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Title

Territorial Technologies

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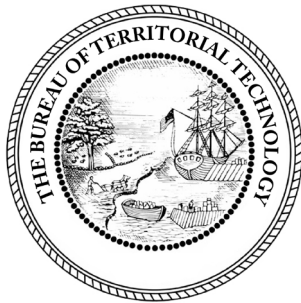
Authors

Hindle, Richard L
Neeraj, Bhatia

Publication Date

2016-07-01

THE BUREAU
OF
ENVIRONMENTAL &
TERRITORIAL
TECHNOLOGY



Patent Examiners:

Richard Hindle
Neeraj Bhatia

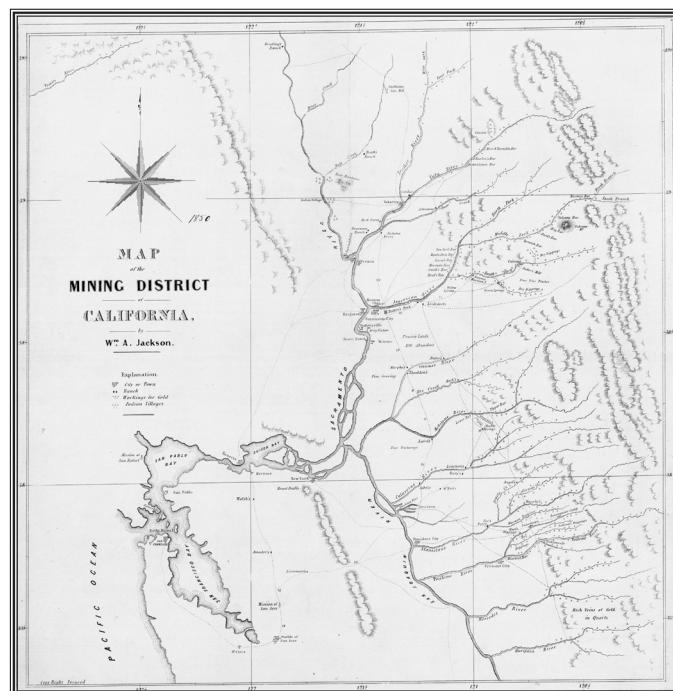
Technologists:

Mario Accordino
Michael Biros
Paul McBride
Alexandra Zahn

FILED ON JUNE 17, 2016

"Patents originally represented gestures of "largesse" on the part of sovereigns, monarchs, dukes, or lesser feudal masters, to members of their court or tenantry. They were designed to encourage thoughtful pioneering, the results of which might obviously be productive for greater wealth of feudal leaders and indirectly to their hosts of followers and subjects... When the democratic idea broke loose in Europe, as a result of partial emancipation of man by his artist-an-scientist devised mechanisms, the popular representatives of that time, thinking by habit in terms of feudal structure and laboring under the problem of transferring privilege of sovereignty to the populace, deemed it a wise and just act to embody the 'letters patent' idea in their democratic constitution.. The necessity of invention and growth were highly apparent to the budding democracies, for had not invention itself forwarded man to the possibility of emergent DEMOCRACY?"

- Fuller, Richard Buckminster. "Throwing in the Patent Sponge". Nine Chains to the Moon. 1938



TO WHOM IT MAY CONCERN

This report explores how technological innovations have, and will, reconfigure the earthworks and control systems of the delta. **The Bureau of ~~Undertaking~~ Environmental Territorial Technology (BUTT) (BETT)** investigates ~~reconfigures~~ the relationship between territory and technology through construction methods, new typological conditions, modular units, and devices. The intimate relationship between territory and technology is easily witnessed through the operationalization of California's water infrastructure. For instance, the development of ground water pumping technology in California reconfigured the entire Central Valley into arable land that was irrigated and sustained through a collection of individual farmers. On the other end of the spectrum, top-down water infrastructure – most notably, the State and Central Valley Water Projects – were also technologies that worked through prototypical relationships between systems. The unique opportunity in thinking through territory via technology, and technology via territory, is to position design as a trans-scalar operation (i.e. from the detail to the region), which can integrate with new scenarios and future environmental imperatives. The following report considers scalar feedback between systems while providing agency to designers to reconfigure large-scaled territories through technological operations. ~~This also provides a methodology for designers to receive equitable compensation.~~

ASSUMPTIONS

FACTS

Today, there is ~~little~~ no 'nature' in California that remains untouched from the effects (directly or indirectly) of human intervention. Simultaneously, we also are now aware of the difficulties in civilizing nature, and the ecological and social impacts of such colonization technologies. Just at the frontier was civilized through territorial technologies, this report proposes that the Delta can be rewilded through new technological machines, devices, and conditions—we call this hybrid-space of operation the Frontier 2.0. Contemporary rewilding calls for and combines the technological entrepreneurialism and ecological awareness that California is known for to rethink the territory. The pro-active establishment of a territorial operation through technological artifacts, devices, machines, or conditions privileges transcalar approaches that link the object to the region. This foregrounds the development of **patents** – a primary language for entrepreneurs—once again, and asks how spatial designers can develop patents not just for civilizing the frontier but rather to **rewild** California for new 'resources' that are socially and ecologically oriented. This is a specific technique born from the confluence of DIY culture, social engagement, and tech entrepreneurship of California. More importantly, this provides spatial designers—who are now ~~finding difficult~~ **paralyzed** to design with the complexity of systems and the transcalar ways that they operate— a renewed agency. The patent is the commodification of an idea, a representation of technology. Its representational language demands the clarification of abstraction and the complexity of territorial systems—making them a political tool to engage, make visible, and empower people within their territory.

CLASSIFICATION

Today, there is ~~little~~ no 'nature' in California that remains untouched from the effects (directly or indirectly) of human intervention. Simultaneously, we also are now aware of the difficulties in civilizing nature, and the ecological and social impacts of such colonization technologies. Just at the frontier was civilized through territorial technologies, this report proposes that the Delta can be rewilded through new technological machines, devices, and conditions—we call this hybrid-space of operation the Frontier 2.0. Contemporary rewilding calls for and combines the technological entrepreneurialism and ecological awareness that California is known for to rethink the territory. The pro-active establishment of a territorial operation through technological artifacts, devices, machines, or conditions privileges transcalar approaches that link the object to the region. This foregrounds the development of patents – a primary language for entrepreneurs—once again, and asks how spatial designers can develop patents not just for civilizing the frontier but rather to rewild California for new 'resources' that are socially and ecologically oriented. This is a specific technique born from the confluence of DIY culture, social engagement, and tech entrepreneurship of California. More importantly, this provides spatial designers—who are now ~~finding difficult~~ **paralyzed** to design with the complexity of systems and the transcalar ways that they operate— a renewed agency. The patent is the commodification of an idea, a representation of technology. Its representational language demands the clarification of abstraction and the complexity of territorial systems—making them a political tool to engage, make visible, and empower people within their territory.

CLASS No. IX.

CIVIL ENGINEERING,

**And Architecture, comprising works on Rail and Common
Roads, Bridges, Canals, Wharves, Docks, Rivers,
Wiers, Dams, and other Internal Improve-
ments, Buildings, Roofs, &c.**

CLASSIFICATION CPC 40214824

TECHNOLOGICAL TAXONOMY
FOR WORLD PLANETARY DESIGN RECOLONIZATION

Territorial Technologies

A method, machine, assembly, unit, or model, that operates in a trans-scalar manner from details to systems and regions. This classification of technology reconfigures regional systems to ~~unforeseen~~ foreseen ends.

METHOD

1. Levees. 1a. Landform Zipper. Page. XX;

MACHINE

2. Sedimentation Harvesting 2A. Regional Reinforcement. Page
XX

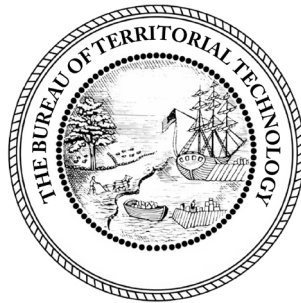
ASSEMBLY

3. Edge Engineering. 3A. Banking. Page. XX

UNIT

4. Tule Bale. 4A. Tule-Tech. Page XX

THE X PAGES



The X-Pages were discovered on the University of Berkeley California Campus on June 13, 2016. The found pages were missing from original patent records and show the territorial implications of particular technologies. This recent discovery reveals alternate scenarios for the California Delta's organization and morphology.

932,565.

Patented Aug. 31, 1909.
 6 SHEETS—SHEET 1.

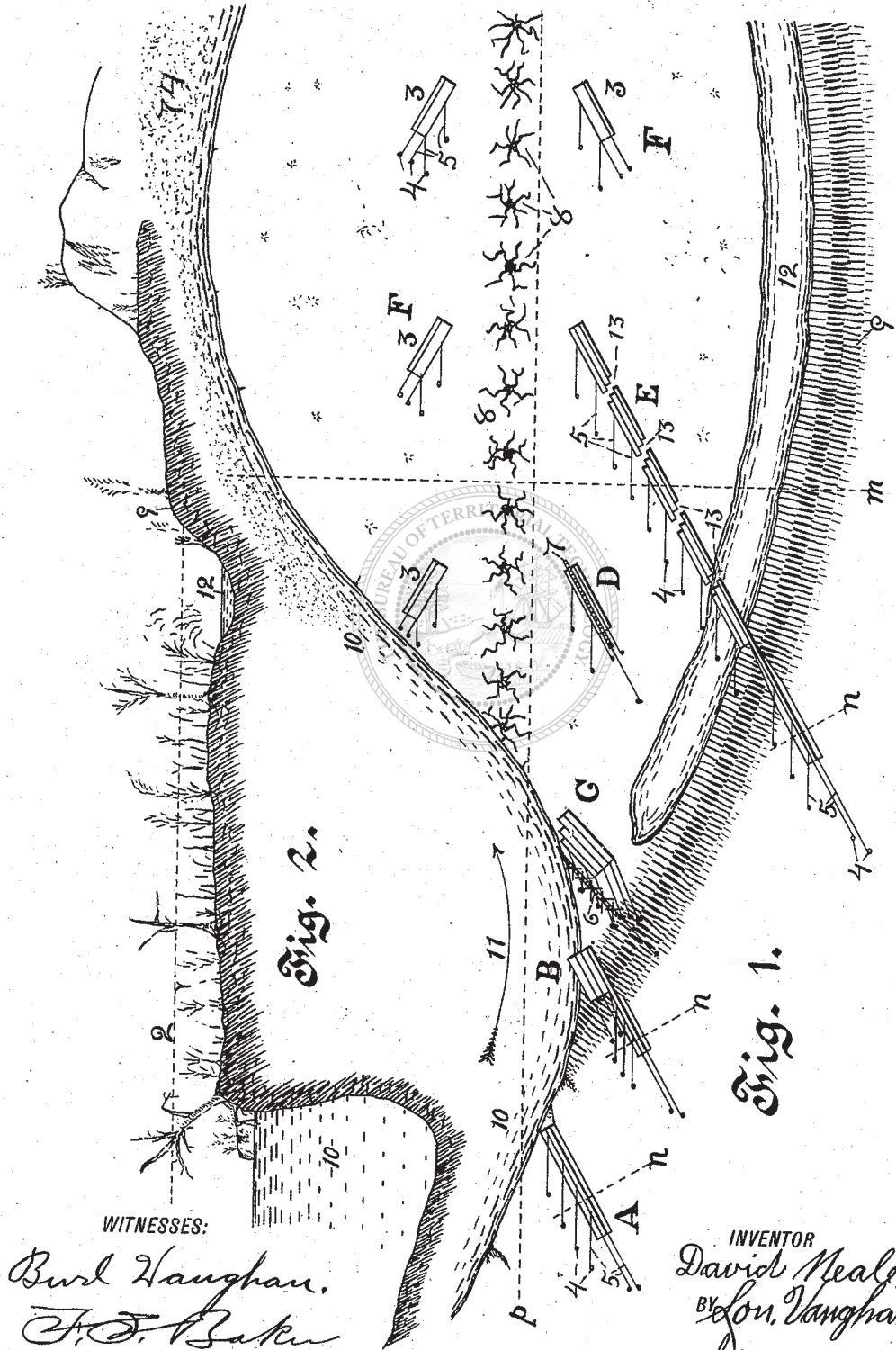


Fig. 2.

Fig. 1.

WITNESSES:

Burd Vaughan,
F. J. Baker

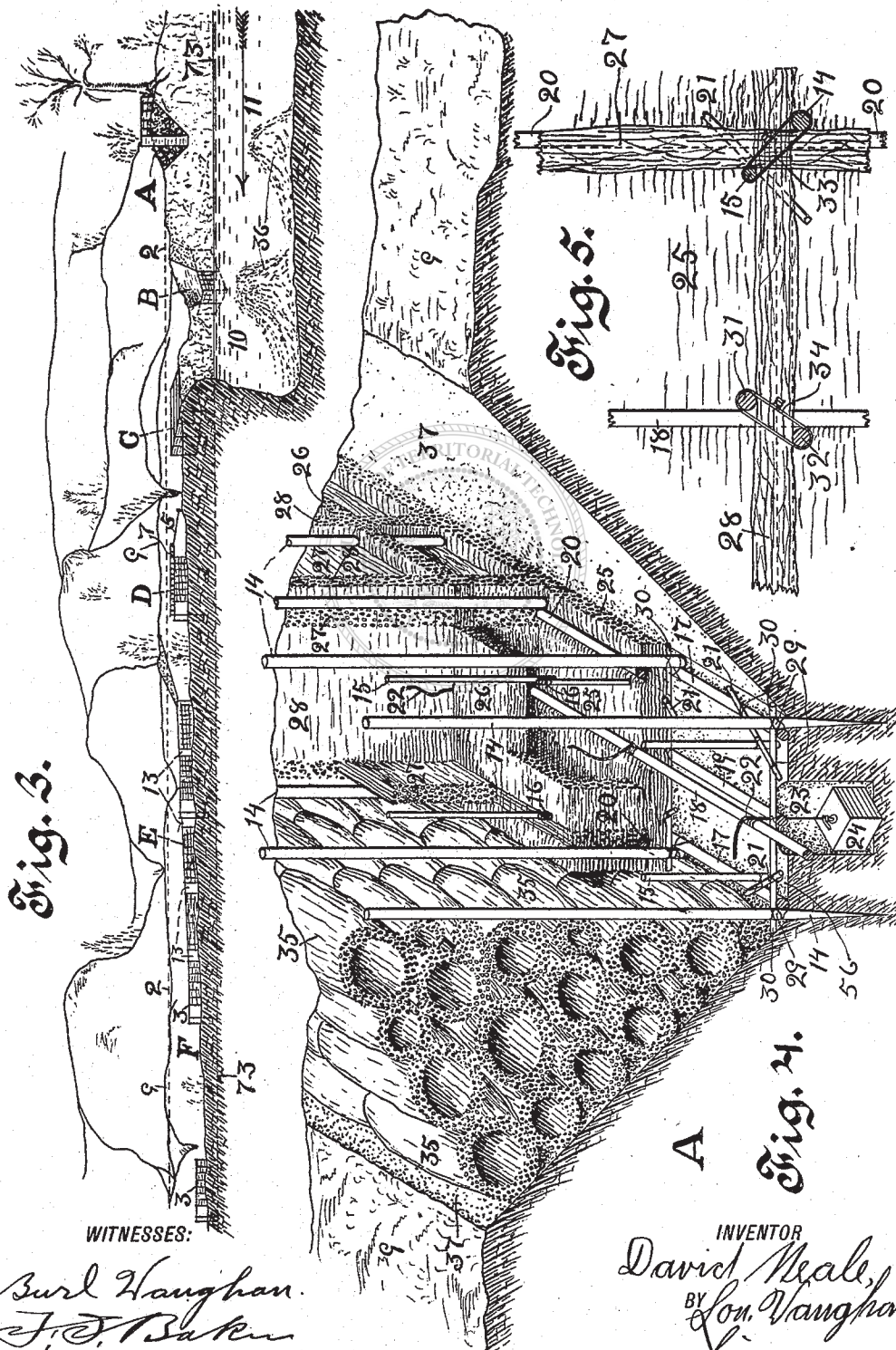
INVENTOR
David Neale,
 BY *Burd Vaughan,*
 his ATTORNEY.

D. NEALE.
 ANTIICIPATORY RIPRAP DIKE.
 APPLICATION FILED JAN. 30, 1909.

932,565.

Patented Aug. 31, 1909.

6 SHEETS—SHEET 2.



WITNESSES:
 Burl Haughan.
 J. T. Baker

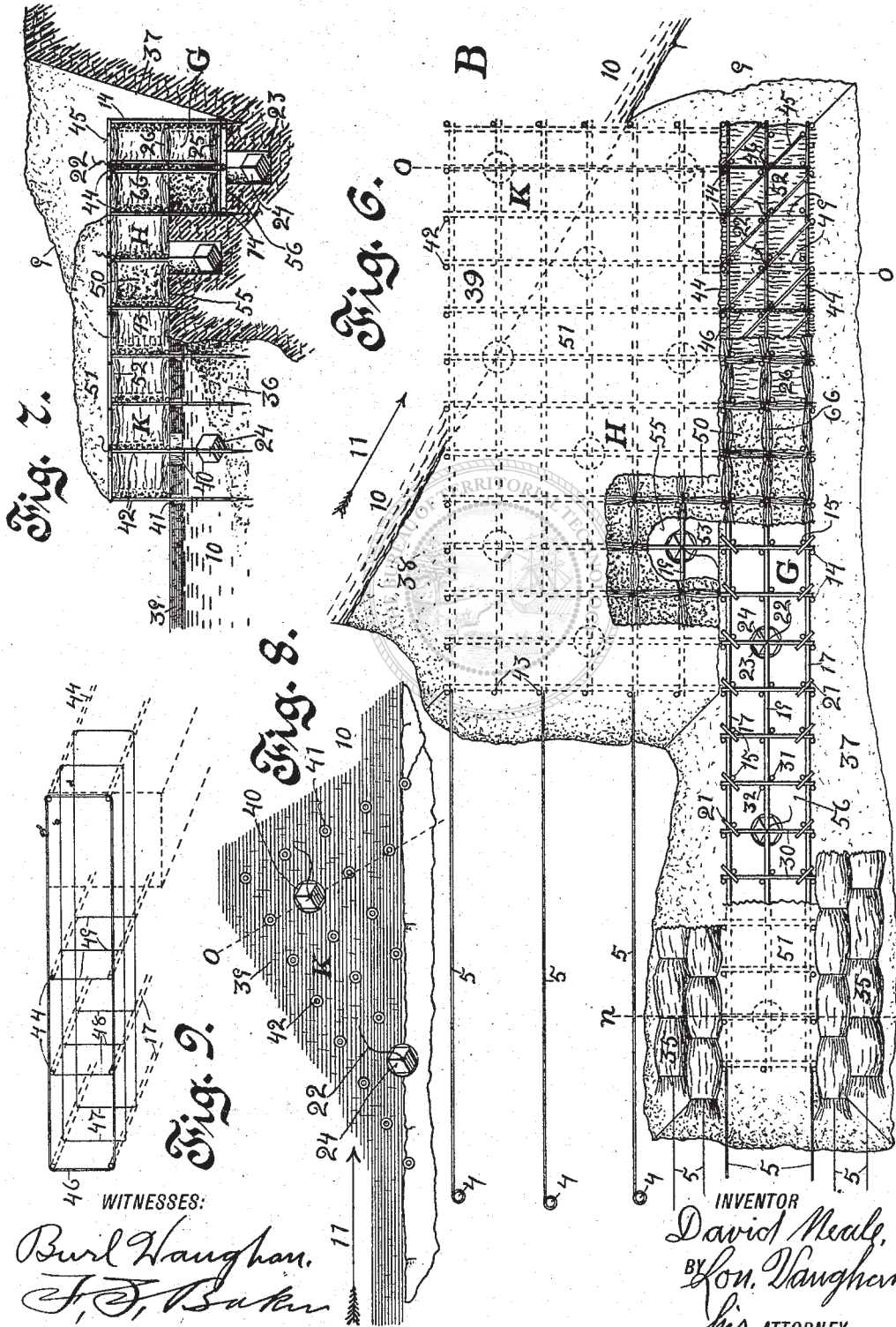
INVENTOR
 David Neale,
 BY Son. Haughan,
 ATTORNEY.

D. NEALE.
 ANTICIPATORY RIPRAP DIKE.
 APPLICATION FILED JAN. 30, 1909.

932,565.

Patented Aug. 31, 1909.

6 SHEETS—SHEET 3.



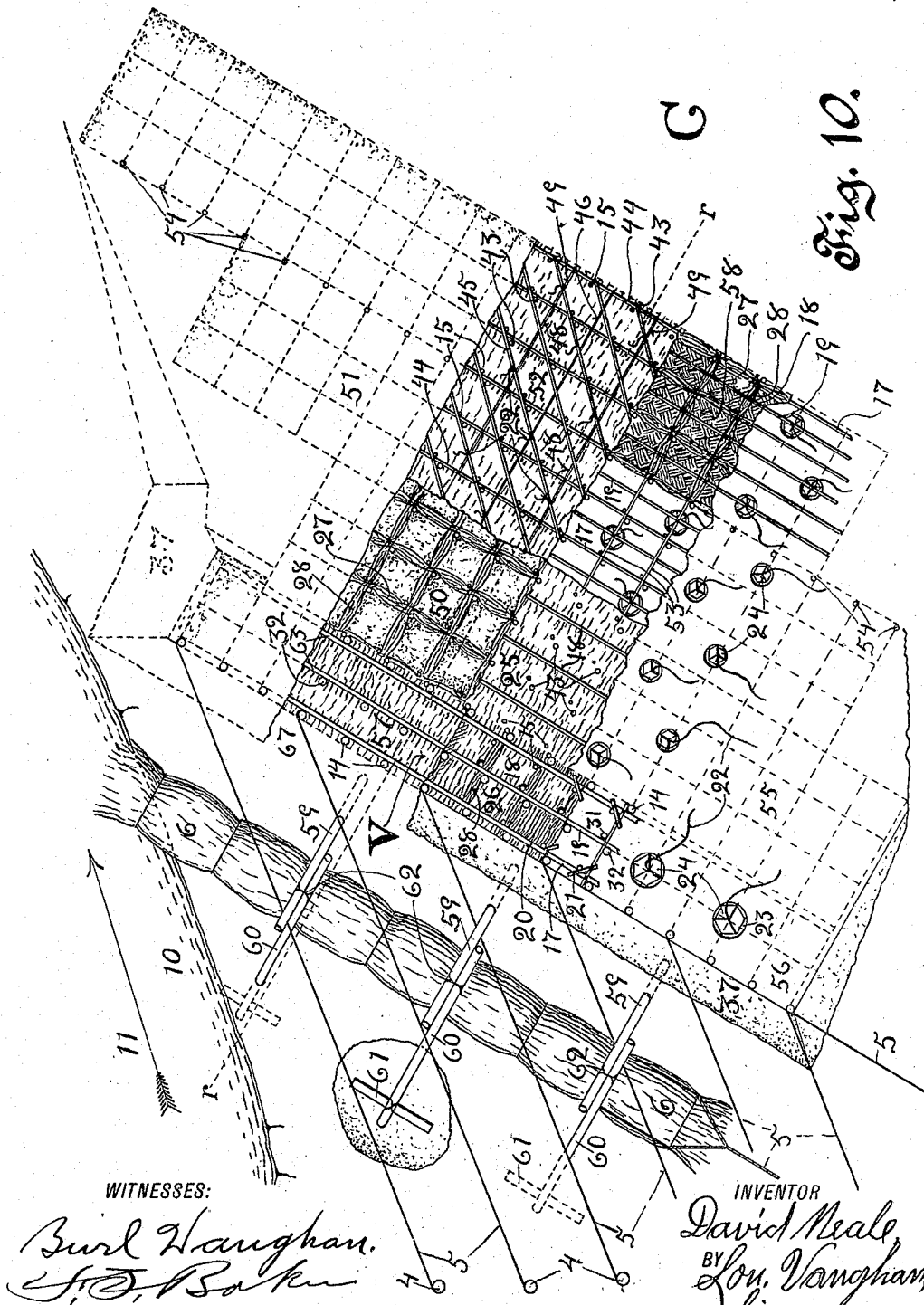
WITNESSES:
 Burl Haugham,
 J. J. Butler

INVENTOR
 David Neale,
 BY Burl Haugham,
 ATTORNEY.

932,565.

D. NEALE.
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6 SHEETS—SHEET 4.



WITNESSES:

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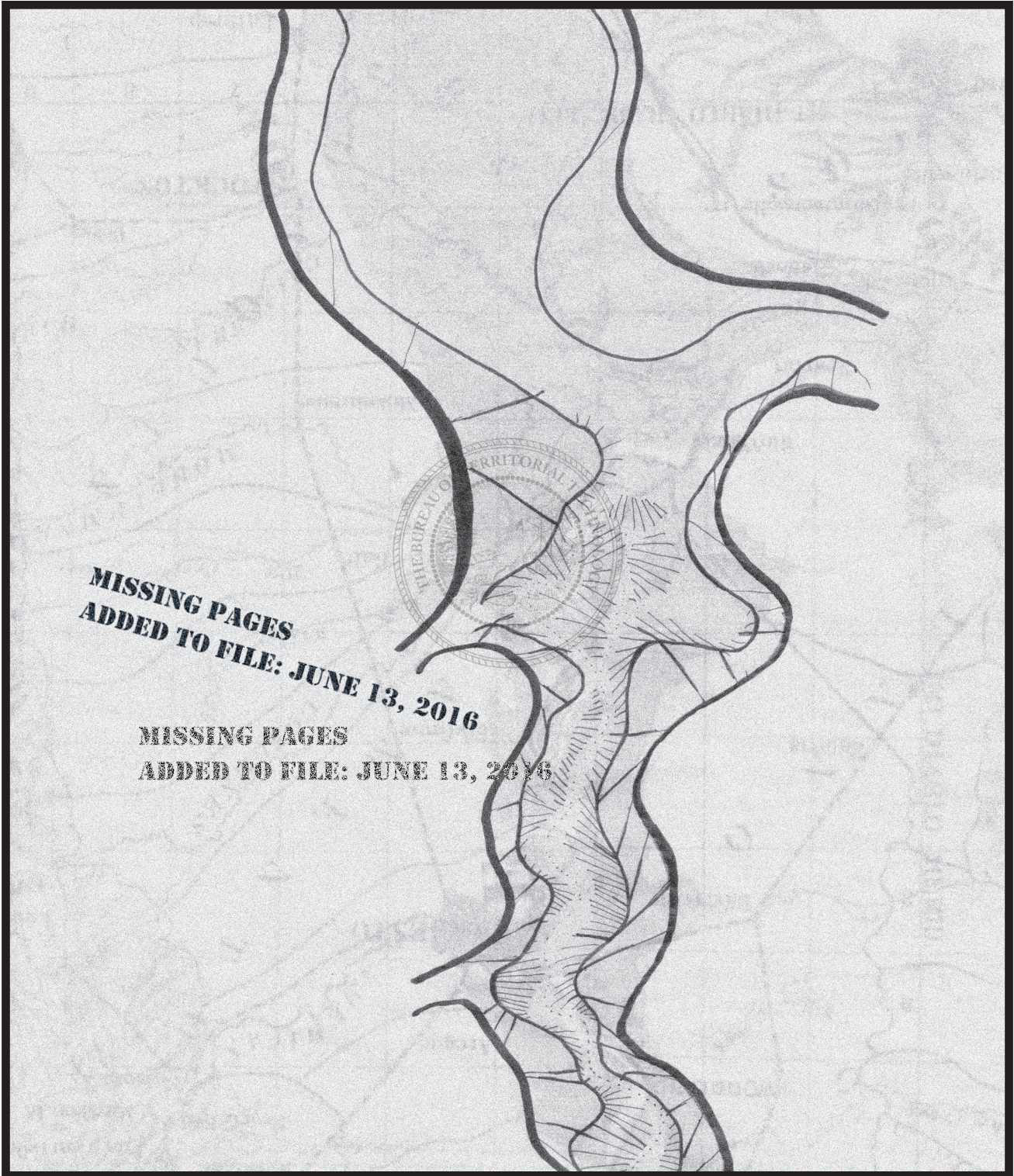
INVENTOR

David Neale,
BY Lou. Vaughan,
his ATTORNEY.

932,565.

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APPLICATION FILED JAN. 30, 1909.

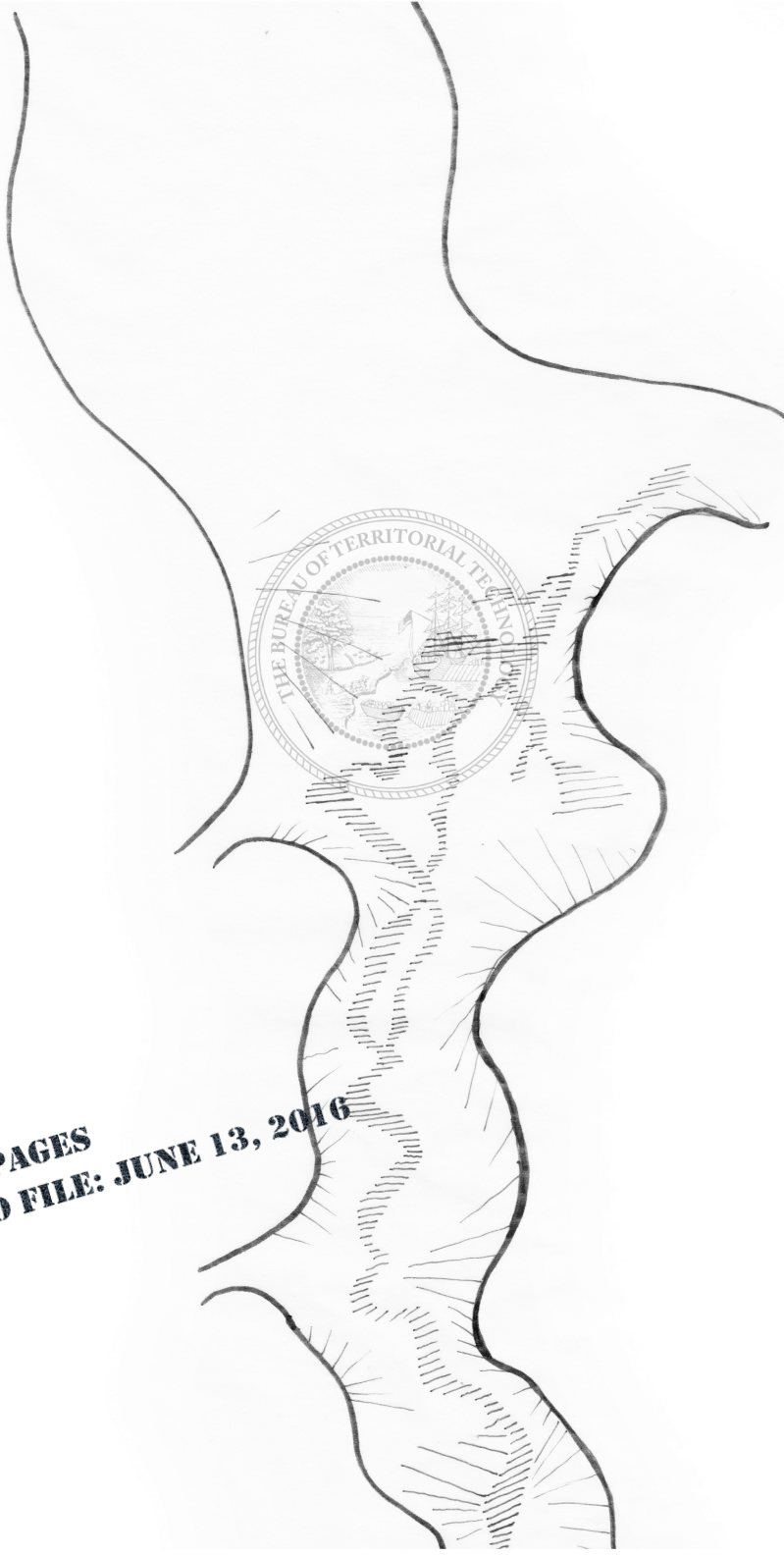
Patented Aug. 31, 1909.
8 SHEETS—SHEET 1.



932,565.

D. NEALE.
ANTICIPATORY RIPRAP DIKE.
APPLICATION FILED JAN. 30, 1909.

Patented Aug. 31, 1909.
8 SHEETS—SHEET 1.

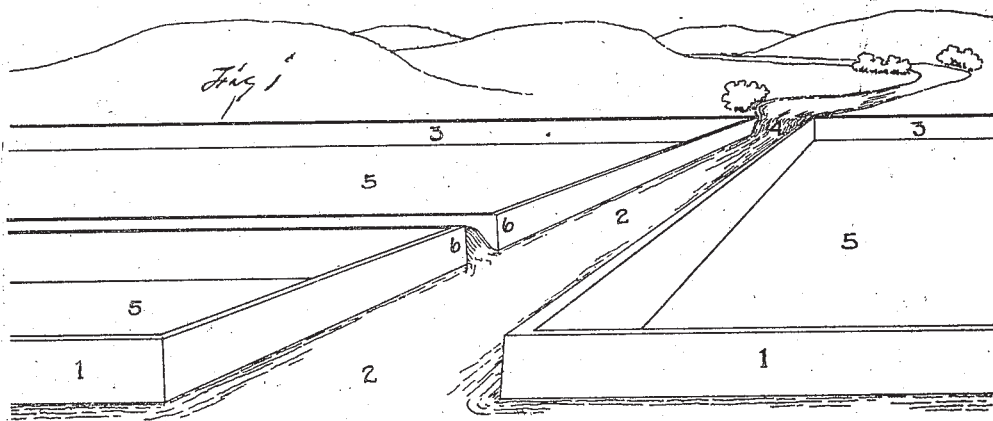
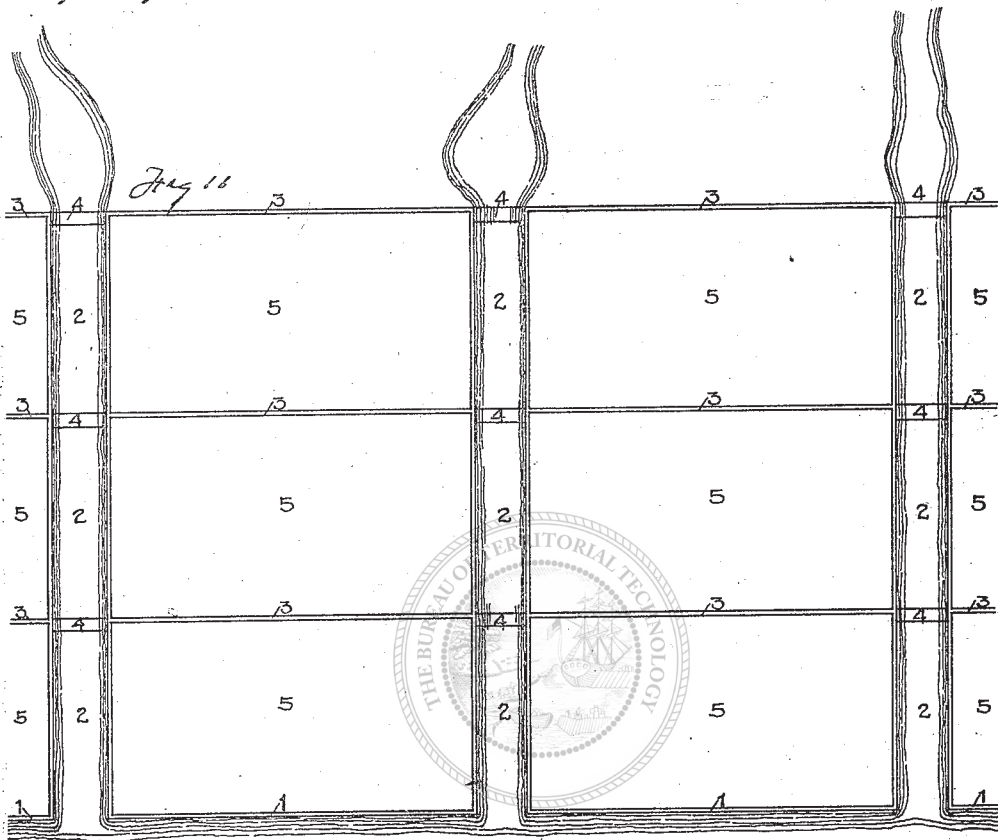


**MISSING PAGES
ADDED TO FILE: JUNE 13, 2016**

Z. T. SWEENEY.
 MULTIPLE DAM AND CONDUIT.
 APPLICATION FILED APR. 24, 1918.

1,284,946.

Patented Nov. 12, 1918.



witnesses { W. J. Richard
 Kate Inna

Zachary T. Sweeney

UNITED STATES PATENT OFFICE.

ZACHARY T. SWEENEY, OF COLUMBUS, INDIANA.

MULTIPLE DAM AND CONDUIT.

1,284,946.

Specification of Letters Patent. Patented Nov. 12, 1918.

Application filed April 24, 1918. Serial No. 230,542.

To all whom it may concern:

Be it known that I, ZACHARY T. SWEENEY, a citizen of the United States, residing at Columbus, in the county of Bartholomew and State of Indiana, have invented a new and useful Multiple Dam and Conduit, of which the following is the specification.

My invention relates to improvements in a construction for preventing the overflow of lowlands, and the objects of my improvements are, first, to prevent an overflow on low lying lands by the tides of the sea. Second, to afford facilities for fresh water streams back of the sea wall to find their way into the sea at any stage of the tide. I attain these objects by the construction illustrated in the accompanying drawings.

In the drawings, Figure 1 is a perspective view of a sea wall, dam and conduit made of some plastic material, preferably concrete, in which the sea wall is connected by an integral conduit to a dam farther inland forming a solid construction, doing away with all mechanical appliances for holding the various parts together. 1 represents the sea wall intersected by a conduit 2 which connects the sea wall with dam 3, which is considerably higher than the sea wall 1. In dam 3 there is a spillway 4 through which the water collected above dam 3 can flow into conduit 2 and find its way through the sea-wall to the sea at any stage of the tide without overflowing the lowlands 5. There may be as many conduits 2 as are necessary to carry the water from above dam 3 to sea level; also there may be as many dams 3 as are necessary, one above the other, all connected by one or more conduits 2 to form a solid construction for preventing the overflow of lowlands. 6 represents a lateral conduit used to convey the water from small streams emptying into the lowlands between sea wall and dam 3 into conduit 2.

Fig. 2 is merely an amplification of Fig. 1, showing more than one dam, conduit and spillway. The various dams are represented by 3; the conduits by 2; the spillways by 4 and the lateral conduits by 6. It is obvious that the channels 2 are formed by wing dams connecting openings in the dam 1, and the sides of spillways 4, and that the lateral conduits 6, are formed by secondary dams connecting the sides of the spillways in the wing dams.

While I have expressed a preference for concrete, I do not wish to be limited to the use of any particular material in constructing my invention. Its value is in the way the several structures of which it is composed are related to each other rather than of the material of which it is composed.

Having thus described my invention, what I claim Letters Patent for, is,

In a construction for preventing the overflow of lowlands, a sea wall having openings therein, wing dams arranged at angles to and projecting outwardly from said sea wall and having spillways therein, a dam spaced from and arranged in parallel relation to said sea wall and connecting the ends of said wing dams and having spillways therein, the said wing dams forming side walls of channels between the spillways in said dam and the openings in said sea wall, and secondary dams arranged parallel to said sea wall and connecting the sides of the spillways in said wing dams to form channels therebetween.

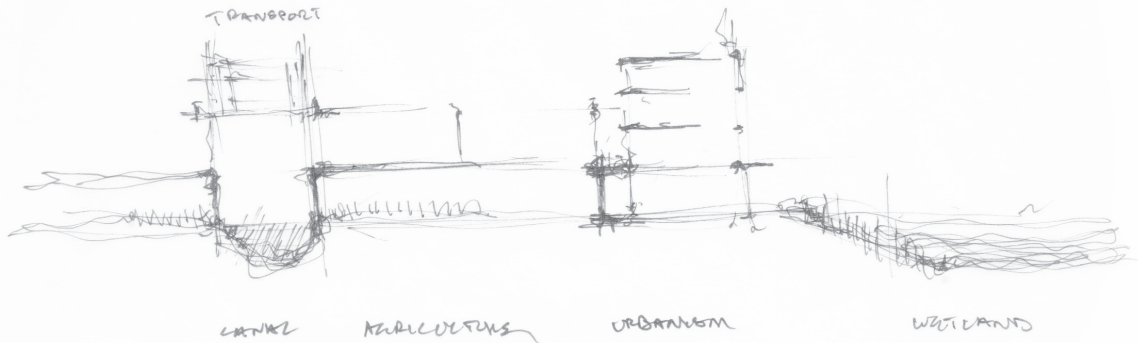
In testimony whereof I have signed this specification in the presence of two subscribing witnesses this 19th day of June, A. D. 1918.

ZACHARY T. SWEENEY.

Witnesses:

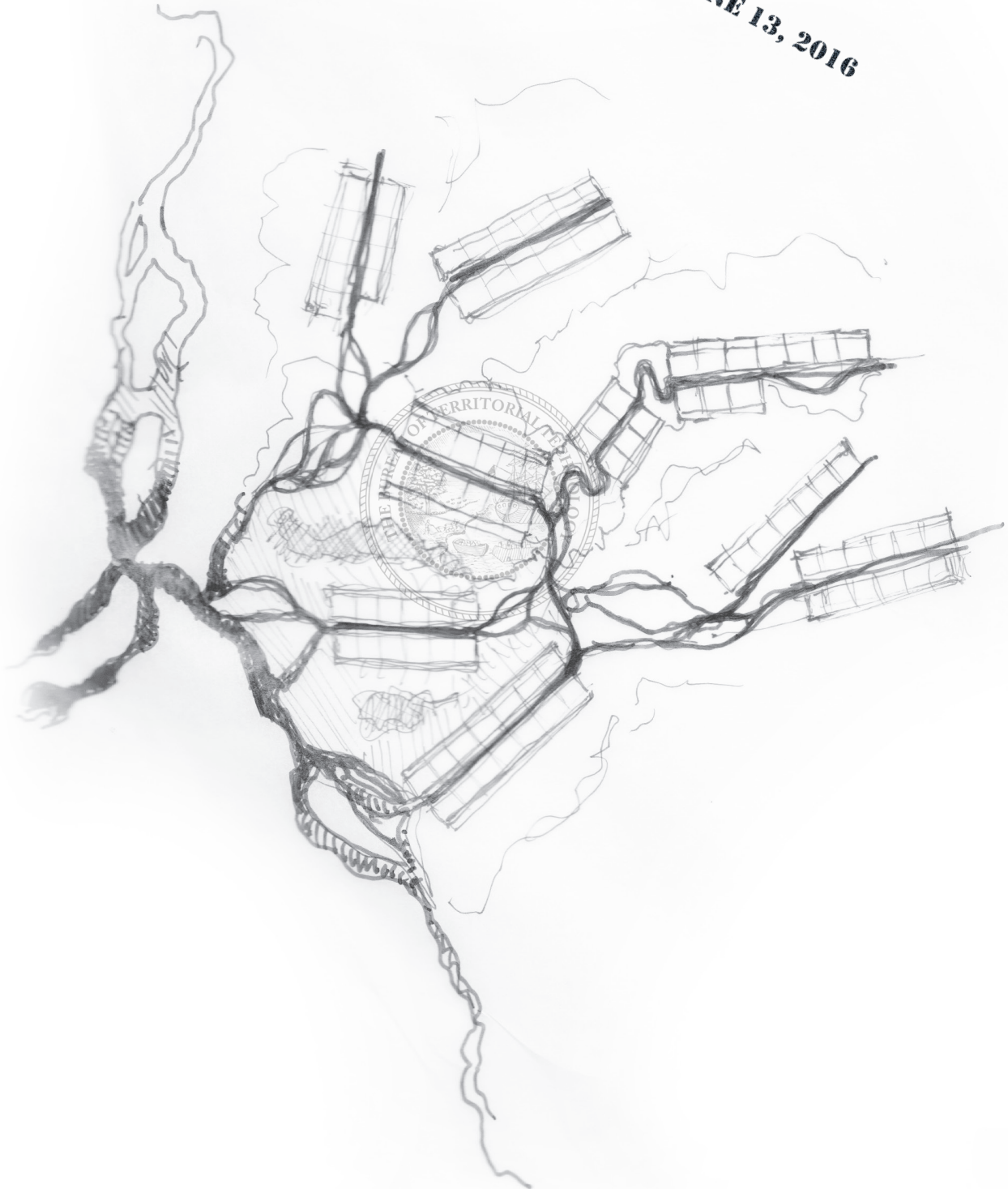
D. J. RICHARD,
KATE IRWIN.

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Z. T. SWEENEY
MULTIPLE DAM AND CONDUIT

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ADDED TO FILE: JUNE 13, 2016**



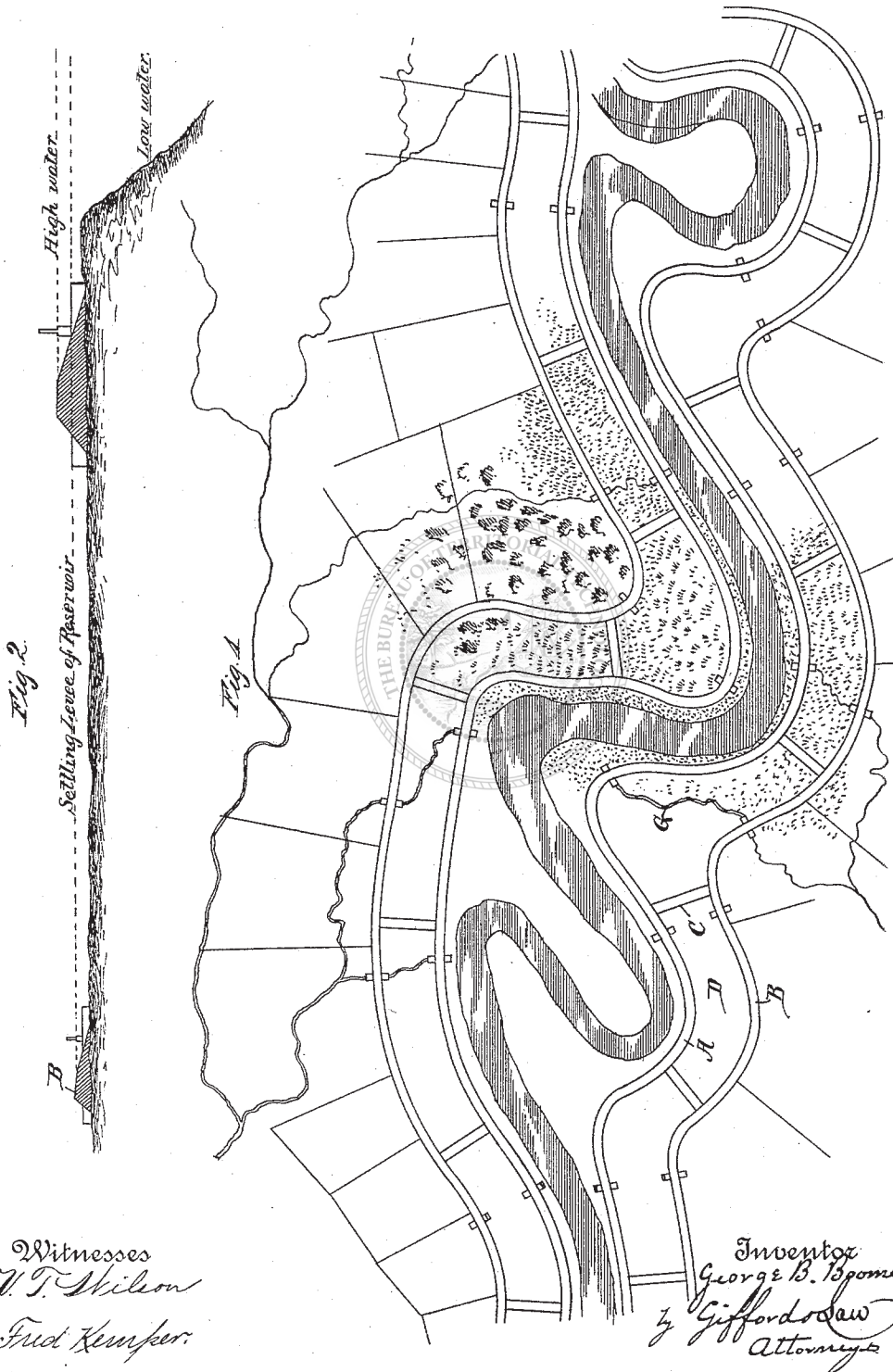
(No Model.)

2 Sheets—Sheet 1.

G. B. BOOMER.
METHOD OF CONSTRUCTING LEVEES.

No. 452,989.

Patented May 26, 1891.



Witnesses
V. T. Wilson
Fred Kemper

Inventor
George B. Boomer
J. Gifford Saw
Attorneys

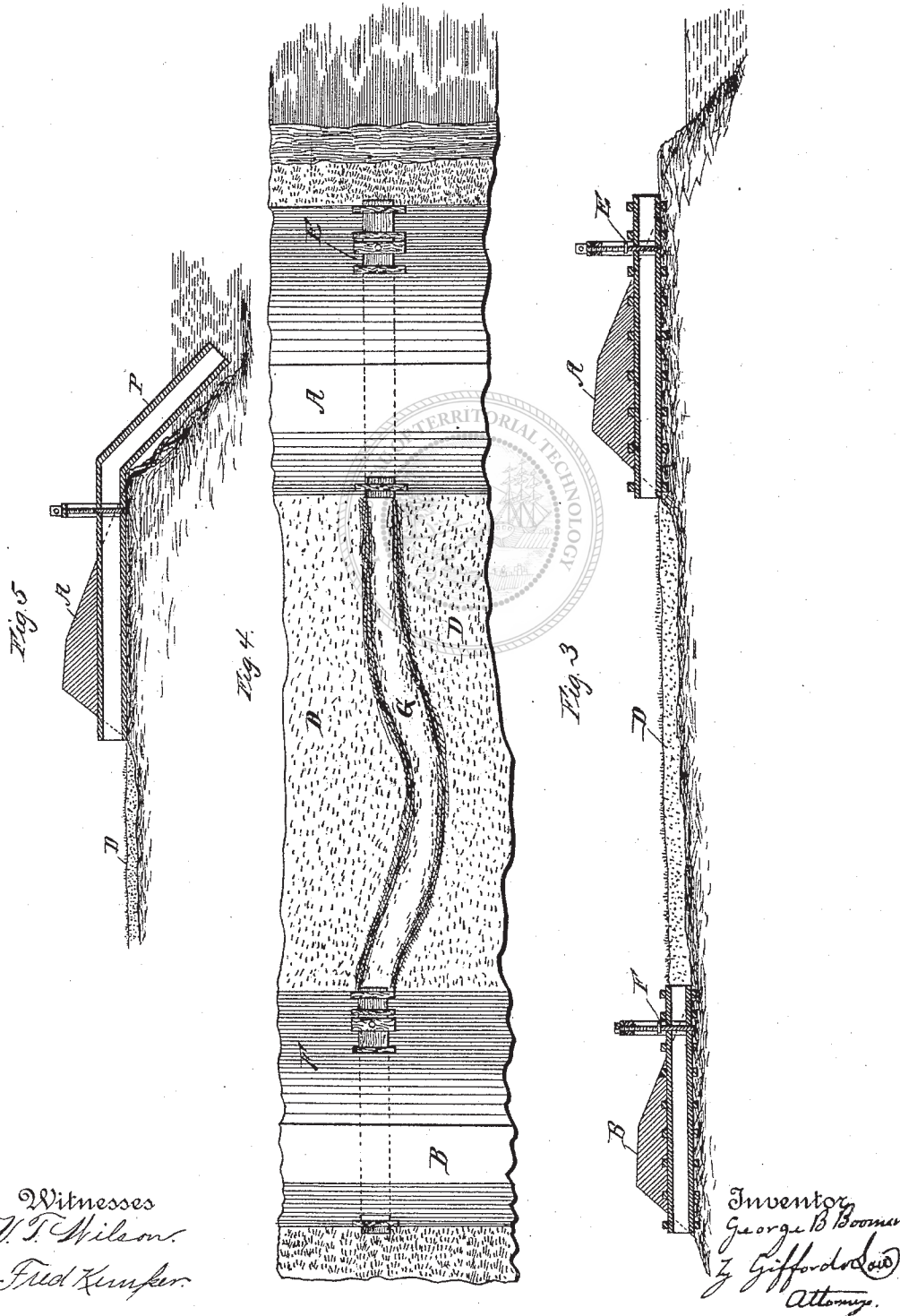
(No Model.)

2 Sheets—Sheet 2.

G. B. BOOMER.
METHOD OF CONSTRUCTING LEVEES.

No. 452,989.

Patented May 26, 1891.



Witnesses
V. T. Wilson.
Fred Kemper.

Inventor
George B. Boomer
J. Gifford & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE B. BOOMER, OF MOUNT PLEASANT, NEW YORK.

METHOD OF CONSTRUCTING LEVEES.

SPECIFICATION forming part of Letters Patent No. 452,989, dated May 26, 1891.

Application filed July 18, 1890. Serial No. 359,216. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. BOOMER, a citizen of the United States, and a resident of Mount Pleasant, in the county of Westchester and State of New York, have invented certain new and useful Improvements in the Method of Constructing Levees, of which the following is a specification, reference being had to the accompanying drawings.

My invention consists in an improvement in the art of constructing levees or embankments along navigable rivers or streams where it is desired to confine the river within its channel, and in relieving the river along its course of the excess of water during the time of freshets, so as to prevent it from accidentally overflowing its banks; and it furthermore consists in irrigating and fertilizing the banks of the river, so as to make them more productive.

My improvement is applicable to those streams that contain or carry down with their current earth or similar sediment which settles when the water becomes stationary. Many rivers, especially in time of freshets or high water, contain or hold suspended large quantities of sediment or earth, most of which is carried down with the current and deposited at the mouth of the river. Some of this sediment settles on the bed of the river and gradually raises the latter, and another portion is deposited on the land lying along the river when the latter overflows its banks and floods the adjacent country. My improvement consists in utilizing this earth or sediment contained in the river to build up the embankments or levees by catching and retaining the sediment and applying it to the land on each side of the river; and it furthermore consists in regulating and controlling the rise of the water by a system of gates in the levees, by which the water is drawn off at certain points when the river threatens to rise above a safe level. In the system of levees now in use on all rivers the design has been to confine all the water of the stream or river in its channel from its source to its mouth. To do this it has been necessary to build strong and in some places high levees at great expense, which require constant attention and repairs and which must be increased in size every few years. These levees on account of their

size are apt to give way in time of freshets, and as there is no way of drawing off the water at any other point the country where the break occurs is flooded and great damage is done before repairs can be made.

My improved method of constructing levees is as follows, reference being had to the drawings, in which—

Figure 1 is a plan view of a river, showing my improved levees on each side of the same. Fig. 2 is a sectional view of the levee on one side of the stream, showing the position of the two levees or embankments. Fig. 3 is an enlarged sectional view of the levee, showing the gates and bulk-head in the levees. Fig. 4 is a view of a section of the levee, looking down from above, showing the portion included between the two levees and the ditch or passage-way through the latter and connecting the gates in the two levees. Fig. 5 is a sectional view of a modified construction of my improvement.

On each side of the stream or river is formed a levee (marked A in the drawings) similar to those now in use. This can be of any height found practical; but in general its summit should be about one foot above high-water mark. Back from this main levee A and in a line substantially parallel with it is a second or sub-levee B. This sub-levee may be any distance from the main levee desired, depending on the configuration of the land and the area it is desired to flood, as stated below, but in general will be about one mile back of the river or levee A. The sub-levee should be about five feet high; but the height may vary according to circumstances. Across the space included between these two levees A and B are constructed cross levees or dikes C, dividing the space into basins D. These cross-dikes may be made at regular or irregular intervals, thus forming basins of the same or varying area as the distance between the levees A and B and the nature of the country shall determine. In general these dikes C will be made often enough to form basins of convenient and manageable area and capacity.

In each basin or division D in the main and sub-levees A and B are placed bulk-heads and gates E F, (shown more clearly in Fig. 2,) by which water from the river may be admitted

into the basin and then withdrawn from the same into the country back of the river. These gates E and F are naturally placed at the lowest depression in the basin or at each end of any natural drainage through the basin, so that the water will readily flow from the one gate E to the other gate F through the basin when it is not desired to flood the latter, as is stated below. Where there is no natural depression or drainage through the basin, a ditch G may be formed from the one gate to the other, as indicated in the drawings. There is thus in the main levee A a series of gates E, by means of which water may be drawn from the river at high water to flood the basins D or space between the two levees, and in the sub-levee B a corresponding series of gates F, by means of which the water may be drawn off from the basins D and allowed to flow off into the country back of the river. It is intended to arrange these gates E and F along the whole course of the river from near its source to its mouth. Water may thus be drawn off at any point or series of points, as is desired.

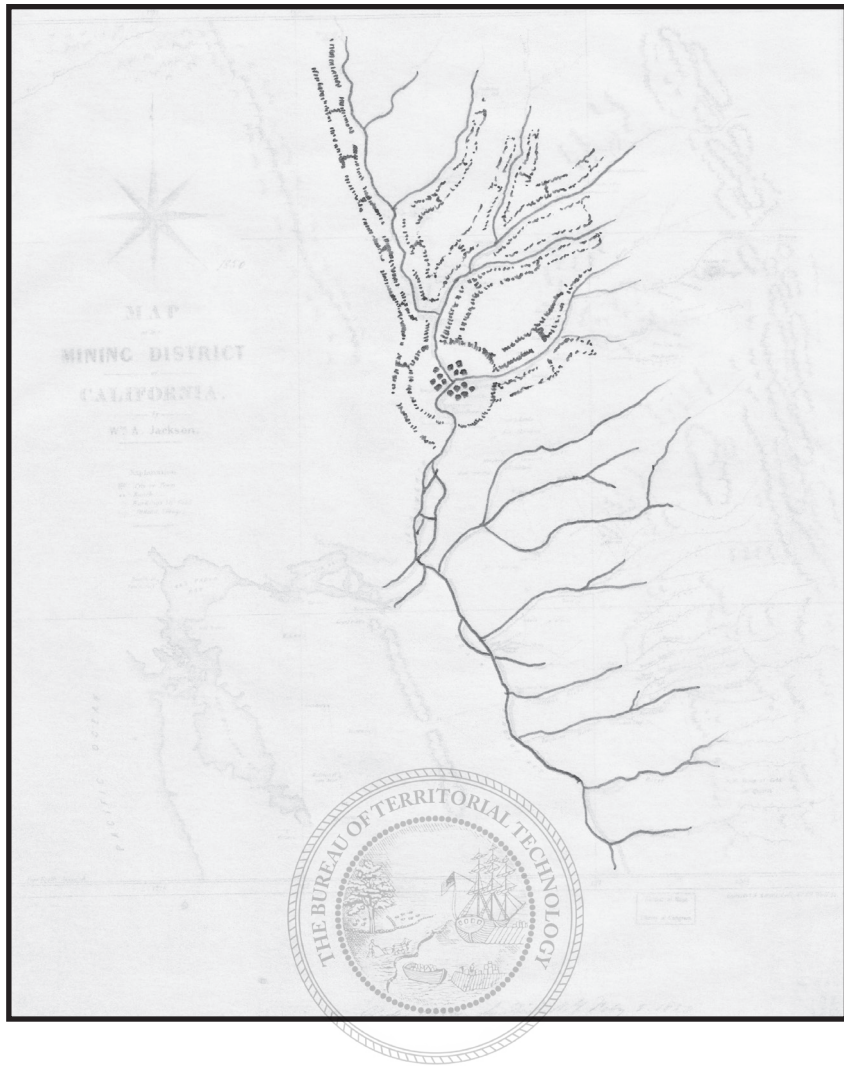
During the time of the spring freshets the water of the river or stream is apt to be charged with a large amount of earth or sediment. As the water rises and threatens to overflow its banks, the gates E in the main levee A are opened, the gates F being closed and the basins D flooded with the water from the river until they are full to the top of the levee F. If all the gates E along the course of the river are opened and the whole space between the two levees on both sides of the river is flooded, it follows that a large volume of water will be withdrawn from the river and the level of the water lowered, so that the threatened overflow is prevented. It is not necessary that all the basins should be flooded at one time, but the gates E may be opened here and there along the course of the river as is found desirable and necessary to lower the water in the river. As the water confined in the basins D remains quiet and unagitated, the earth and sediment held in suspension in the water settles on the bottom of the basin. After the water has become clear the gates F in the sub-levee B are opened and the water is allowed to flow off through the country back of the river. The basins D may then be again flooded with water, as before, and this may be repeated as often as is necessary while the river remains high. Every time the basins D are filled with water so much water is withdrawn from the river and the level of the latter reduced, and at the same time a fresh quantity of earth is deposited on the bottoms of the basins. This deposit not only builds up the levee or bank between the dikes, but being sediment from the river renders the land on which it is placed very fertile and capable of producing large crops. This withdrawing of the water from the river and flooding the basins may be repeated during the whole year, if desired, as often as

the water rises in the river and it is required to lower its level; but if it should be desired the basins D, or the space included between the two levees A and B, may be cultivated, and on account of the rich deposits obtained from the river will be very fertile and produce large crops. When the spaces D are thus cultivated, if a freshet or high water should occur while the crops are growing, or when it would be injurious to flood them, the water may be drawn off from the river through the basins by opening both gates E and F and allowing the water to flow along the ditches G or natural depressions from one gate to the other, and thus out into the country back of the river. It will thus be possible to withdraw the water from the river without flooding the basins and injuring the crops, and at the same time, by reason of the gates along the whole course of the river, to withdraw the water in small quantities here and there and avoid injuriously flooding the region back of the river.

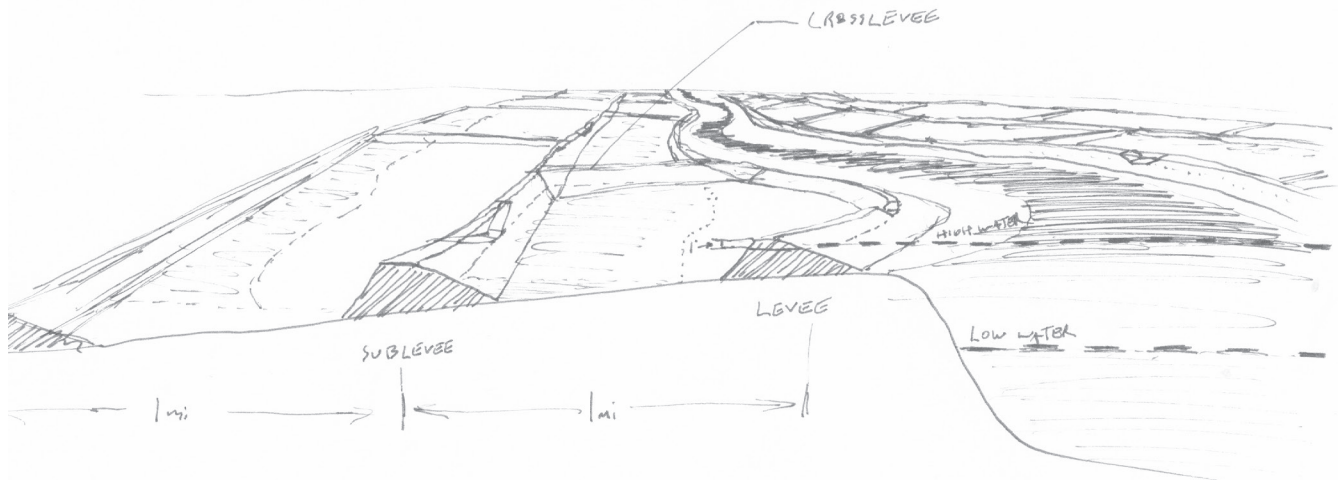
In general, while the basins D are under cultivation the gates F are left open to insure drainage from the lands and keep the ditches G clear. These ditches or depressions G may be opened and made ready to draw off the water by occasionally washing them out with water from the river by opening the gates E. After the crops have been harvested the basins D may be again flooded and a fresh deposit of earth placed on them, as above described. Thus every year a fresh supply of rich earth is deposited along the bottoms of the basins D, rendering the land very fertile, and at the same time the space between the levees is gradually raised and built up to form a strong embankment. When in course of time the basin or space D is filled up to the top of the levee B, the latter is raised, and as it is only necessary to build this sub-levee five feet or so this can be readily and cheaply done. In the same way the levee A may be readily raised when required. In this way only low levees are necessary and the great expense of high levees avoided.

As will thus be seen, in my improved system the river builds up its own banks by depositing its own sediment in times of high water, and by my system of gates along the whole course of the river it is possible to control the rise of the water and prevent it overflowing its banks or breaking through its levees. As when in time of heavy rains an increase in the water is expected, the level of the river near its mouth may be lowered by opening the gates in that part of the river, so that when the freshet comes it will be provided for and can do no damage, and not only is the rise of the water kept under control and the banks built up, but the rich sediment in the river is applied to the land so as to render the latter very fertile.

Fig. 5 shows a modified construction of my improvement. In place of the gate E in the main levee A, I place an iron pipe or conduit P, which extends through the levee and down

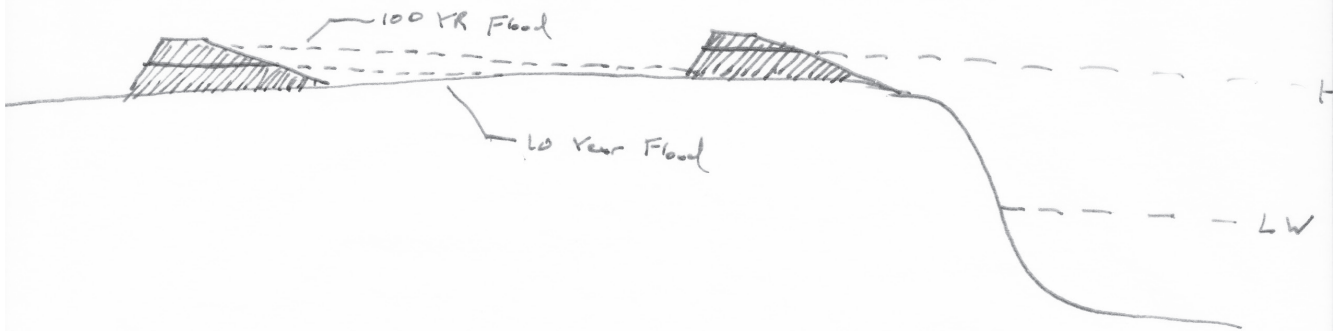


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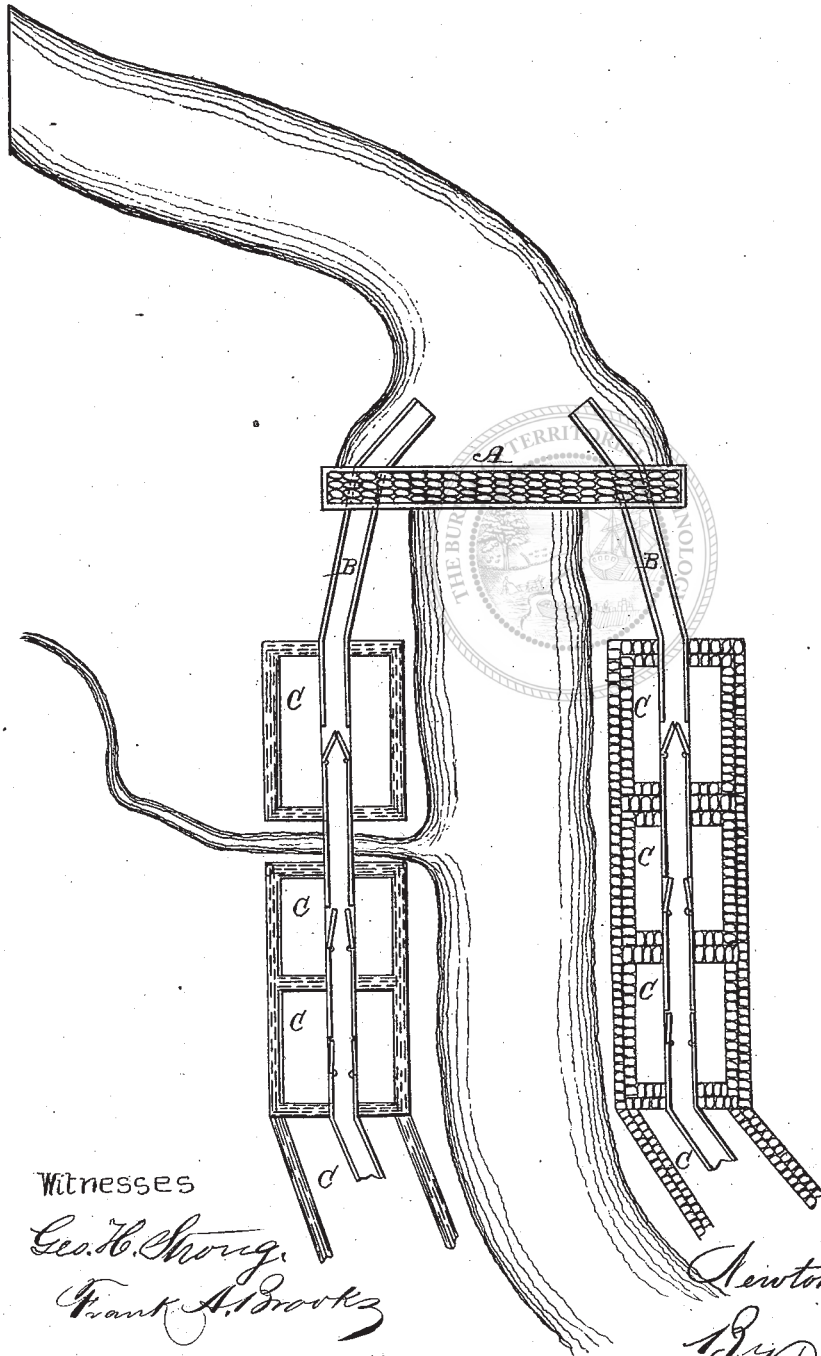
(No Model.)

N. SEWELL.

Method of Relieving River Channels of Sediment
and Forming Levees.

No. 235,967.

Patented Dec. 28, 1880.



Witnesses

Geo. H. Strong
Frank A. Brooks

Inventor

Newton Sewell
By Dewey & Co.
Attys

UNITED STATES PATENT OFFICE.

NEWTON SEWELL, OF MARYSVILLE, CALIFORNIA.

METHOD OF RELIEVING RIVER-CHANNELS OF SEDIMENT AND FORMING LEVEES.

SPECIFICATION forming part of Letters Patent No. 235,967, dated December 28, 1880.

Application filed May 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, NEWTON SEWELL, of Marysville, county of Yuba, and State of California, have invented a Method for Relieving River-Channels of Sediment and Forming Levees; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a method for relieving the channels of water-courses from the sediment which may be brought down by the water, and for utilizing the same in the formation of levees upon each side of the stream to aid in the reclamation of the land; and it consists of a dam or dams built across the stream and having flumes or ground-cuts leading out therefrom to the banks of the stream below. At suitable points upon the banks of the stream, below the dam or dams, a succession of inclosures are formed, of earth, either loose or in sacks, or other material formed in any suitable manner, so that the water from the flumes may be led into them and the sediment contained in the water allowed to settle, the water being drawn off and allowed to flow back into the stream. When the first inclosures have been filled with the sediment the flumes are allowed to discharge into the next inclosures, and the levee may thus be built of any desired length, width, and height. By adding to the inclosing-walls and filling the new space any height may be attained.

Referring to the accompanying drawing for a more complete explanation of my invention, the figure is a plan view of my levee-forming devices.

The disposition of the sediment which is brought down rivers, and especially those rivers where hydraulic mining is extensively carried on in the upper portions of their course, is a matter of serious consideration. Already some of the rivers of California have been filled with the tailings from these mines to a depth of more than twenty-five feet, and the safety of cities and the surrounding country is endangered during the rainy season by the overflow of the water from the streams. Agricultural lands are also ruined by the deposit of sediment. In order to prevent this overflow, and also the further filling up of the beds of important streams by the continued deposit of tailings, it is neces-

sary to build levees to keep the water within the channel, and at the same time provide for the disposition of the mud, tailings, or earthy sediment which is continually brought down by the stream. My invention contemplates the performance of both these operations in one, and in order to carry it out I build a dam at A, of any desired height and material. The water and sediment brought down by the stream are collected within the reservoir formed by this dam, and are led out from it by means of flumes or ditches B, upon one or both sides of the river, as may be desired. Upon the banks of the stream, or at the point where it is desired to form the levee, I build a succession of inclosures, C, with walls of earth or other suitable material, in sacks or otherwise. These inclosures are made as wide as it may be desired to form the levee, and the water is allowed to flow from the flume into them. The sediment will settle from the water on account of the checking of its flow and the comparative quiet of the water. When the sediment has thus been deposited the water is allowed to flow back into the channel of the stream and continue its course. The flow of water and sediment into the inclosures is continued until the first inclosure has been filled to a point as high as may be desired. The second inclosure is then filled, as in the first case. The flumes are provided with gates, which are adapted to control the flow of water into each inclosure, as may be desired. By this construction the levee may be extended indefinitely.

Where other streams enter the main one they are allowed to flow through the levee, and the flumes or ditches are carried across these entering or branching tributaries. If these tributaries also carry considerable sediment, they may be provided with dams and ditches or flumes, and the sediment from them also deposited upon the main or branch levees, as may be required. By this means I am enabled to relieve the waters of the streams of the sediment which would soon choke the channel and fill it up, and at the same time I deposit this material at any point desired, either to build a levee or to reclaim and fill up low sunken land.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The dam A in the stream or channel, and the flumes or sluices B, leading from the channel above the dam to the shore, in combination with the series of inclosures C, whereby the water may be taken from the stream and

caused to deposit its sediment continuously to form levees, substantially as herein described.

In witness whereof I have hereunto set my hand.

NEWTON SEWELL.

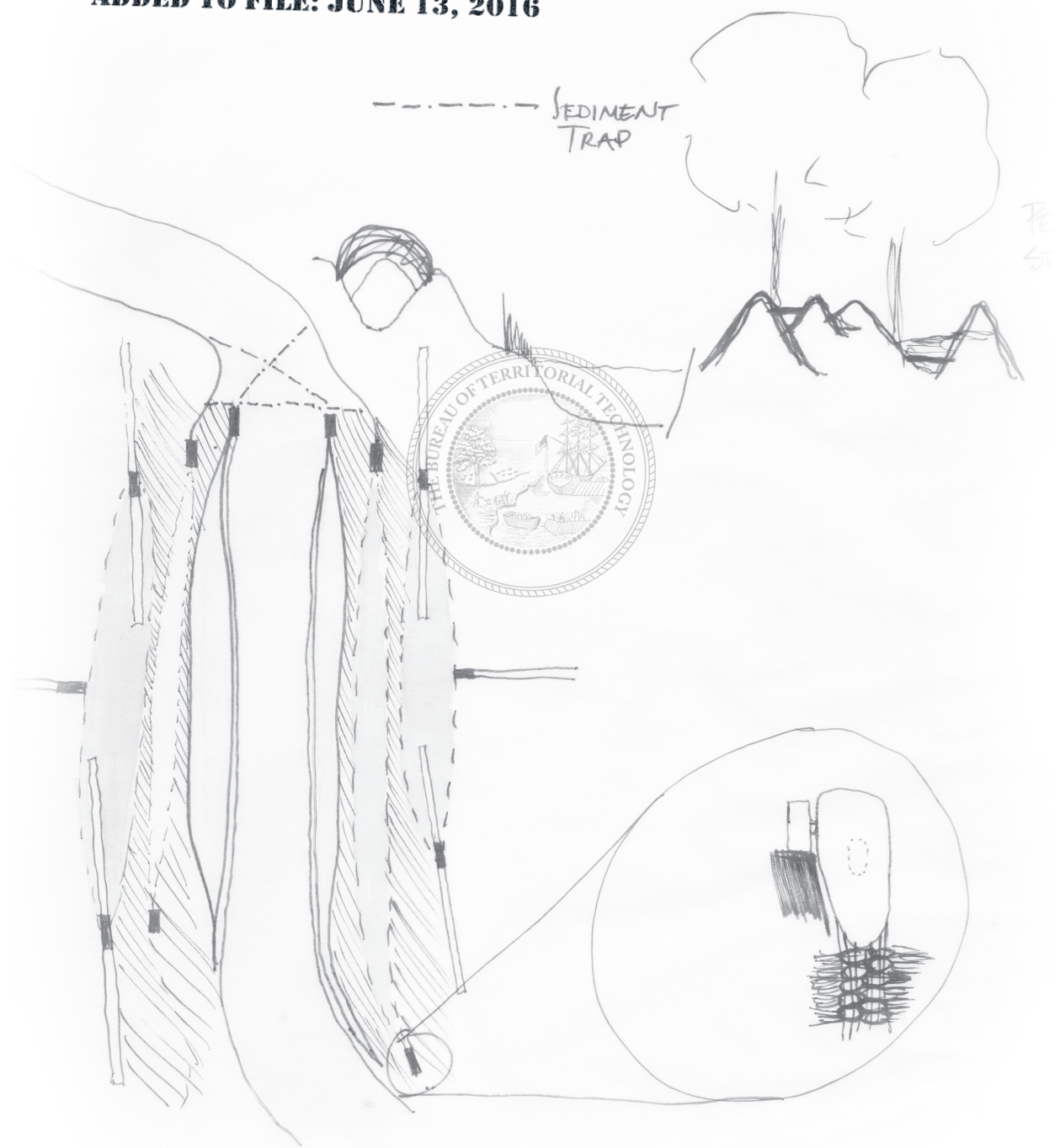
Witnesses:

S. H. NOURSE,

FRANK A. BROOKS.



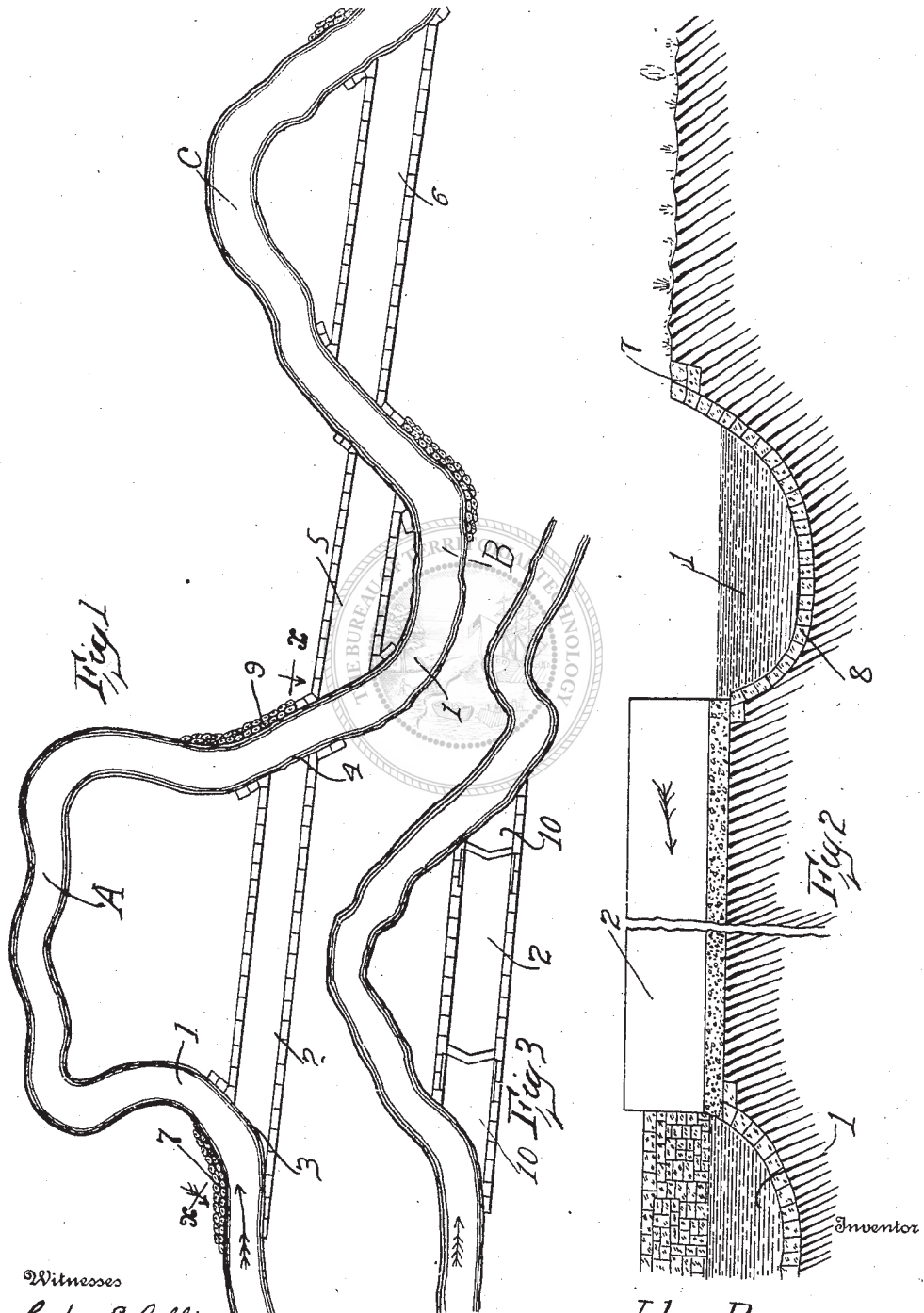
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J. BRYAN.
SYSTEM TO PREVENT THE OVERFLOWING OF RIVERS.
APPLICATION FILED MAR. 7, 1910.

969,334.

Patented Sept. 6, 1910.



Witnesses
Edwin C. Hollier
Edward Reed.

John Bryan,
Inventor
H. A. Galloway,
Attorney

UNITED STATES PATENT OFFICE.

JOHN BRYAN, OF YELLOW SPRINGS, OHIO.

SYSTEM TO PREVENT THE OVERFLOWING OF RIVERS.

969,334.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed March 7, 1910. Serial No. 547,653.

To all whom it may concern:

Be it known that I, JOHN BRYAN, a citizen of the United States, residing at Yellow Springs, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Systems to Prevent the Overflowing of Rivers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to systems to prevent the overflowing of rivers and is designed more particularly to prevent the flooding of a given place or places along a portion of a river. As is well known many streams periodically overflow their banks, inflicting very great injury to the property situated along their banks. The worse floods usually occur along bends or curves in the river owing to the restricted passage of the water and the shape of the channel and the greatest damage is usually inflicted upon property lying on the outer side of the bend in the river. Frequently large cities are located along the outer side of a bend in the river and the damage inflicted upon the property of said cities periodically is very great, and, not only is the actual damage great, but the value of property adjacent to the river is materially affected by the liability of such floods.

The object of the present invention is to so reduce the amount of water passing around such a curve or bend in the river as to prevent the river from overflowing its banks along such bend, and further, to accomplish this result without affecting the normal level of the river.

In the accompanying drawings, Figure 1 is a top, plan view of a river containing a series of bends, showing my invention applied thereto; Fig. 2 is a sectional view, taken on the line $x-x$ of Fig. 1 and looking in the direction of the arrows; and Fig. 3 is a top, plan view showing a slightly modified form of the invention.

In Fig. 1 of these drawings I have indicated at 1 a river containing a series of bends, indicated at A, B and C. Considering the first bend, A, in the river it will be noted that this bend is quite sharp and obviously the flow of the water through the same will be somewhat retarded. During

a freshet this retarding of the flow of the water will cause the same to spread out over the banks of the river and the strong current which exists at such times will also have a tendency to cause the river to overflow the outer bank along the bend in the river. I aim to prevent the river from overflowing its banks along the bend by removing a portion of the water from the river at a point above the bend and discharging the same into the river at a point below the bend. In this manner the water in the river along the bend is prevented from exceeding a predetermined height and the city or other properties located along the bend are protected from floods. I prefer to remove the water from the river, and thus shunt the same across the bend, by means of a conduit or canal 2 connected to the river at a point above the bend or near the upper end thereof, as indicated at 3, extending across the neck of land formed by the bend and again connected to the river at a point below the bend or near the lower end thereof, as indicated at 4. It will be obvious that the canal may be of a size and may be so connected to the river as to protect the whole of the bend or only a given portion thereof, and that the degree of curvature of the bend is immaterial to the successful application of the invention. In the canal 2 which extends across the bend A, as shown in Fig. 1, the inlet end of the canal is arranged almost in line with the course of the river above the bend. Consequently, the current of the river would tend to carry the same directly into the canal. To prevent too large a quantity of water being removed from the river and thus affecting the normal depth of the river along the bend therein the bottom of the canal at its inlet end, and preferably along the entire length thereof, is arranged above the normal water level of the river, but below the danger point, *i. e.*, the point at which the river would be liable to overflow its banks along the bend. When the water has risen above the bottom of the canal or conduit at its inlet end a very considerable portion of the same will enter the canal. The canal is preferably constructed of masonry or concrete and the arrangement

of the bottom thereof relatively to the normal water level of the river is thereby made permanent and the banks are prevented from washing and changing the course of the canal. Further, this construction offers a very slight resistance to the movement of the water through the canal. Therefore, owing to the straight, unobstructed character of the canal or conduit and to the comparatively short length thereof, a very large portion of the excess water in the river will pass through the canal and will be discharged into the river at a point below the place or places which it is desired to protect.

Where the river contains a series of bends, such as shown in Fig. 1, and it is desired to protect points along each bend other canals may be provided, as shown at 5 and 6. The arrangement of the inlet end of the second canal relative to the discharge end of the first canal may be varied according to existing conditions, but usually the inlet of the second canal would be arranged some distance down the river from the discharge of the first canal. The canals or conduits are here shown as perfectly straight and built substantially on a level, but, in the actual construction of such canals or conduits, it is very probable that slight turns or curves would necessarily be imparted thereto, that at points the entire body of the canal would be above the level of the ground and that at other points the body of the canal would be sunk below the level of the ground, this depending entirely upon the character of the land across which it is necessary to convey the water.

It is desirable that the depth and width of the river bed adjacent to the end of the canal or conduit should be always the same, and, to accomplish this it may be desirable, in certain instances, to arrange a protecting wall 7 along the side of the river opposite the inlet end of the canal and to cover the bottom of the river with a layer of rock or the like, as indicated at 8, thus preventing the washing out of the bottom of the river or the shore and permanently determining the amount of water which can pass through the river at this point without rising above the level of the bottom of the canal. It may also, in some instances, be desirable to provide a protecting wall for the river's bank opposite the discharge end of the canal, as indicated at 9. The desirability of these protecting devices, however, would depend upon the conditions existing in each particular instance.

If it should be desired to utilize the canal for navigation purposes a uniform depth of water may be maintained therein at all seasons of the year and locks may be provided at the ends thereof to lift the vessels therein and discharge the same therefrom.

Such locks are indicated at 10 in Fig. 3 of the drawings. A suitable depth of water may be maintained in the canal, when the level of the river is below the bottom thereof, by any suitable means. The pumping system patented by me July 7, 1903, No. 732,704, is well adapted for this purpose. Further, by maintaining a constant level of water in the canal the same could be utilized as a source of water supply by persons living along the course thereof.

While I have shown and described one embodiment of my invention it will be understood that this showing and description are for the purpose of illustration only and many modifications thereof may be made without departing from the principle involved. I, therefore, wish it to be understood that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A system for preventing a river from overflowing its banks at a given place consisting of a conduit extending between two points on said river, one above and the other below said given place, the bottom of said conduit being arranged at a point between the normal water level of the river and the danger point.

2. Means for preventing the overflowing of a river comprising a conduit connecting two points along a bend in said river, the inlet end of said conduit having its bottom arranged at a point between the normal level of the river and the danger point.

3. Means for preventing the overflowing of a river at a given place comprising a conduit connecting two points along the river, one above and the other below said given place, said conduit having its bottom arranged at a point between the normal level of the river and the danger point.

4. Means for preventing the overflowing of a river at a given place comprising a conduit connecting two points along the river, one above and the other below said given place, said conduit having its bottom arranged at a point between the normal level of the river and the danger point, and means for maintaining that portion of said riverbed adjacent to the inlet end of said conduit at a fixed width and depth.

5. Means for preventing the overflowing of a river at a given place comprising a conduit connecting two points along the river, one above and the other below said given place, said conduit having its bottom arranged at a point between the normal level of the river and the danger point, and locks at the opposite ends of said conduit.

6. Means for preventing the overflowing of a river at points along a bend therein comprising a conduit connecting two points along said bend, said points being arranged one above and the other below the places to be protected, said conduit having a substantially smooth bottom and side walls of a fixed character and having its bottom ar-

ranged between the normal water level of the river and the danger point.

10

In testimony whereof, I affix my signature in presence of two witnesses.

JOHN BRYAN.

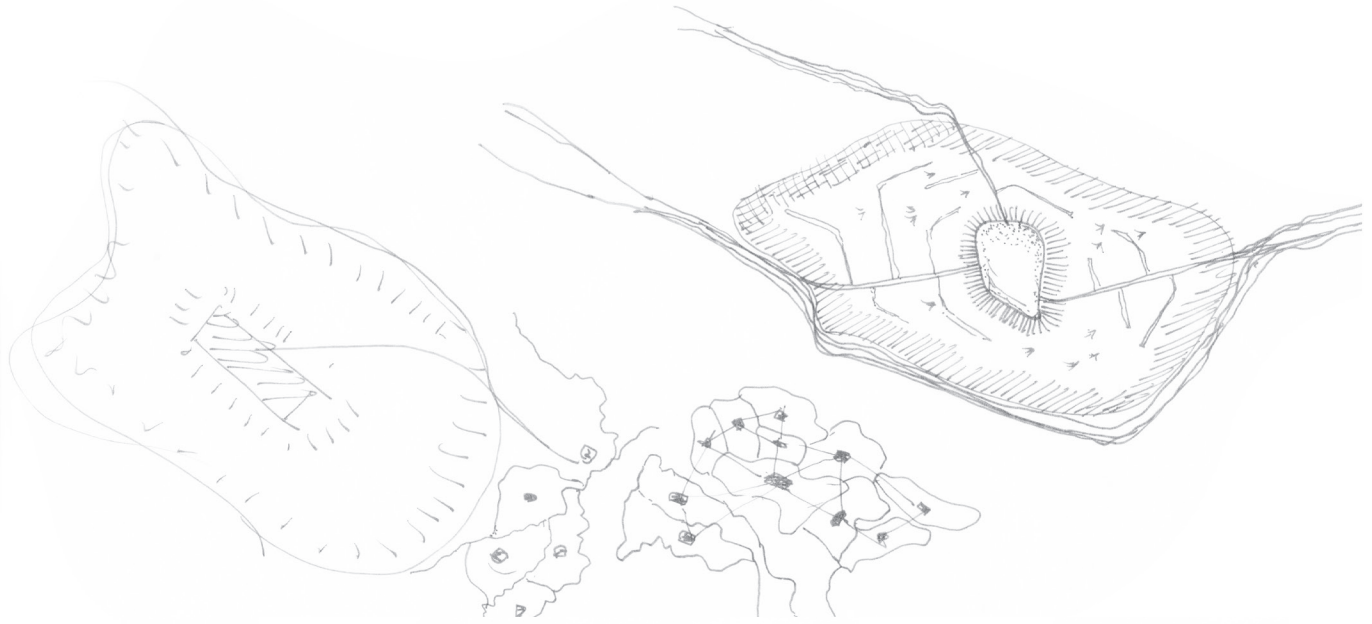
Witnesses:

ELZA F. MCKEE,
EDWARD J. REED.

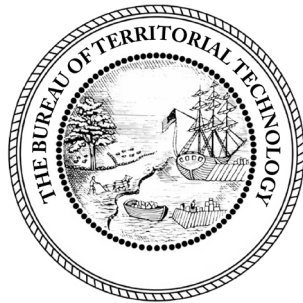


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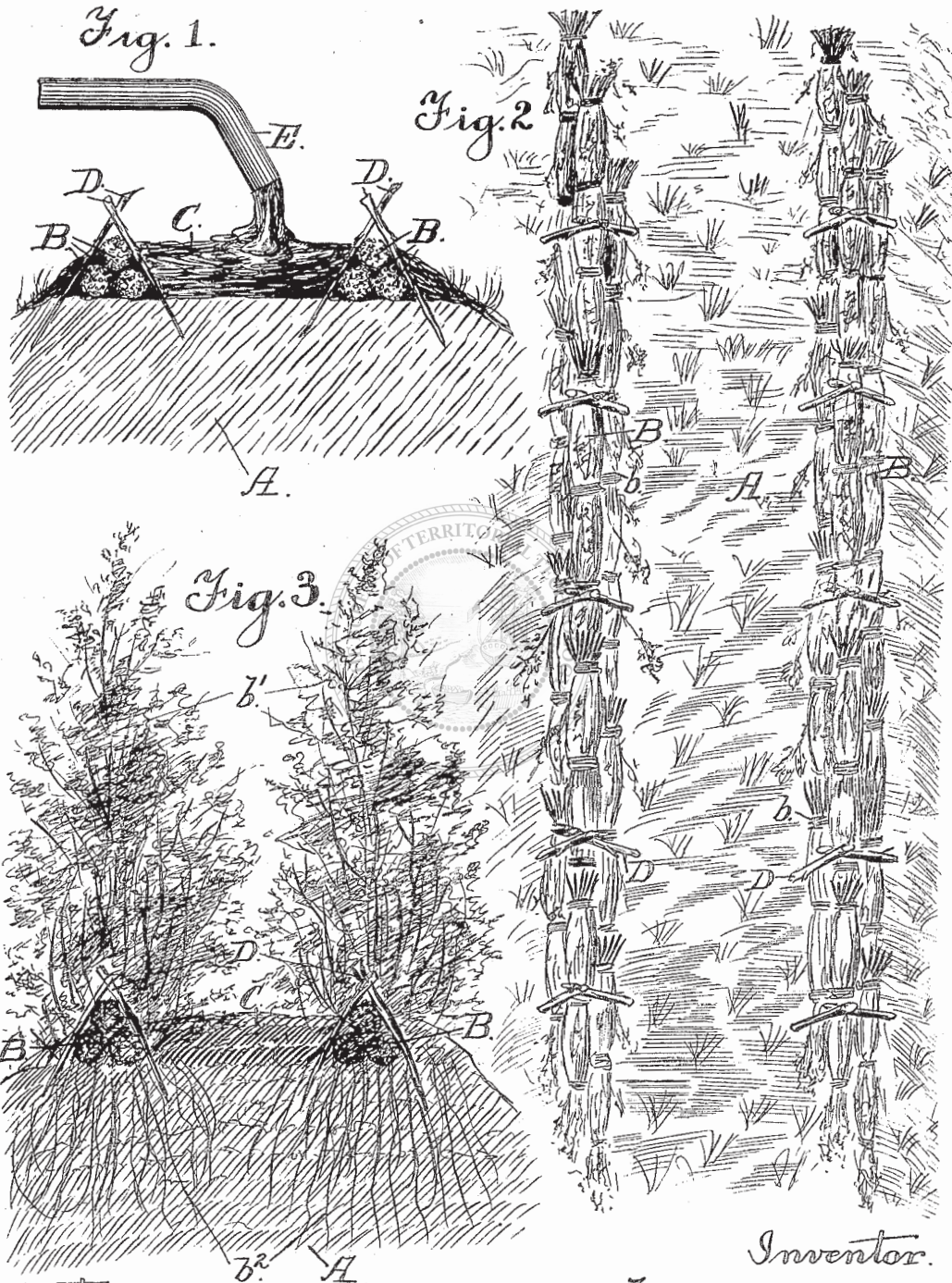


No. 813,069.

PATENTED FEB. 20, 1906.

F. V. WRIGHT.
LEVEE.

APPLICATION FILED SEPT. 12, 1905.



Witnesses:
Arthur H. Slee
J. Compton

Inventor.
Frank V. Wright
by H. F. Booth
his Attorney.

1,268,770.

Fig. 1.

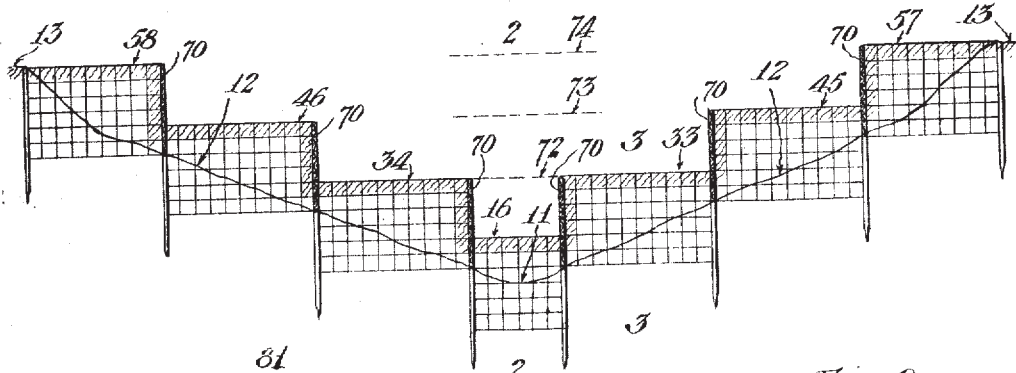


Fig. 2.

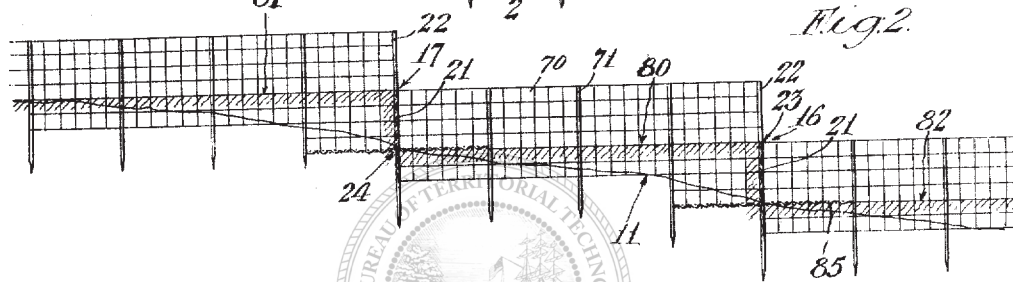


Fig. 3.

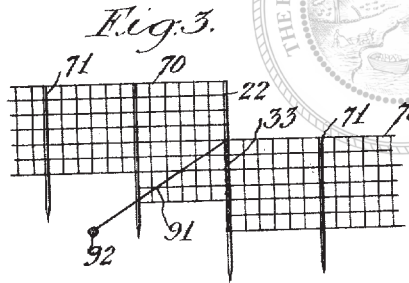
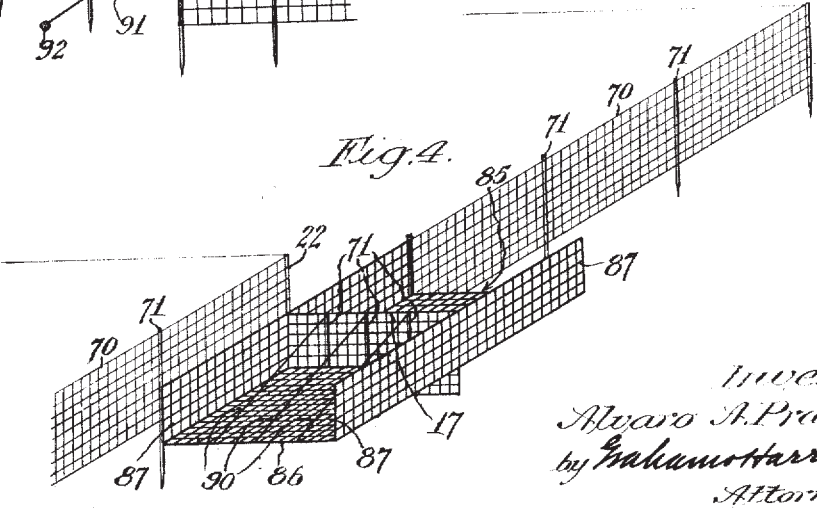


Fig. 5.

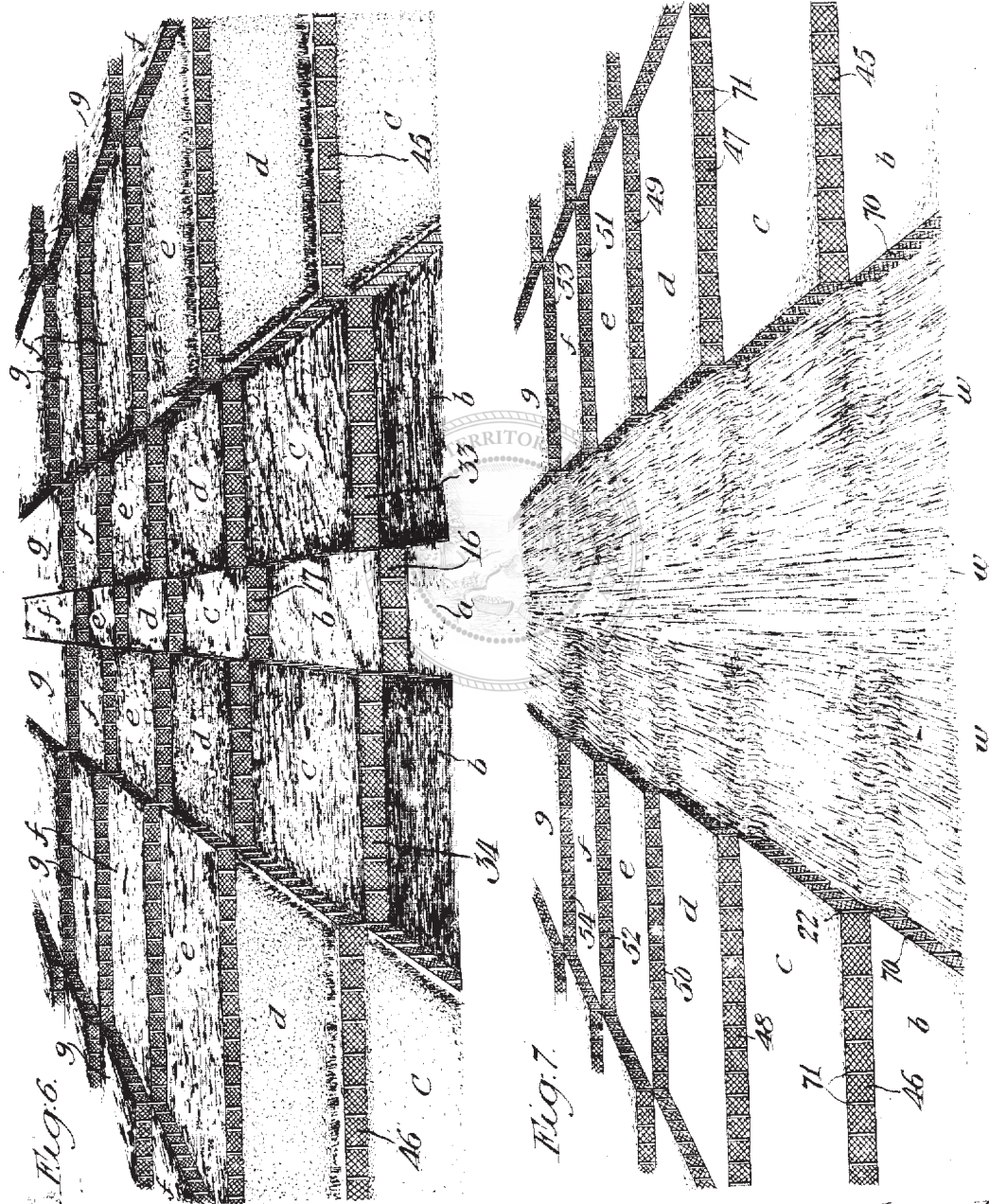
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27	53	51	49	47	45	43
25	41	39	37	35	33	31
20	19	18	17	16	15	14
26	42	40	38	36	34	32
28	54	52	50	48	46	44
30	66	64	62	60	58	56

Fig. 4.



Inventor
 Alvaro A. Pratt
 by Graham Harris
 Attorneys

1,268,770.

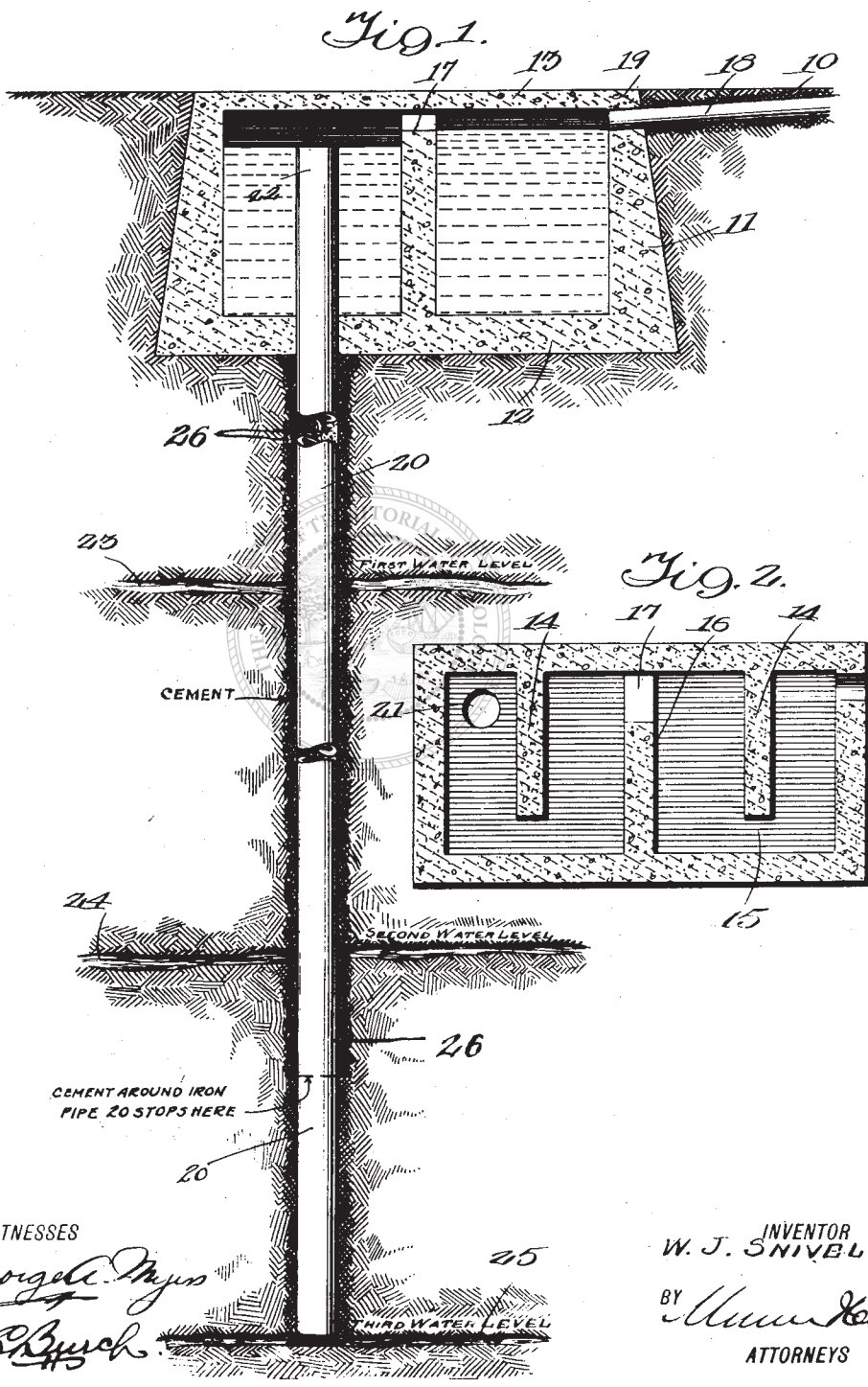


Inventor
Alvaro A. Pratt
by Graham Harris
Attorneys

W. J. SNIVELY.
 DRAINAGE SYSTEM.
 APPLICATION FILED JULY 15, 1920.

1,405,725.

Patented Feb. 7, 1922.



WITNESSES
George H. Myers
J. Burch

INVENTOR
 W. J. SNIVELY,
 BY *Wm. Co.*
 ATTORNEYS



(19) **United States**

(12) **Patent Application Publication**

The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A1**

(43) **Pub. Date: June 17, 2016**

(54) ^(NO MODEL.) **TITLE: METHOD FOR PASSIVE AND ACTIVE LEVEE BUILDING METHOD**

(75) **Inventors:** Alexandra Zahn

(73) **Assignee:** Bureau of Territorial Technology

Appl. No.: 12/495,5823

(21)

Filed: June 17, 2016

(22)

(57) **ABSTRACT**

To all whom it may concern:

Be it known that I, Alexandra Zahn an agent of the Bureau of Territorial Technologies, and resident of San Francisco California, have invented a certain new and useful Invention relating to Passively Constructed Double Levee System. My invention supports existing levees, and in time, replace them with an embankment within the existing levee wall. The process of creating the double levee also recharges aquifers through a process of draining waters in the interior of the leveed polder landscape.

The invention relates to a method of forming levee walls in various forms, but pertains to the passive way of forming levees by using water and sedimentation conveyance from adjacent waterways. The double levee system is either built up over time through inundation and silt fences, or built up in such a way to support the first levee and built all at once. A hydrological pressure differential is create to promote the build up of sediment through the silt fencing or similar material to facilitate accretion. The water passing through the silting structure is stored in the interior of the island and used to replenish the aquifer through a dry-well or appropriate method.

Figure 1. Sectional perspective of the levee wall. The walls of which are built up over time with silt deposits. The first type, without support, is used on islands in the delta which are to be flooded for irrigation suitable for inundation like rice or tule, so that the entire island floods and along the edges the wall catches silt and builds up over seasonal flooding. This water is then pumped out of the island or 'drained' to recharge the aquifer. The third option is to keep the water in the inundated island for future freshwater use.

Figure 2. Said levee wall with a hardened edge behind it, which would be constructed before being inundated with water. This edge would be built up quickly, but would have the intention of breaking down the first levee over time. This construction would enable chambers for different uses of agriculture, aquaculture, ecological edging, or incubation for native species.

Figure 3. Shows the carving and deposition of water and sedimentation

Figure 4. shows the levees on a larger scale

Figure 5. shows the levees working in a per island situation.

Figure 6. shows the sectional options of the two levees.

This system is to used passively to create a double levee system- creating a widened delta to re-establish historic ecological balance. This transition would happen over a long period of time - allowing for agricultural production within this zone during its transition, but also allowing for incubation of native species during this time. The overall end condition would be a productive bay, with a restored ecological canals in certain channels, and broken down levees in more places to allow for a more naturalized edge and increased freshwater marshland while recharging aquifers.

INVENTOR.

WITNESSES:



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A2**

(43) **Pub. Date: June 17, 2016**

(NO MODEL.)

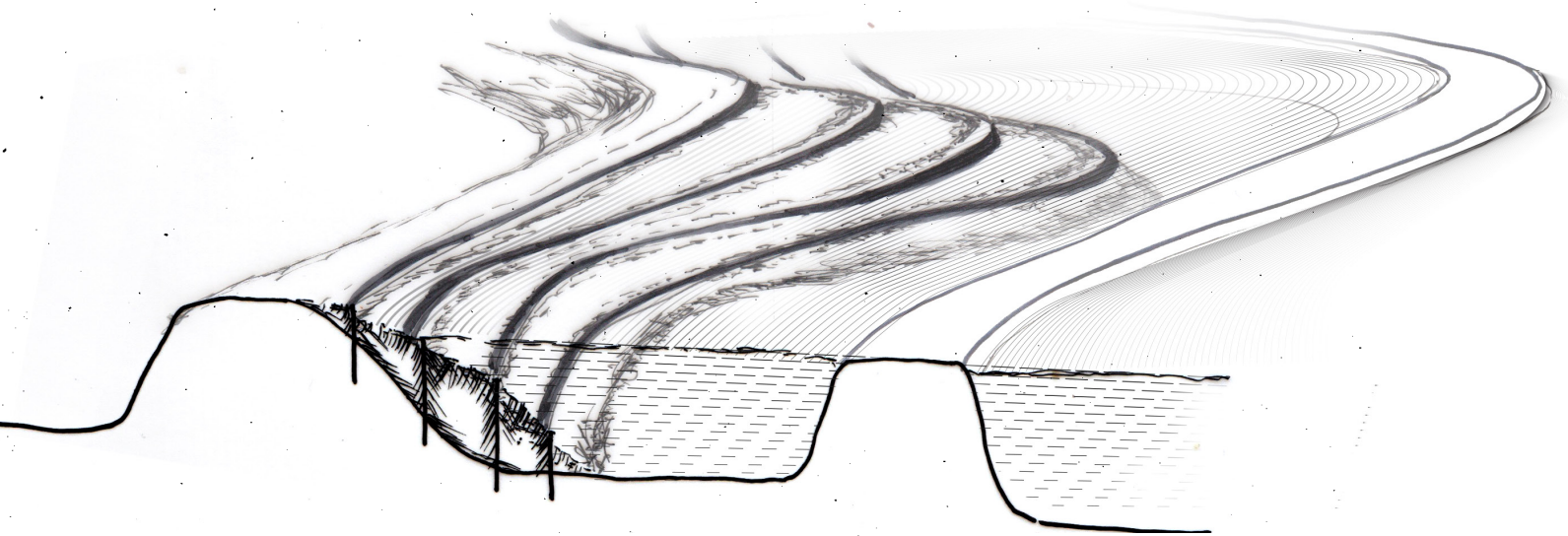


Fig. 2

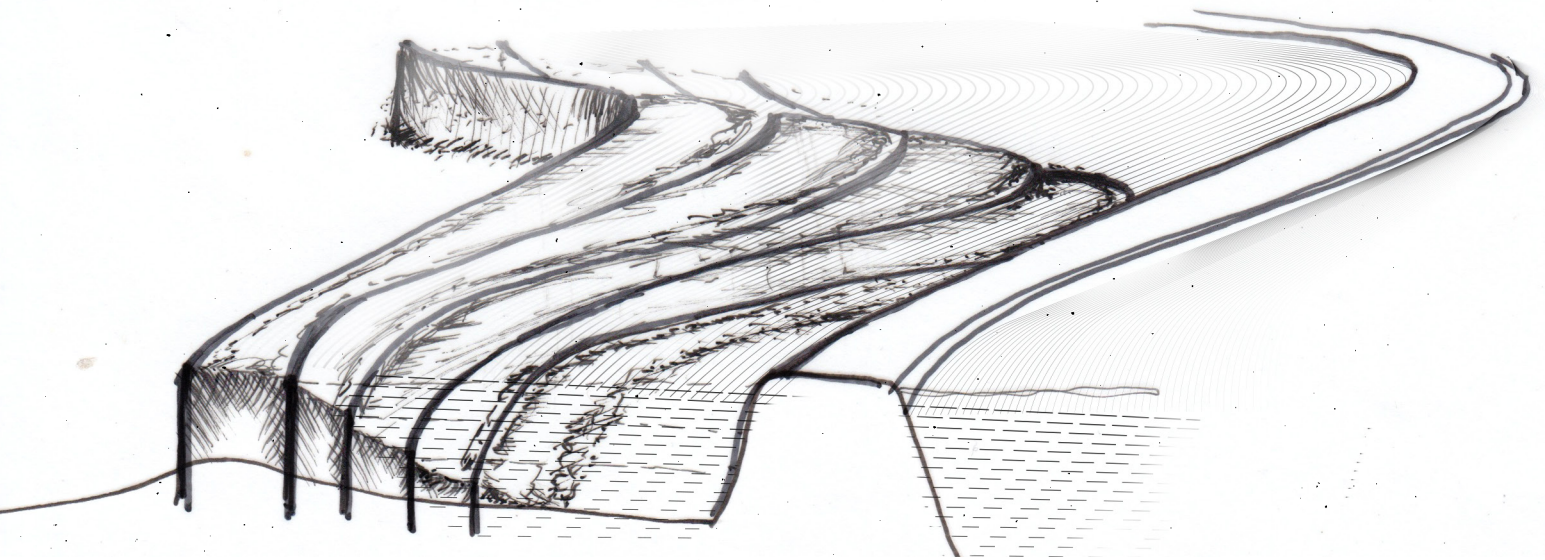


Fig. 1

WITNESSES:

INVENTOR.



(19) **United States**

(12) **Patent Application Publication**

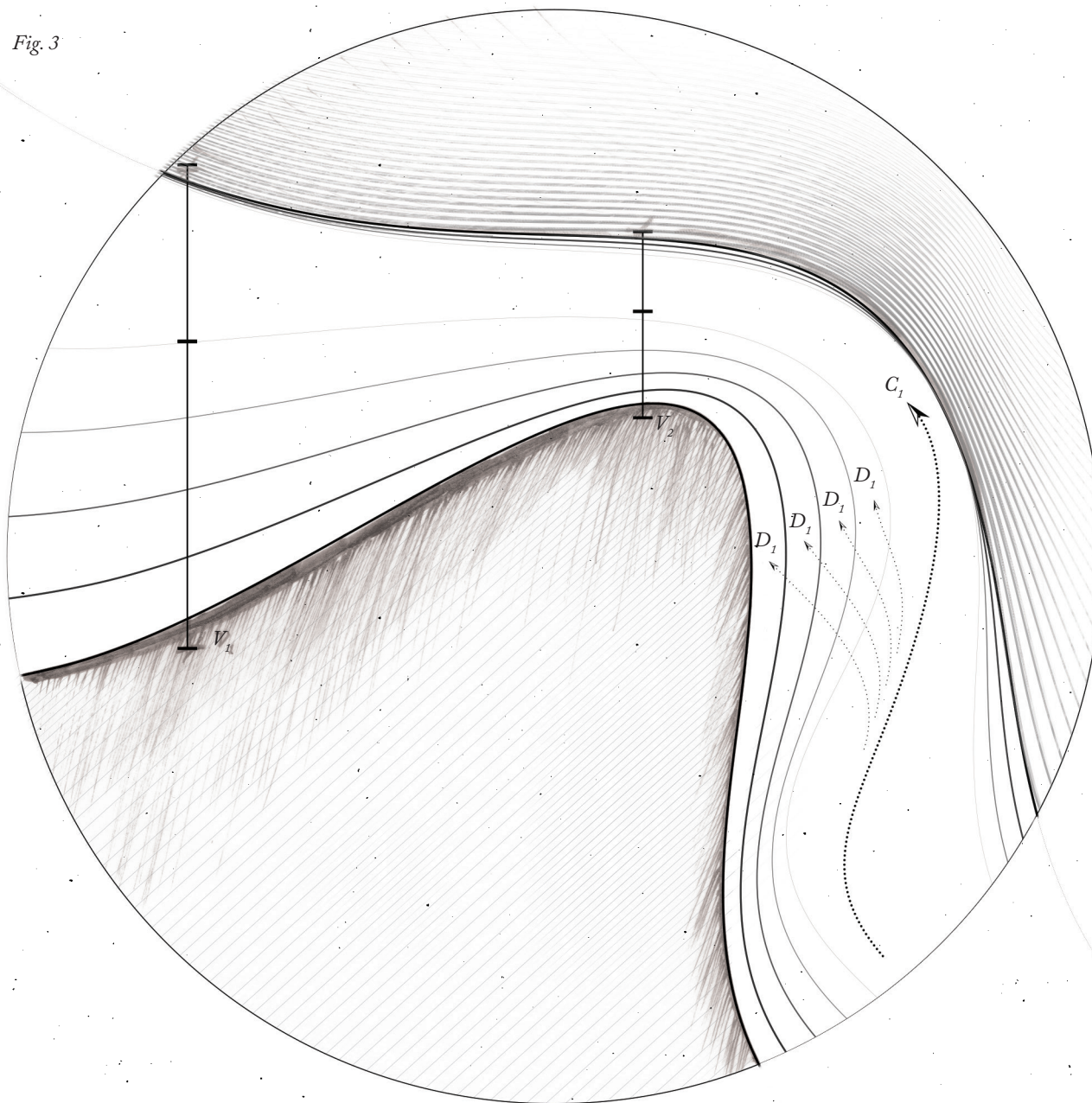
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A2**

(43) **Pub. Date: June 17, 2016**

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Fig. 3



WITNESSES:

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V_1 = Fence Width for slowing Velocity
 V_2 = Fence Width for speeding up Velocity
 D_1 = Deposit of Sediments
 C_1 = Carving/Maximum Velocity

INVENTOR.

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(19) **United States**

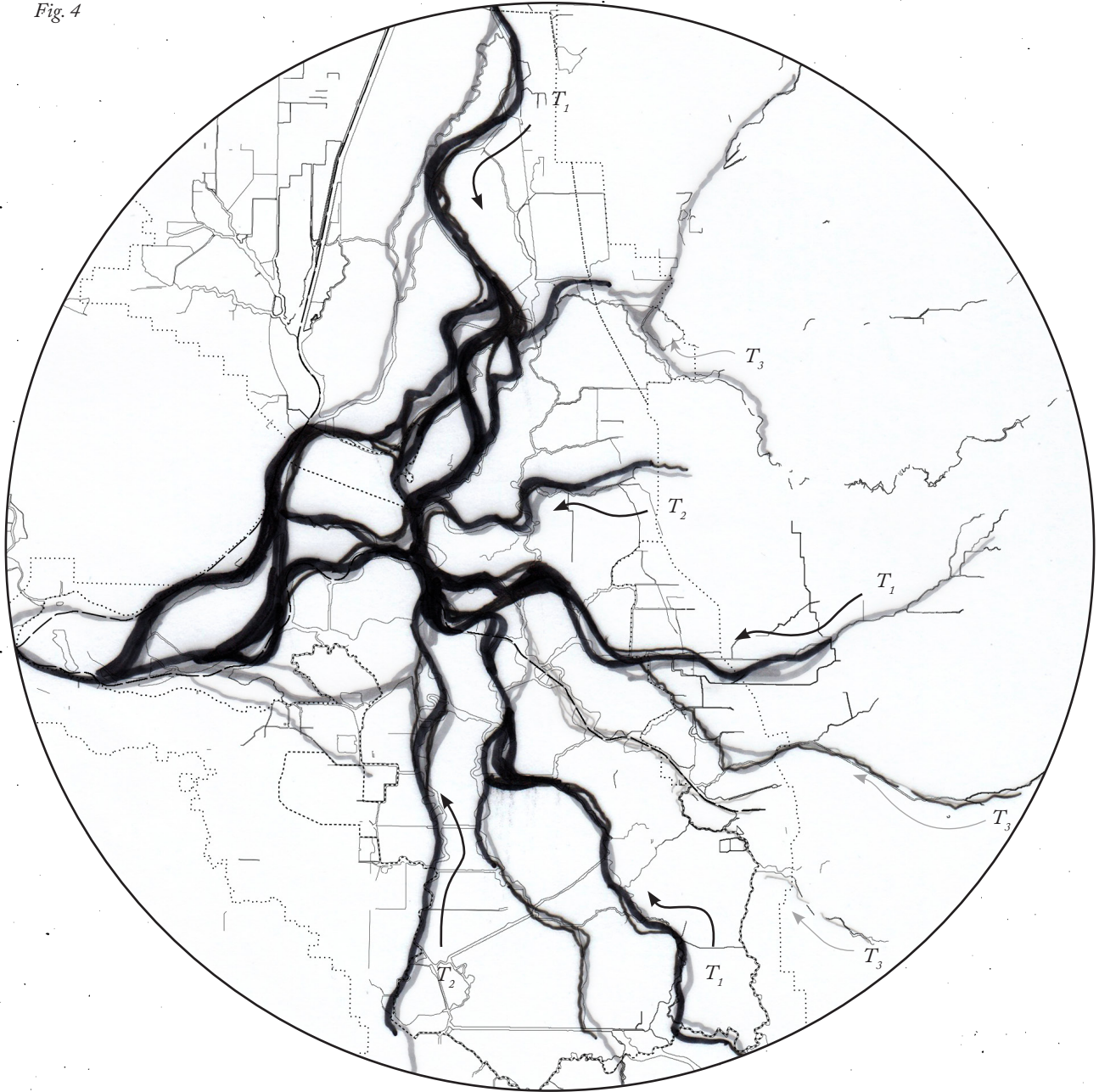
(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A2**

(43) **Pub. Date: June 17, 2016**

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Fig. 4



WITNESSES:

[Handwritten signature]

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INVENTOR.

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T_1 = Tributary 1 - Ecological Restoration
 T_2 = Tributary 2 - Ecological/Incubation/Productive
 T_3 = Tributary 3 - Productive Transitional



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A2**

(43) **Pub. Date: June 17, 2016**

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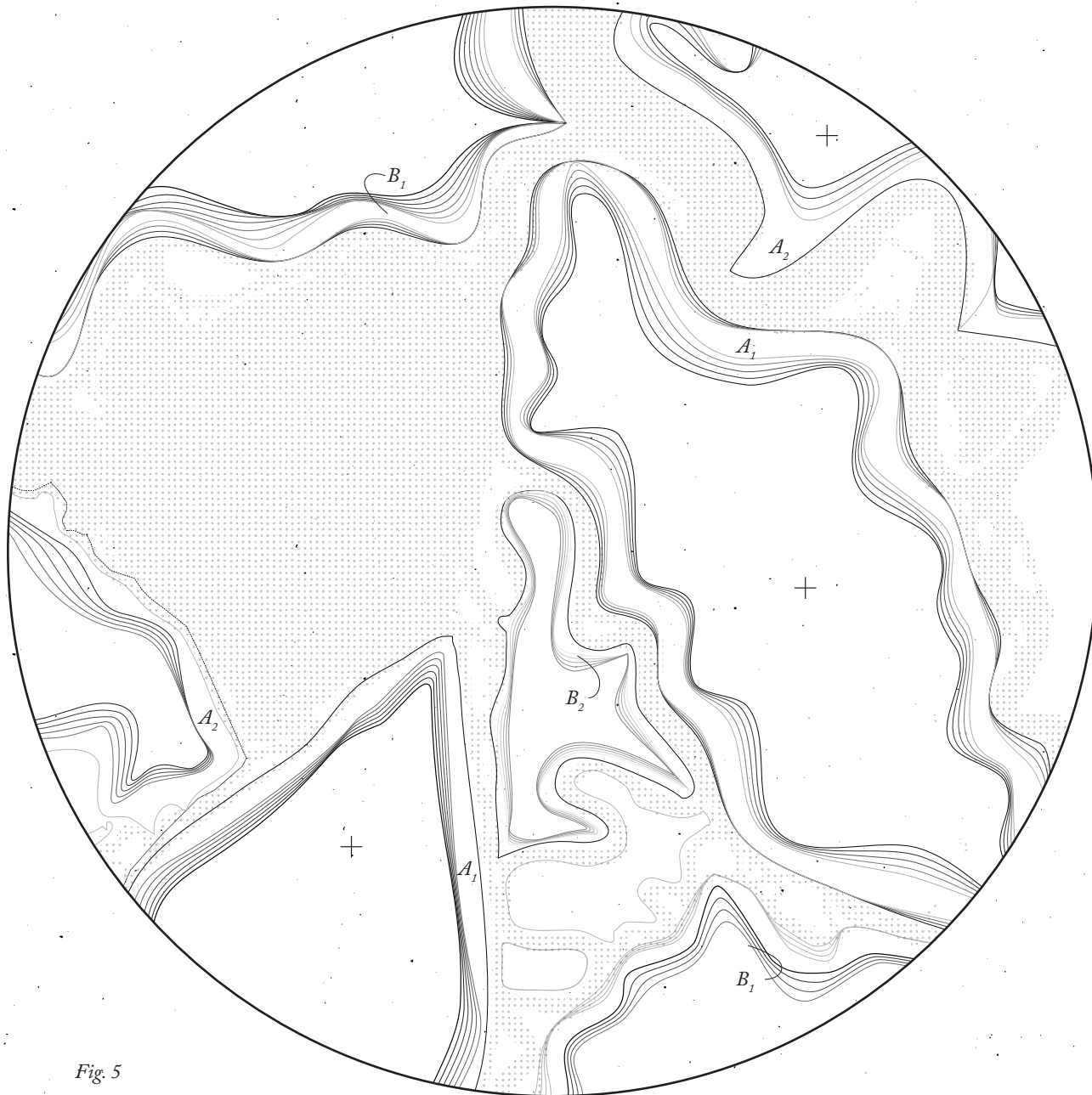


Fig. 5

WITNESSES:

[Handwritten signatures of witnesses]

INVENTOR.

[Handwritten signature of the inventor]



(19) United States

(12) Patent Application Publication
The Bureau of Territorial Technologies

(10) Pub. No.: US 2016/0185720 A2

(43) Pub. Date: June 17, 2016

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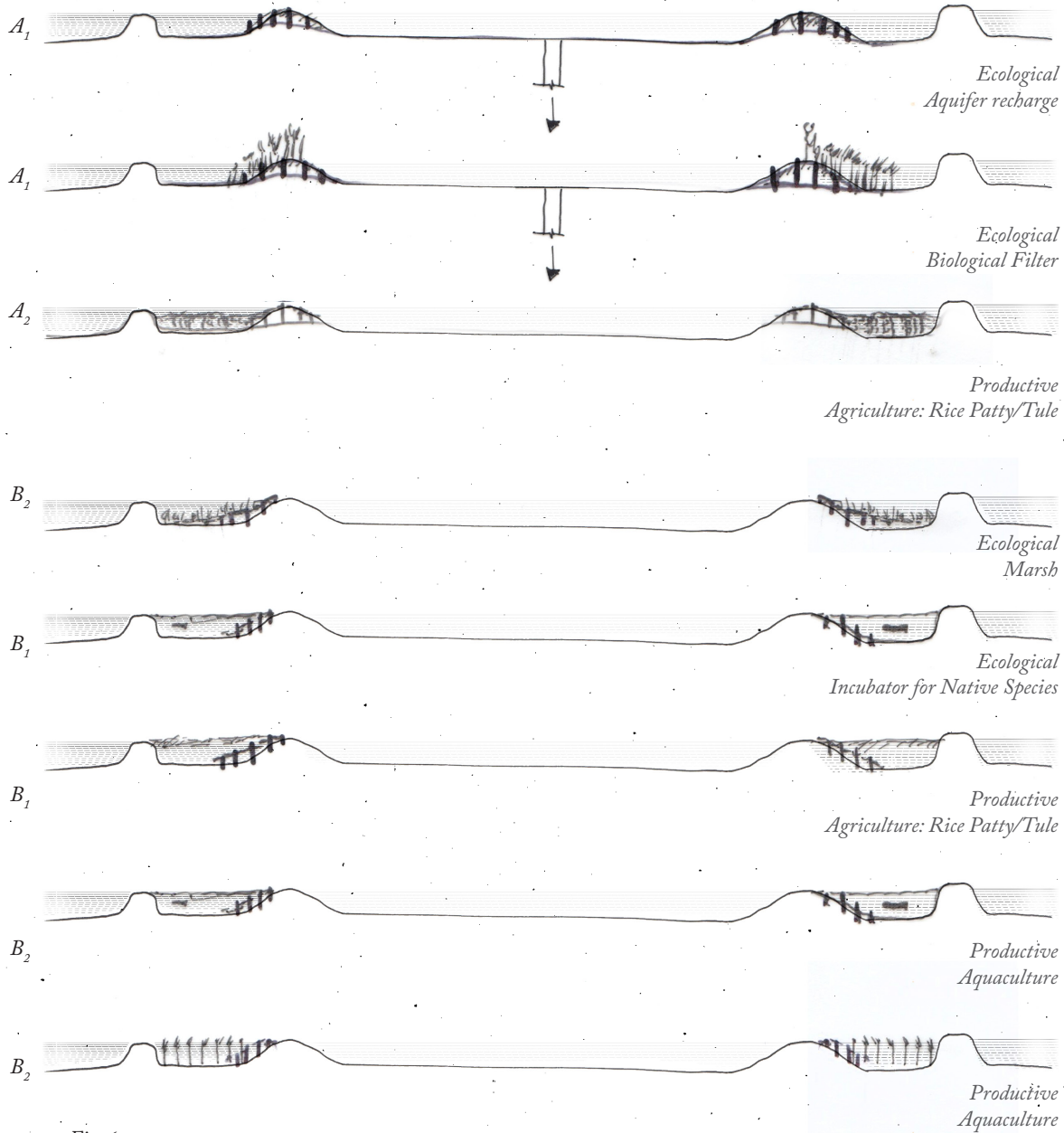


Fig. 6

WITNESSES:

INVENTOR.

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(19) **United States**

(12) **Patent Application Publication**

The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A2**

(43) **Pub. Date: June 17, 2016**

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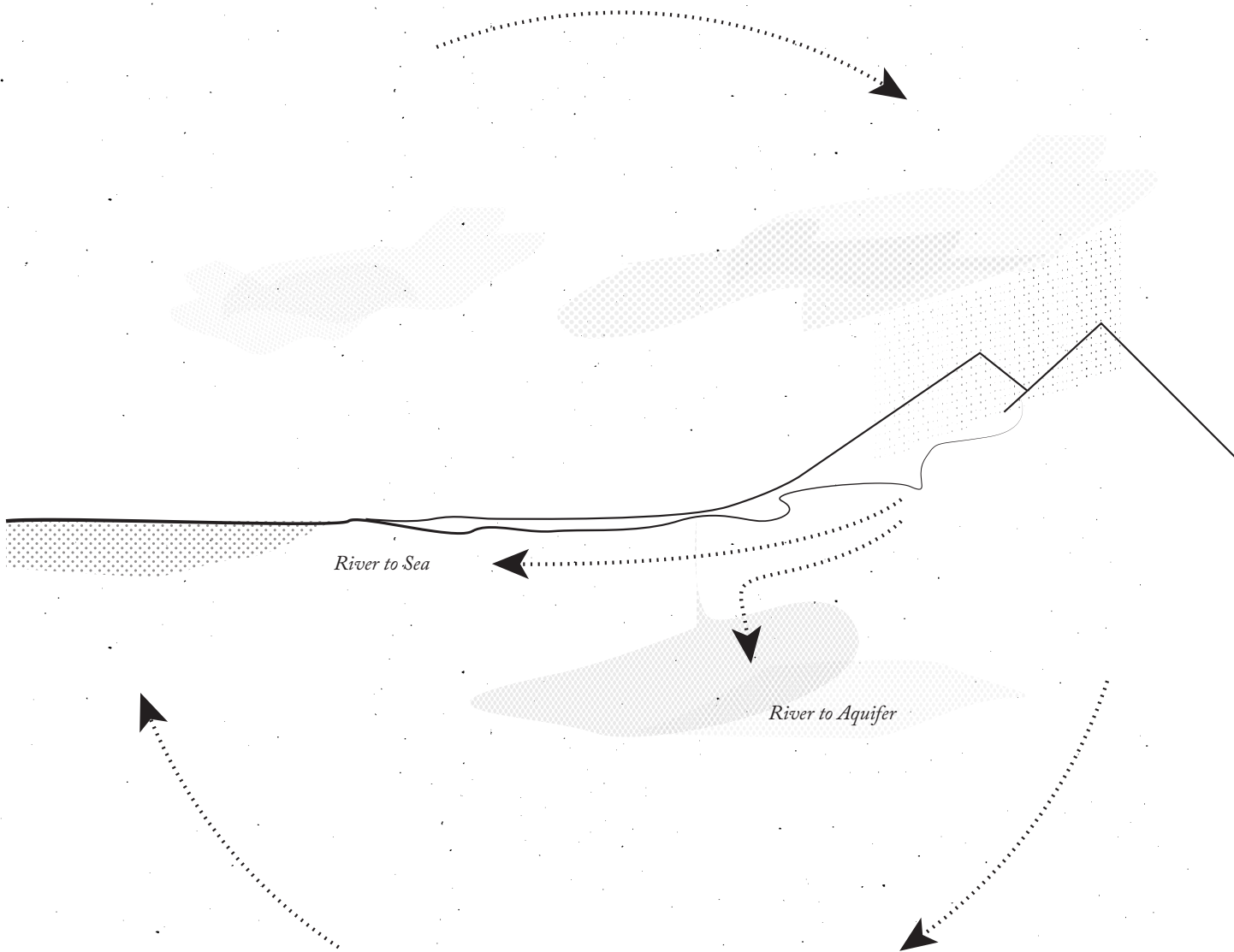


Fig. 7

WITNESSES:

INVENTOR.

United States Patent

Beebout

[15] 3,680,296

[45] Aug. 1, 1972

[54] HAY BALING MACHINE

[72] Inventor: **Howard E. Beebout**, Route 1,
Columbia, Iowa 50057

[22] Filed: **Sept. 18, 1970**

[21] Appl. No.: **73,475**

[52] U.S. Cl.56/16.4, 56/1, 56/15.9,
56/341

[51] Int. Cl.A01d 75/00

[58] Field of Search.....56/6, 15.9, 16.1, 16.4, 341,
56/504, 505

[56] References Cited

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Primary Examiner—Louis G. Mancene

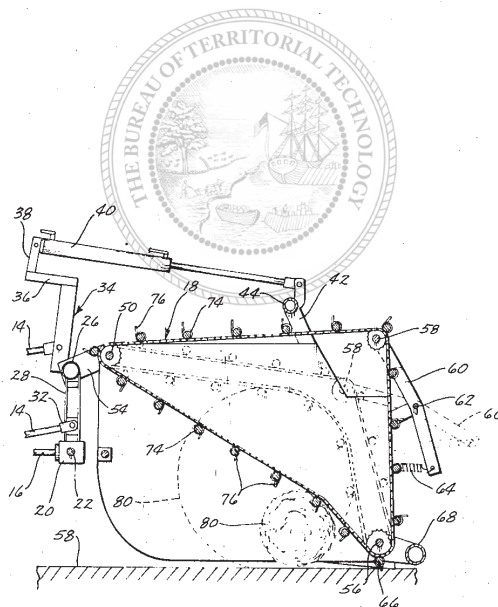
Assistant Examiner—J. A. Oliff

Attorney—Zarley, McKee & Thomte

[57] ABSTRACT

A machine for forming round bales of hay including a frame detachably connected to a three point hitch on a tractor and rearwardly extending arms are pivoted between an operational lower position to a raised upper position by a hydraulic cylinder such that a continuous flexible pickup chain extending over triangularly disposed rollers carried on the side members will be moved out of contact with the formed bale of hay when the side members are pivoted to the raised position. The continuous pickup member operates continuously in both the raised and lowered positions.

8 Claims, 3 Drawing Figures



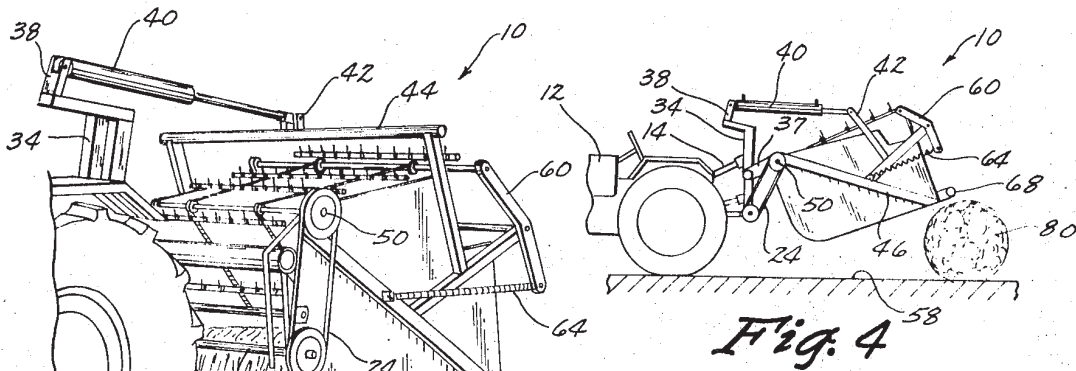


Fig. 1

Fig. 4

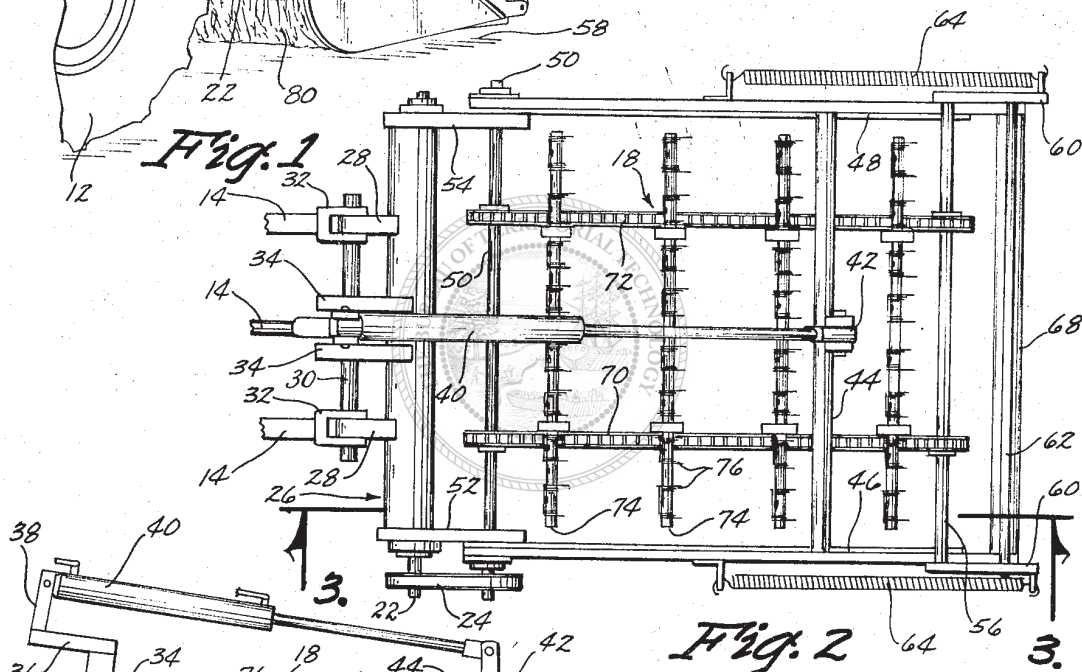


Fig. 2

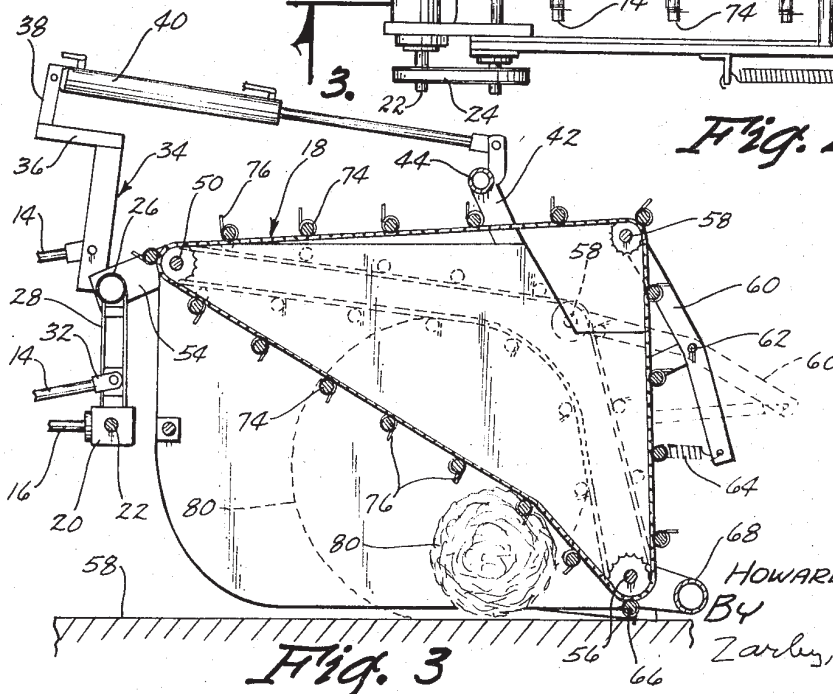


Fig. 3

INVENTOR
 HOWARD E. BEEBOUT
 BY
 Zarley, McKee & Thome
 ATTORNEYS

United States Patent [19]

[11] **4,312,601**

Allen

[45] **Jan. 26, 1982**

[54] **FASCINES**

[75] **Inventor:** John M. Allen, Christchurch, England

[73] **Assignee:** The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

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Primary Examiner—Rodney H. Bonck
Attorney, Agent, or Firm—Pollock, Vande Sande and Priddy

[21] **Appl. No.:** 122,934

[22] **Filed:** Feb. 20, 1980

[30] **Foreign Application Priority Data**
 Feb. 26, 1980 [GB] United Kingdom 06700/79

[51] **Int. Cl.³** E01C 9/08; E02B 3/12

[52] **U.S. Cl.** 404/35; 14/1; 404/71; 405/15; 405/19

[58] **Field of Search** 404/35, 46, 71; 14/1; 405/15, 16, 17, 19

[57] ABSTRACT

A fascine capable of conforming to the contours of a supporting surface, comprises a core of loose cylindrical pipes disposed within a surrounding sleeve of similar pipes transversely and continuously inter-connected by flexible ties. Binding straps attached to the sleeve are reeved so as to cause axial pleating of the sleeve when tensioned, thereby to bind the core into rigid cylindrical form. The fascine is transported in bound condition and the binding straps slackened on deployment.

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8 Claims, 6 Drawing Figures

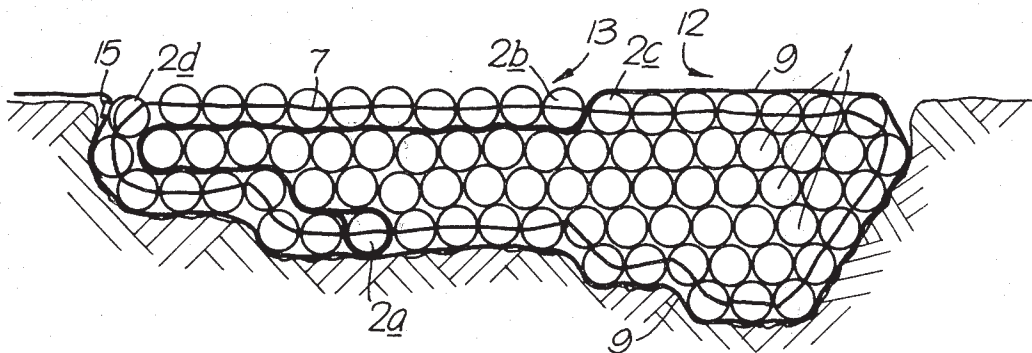


Fig. 1.

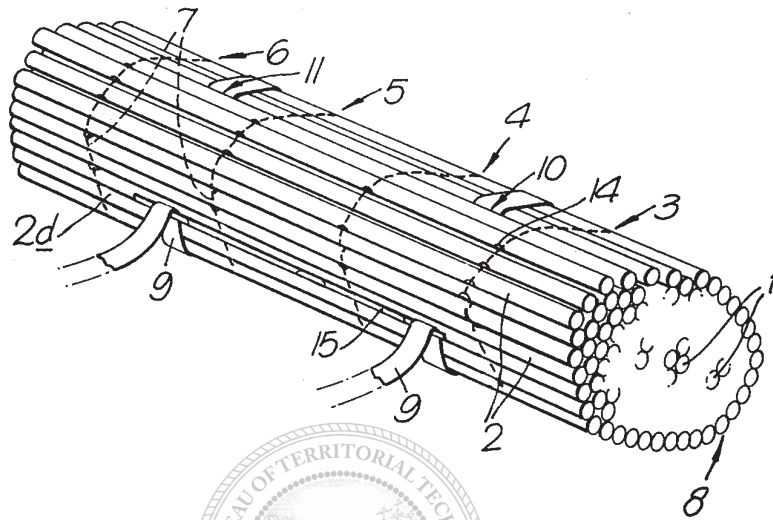
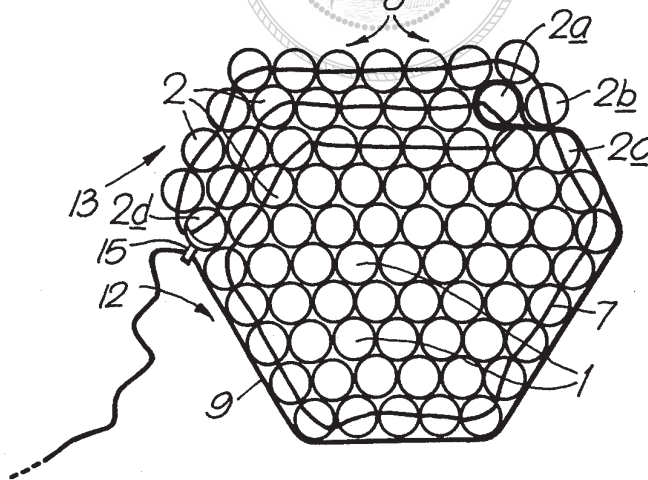


Fig. 2.



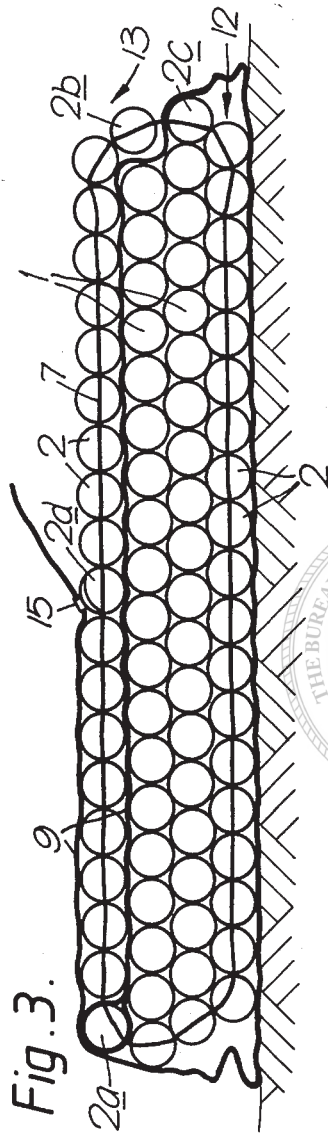


Fig. 4.

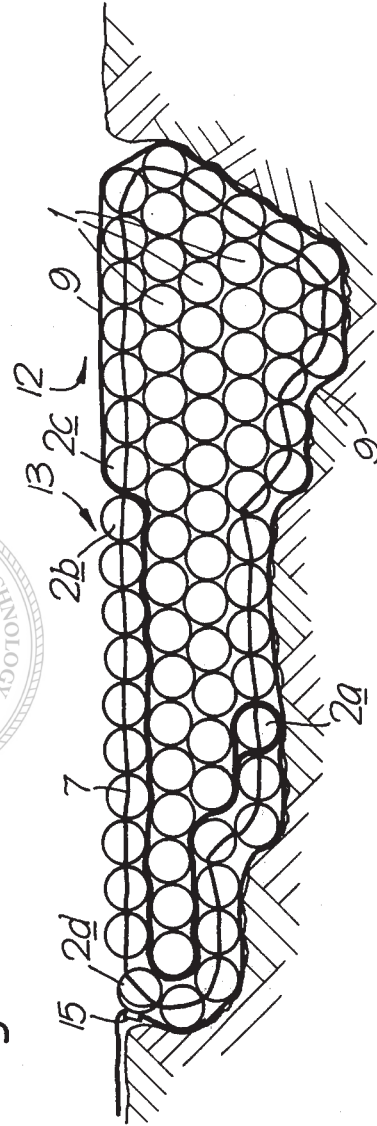


Fig. 5.

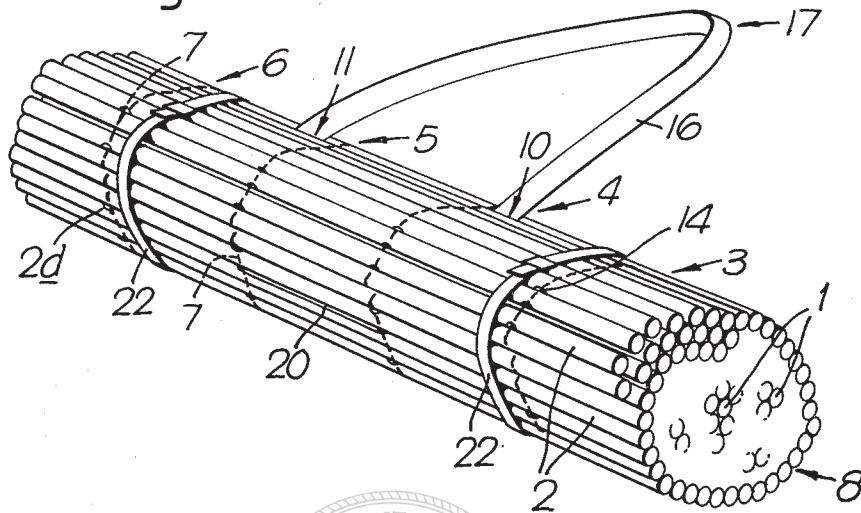
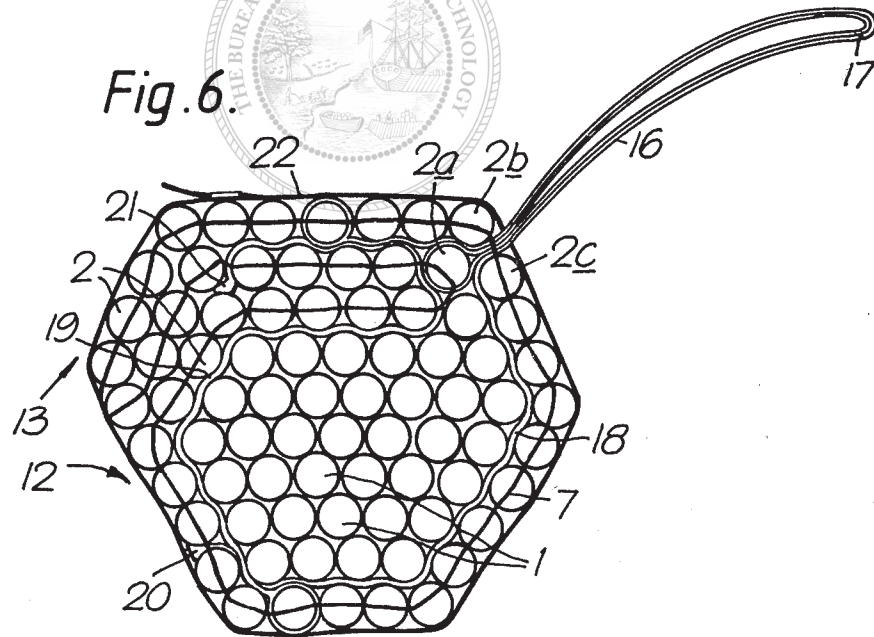


Fig. 6.





US 20120110942A1

(19) **United States**

(12) **Patent Application Publication**
Lim

(10) **Pub. No.: US 2012/0110942 A1**

(43) **Pub. Date: May 10, 2012**

(54) **WALL BLOCK FOR A STRAWBALE HOUSE,
AND STRAWBALE-HOUSE CONSTRUCTION
METHOD USING THE SAME**

Publication Classification

(51) **Int. Cl.**
E04B 2/06 (2006.01)
E04C 1/00 (2006.01)
(52) **U.S. Cl.** *52/578; 52/745.12*

(76) **Inventor: Young Fan Lim, Gyeonggi-do**
(KR)

(57) **ABSTRACT**

(21) **Appl. No.: 12/988,384**

The present invention relates to a wall block for a strawbale house. More specifically, it relates to a wall block for a strawbale house comprising a predetermined frame in which at least two facing sides are not blocked, and a bundle of straw which is positioned within the frame and both ends of which are finished with loess. In the present invention, straw bales which will be comprised in the walls of a strawbale house are preformed into blocks in order to allow the strawbale house to be constructed easily and reduce the construction time and effort. This has the advantage of allowing houses to be built both easily and directly with little cost or time, and has many environmental advantages in terms of environmentally friendly use of materials, reduced construction waste, energy savings and the like.

(22) **PCT Filed: Apr. 16, 2009**

(86) **PCT No.: PCT/KR2009/001953**

§ 371 (c)(1),
(2), (4) **Date: Jan. 9, 2012**

(30) **Foreign Application Priority Data**

Apr. 17, 2008 (KR) 10-2008-0035491

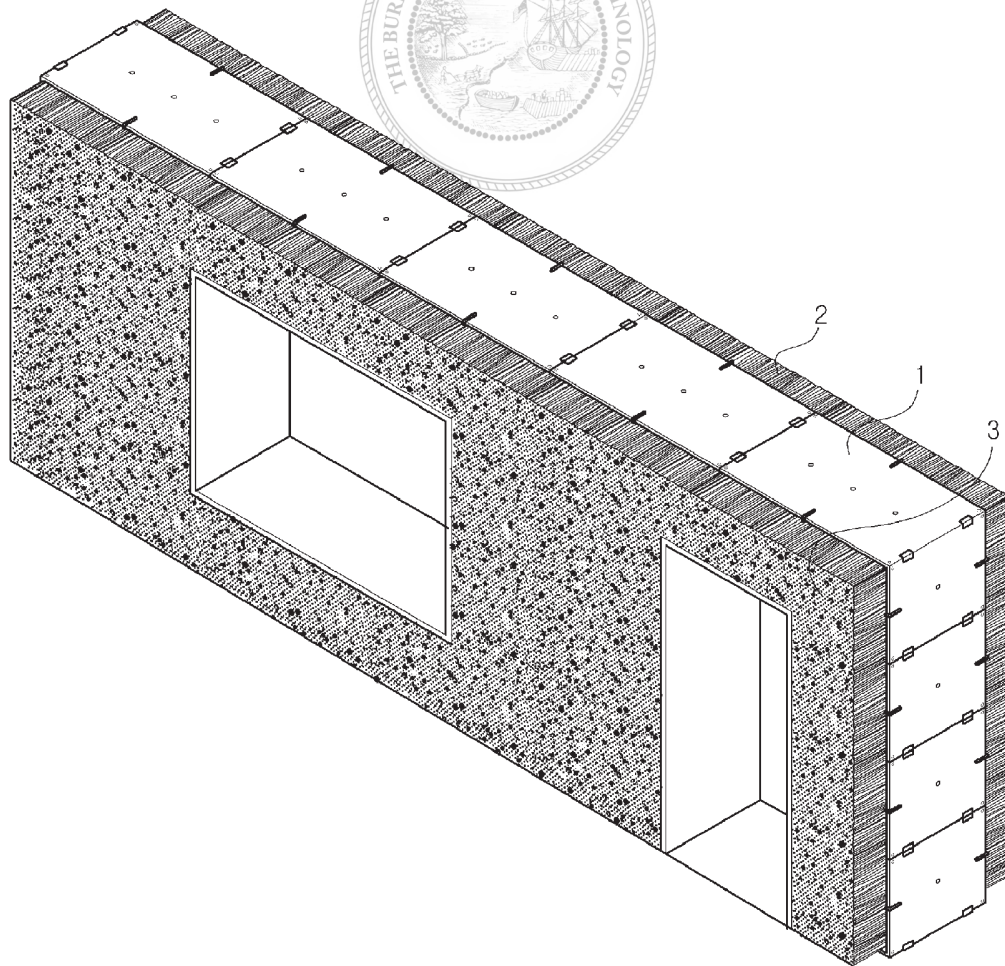
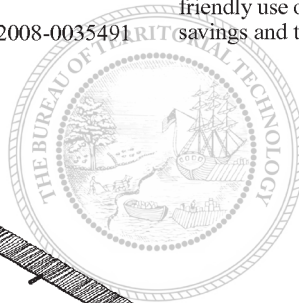
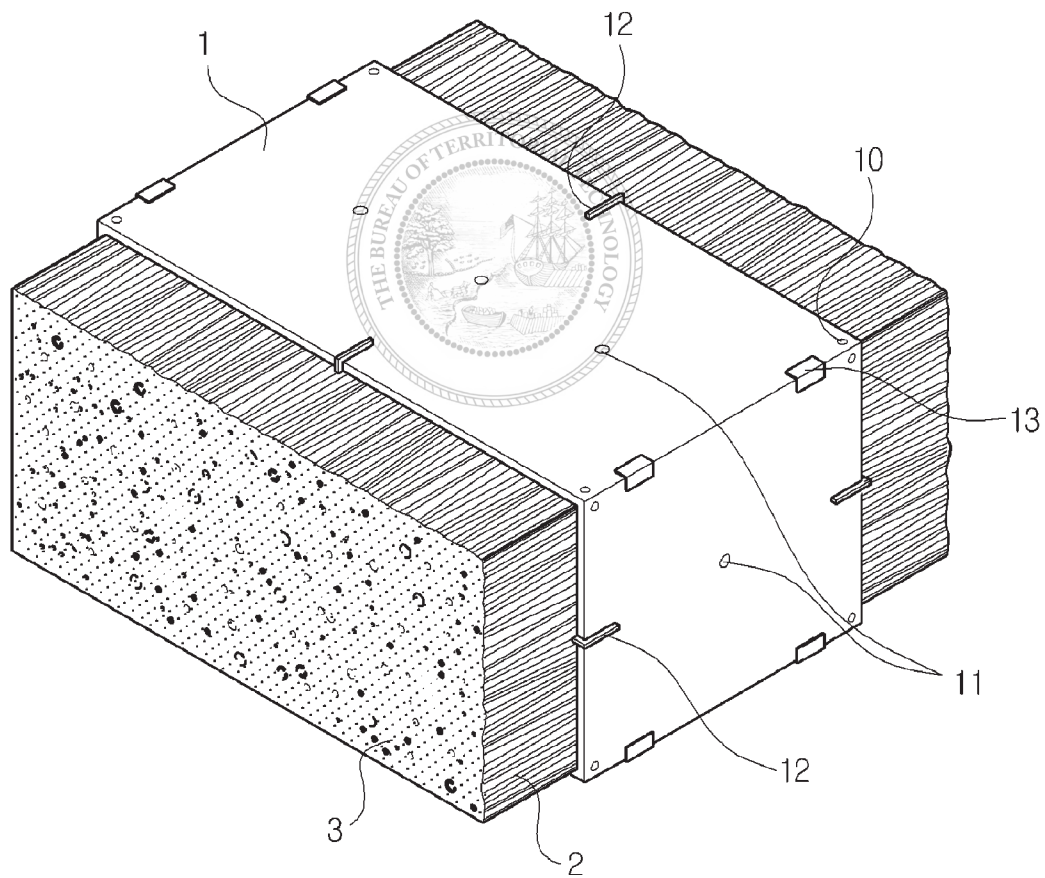


Fig. 1





(19) **United States**

(12) **Patent Application Publication**

The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185724 A1**

(43) **Pub. Date: June 17, 2016**

(54) **TITLE: METHOD FOR APPROPRIATING SCHOENOPLECTUS ACUTUS FOR AGRICULTURAL ARMATURE, DESALINATION AND LAND ACCRETION**

(73) **Inventors:** Mario Accordino
Assignee: Bureau of Territorial Technology
 (21)
 (22) **Appl. No.:** 12/495,5823
 (23) **Filed:** June 17, 2016

Prior Art:
 US 20120110942A1
 05.10.2012

US 4312601
 01.26.1982

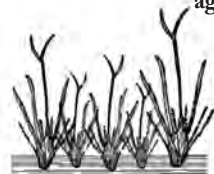
US 3680296
 08.01.1972

(57) **ABSTRACT**

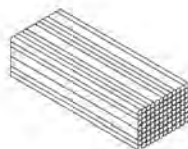
Be it known that I, Mario Accordino, an agent of the Bureau of Environmental and Territorial Technologies, and resident of Oakland California, have invented a certain new and useful method for appropriating harvested Schoenoplectus acutus, tule, for armature in agricultural production, water desalination and land accretion.

The plot of land upon which the system will be deployed is flooded with saline water to a depth of 12 inches. Concurrently, a separate island (Fig.4A) harvests and bales tule (Fig.1), which is then assembled according to the user's desired application and amount of available tule. (Fig. 3) Organic material then serves as infill for agricultural planting soil (Fig. 2B). Finally the system is enclosed in a plastic sheeting, which collects water vapor from the saline water beneath and drips freshwater from the plastic sheet to the crops below (Fig. 2D). As the material of the tule decomposes, the land beneath collects the plant detritus and gains elevation over a process of years. (Fig. 4)

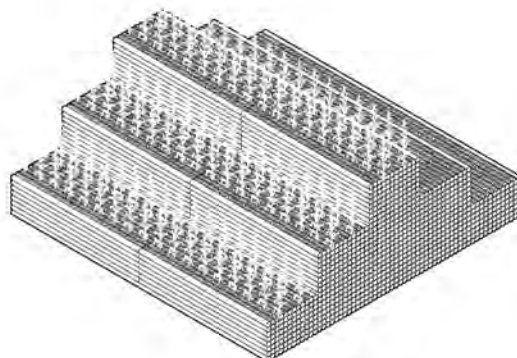
At the onset of production, upland Delta islands will act as tule farming factories, producing material for more deeply subsided islands. As potential freshwater availability dwindles, the majority of Delta islands will transition from producing tule to using tule in agricultural service. (Fig 5, 7, 8)



Schoenoplectus acutus



BALE



STACK

Fig 1.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185724 A1**

(43) **Pub. Date: June 17, 2016**

POTENTIAL TRACT ARRANGEMENTS

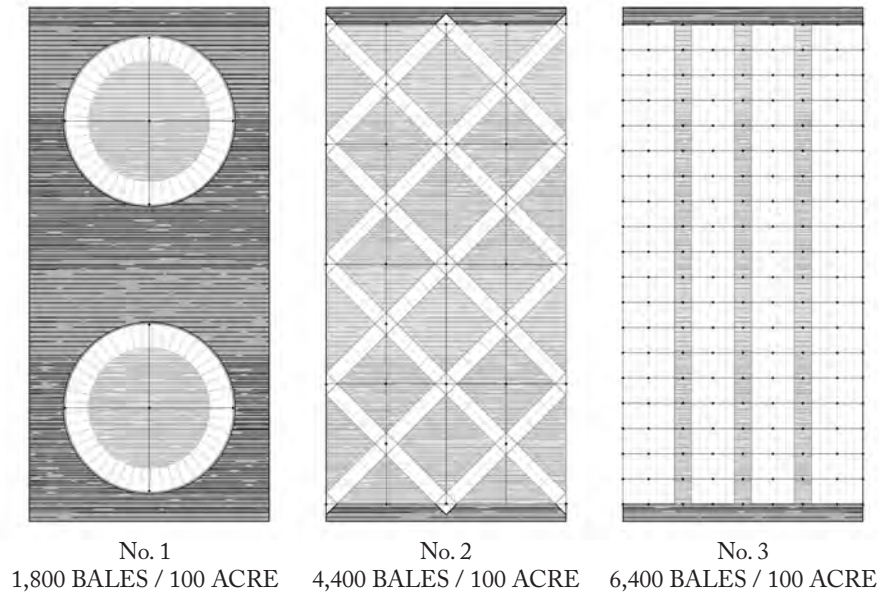


Fig 3.

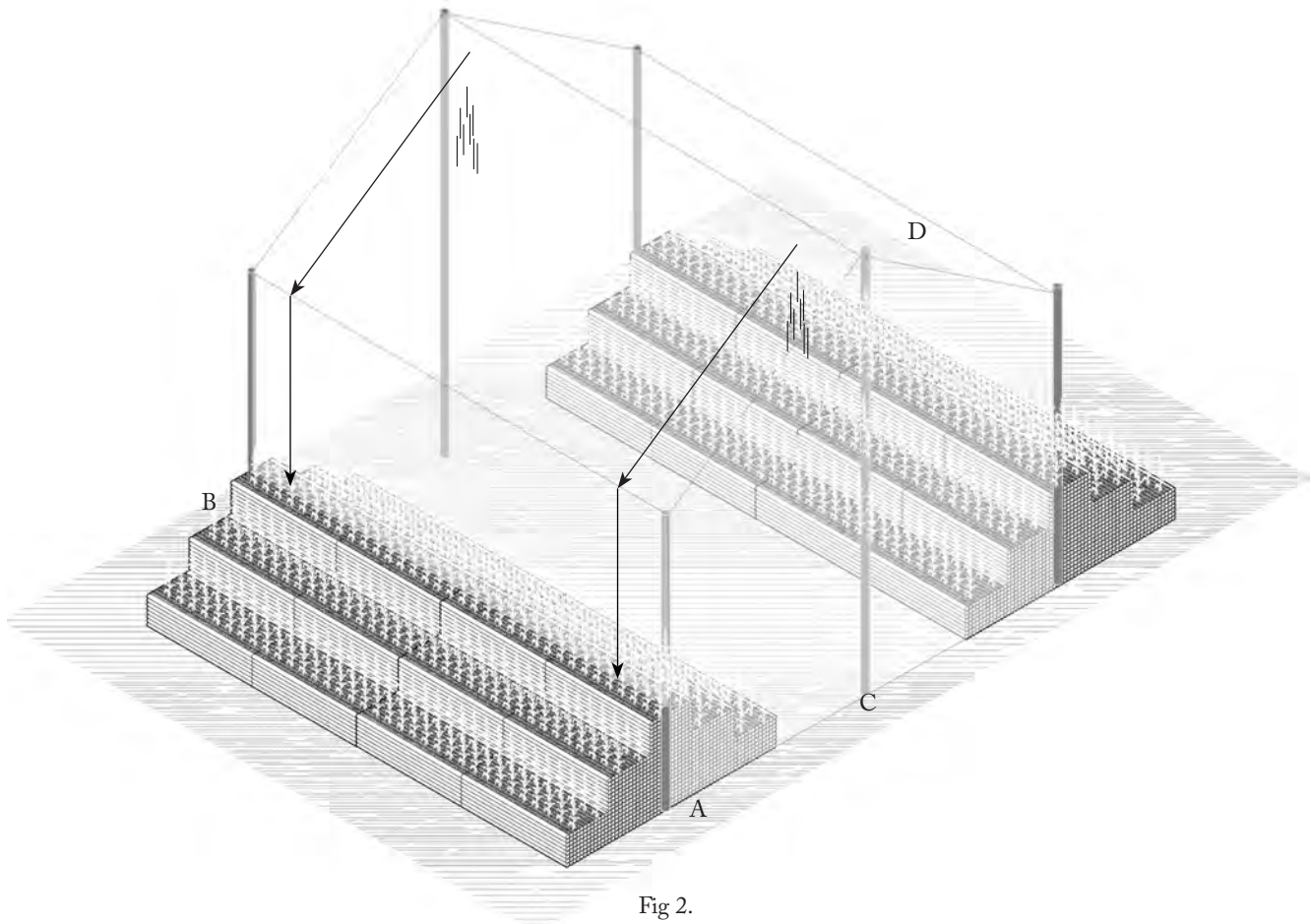


Fig 2.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185724 A1**

(43) **Pub. Date: June 17, 2016**

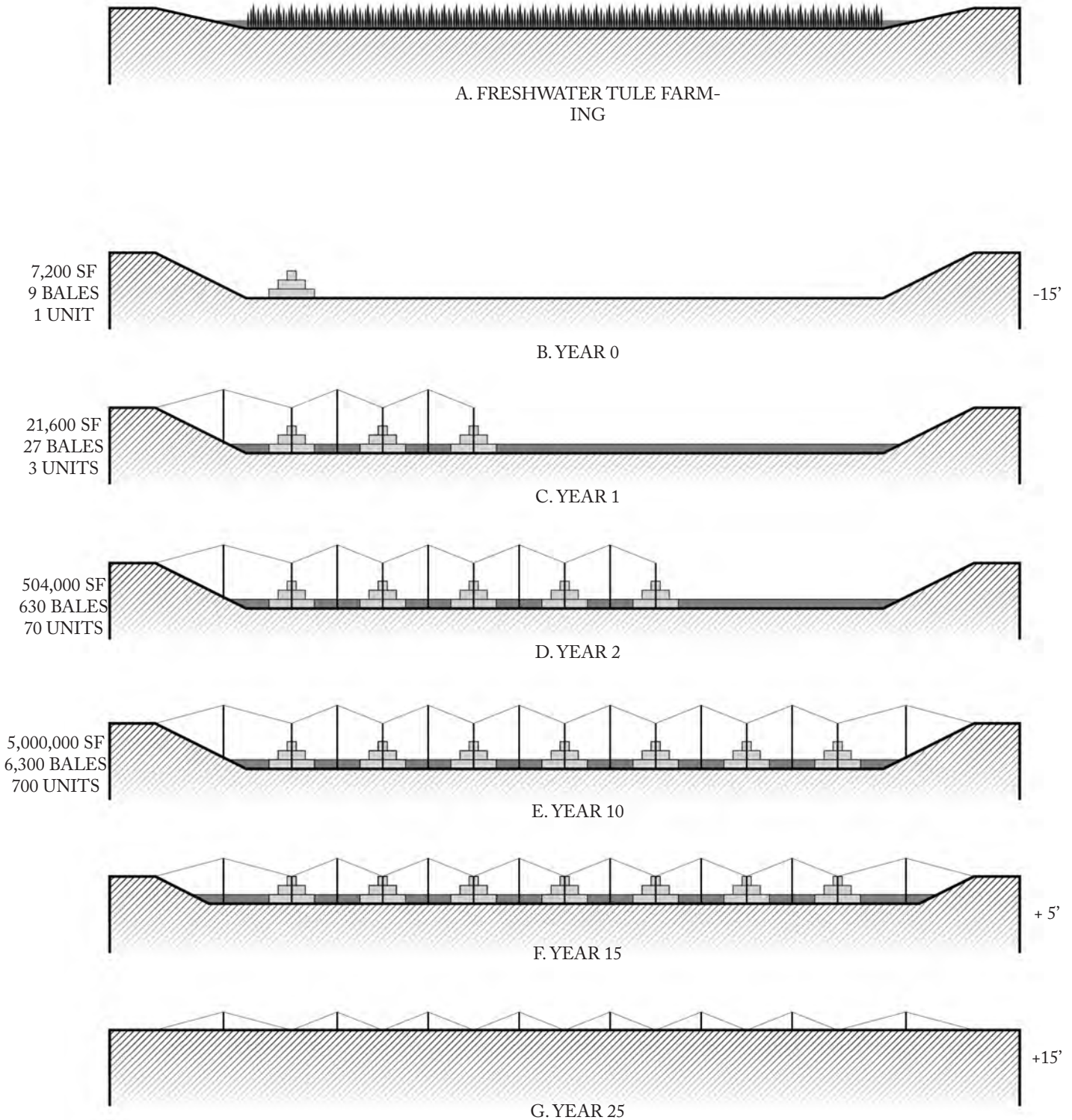


Fig 4.

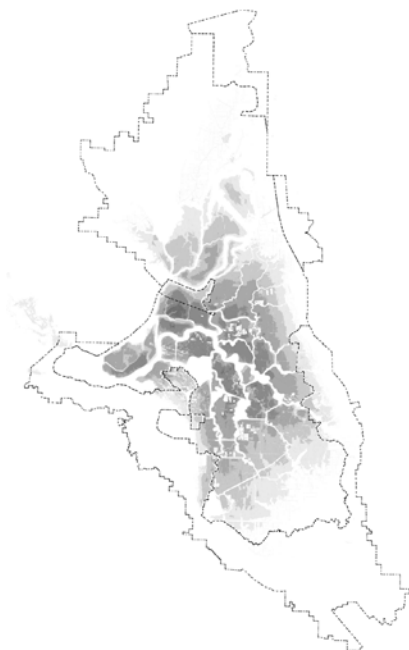


(19) **United States**

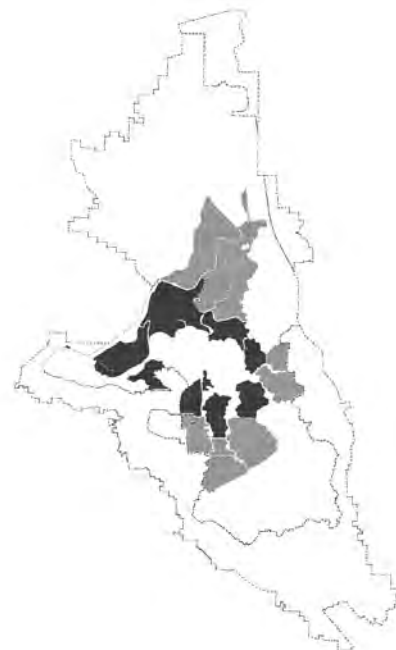
(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185724 A1**

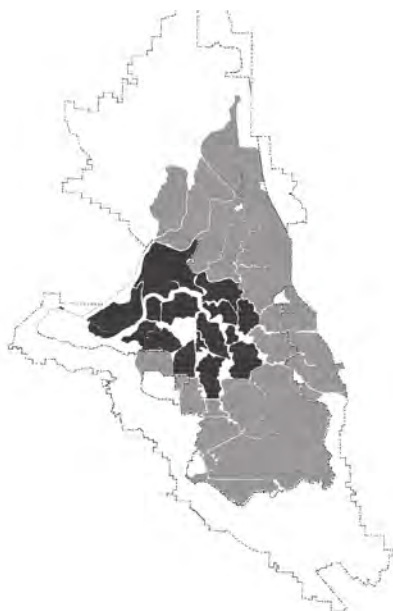
(43) **Pub. Date: June 17, 2016**



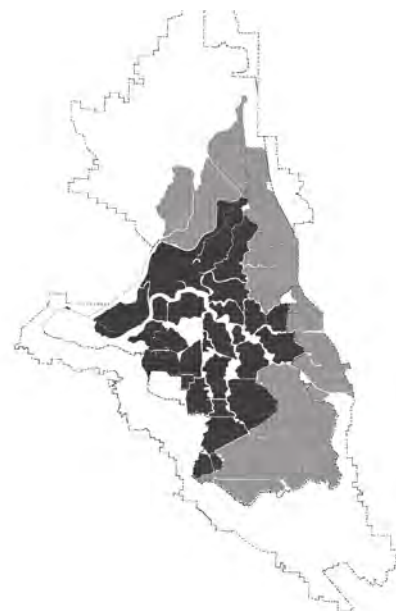
CURRENT SUBSIDENCE



2 YEAR DROUGHT
PRODUCTION ISLANDS: 15
CONSUMPTION ISLANDS: 10



15 YEAR DROUGHT
PRODUCTION ISLANDS: 25
CONSUMPTION ISLANDS: 20



25 YEAR DROUGHT
PRODUCTION ISLANDS: 15
CONSUMPTION ISLANDS: 30

Fig 5.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185724 A1**

(43) **Pub. Date: June 17, 2016**

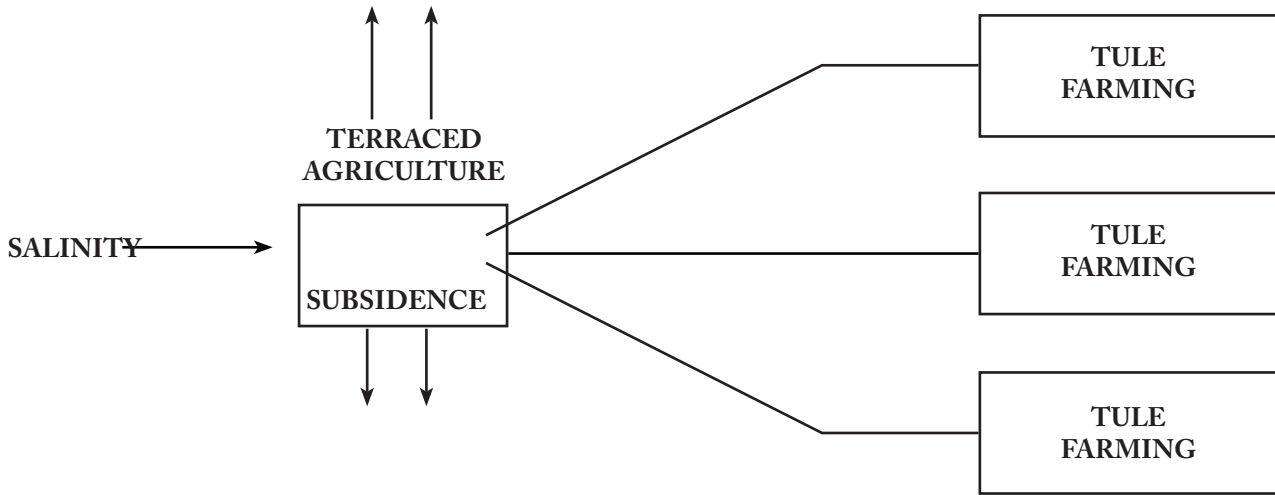


Fig 6.

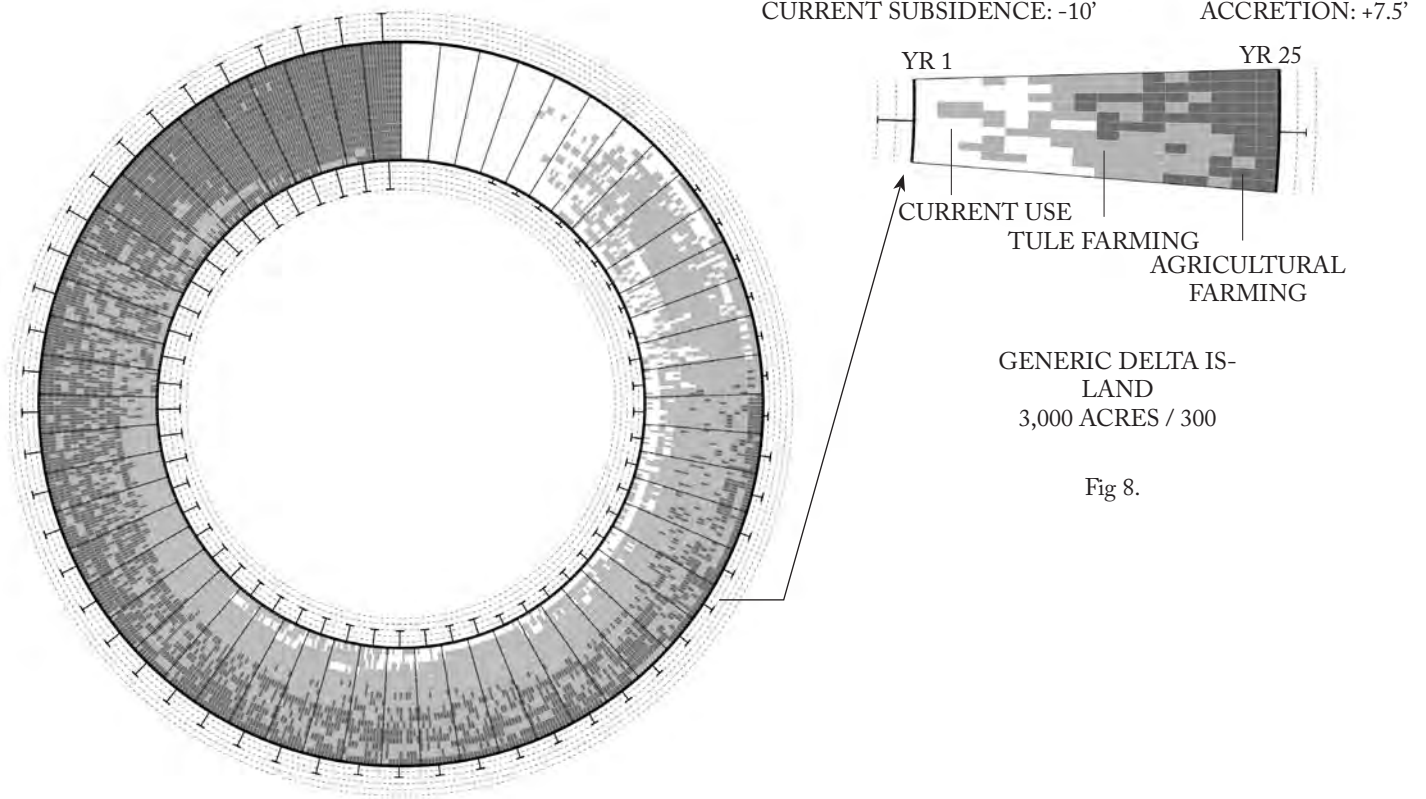


Fig 7.

Fig 8.

G. SWIFT & W. T. O'NEALE.
METHOD OF FORMING EMBANKMENTS.

No. 181,372.

Patented Aug. 22, 1876.

Fig. 1.

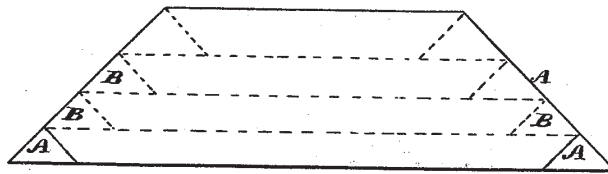
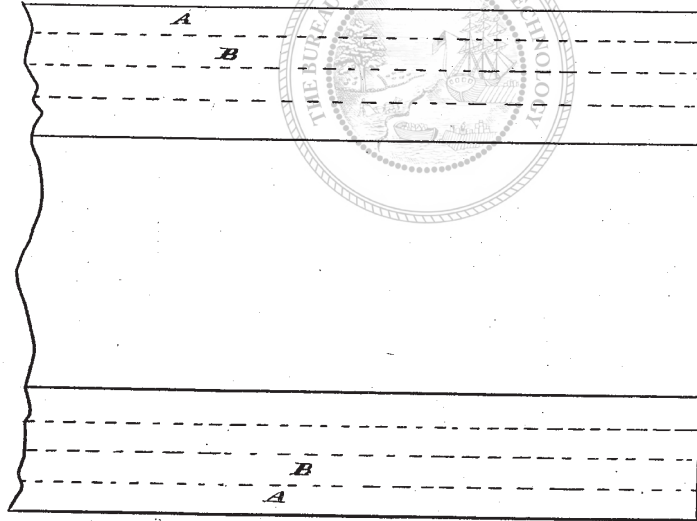


Fig. 2.



Witnesses

Geo. H. Strong
Oswyn S. Stacy

Inventors

Geo Swift
Wm J. O'Neale
By their Attys
Devery Co

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

Feb. 2, 1937.

J. B. ARPIN

2,069,715

ARTIFICIAL REEF

Filed Oct. 29, 1935

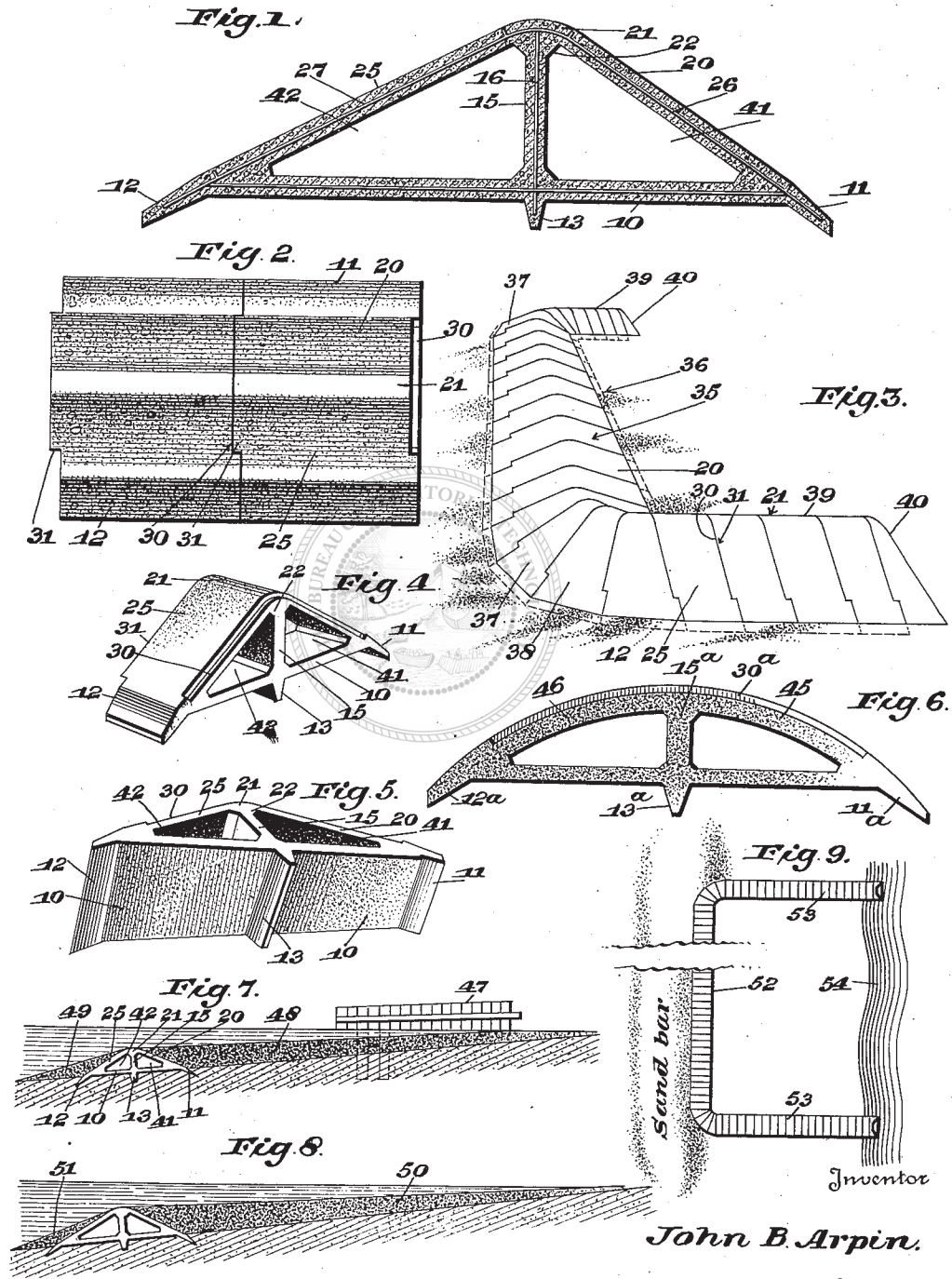


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 7.

Fig. 8.

Fig. 9.

John B. Arpin.

By *Wm. Anderson & Liddy*
Attorneys

Nov. 1, 1938.

T. R. HERBEST, JR

2,135,337

MESH JETTY

Filed Feb. 14, 1936

2 Sheets-Sheet 1

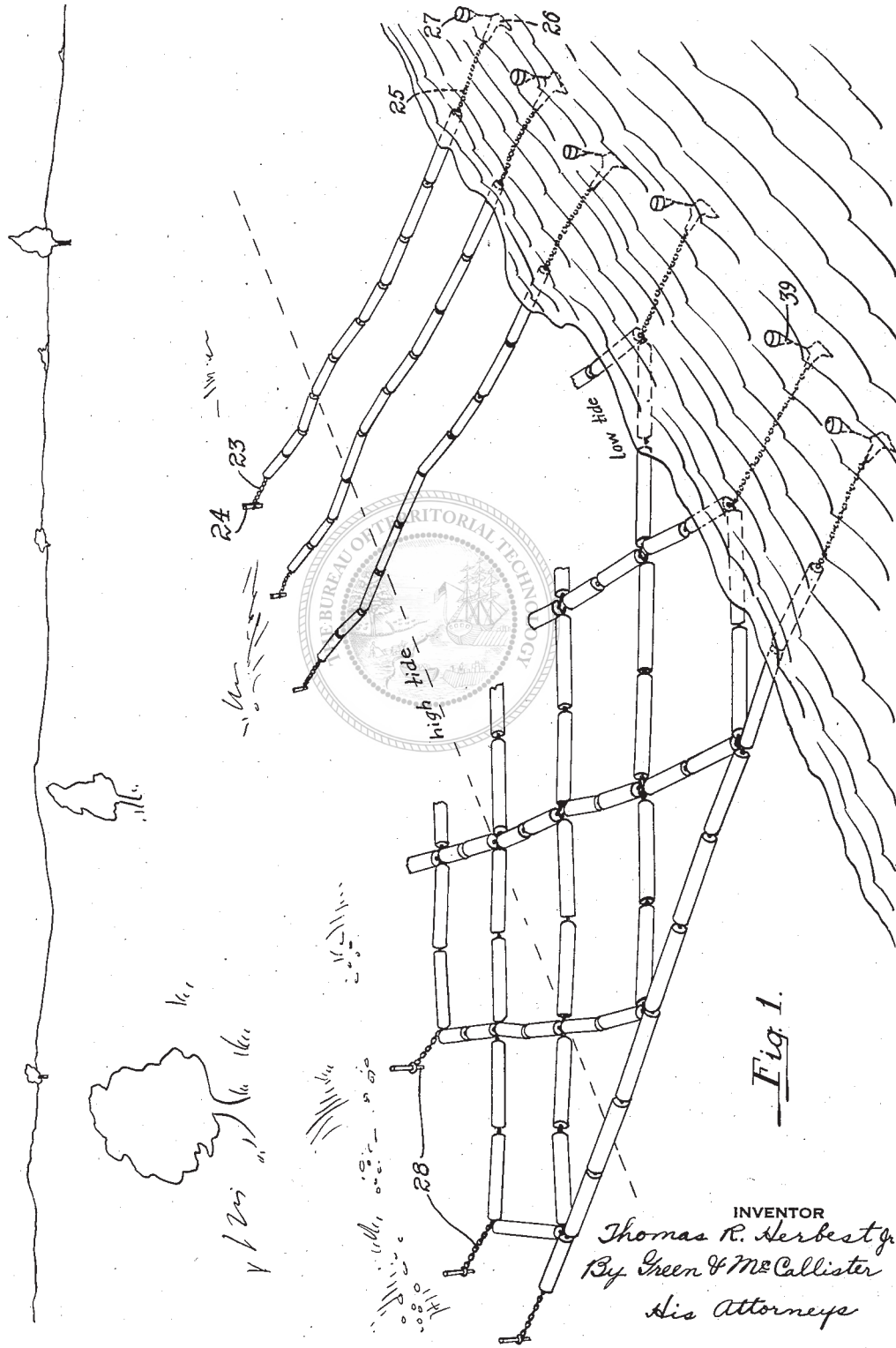


Fig. 1.

INVENTOR
Thomas R. Herbst, Jr.
By Green & McCallister
His Attorneys

Nov. 1, 1938.

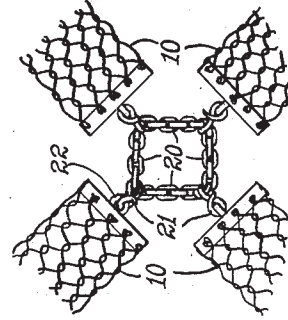
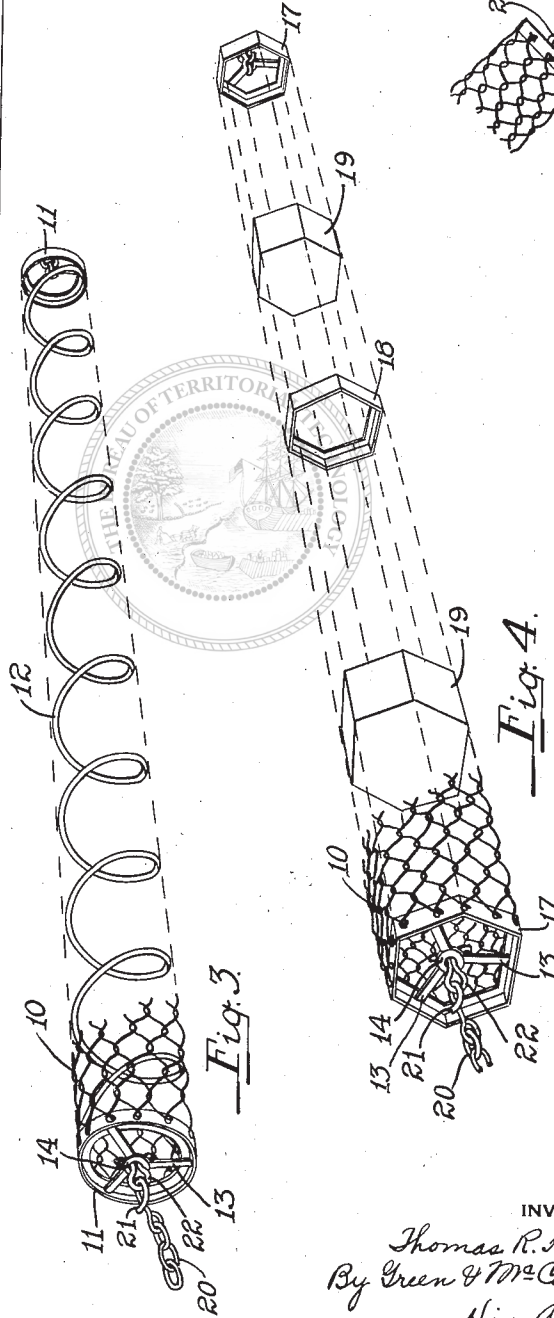
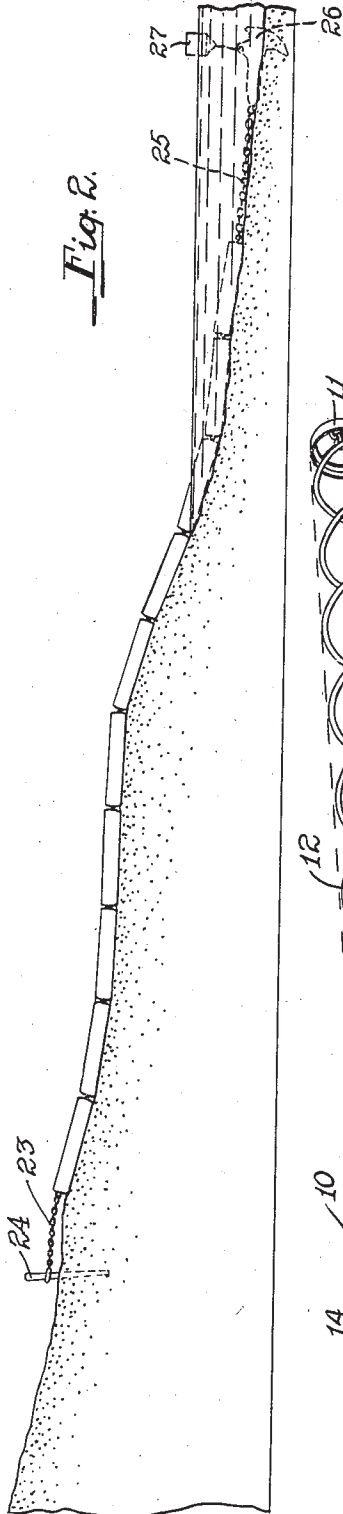
T. R. HERBEST, JR

2,135,337

MESH JETTY

Filed Feb. 14, 1936

2 Sheets-Sheet 2

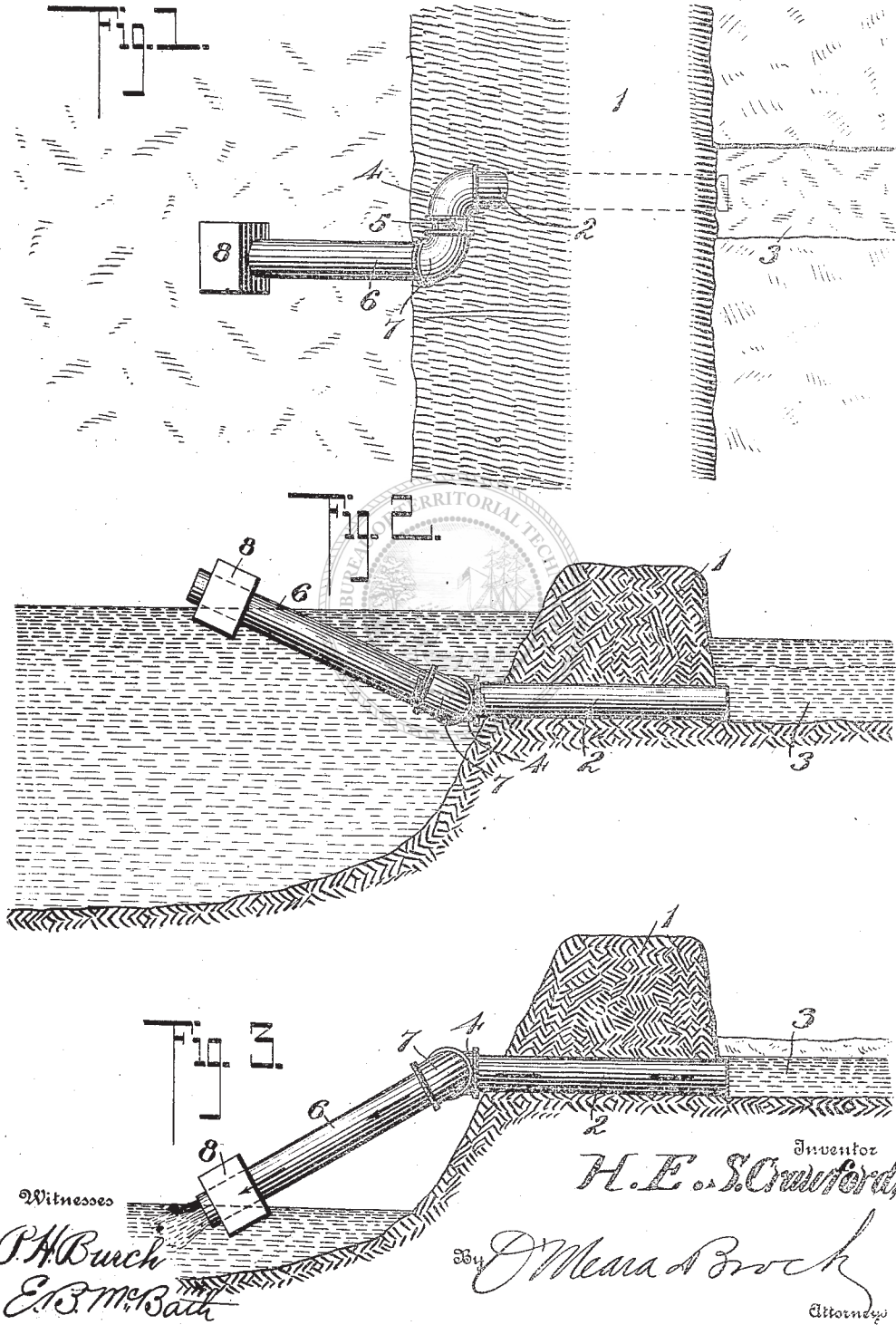


INVENTOR
Thomas R. Herbst Jr
By Green & McCallister
His Attorneys

H. E. S. CRAWFORD,
BACKWATER CUT-OFF.
APPLICATION FILED APR. 7, 1908.

921,513.

Patented May 11, 1909.



Witnesses
P. H. Burch
E. B. McBeth

Inventor
H. E. S. Crawford

O. Meana & Brock
Attorneys



US 20140010601A1

(19) **United States**

(12) **Patent Application Publication**
Bradley, SR. et al.

(10) **Pub. No.: US 2014/0010601 A1**

(43) **Pub. Date: Jan. 9, 2014**

(54) **GEOTEXTILE TUBES WITH POROUS
INTERNAL SHELVES FOR INHIBITING
SHEAR OF SOLID FILL MATERIAL**

Publication Classification

(75) Inventors: **Anthony Shepherd Bradley, SR.**,
Valparaiso, FL (US); **Anthony
Shepherd Bradley, JR.**, Valparaiso, FL
(US)

(51) **Int. Cl.**
E02D 17/20 (2006.01)
C09K 17/00 (2006.01)

(52) **U.S. Cl.**
USPC **405/302.7**; 405/302.4; 405/302.6

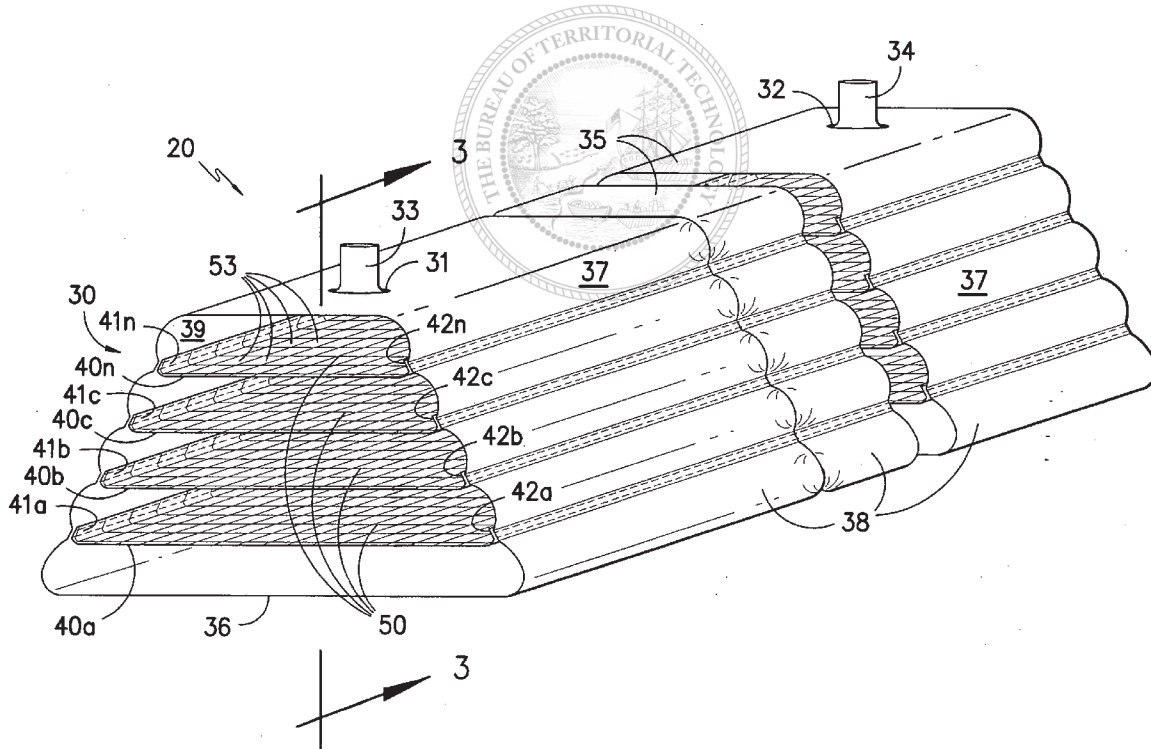
(73) Assignee: **BRADLEY INDUSTRIAL
TEXTILES, INC.**, Valparaiso, FL (US)

(57) **ABSTRACT**

A large scale geotextile tube includes a plurality of shelves that extend across the width of the geotextile tube with each shelf formed of a web of geogrid material or geocell material. As one moves from the bottom of the geotextile tube to the top of the geotextile tube, the width of each shelf decreases. The geotextile tube can be surrounded by an envelope formed of geogrid material.

(21) Appl. No.: **13/507,539**

(22) Filed: **Jul. 6, 2012**



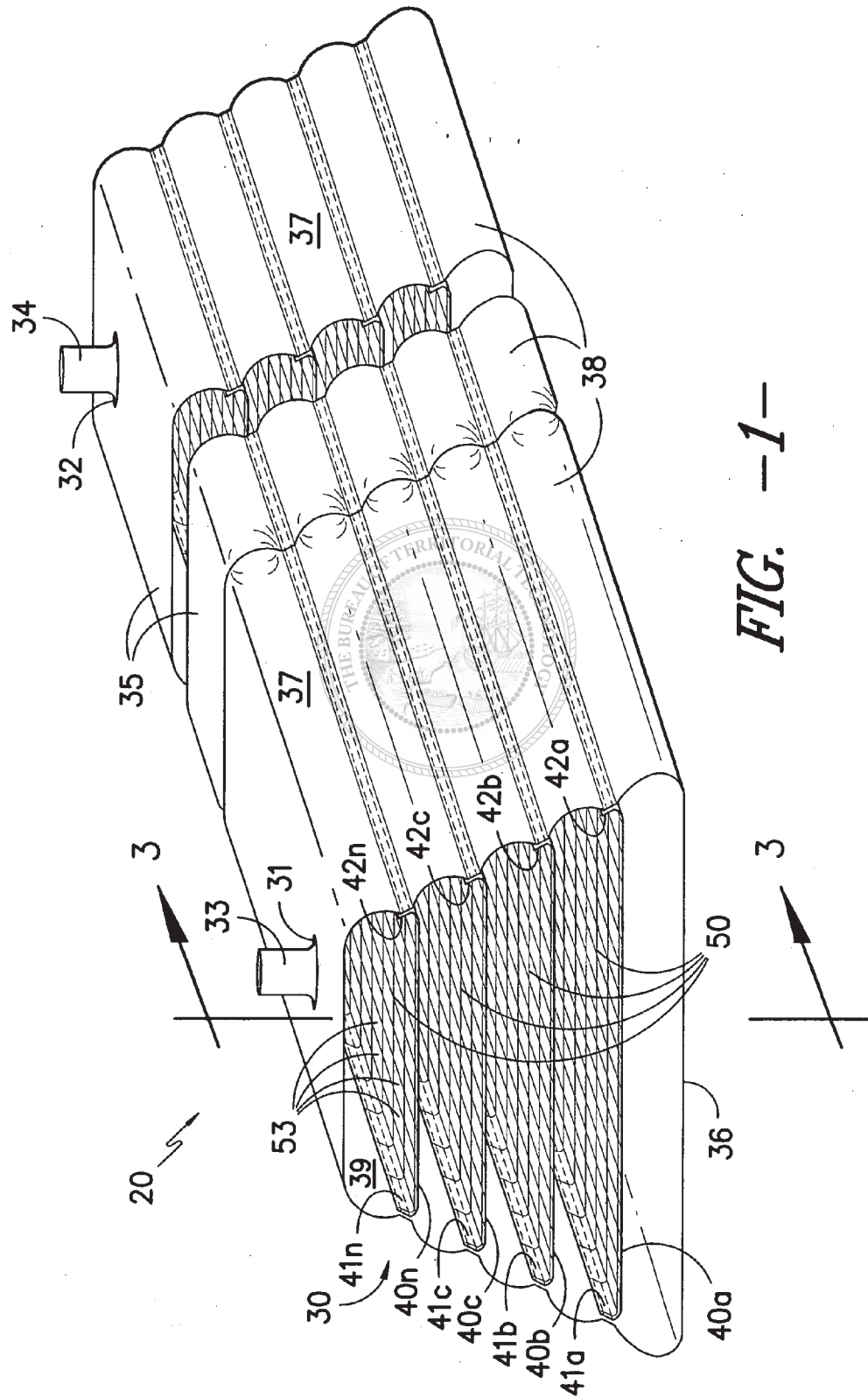


FIG. -1-

E. BIGNELL.
METHOD AND MEANS FOR CURRENT AND CHANNEL CONTROL IN MOVING BODIES OF WATER.
APPLICATION FILED JULY 21, 1919.

1,409,140.

Patented Mar. 7, 1922.

3 SHEETS—SHEET 3.

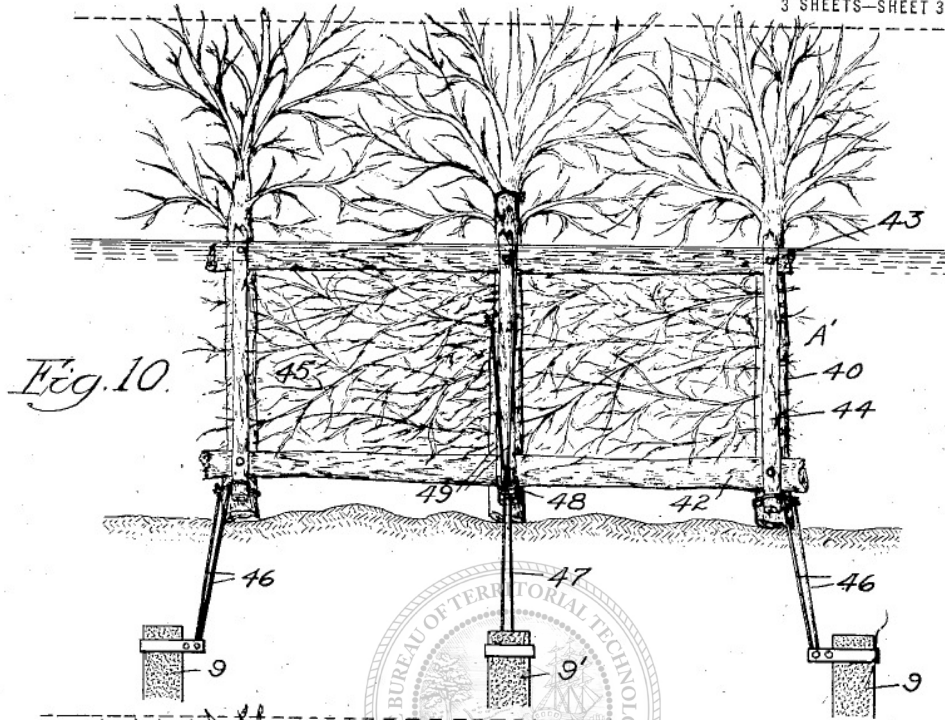


Fig. 10.

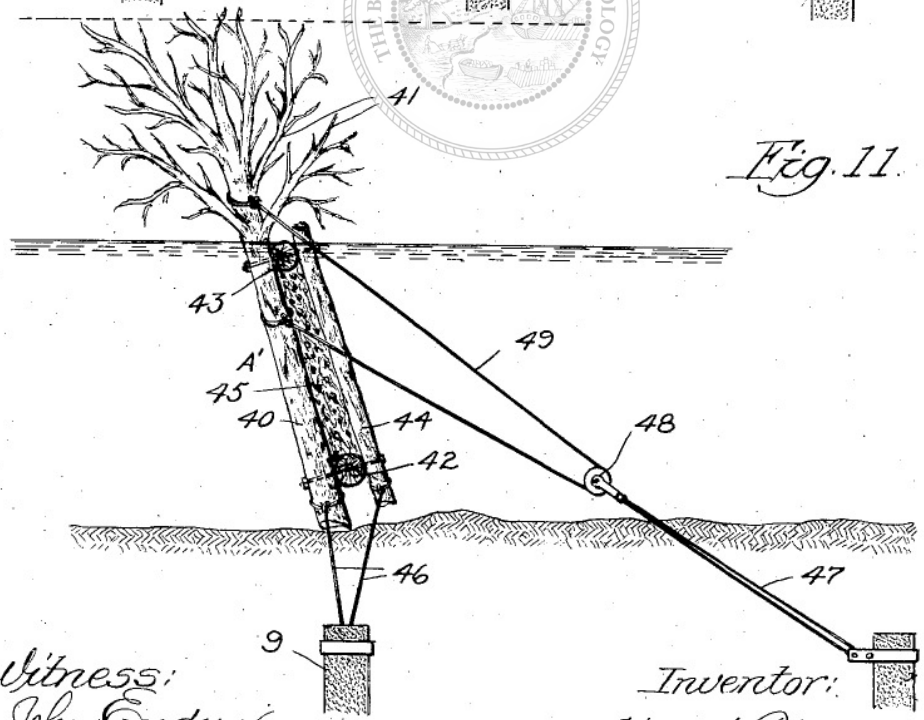


Fig. 11.

Witness:
John Enders

Inventor:
Edward Bignell
by *Arthur L. Cronn*
Att. 412

(19) **United States**(12) **Patent Application Publication**

The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A1**(43) **Pub. Date: June 17, 2016**(54) **TITLE: METHOD FOR THE,
EXTRACTION, CONVEYANCE AND
DISPERSAL OF SEDIMENT SLURRIES**(75) **Inventors:** Michael R. Biros(73) **Assignee:** Bureau of Territorial
Technology(21) **Appl. No.:** 12/495,5823(22) **Filed:** June 17, 2016(23) **Prior Art:**US 181372 Method of Forming Embankments
1876

US 2069715 Artificial Reef 1935

US 2135337 Mesh Jetty 1936

US 921513 Backwater Cut-off 1909

US 2014/0010601 Geotextile Tubes with
Porous Internal Shelves for Inhibiting Shear of
Solid Fill Material 2014(57) **ABSTRACT**

Be it known that I, Michael R. Biros, an agent of the Bureau of Environmental and Territorial Technologies, and resident of Philadelphia, Pennsylvania, have invented a new and improved method for the conveyance of sediment slurries for the construction of land to counteract subsidence and reinforce a vulnerable, low-lying region against sea level rise.

With the joint prospects of sea level rise and land subsidence an imminent threat to low-lying lands, the object of the invention is to provide a new and improved method to extract, convey, and disperse sediment from fluvial systems to subsided land.

In order to accomplish the desired result, a flocculation agent, such as alginate, is added to a flowing waterbody to induce flocculation. As the suspended sediment particles flocculate, they aggregate and form larger particles.

Further downstream, a series of baffles on gantries are inserted into the flow of water to impede the flow and induce settlement of the flocculated particles.

The settled material is extracted from the river bottom via dredge and slurried into deployable sluice units. The sluice units convey the sediment slurry through a triangulated network of sluices of variable permeability. The sediment is distributed to areas within this network to build land.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A1**

(43) **Pub. Date: June 17, 2016**

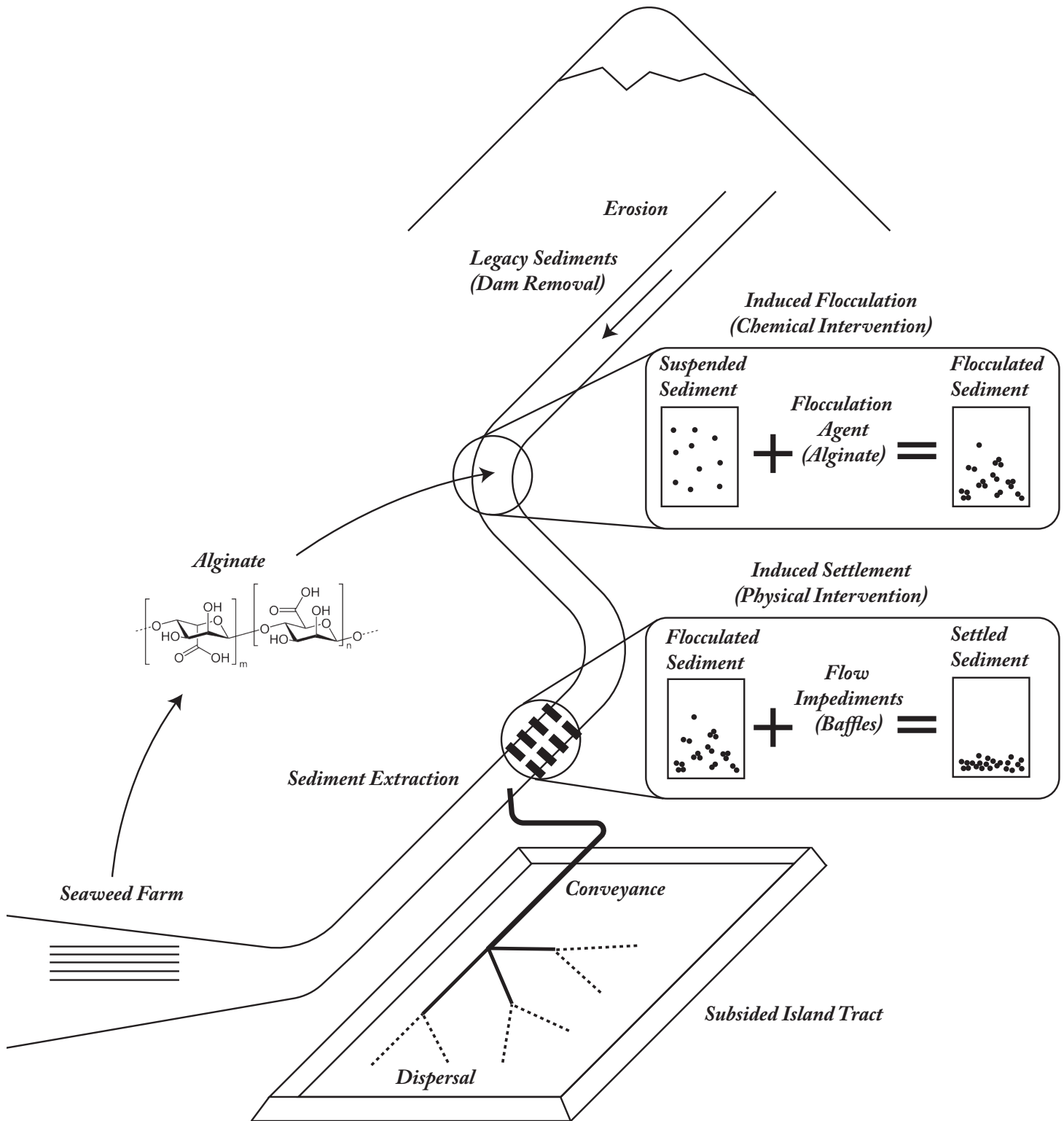


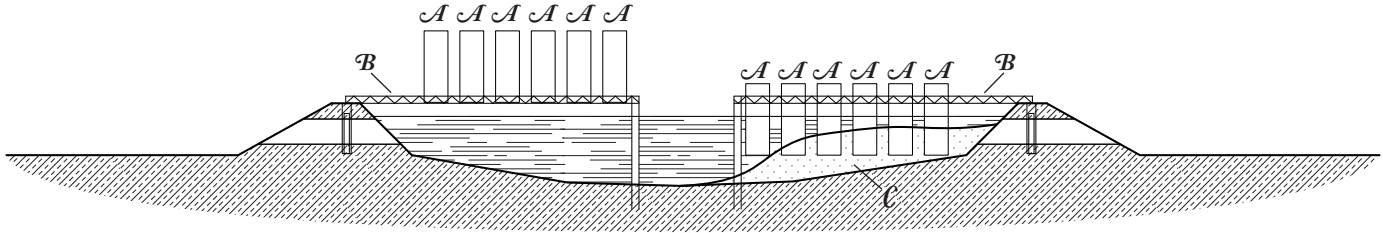
Figure 2. Flow diagram indicating the chemical and physical processes of induced flocculation, induced settlement, sediment extraction, conveyance, and dispersal.



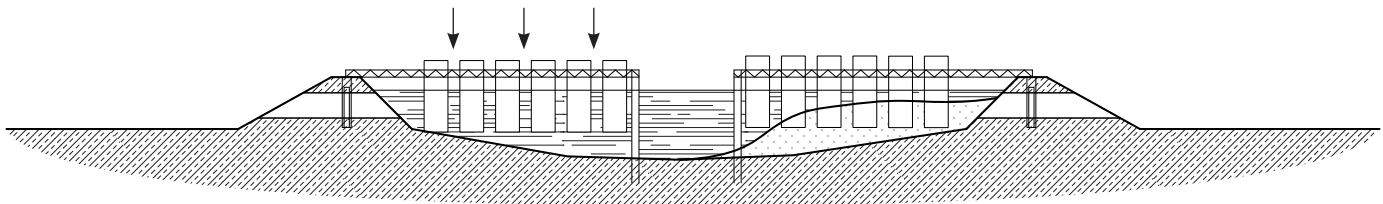
(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

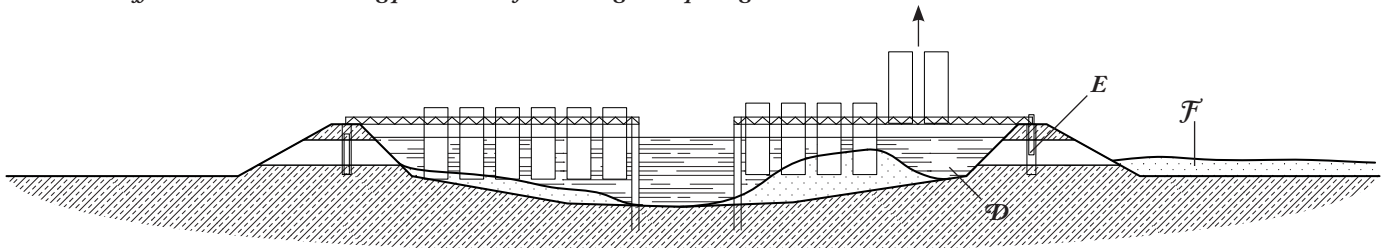
(10) **Pub. No.: US 2016/0185720 A1**
(43) **Pub. Date: June 17, 2016**



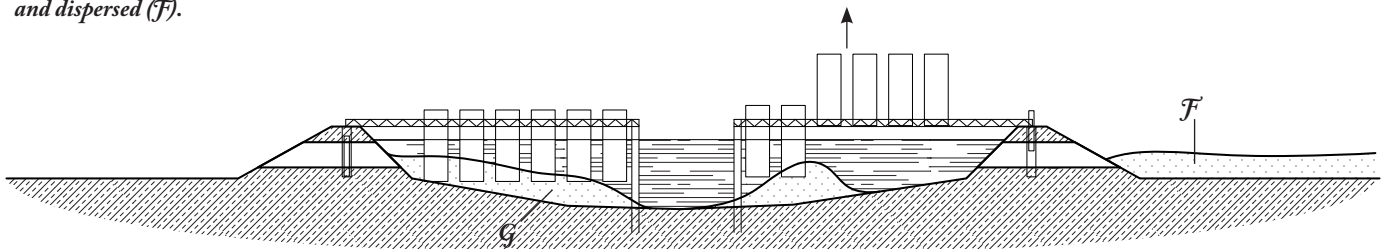
Section 1. Baffles (A) are lowered from the gantry (B) on one side slowing the flow of water and depositing sediment (C).



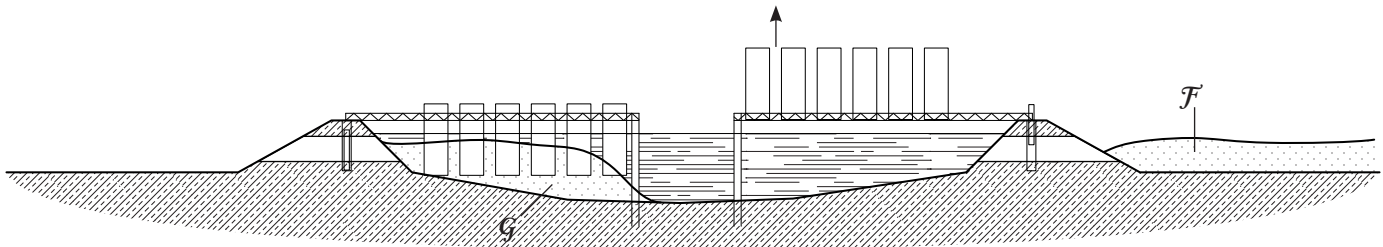
Section 2. Baffles are lowered increasing pressure and flow through the openings.



Section 3. Baffles are selectively opened. Increased flow scours sediment deposits. Resuspended sediment is harvested (D), transported (E), and dispersed (F).



Section 4. As sediment is harvested from one side of the river, sediment simultaneously accumulates on the other side (G).



Section 5. The process repeats for the other side of the river.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A1**
(43) **Pub. Date: June 17, 2016**

Figure 3. Sediment slurry conveyance sluice.

- (A) Rigid frame for structural support of panels.
- (B) Circumferential bands for structural support of sluice unit.
- (C) Geotextile panels of limited permeability.
- (D) Sediment slurry.

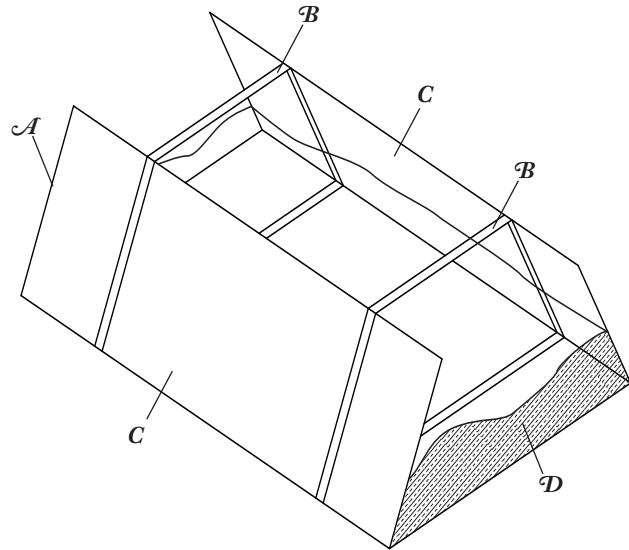


Figure 4. Sediment slurry permeable sluice.

- (A) Rigid frame for structural support of panels.
- (B) Circumferential bands for structural support of sluice unit.
- (C) Geotextile panels of variable permeability.
- (D) Sediment slurry.

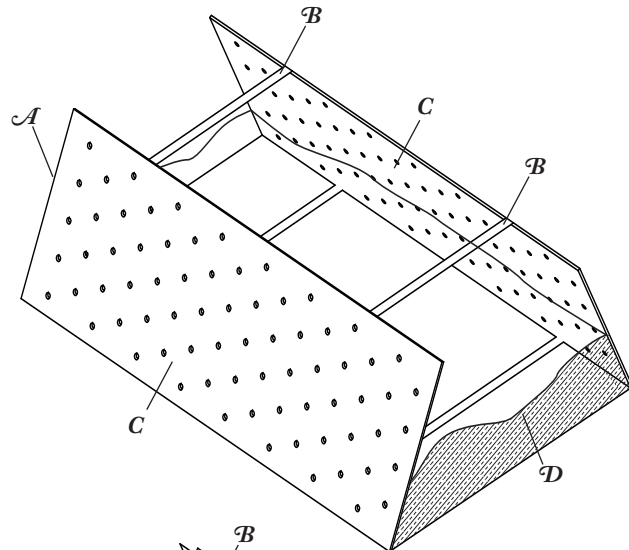


Figure 5. Sediment slurry distribution sluice.

- (A) Rigid frame for structural support of panels.
- (B) Circumferential bands for structural support of sluice unit.
- (C) Geotextile panels of variable permeability.
- (D) Notches for sediment slurry distribution.
- (E) Sediment slurry.

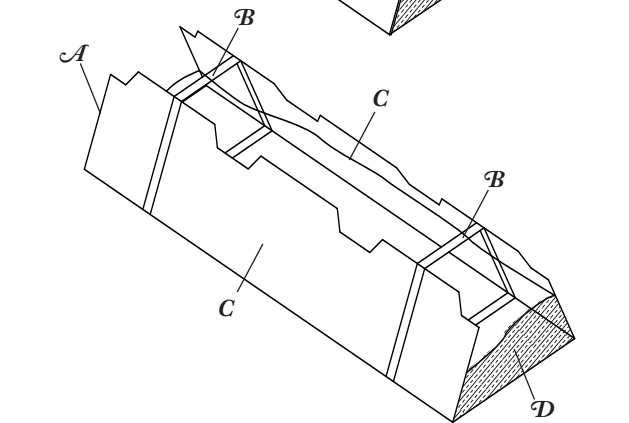
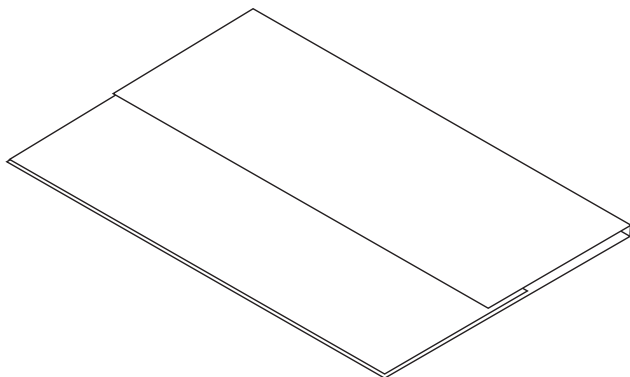


Figure 6. Folded unit for transport or storage.





(19) **United States**

(12) **Patent Application Publication**
 The Bureau of Territorial Technologies

(10) **Pub. No.:** US 2016/0185720 A1

(43) **Pub. Date:** June 17, 2016

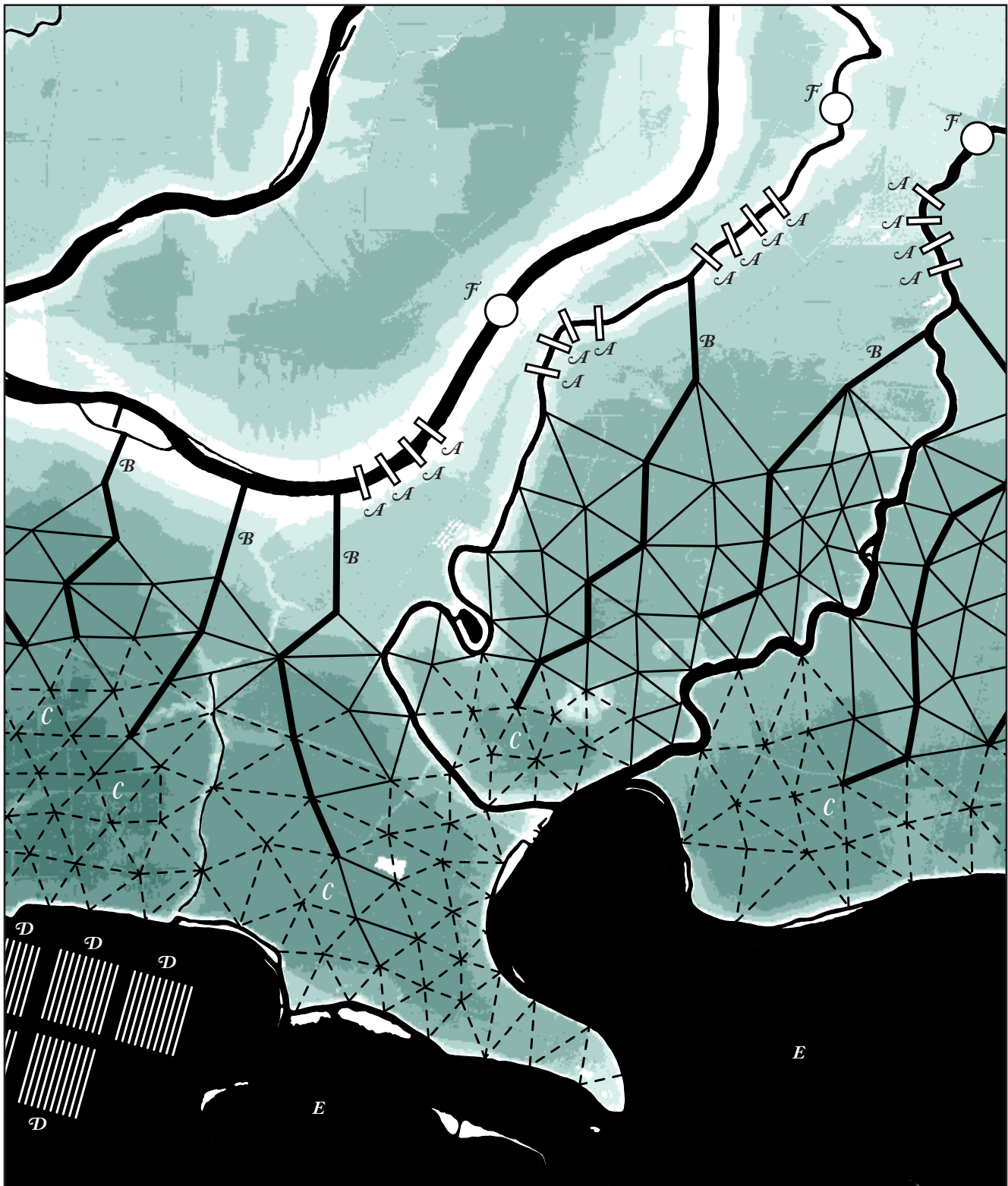


Figure 7. Triangular lattice landscape reinforcement structures of sediment extraction (A), conveyance (B), and dispersal (C). Seaweed farms (D) take advantage of saline conditions of the inland sea (E) and provide a source of alginates to induce sediment flocculation upstream of sediment extraction sites (F).



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185720 A1**

(43) **Pub. Date: June 17, 2016**

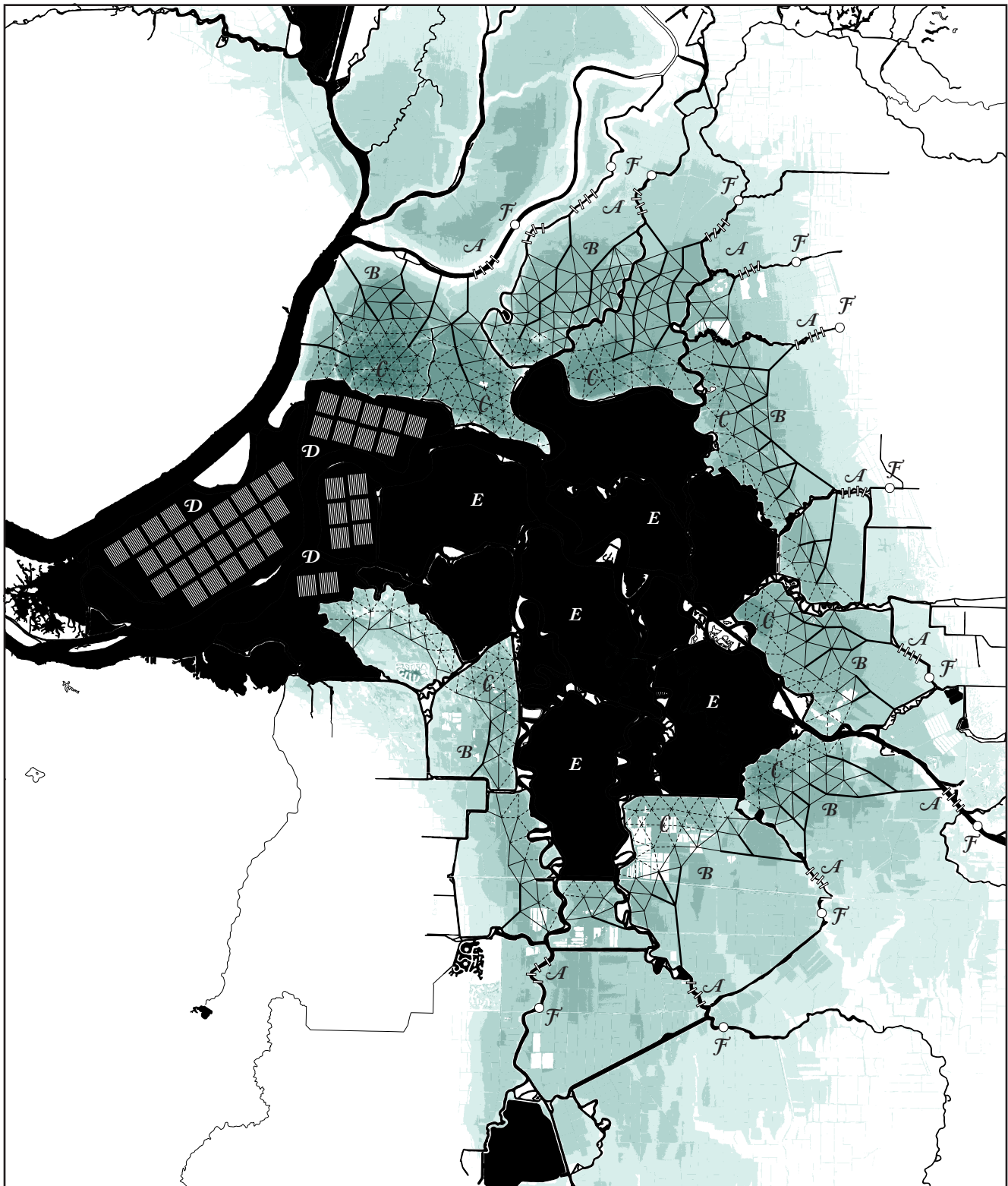


Figure 8. Triangular lattice landscape reinforcement structures of sediment extraction (A), conveyance (B), and dispersal (C). Seaweed farms (D) take advantage of saline conditions of the inland sea (E) and provide a source of algalinate to induce sediment flocculation upstream of sediment extraction sites (F).

(No Model.)

4 Sheets—Sheet 1.

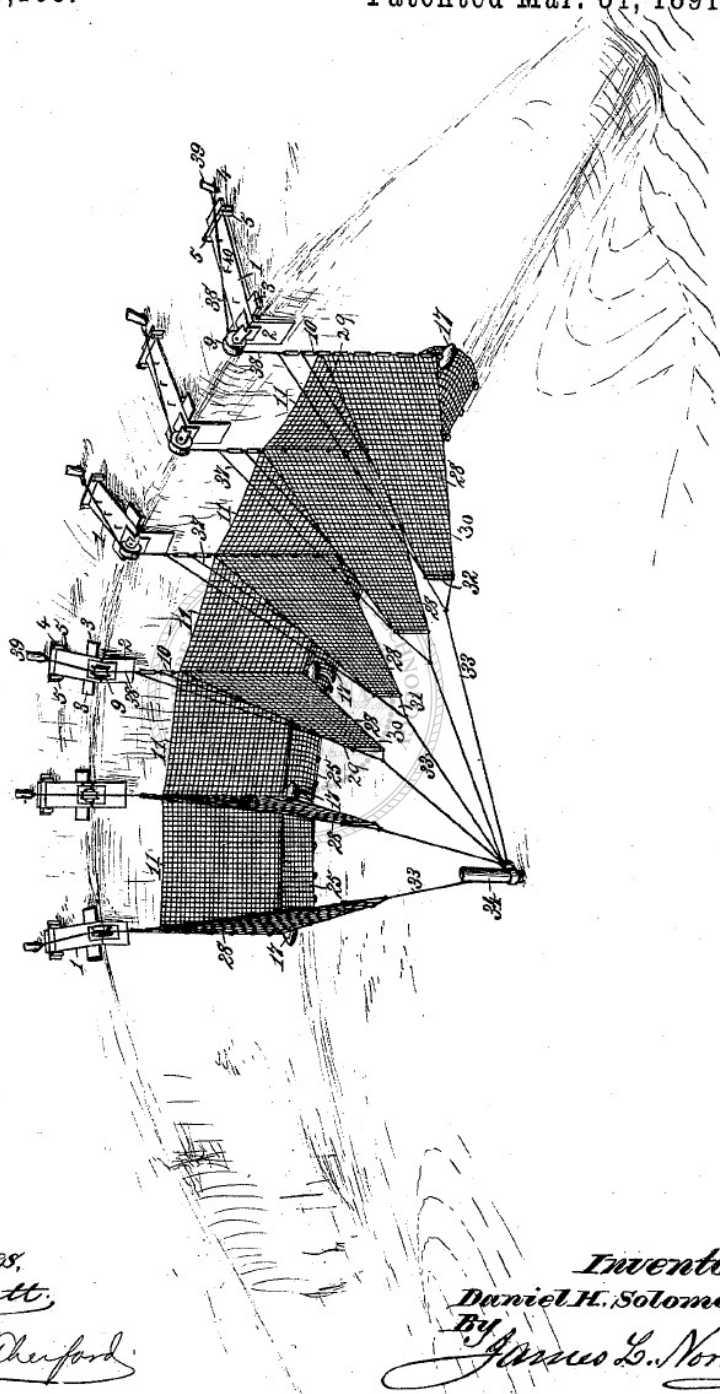
D. H. SOLOMON.

DEVICE FOR PREVENTING BANKS FROM CAVING.

No. 449,185.

Patented Mar. 31, 1891.

Fig. 1.



Witnesses,
Phil Everett,
J. A. Rutherford

Inventor,
Daniel H. Solomon,
By James L. Norris,
Atty.

(No Model.)

4 Sheets—Sheet 2.

D. H. SOLOMON.

DEVICE FOR PREVENTING BANKS FROM CAVING.

No. 449,185.

Patented Mar. 31, 1891.

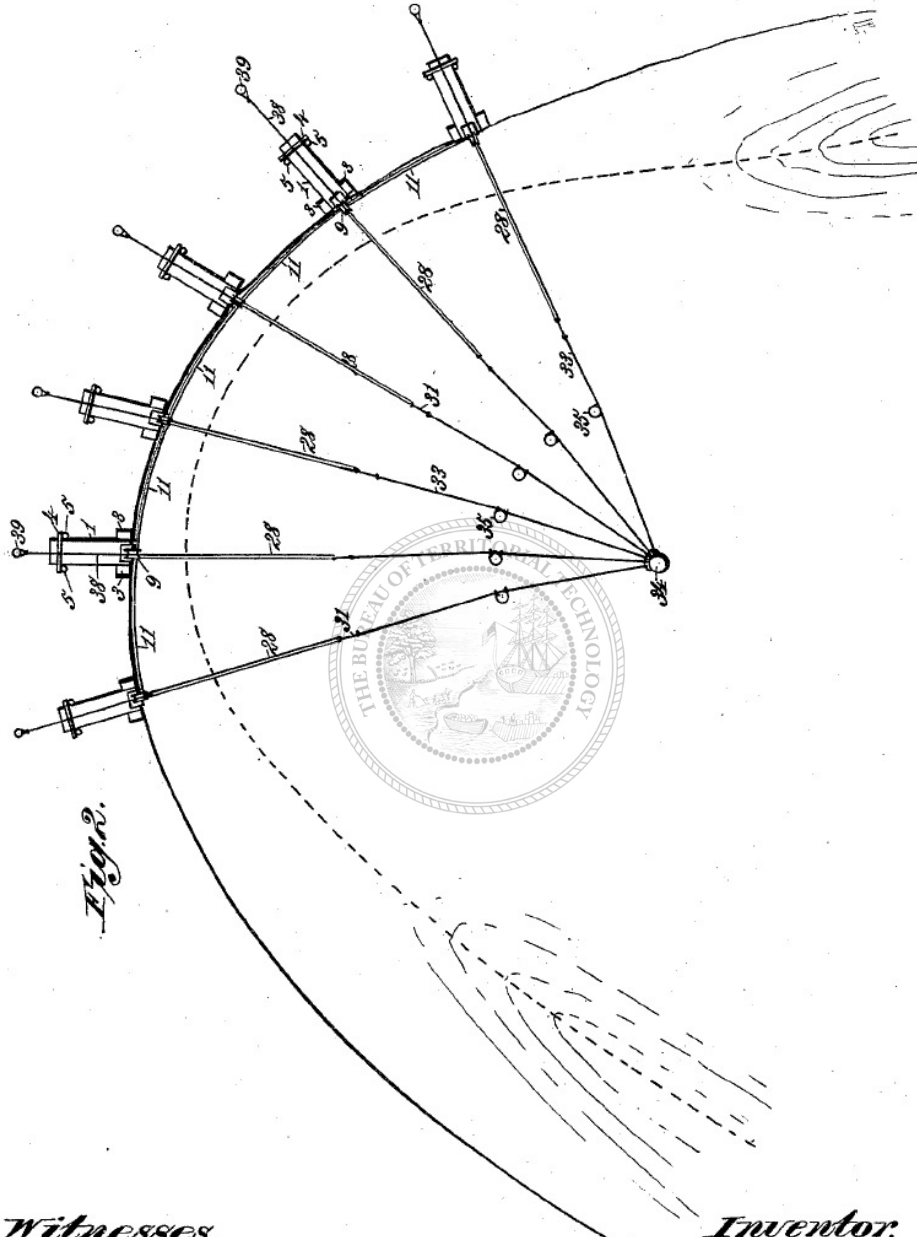


Fig. 2.

Witnesses.
Robert Everett,
J. A. Rutherford

Inventor:
Daniel H. Solomon,
By James L. Norris,
Atty.

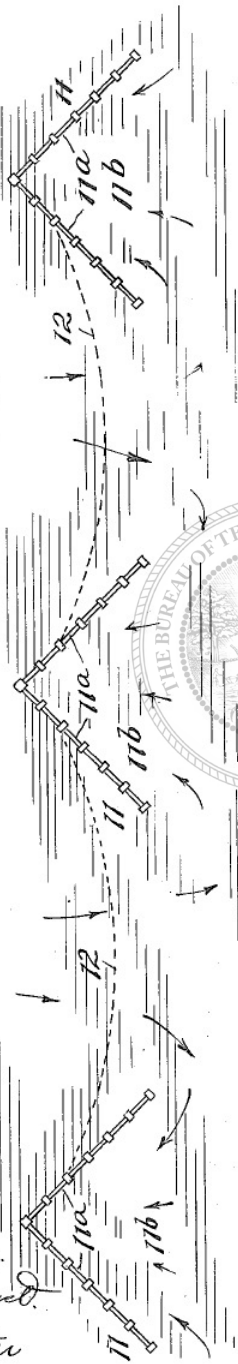
THE NORRIS PETERS CO., PHOTO-LITHO, WASHINGTON, D. C.

M. A. CALLAHAN.
BEACH FORMING JETTIES.
APPLICATION FILED FEB. 2, 1914.

1,137,049.

Patented Apr. 27, 1915.

Fig. 1.



Witnesses
E. B. Gilchard.
L. J. Porter

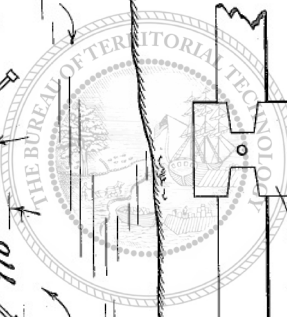


Fig. 2.

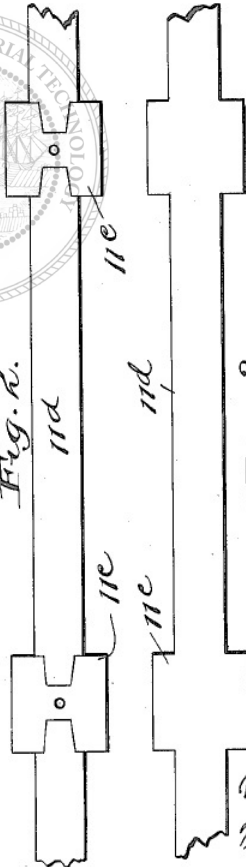


Fig. 3.



Inventor
Mark A. Callahan
by
Thurston & Kwie
Atys.

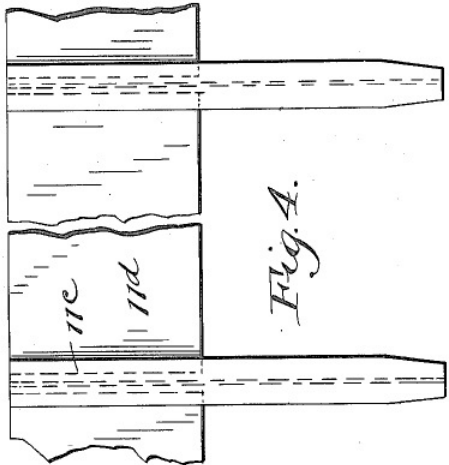


Fig. 4.



(19) **United States**

(12) **Patent Application Publication**
The Bureau of Territorial Technologies

(10) **Pub. No.: US 2016/0185739 A1**

(43) **Pub. Date: June 17, 2016**

(54) **TITLE: METHOD FOR ACCRETING LANDFORMS WITHIN LEVEE SYSTEMS IN DELTAIC ENVIRONMENTS**

(57) **ABSTRACT**

(75) **Inventors:** PAUL MCBRIDE

(73) **Assignee:** Bureau of Territorial Technology

(21) **Appl. No.:** 12/495,5823

(22) **Filed:** June 17, 2016

(22) **Prior Art:** US1409140, US550640, US1137049

Be it known that I, Paul McBride an agent of the Bureau of Environmental and Territorial Technologies, and resident of Seattle in the fine state of Washington, have invented a certain new and useful Invention relating to accreting landforms in a zipper pattern which increases levee stability, habitat proliferation, and sediment mining and collection. This device is composed of a simple wooden tetrahedron structure anchored with trees and stabilized with tension cables, rope, and organic matter plashings including but not limited to woven willow branches, fallen leaves, and other marine debris. A geo-filter fabric substrate is attached to the bottom half of the structure to collect sediment while native wetland species grow as plashing in the upper half providing substrate for wetland proliferation and capturing sediment inside the tetrahedron structure.

fig 1. LANDFORMING SECTION AT LEVEE

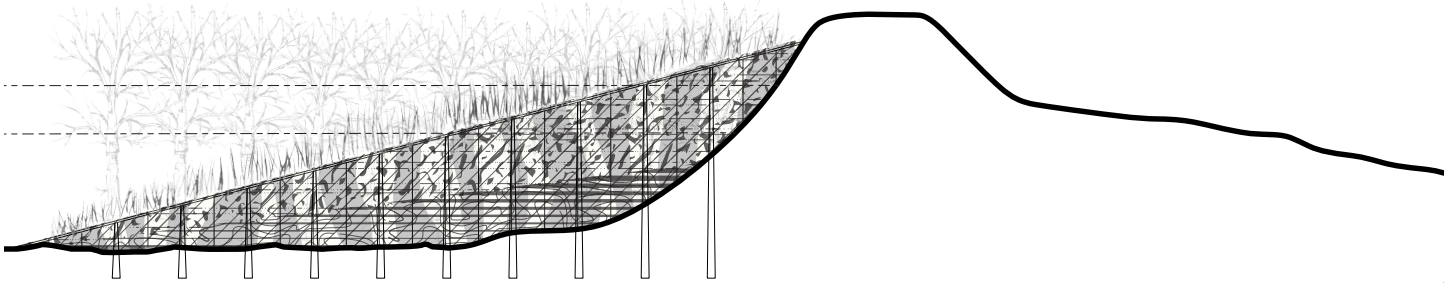
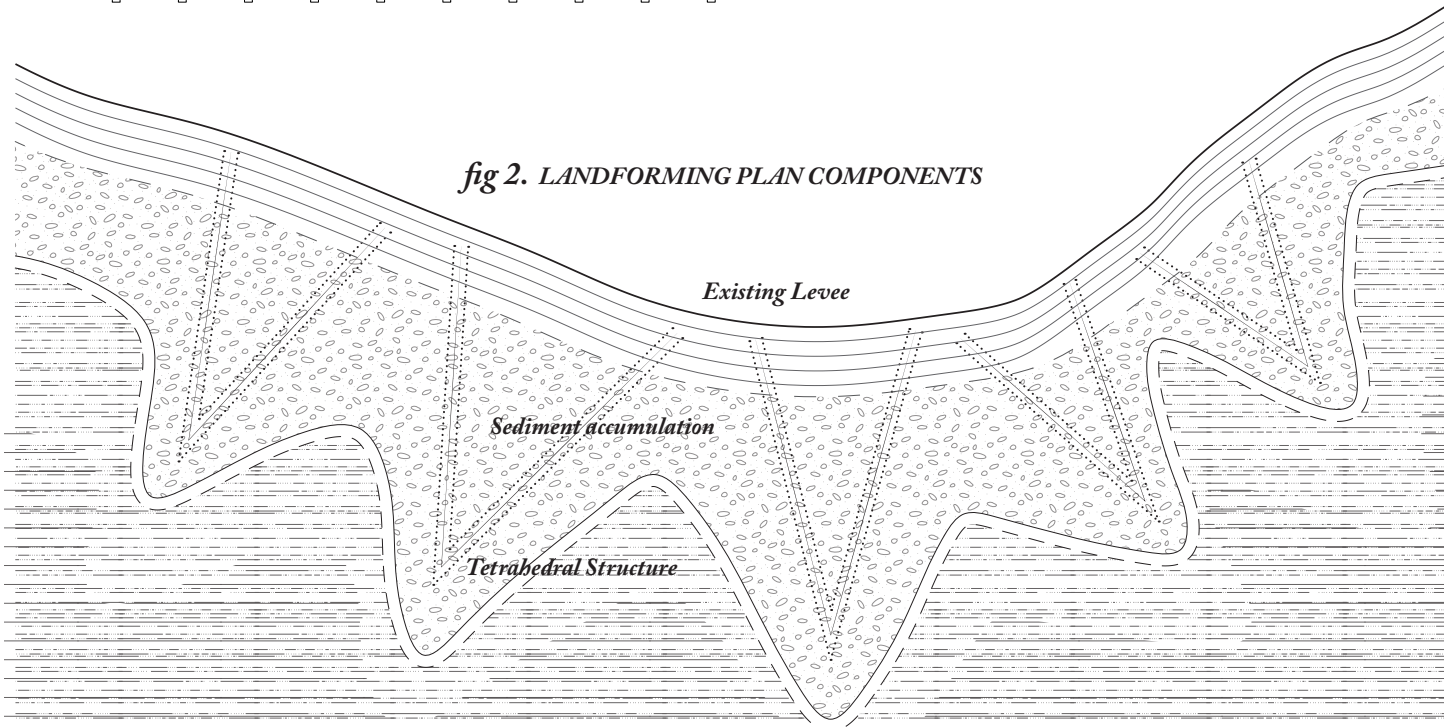


fig 2. LANDFORMING PLAN COMPONENTS





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fig 3. UNIT LAYERING

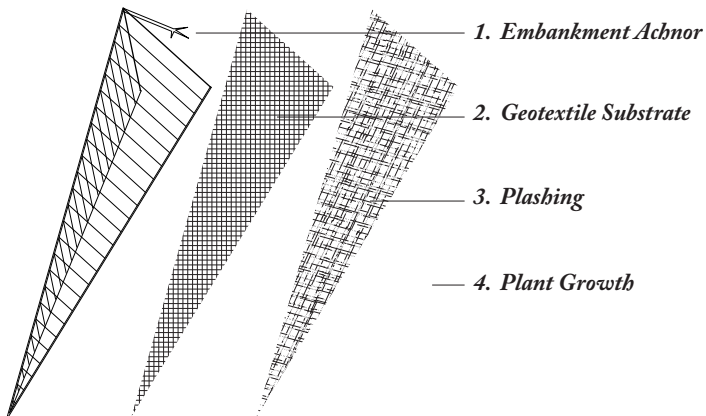


fig 4. MATERIAL CONSTRUCTION

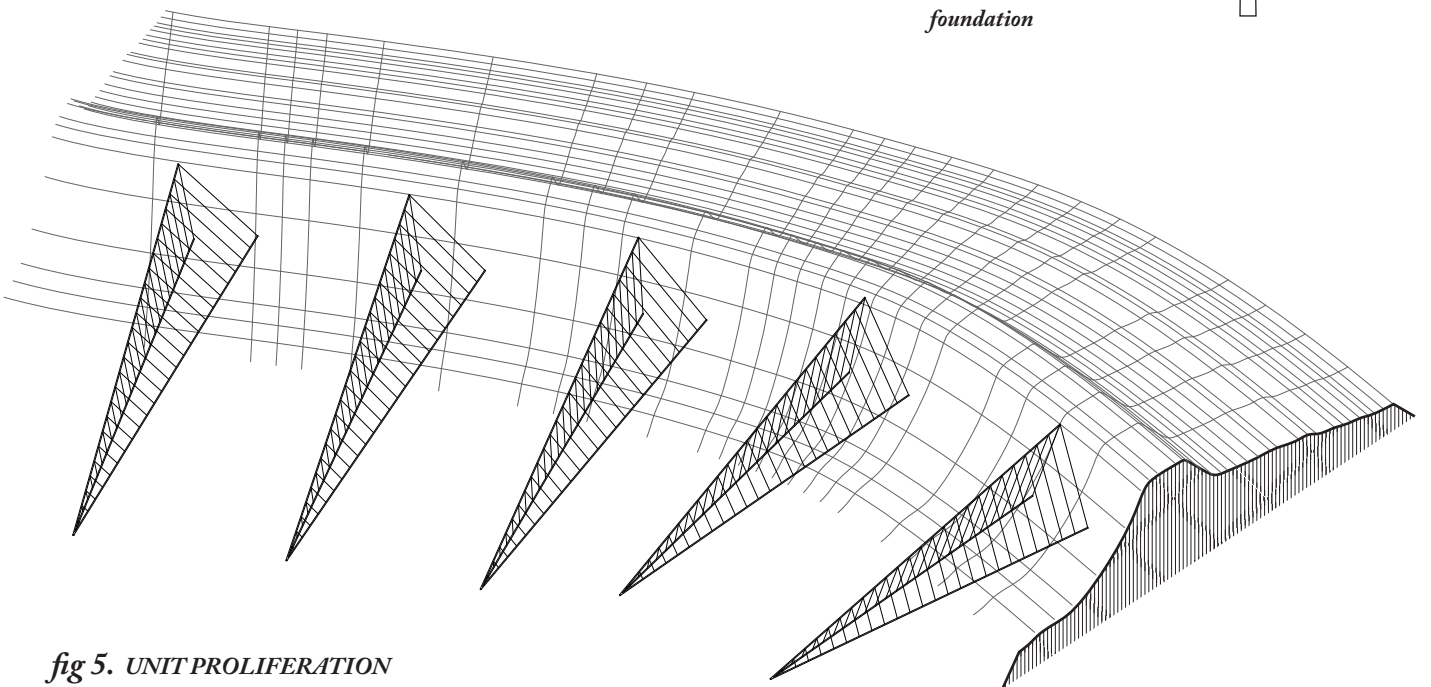
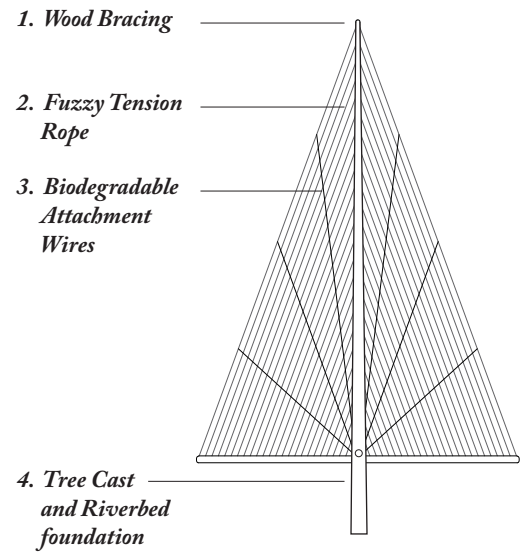


fig 5. UNIT PROLIFERATION



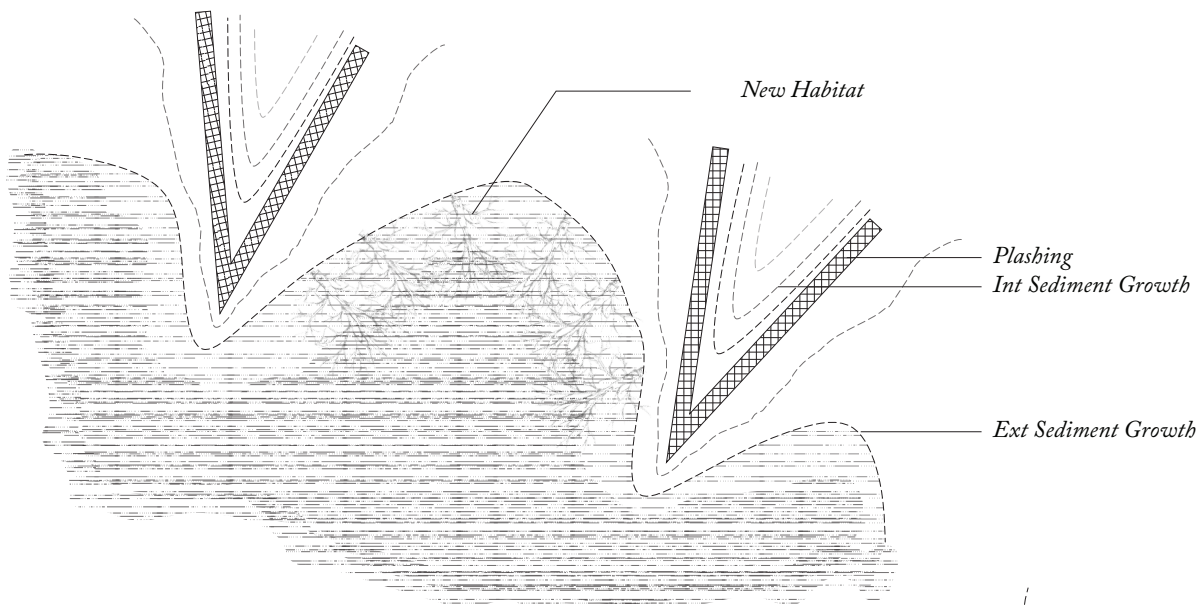
(19) **United States**

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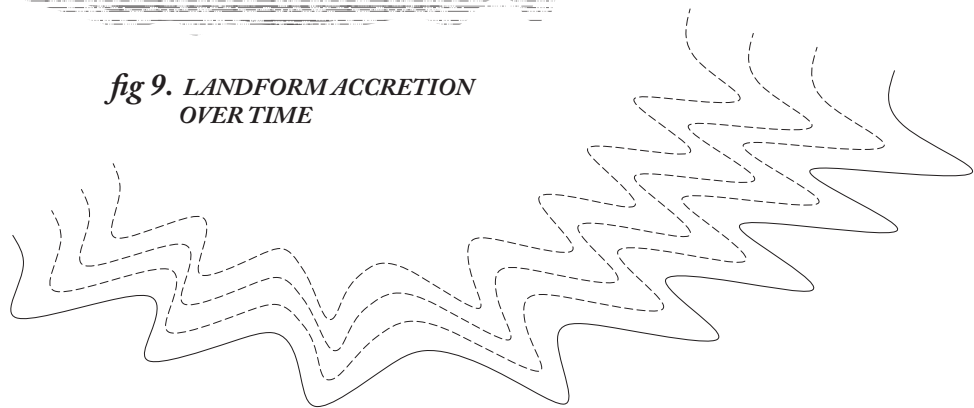
(10) **Pub. No.: US 2016/0185739 A1**

(43) **Pub. Date: June 17, 2016**

fig 8. SEDIMENT ACCUMULATION AND HABITAT FORMATION



*fig 9. LANDFORM ACCRETION
OVERTIME*





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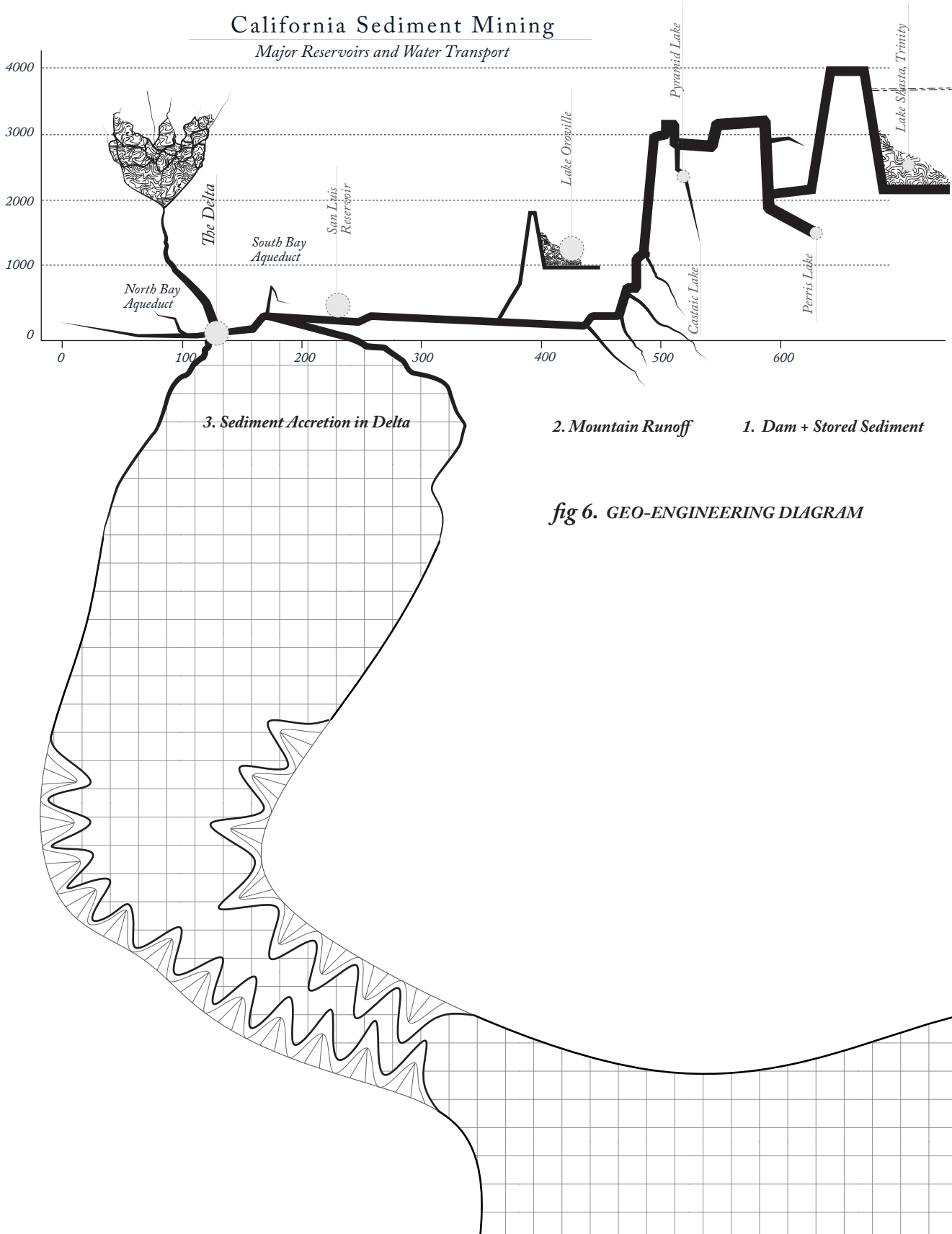


fig 6. GEO-ENGINEERING DIAGRAM



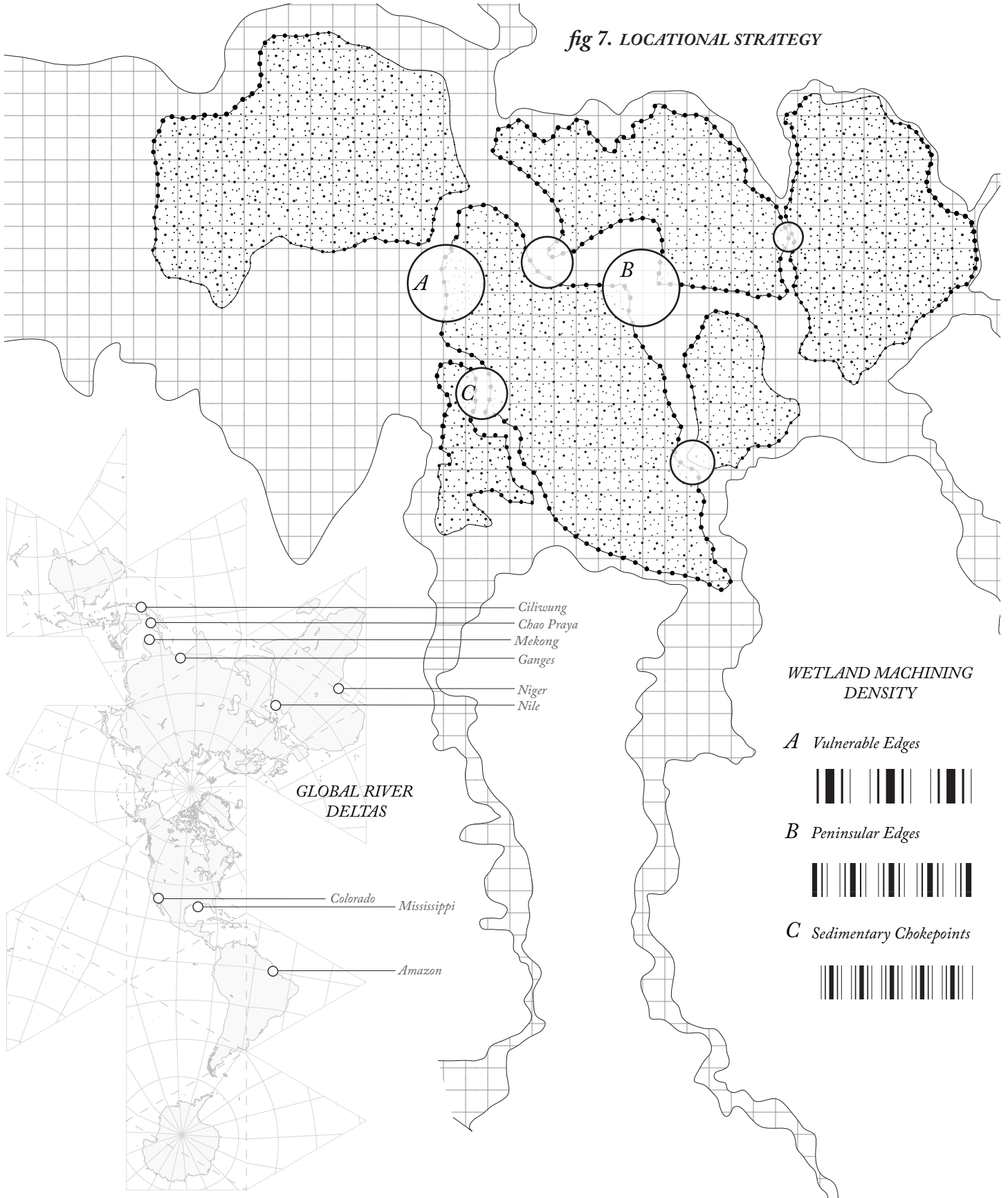
(19) **United States**

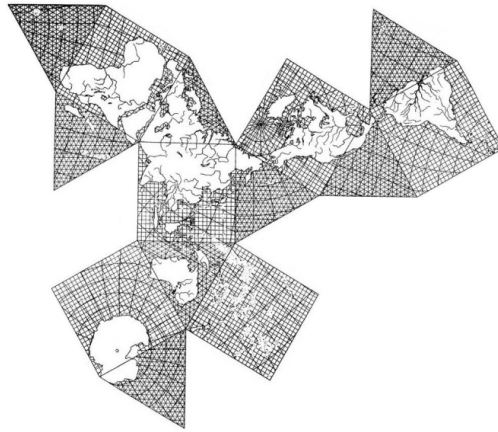
(12) **Patent Application Publication**
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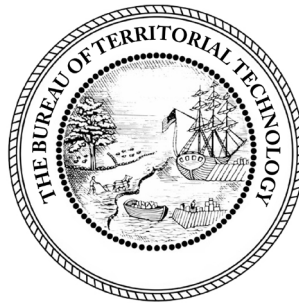
(43) **Pub. Date: June 17, 2016**

fig 7. LOCATIONAL STRATEGY





THE BUREAU
OF
ENVIRONMENTAL &
TERRITORIAL
TECHNOLOGY



Patent Examiners:

Richard Hindle
Neeraj Bhatia

Technologists:

Mario Accordino
Michael Biros
Paul McBride
Alexandra Zahn