No. 776,898. PATENTED DEC. 6, 1904.

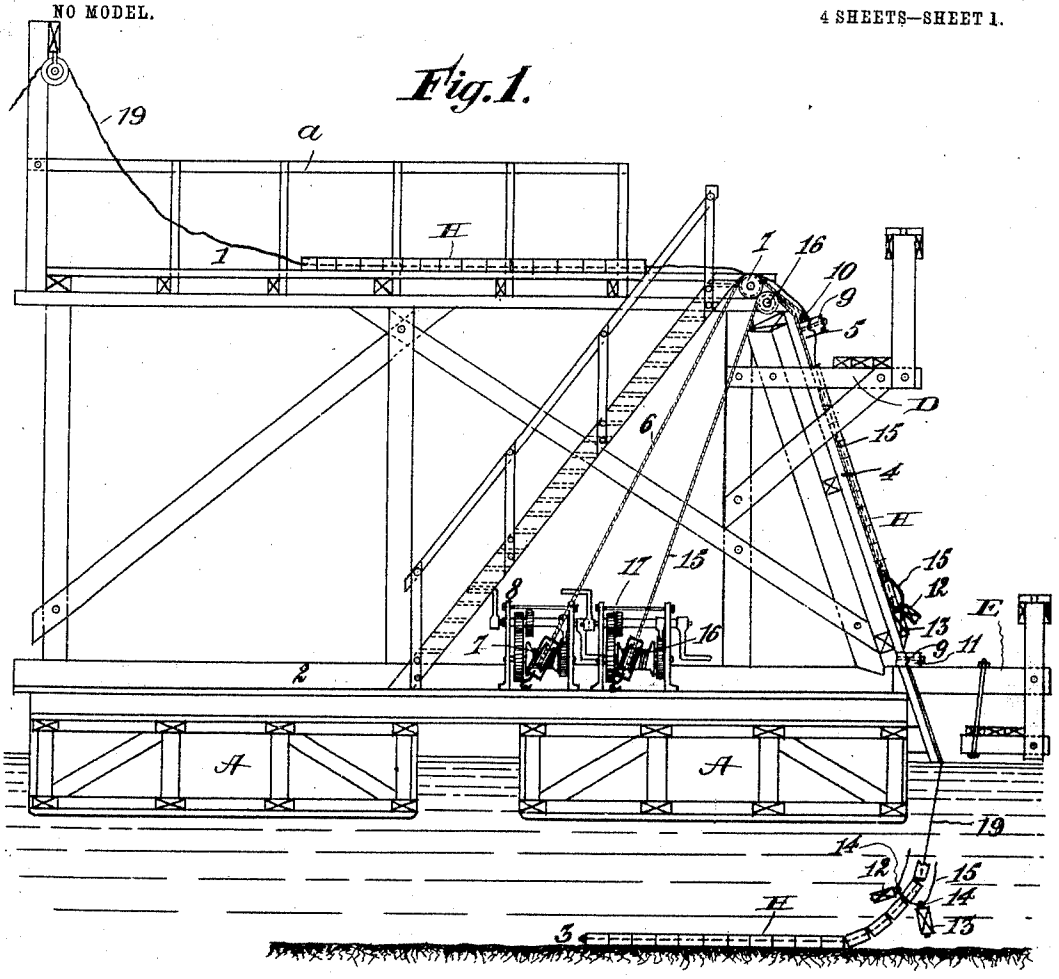
E. FICHEFET.

APPARATUS FOR APPLYING BED AND BANK LININGS UNDER WATER.

APPLICATION FILED FEB. 13, 1904.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



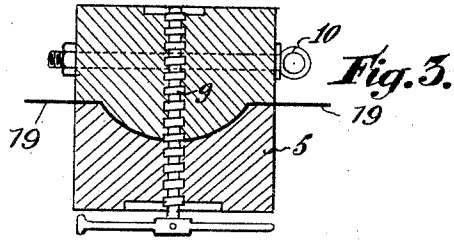


Fig. 3.

Witnesses.
Wm. D. Bell.
Robert J. Pollitt.

Inventor,
Eugene Fichefet,
by Fartnell & Steward,
Attorneys.

No. 776,898. PATENTED DEC. 6, 1904.

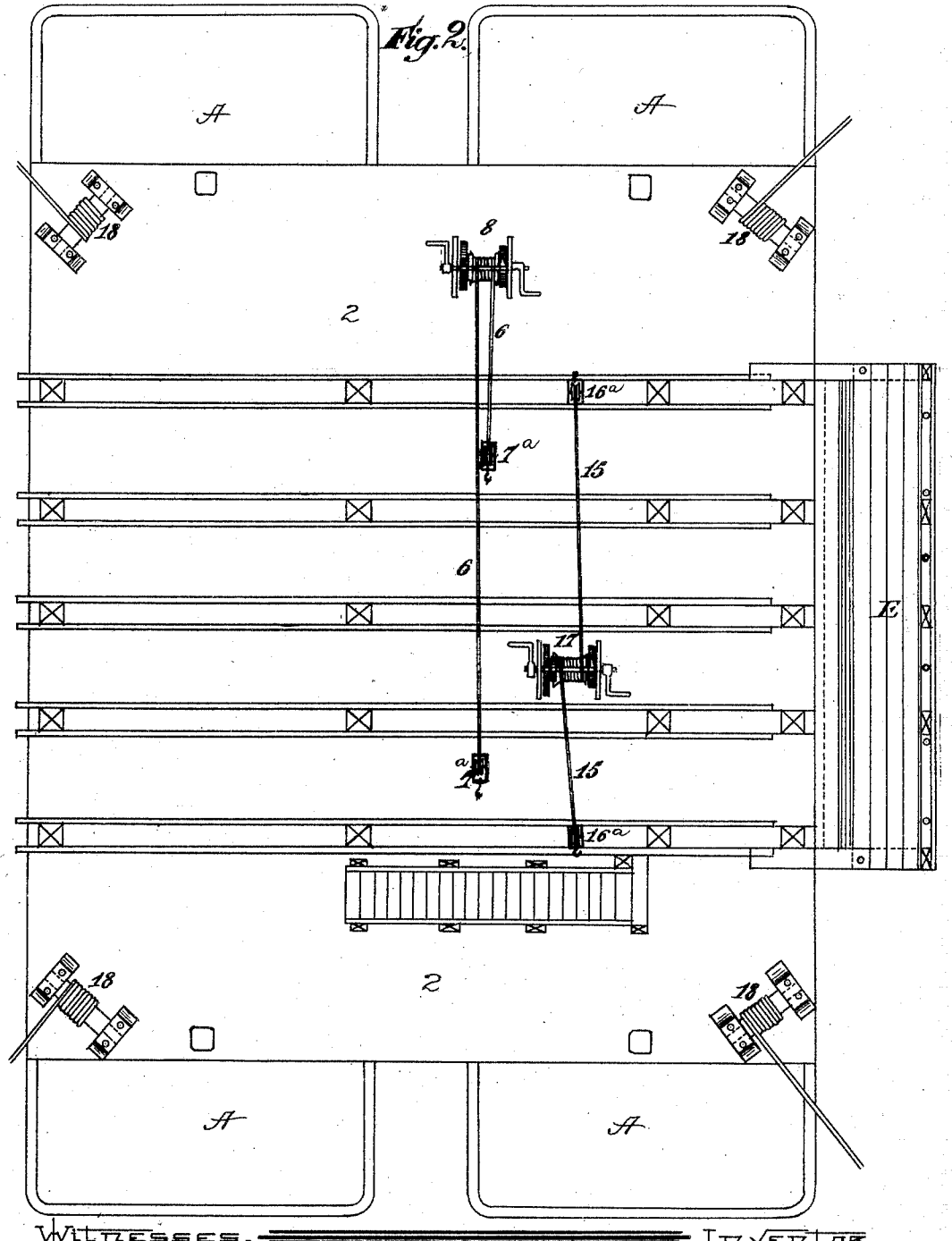
E. FICHEFET.

APPARATUS FOR APPLYING BED AND BANK LININGS UNDER WATER.

APPLICATION FILED FEB. 13, 1904.

NO MODEL. 4 SHEETS—SHEET 2.

Fig. 2.



Witnesses.

Wm. D. Bell.

Robert J. Pollitt.

Inventor,

Eugene Fichefet,

by Baxter & Steward,

Attorneys.

No. 776,898. PATENTED DEC. 6, 1904.

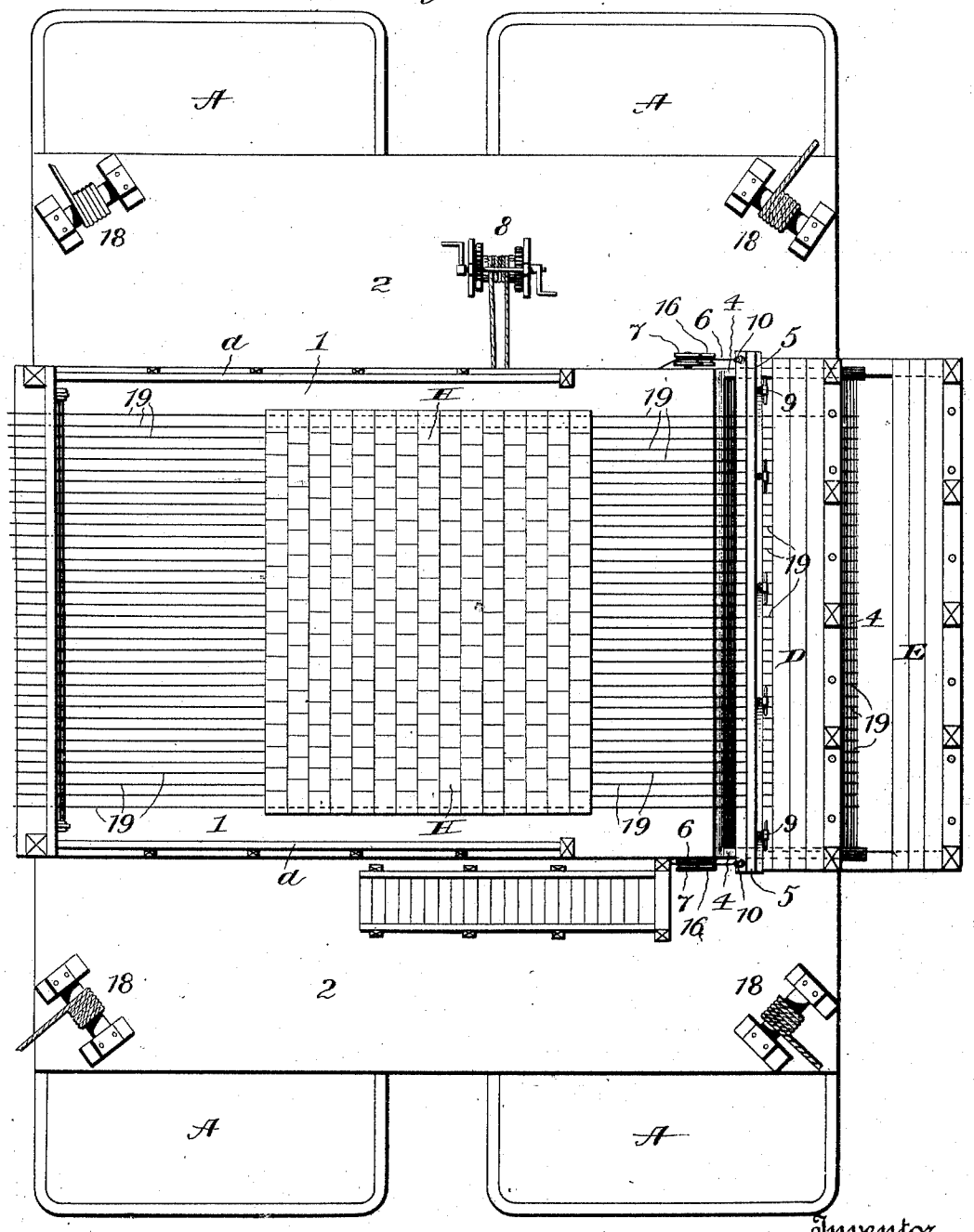
E. FICHEFET.

APPARATUS FOR APPLYING BED AND BANK LININGS UNDER WATER.

APPLICATION FILED FEB. 13, 1904.

NO MODEL. 4 SHEETS—SHEET 3.

Fig. 2a



Witnesses

Jas. E. Hutchinson.

C. F. Burke

Inventor

Eugene Fichefet

By Bakewell Cornwall Attorneys.

No. 776,898. PATENTED DEC. 6, 1904.

E. FICHEFET.

APPARATUS FOR APPLYING BED AND BANK LININGS UNDER WATER.

APPLICATION FILED FEB. 13, 1904.

NO MODEL. 4 SHEETS—SHEET 4.

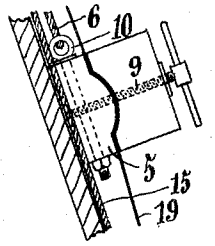
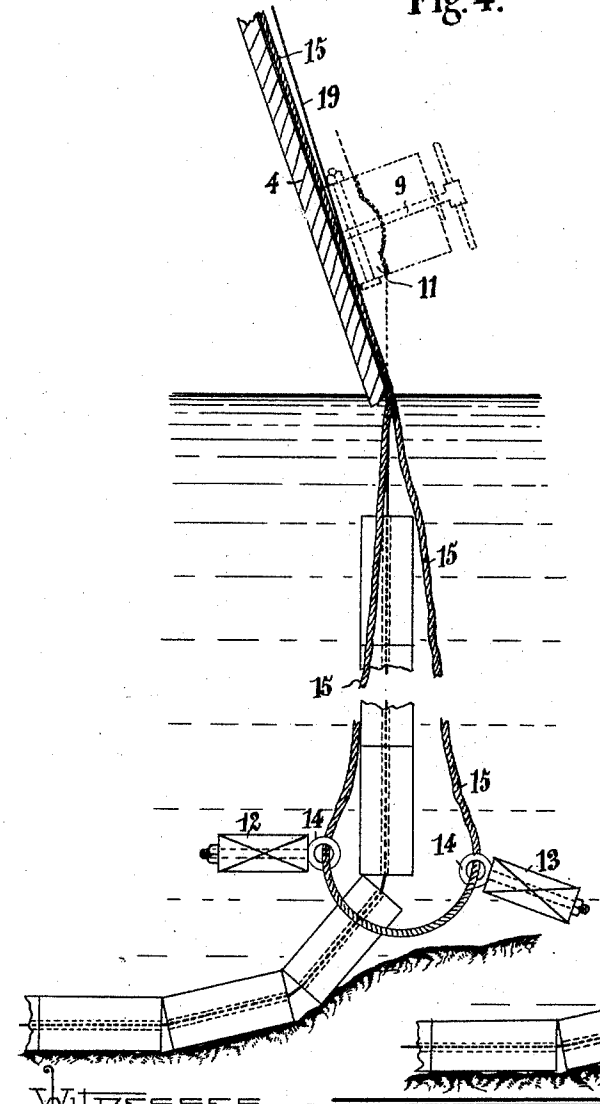


Fig. 4.



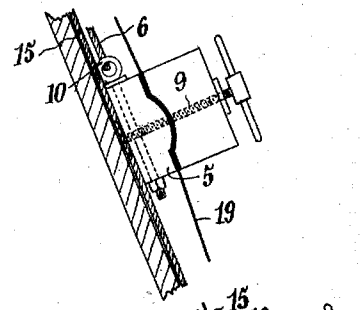
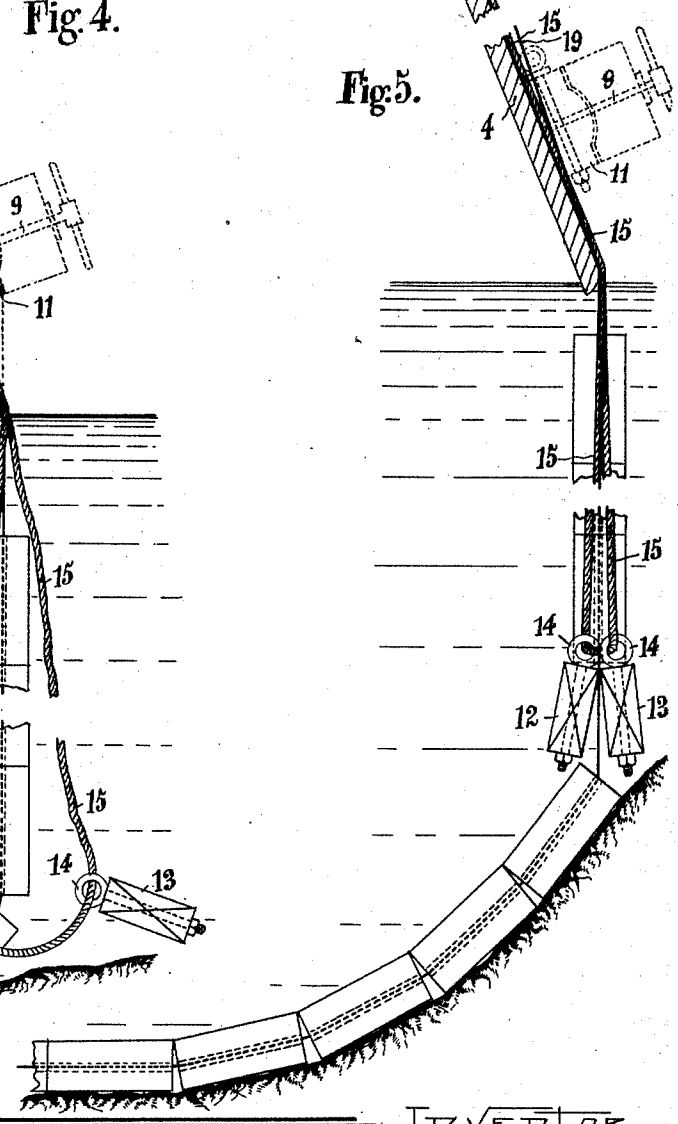


Fig. 5.



Witnesses.

Wm. D. Bell.

Robert J. Pollitt

Inventor,

Eugene Fichefet,

by Carter & Steward,

Attorneys.

No. 776,898. Patented December 6, 1904.

UNITED STATES PATENT OFFICE.

EUGENE FICHEFET, OF BRUSSELS, BELGIUM.

APPARATUS FOR APPLYING BED AND BANK LININGS UNDER WATER.

SPECIFICATION forming part of Letters Patent No. 776,898, dated December 6, 1904.

Application filed February 13, 1904. Serial No. 193,399. (No model.)

To all whom it may concern:

Be it known that I, EUGENE FICHEFET, building engineer, a subject of the King of Belgium, residing at Brussels, Belgium, have invented a new and useful Improvement in Apparatus for Applying Bed and Bank Linings Under Water; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to an improved apparatus for placing linings on the banks or beds of rivers, streams, or other bodies of water.

Heretofore it has been suggested to place a covering of pieces of terra-cotta, cement, or other material on the beds and banks of rivers, &c., which pieces were laced together by wire strands or bars—as, for instance, such as shown in my United States Letters Patent No. 763,171, dated June 21, 1904, and the patent to Villa, No. 554,354, dated February 11, 1896.

My present invention relates to an apparatus for facilitating the placement of such coverings or linings.

In handling large sections of lining which have been laced together manifestly to properly handle and place the same requires considerable skill and effort on the part of the operator. My invention is designed to assist the operator in the placement of the material in its proper location and so without the necessity of direct hand manipulation of the blocks or pieces other than threading them with the wires.

In the accompanying drawings I have chosen to illustrate an embodiment of the invention. It is, however, to be understood that various alterations, changes, and additions can be made without departing from the nature and spirit of the invention.

In the drawings, Figure 1 is a side view of an apparatus. Fig. 2 is a plan view of the lower deck, the upper deck being omitted. Fig. 2ª is a plan view of the upper deck. Fig. 3 is a detail view of the clamping member or bar. Figs. 4 and 5 are enlarged detail sections showing the different positions of the parts of the apparatus while being employed in lowering the sections.

In the form of apparatus illustrated two pontoons or floats A are employed, being decked over by what I shall term the "lower" deck 2. On this deck at opposite corners are positioned suitable winches 18, designed to be attached to any anchorage for maintaining the barge in position. On the deck 2 are arranged a series of uprights B, suitably braced and supporting the upper deck 1, which is conveniently a platform having a suitable railing *a* at its sides. At the forward side of the barge is arranged an inclined chute 4, the same being supported fixedly in place by suitable braces, as shown in Fig. 1. The end of the chute 4 extends down below the lower deck and slightly forward, while the upper end terminates adjacent the upper deck.

D designates a platform projected out and extending across the upper end of the chute 4, while a somewhat similar platform E is located near the lower end of the chute 4. At opposite ends of the chute are arranged sets of pulleys 7 16, the latter being arranged below the plane of the former. Over these pulleys are passed cables 6 and 15, extending from opposite sides of the lower deck upward over the pulleys, their opposite ends passing over suitable pulleys 7ª and 16ª on the lower deck and from thence to suitable winches 8 and 17, mounted on the lower deck. The outer ends of the cables 6 are connected to an elongated clamp 5, which clamp is conveniently divided longitudinally on a curved line, as shown in Fig. 3, and at intervals is provided with set-screws 9, passing through the two members of the clamp. The outer member of the clamp at opposite ends is provided with suitable eyebolts 10, to which the ends of the cables 6 are attached. This clamp 5 extends across the entire face of the chute 4, its purpose being presently described.

Adjacent to the forward end of the lower deck is rigidly secured a clamp 11, in construction similar to that of clamp 5, without, however, the employment of eyebolts. This clamp 11 is so constructed that the outer portion may be readily removed by unscrewing the set-screws 9, and thereby leave a free passage or surface over which the tile passes in the act of lowering.

H designates the covering, which may be of

terra-cotta, cement, or other material having the wires 19 passed therethrough.

On the ends of the cables 15 are formed loops, as shown in Fig. 4, and the looped ends carry suitable buoyant beams 12 13 of a length substantially that of the chute. These buoyant beams are provided with eyebolts 14, through which the looped portion of the cable passes.

In operation the barge remains anchored in position above the section designed to be covered with the protecting-lining. A section of lining is formed on the upper deck by passing the wires through the respective blocks. The section is then moved forward onto the inclined chute, being supported in its descent down the chute by the two buoyant beams 12 and 13. As the beam receives the load the winch 17 is operated to unwind the cable 15 and the wires holding the section of lining in place as the latter is gradually lowered down the inclined chute, the outer member of clamp 11 having been removed. The outermost pieces of tiles are secured on the wires by suitable bars or knots, as 3, Fig. 1, and as the section is lowered into the water from the chute, the weight being supported by the cables 16, they are brought into contact with the earth or bed of the river, and owing to the fact that the two buoyant supporting-bars 12 and 13 are positioned side by side they are forced apart not only by their own bouyancy when relieved of the strain or weight of the section, but by one of them coming in contact with the bottom of the river. They immediately arise by their own buoyancy, and the section is gradually lowered to its resting-place by means of the winch 8. To enable this latter to act, however, the wires above the section are first clamped by the clamp 5 and are then uniformly lowered into position. After the first section of lining is properly deposited the wires are clamped in the lower clamp 11, and the upper clamp 5 is loosened and drawn up to its proper position. Another section is laid out and strung and then is lowered in a manner similar to the first, the ends of the buoyant bars releasing themselves by being spread apart by engaging the uppermost members of tile of the first deposited section, which latter has been held slightly elevated, as shown in Fig. 1. The operation of releasing one clamp and setting the other is then repeated, and the second section of lining is placed in position, the barge as a whole being slightly moved forward by means of the winches 18. By this means the lining is easily formed in convenient location and readily disposed with great dispatch along the bottom of rivers or other bodies of water designed to be protected.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. An apparatus for placing linings upon the beds and banks of rivers, &c., in combination with a floating frame, a chute for a section of lining, means for lowering the lining down the chute, and a clamp for retaining the connecting-strands of the lining in position, substantially as described.

2. In an apparatus for protecting the bottoms or banks of rivers, &c., the combination with a float, of a chute on the float, means for lowering a section of lining down the chute, a clamp for the lining-strands, and detachable means for lowering the lining.

3. In an apparatus of the character described, the combination with a framework, of an inclined chute, means for lowering a section of lining down the chute to the place of deposit and a retaining-clamp.

4. In an apparatus of the character described, the combination with a float, of an upper deck and a lower deck, an inclined way extending from the upper deck, means for lowering a section of lining from the upper deck down the inclined way and a retaining-clamp.

5. In an apparatus of the character described, the combination with a float, of an upper deck, means for lowering a section of lining from the upper deck into the water below the float and a retaining-clamp.

6. In an apparatus of the character described, the combination with an upper and lower deck, of a chute, a fixed clamp and a movable clamp, and means for lowering a lining-section down the chute, substantially as described.

7. In an apparatus of the character described, the combination with an elevated platform, an inclined way, buoyant supports for a section of lining, and means for lowering the supports and section of lining down the inclined way.

8. In an apparatus of the character described, the combination with a float having an upper and lower deck, of means for supporting and lowering a section of lining from the float comprising a winding means and a buoyant supporting means.

9. In an apparatus of the character described, the combination with a float, of means for lowering a section of lining into the water from the float comprising winding means and two independent supporting-beams arranged side by side and flexibly connected with the winding means.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EUGENE FICHEFET.

Witnesses:
JOSEPH MARKL,
GREGORY PHELAN.