

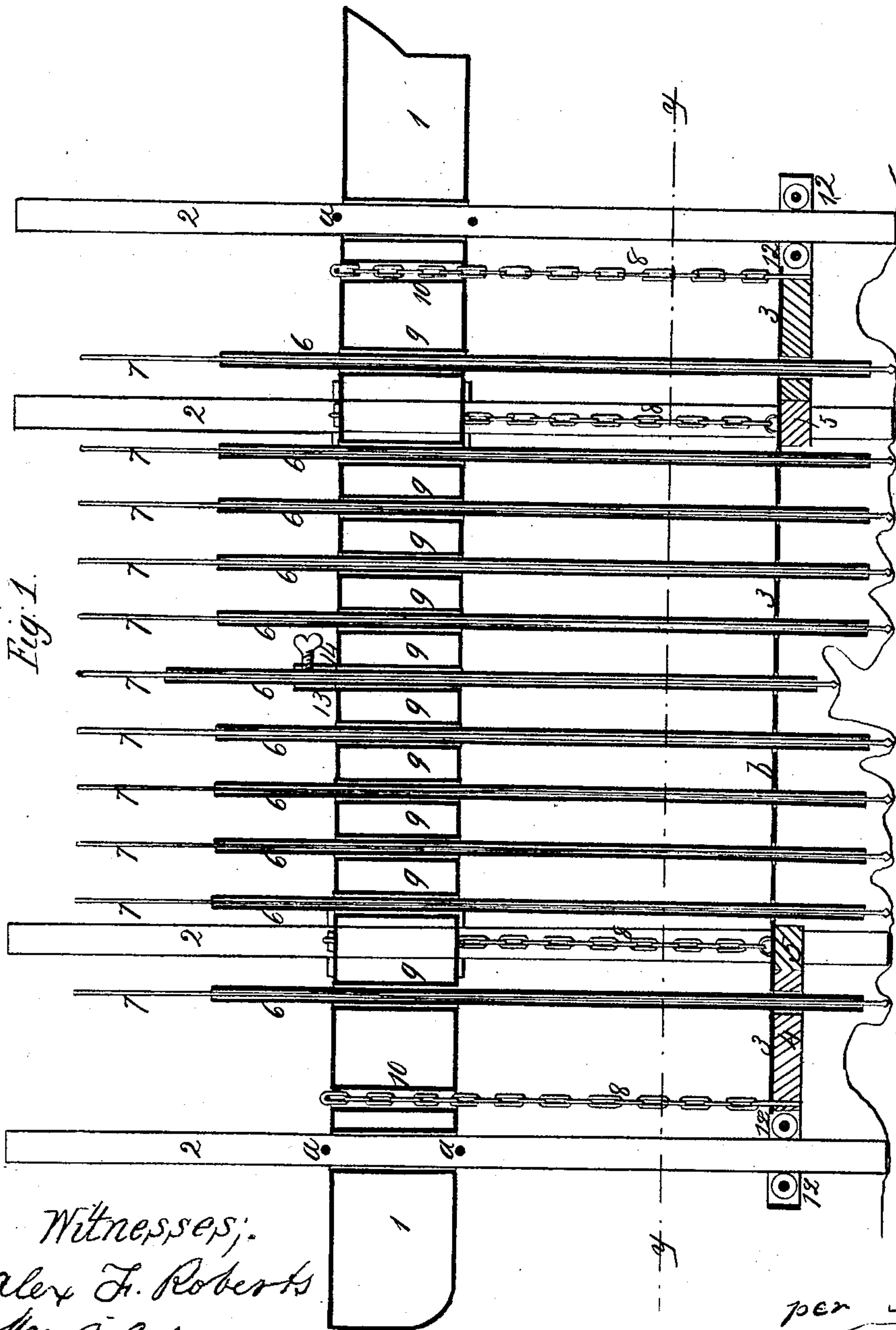
Sheet 1-2, Sheets.

S. Lewis.

Drilling App's.

N^o 85,597.

Patented Jan. 5, 1869.



Witnesses;
alex F. Roberts
Wm A Morgan

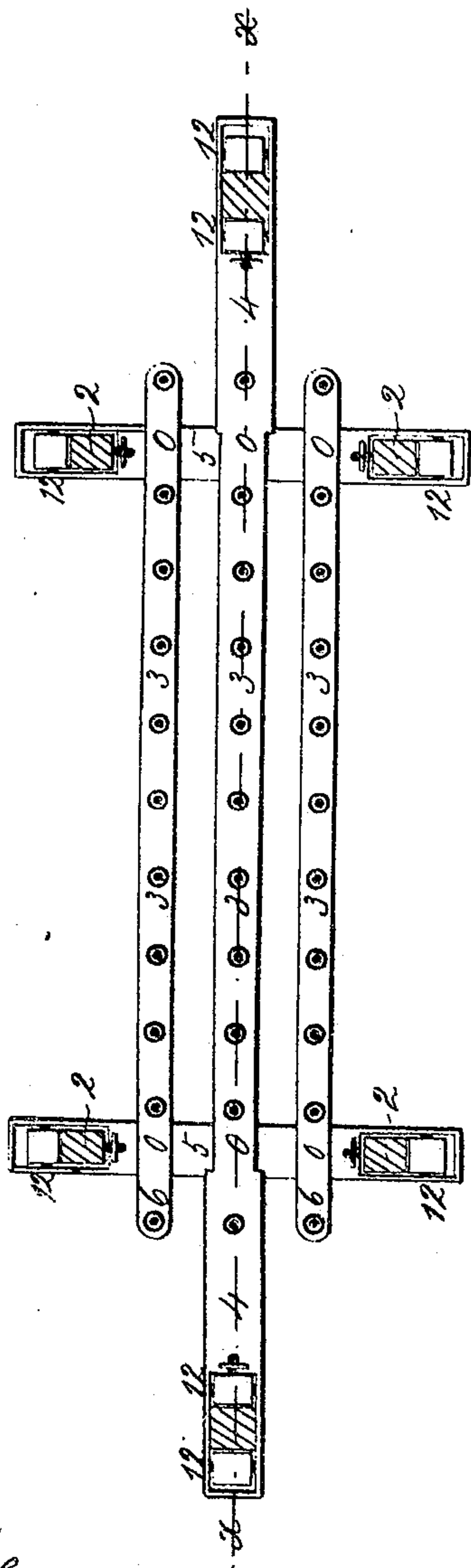
Inventor;
S. Lewis.

per Mumford & Co
Attorneys

Sheet 2-2, Sheets.

N^o 85,597.

Patented Jan. 5, 1869.



Witnesses;
Alex F. Roberts
Wm Morgan

Inventor,
S. Lewis.

Munroe & Co.
Attorneys.

United States Patent Office.

SAMUEL LEWIS, OF BROOKLYN, E. D., NEW YORK.

Letters Patent No. 85,597, dated January 5, 1869.

IMPROVED SUBAQUEOUS DRILLING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SAMUEL LEWIS, of Brooklyn, E. D., in the county of Kings, and State of New York, have invented a new and useful Improved Subaqueous Drilling-Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention consists in apparatus designed to simplify the operation of drilling rock under water, as described in my present patent, whereby the "telescopic still-water dam" is dispensed with, as will hereinafter be more fully described.

In the accompanying plate of drawings—

Figure 1 represents a vertical longitudinal section of the apparatus, taken on the line *x x* of fig. 2, showing the boat, float, raft, or staging on which the actuating-power or mechanism is placed; also the drills, tubes, spuds, or vertical anchors, chains, guide-plates, friction-rollers, &c.

Figure 2 is a plan or face view of the movable guide-rack, as seen from the red line *y y* of fig. 1, showing the three guide-plates, and the cross-pieces forming the rack, and connecting the lower ends of the spuds or anchors, the friction-rollers on each side of each spud, and the apparatus for the drill-tubes, &c.

Similar letters of reference indicate corresponding parts.

I have already received Letters Patent of the United States for a "portable and adjustable still-water dam," issued on the 28th day of July, 1868, and having continued my experiments upon subaqueous drilling and blasting-apparatus, have come to the conclusion that, for some situations at least, an apparatus far less costly than the subject of said patent, can be constructed, without detriment to the efficiency of the mechanism.

For instance, the telescopic dam described in said patent was designed mainly for the convenience of the diver, enabling him to descend and insert the charges, in all states of the tide. But considering that not only a row of drills may be substituted for one, but that a number of rows of drills may be used instead of a single row, the present applicant has concluded that the multiplied rows more than compensated for the absence of the telescopic dam, since, in the place of going down at any state of the tide to insert one row of charges, the diver can descend at slack-water, and insert a largely-increased number; and all without the costly and comparatively difficult to operate dam described in the patent aforesaid, the tubes in the devices herewith submitted, serving the purpose of the dam, so far as the protection of the drills from the force of the current is concerned; the object of the whole apparatus as now presented, being the performance of the work contemplated, by greatly simplified means, as compared with the mechanism patented as aforesaid.

In fig. 1, 1 is the boat, float, raft, or staging, through

which the spuds, or vertical anchors, marked 2, pass, as shown, without sealing, the latter being shown in an application now before the office.

The figures 9 represent outer tubes, which enclose the drill-tubes, and pass from the bottom to the deck of the boat or raft, being so attached at their lower ends, as to prevent the ingress of water in the case of using a boat or other hollow structure.

10 10 are passages through the boat, for the chains 8 8, and are sealed against the water in a similar manner.

2 represents the spuds, or vertical anchors, on which the staging, or raft, or boat is brought to bear by mechanism, an application for a patent on which is now before the office; the pins marked *a*, being merely to hold the apparatus in position for handling.

The chains marked 8 are the means by which the guide-plates 3, or guide-rack, are elevated or lowered by windlasses on deck.

The marks 6 indicate the drill-tubes, which play freely in the outer tubes 9 9, through the raft or boat 1, and in corresponding apertures in the guide-plates 3 below.

The figures 7 indicate the drills, which play freely in the tubes, and are connected with the power by means not necessary to be shown here.

13 is a representation of the means of keeping the tubes suspended, when they are raised for the purpose of removal, or any other, by the set-screw 14 working into the collar 13, as shown, it being understood that each of the drill-tubes is to be thus provided.

The longitudinal plates, marked 3 3 3, (fig. 2,) are for the purpose of guiding or retaining in position the lower ends of the drill-tubes 6. They are perforated and attached to the cross-pieces 5 5, as shown; the said cross-pieces and the central longitudinal guide-plate 3, having friction-rollers 12 12 and chains 8 8 attached, for the purpose of operating the rack, composed of the guide-plates 3 and the cross-pieces 5, with the greatest possible ease.

The operation of the mechanism will be as follows:

The raft or boat 1 is towed or self-propelled to the place of operation; the spuds, or vertical anchors 2, are allowed to slide downward until they touch the bottom; then, by the mechanism aforesaid, described in my pending application, the raft or boat is raised on the spuds and secured in the desired position. The tubes 6 are next set free by a turn on the set-screw 14, until they rest respectively on the rock, and the drill in each tube is allowed to sink to the same depth. The guide-rack 3 5 is then lowered to a close proximity to the face of the rock, and then the drills are ready for attachment to the power, and to commence work.

When it is desired to remove either for the purpose of discharging a blast, or a change of location, the chains 8 are shortened by the windlasses, and the guide-plates or rack raised to the bottom of the boat or raft, after which the tubes are raised and secured, as before de-

scribed; the drills being secured in a like raised position by means not necessary to specify.

When the drilling is completed, ready for the insertion of the charges, said charges are inserted, either by a diver descending for the purpose, or by inserting the cartridges through the tubes from the deck, after withdrawing the drills for that purpose.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The guide-rack, consisting of the longitudinal plates 3 3 3, the cross-pieces 5 5, connecting and embracing the lower ends of the vertical anchors 2, and the friction-rollers in the end of each, constructed, connected, and operating substantially in the manner and for the purposes specified.

2. The tubes 6 as guides for the drills, and a protection against the pressure of the current, when combined with the guide-rack, claimed above, composed of the plates 3 and 5.

3. The sleeve 13 and set-screw 14, in combination with the rack and drill-tubes, as described, and for the purpose specified, all constructed, combined, and operated substantially as set forth.

The above specification of my invention signed by me, this 15th day of October, 1868.

SAMUEL LEWIS.

Witnesses:

FRANK BLOCKLEY,
E. GREENE COLLINS.