(No Model.) 2 Sheets—Sheet 1.

A. K. STONE.

DREDGER.

No. 371,801. Patented Oct. 18, 1887.

FIG. 1.

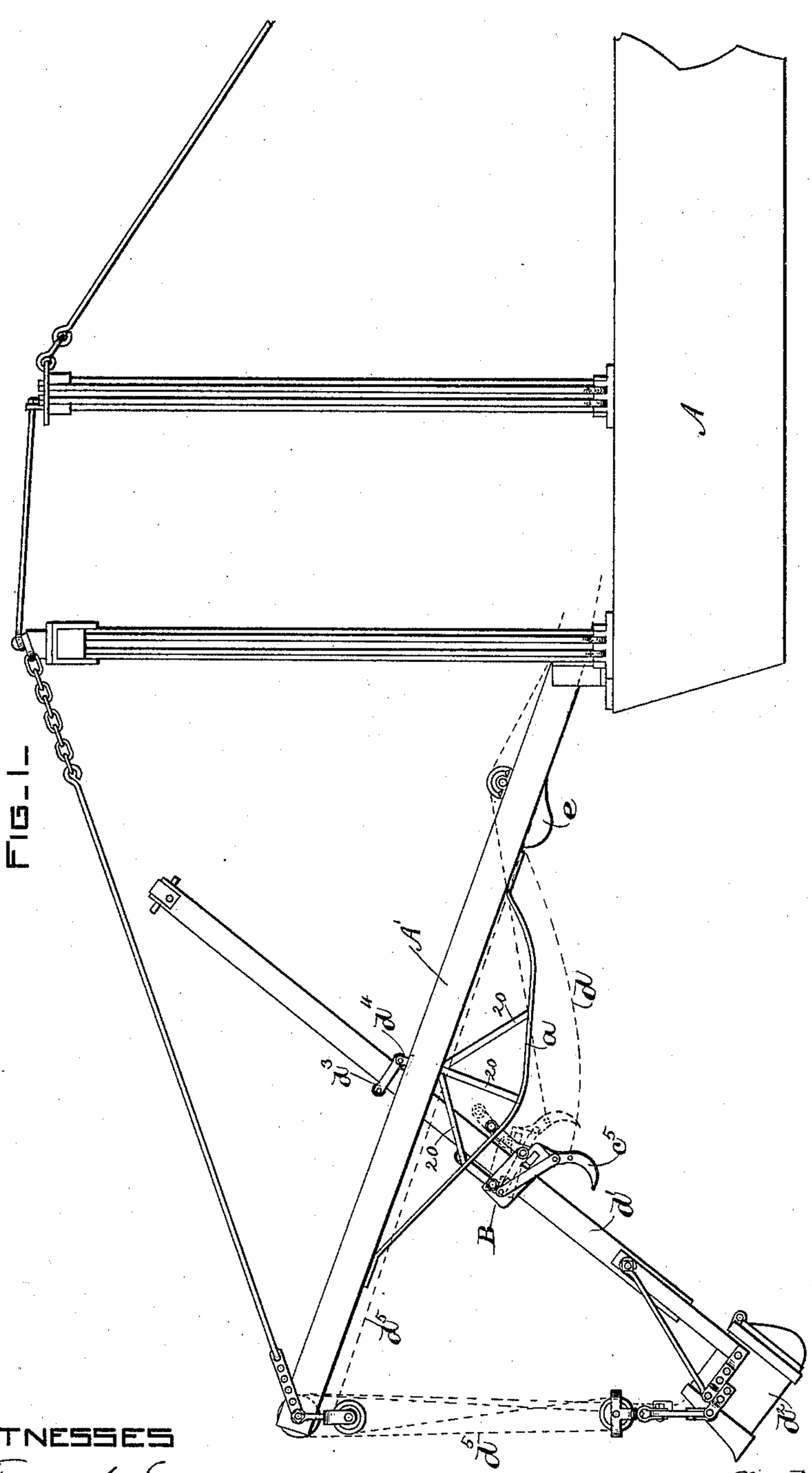
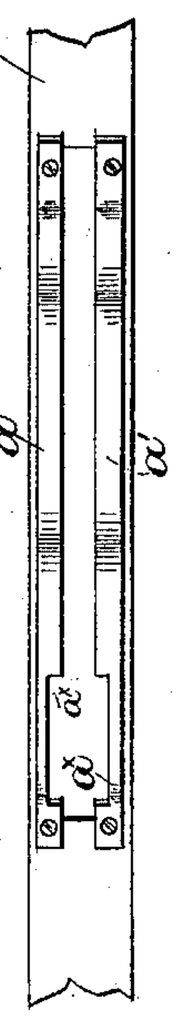


FIG. 2.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

A. K. STONE.

DREDGER.

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FIG. 3.

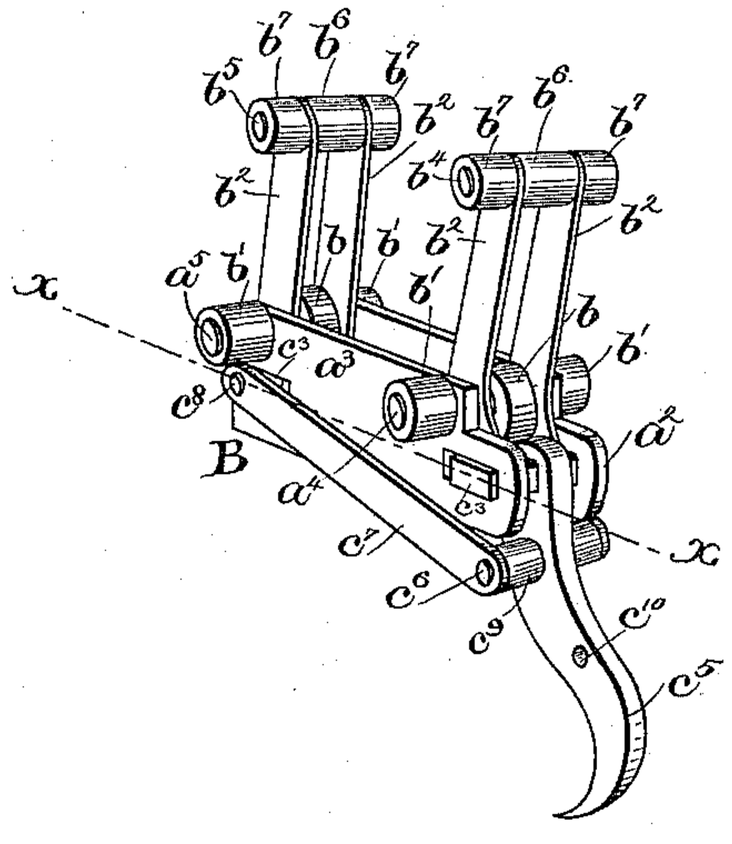
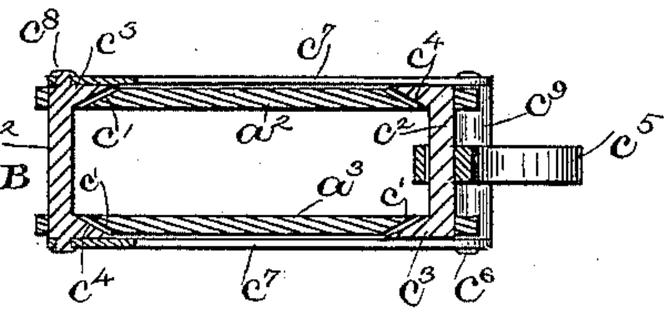


FIG. 4.



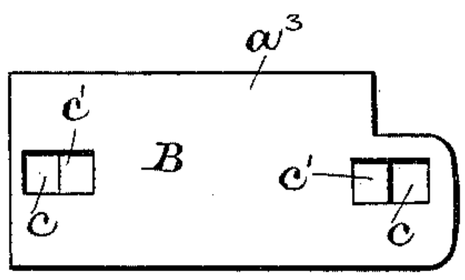


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

ANDREW K. STONE, OF BOSTON, MASSACHUSETTS.

DREDGER.

SPECIFICATION forming part of Letters Patent No. 371,801, dated October 18, 1887.

Application filed April 2, 1887. Serial No. 233,384. (No model.)

To all whom it may concern:

Be it known that I, ANDREW K. STONE, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Dredgers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to dredging-machines, and is an improvement upon the machine shown and described in my application, Serial No. 204,851, filed June 11, 1886, and has for its object to improve and simplify the construction of the same.

In the application referred to the dipper or bucket handle is automatically clamped by a mechanism supported upon the boom and operated by the lifting-chains.

In accordance with this invention I support below the boom a track or tramway upon which a carriage is adapted to ride, the said carriage constituting a guide through which the dipper-handle is extended, the sides of the said carriage forming clamps by which the dipper-handle may be held in any desired position, the said clamping sides of the carriage being operated by the backing-chain.

My invention therefore consists, essentially, of a dredging-machine, a swing boom or frame, a track or tramway attached thereto, and a bucket and its attached handle, combined with a clamping mechanism adapted to be moved over the said track or tramway, and with means to operate the said clamping mechanism, substantially as will be described.

Figure 1, in side elevation, shows a sufficient portion of a dredging-machine with my improvements added to enable my invention to be understood; Fig. 2, an under side view of a portion of the boom, showing the tramway attached thereto; Fig. 3, a perspective of the carriage detached; Fig. 4, a section of Fig. 3 on line x x, and Fig. 5 a side elevation of one of the sides of the carriage detached.

The boat A, the boom A′, and the framework supporting the said boom are substantially such as shown in the application referred to, and not herein claimed. The boom A′ has attached to its under side two rails, a a', constituting a track or tramway upon which a clamping-carriage, B, is adapted to ride, the said rails near the forward end of the said boom being preferably cut away or slotted, as at $a^{\times}$, (see Fig. 2,) the said track or tramway being strengthened by the braces or girders 20.

The clamping-carriage B, as herein shown, consists, essentially, of two sides, a^2 a^3, joined at their opposite ends by shafts a^4 a^5, the said shafts being extended through the said sides. Each shaft a^4 a^5 has loosely mounted upon it between the sides a^2 a^3 a roller, b, and on each end of the said shafts beyond each side a^4 a^5 is a wheel, b'. Each shaft a^4 a^5 has loosely connected to it one end of links or bars b^2, there being a link or bar on each side of the roller b between it and the sides a^3 a^4.

The links or bars b^2 on the shafts a^4 a^5 are connected, respectively, by shafts b^4 b^5, provided between the said links or bars with a collar, b^6, and with wheels b^7 on the ends of the said shafts outside the said links or bars, the clamping-carriage B being supported upon the tramway by the wheels b^7 when the sides a^2 a^3 are loose upon the dipper-handle, as shown in Fig. 1 by full lines. Each side a^2 a^3, at its front and rear, is provided with a slot, c, the rear wall of each slot being substantially straight, while its front wall is inclined, as at c'. (See Figs. 1 and 5.)

The sides a^2 a^3 are given a motion toward and from each other by means of a cam mechanism, (herein shown as a bar, c^2,) provided at its ends with a substantially right-angled extension or arm, c^3, the said arms being fitted into the slots c, and being beveled on their inner side, as at c^4, to co-operate with the inclined ends c' of the said slots.

The bar c^2 at the rear end of the clamping-carriage is loosely embraced between the sides a^2 a^3 by a lever, c^5, pivoted upon a stud, c^6, joined at each end by a connecting-rod, c^7, with a stud, c^8, on the arms c^3 of the bar c^2 at the front end of the carriage. (See Figs. 3 and 4.) A roller, c^9, is herein shown interposed between the lever c^5 and the connecting-rods c^7.

The lever c^5, as shown, has a hole, c^{10}, through which the backing-chain d is inserted to fasten the said lever thereto.

The dipper-handle d', provided with the dipper or bucket d^2, which latter may be substantially such as shown in my application referred to, is inserted through the clamping-carriage B, between the sides a^2 a^3 and the

shafts a^4 a^5, the said dipper-handle, as herein shown, being extended through a square collar, d^3, pivoted at d^4 to an upright on the boom A′, the said collar assisting to guide the said dipper-handle.

The bucket d^2 may be elevated by the lifting-chains d^5, attached to the said bucket in any suitable manner and connected to a winding-drum. (Not shown.)

As shown in Fig. 1, the bucket is being elevated, the rollers b^7 of the clamping-carriage B at such time riding on the tramway, the sides a^2 a^3 being in their normal position shown in Figs. 3 and 4, permitting the handle d' to pass up. Having discharged its load, the bucket is drawn back near the boat by the backing-chain, the latter being wound upon its drum. (Not shown.) As the backing-chain is wound upon its drum, the lever c^5 is turned on its pivot c^6, the short arm of the said lever pushing the bar c^2 forward, causing the inclined sides c^3 of the arm c^2 at the rear end of the sides a^2 a^3 to travel up the incline c', and the pivot c^6, moving backward, draws with it the rods c^7 and the arms c^3, connected therewith, causing the said arms to travel toward the arms c^3 at the rear end of the sides a^2 a^3. It will thus be seen, as the inclined sides c^4 of the arms c^3 travel up the inclined ends c' of the slots c, that the sides a^2 a^3 are forced toward each other, the said sides thus clamping the dipper-handle securely and preventing its further downward movement until the tension upon the backing-chain is released.

As the clamping-carriage B is drawn back, it will occupy substantially the position shown by dotted lines in Fig. 1, the wheels b^4 being elevated from the tramway. In the backward movement of the clamping-carriage B the sides a^2 a^3 continue to clamp the dipper-handle until the tension upon the backing-chain is released, which may be done by slacking the said chain by stopping rotation of the drum upon which it is wound, or, as shown in Fig. 1, by means of the projection e on the under side of the boom, against which the lever c^5 strikes, the short arm of the said lever moving backward and the long arm moving forward, thereby releasing the bind of the sides a^2 a^3 upon the dipper-handle, permitting the latter to descend to the bottom.

The slots $a^\times$ in the rails comprising the track or tramway permit the clamping-carriage to be readily removed in case it is desired to repair the same.

I claim—

1. In a dredging-machine, a swing boom or frame, a track or tramway attached thereto, and a bucket and its attached handle, combined with a clamping mechanism adapted to be moved over the said track or tramway, and with means to operate the said clamping mechanism, substantially as described.

2. In a dredging-machine, a swing boom or frame, a track or tramway attached thereto, and a bucket and its attached handle, combined with a clamping-carriage adapted to ride upon the said track or tramway, and through which the dipper-handle is extended, and with means to operate the clamping-carriage, substantially as described.

3. In a dredging-machine, a swing boom or frame, a track or tramway attached thereto and provided with slots at one end, and a bucket and its attached handle, combined with a clamping-carriage adapted to ride upon the said track or tramway, and through which the dipper-handle is extended, and with means to operate the clamping-carriage, substantially as described.

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

ANDREW K. STONE.

Witnesses:
G. W. GREGORY,
JAS. H. CHURCHILL.