

W. VAN DUSEN.

MODES OF, AND APPARATUS FOR, UNLOADING VESSELS.

No. 185,596.

Patented Dec. 19, 1876.

Fig. 4.

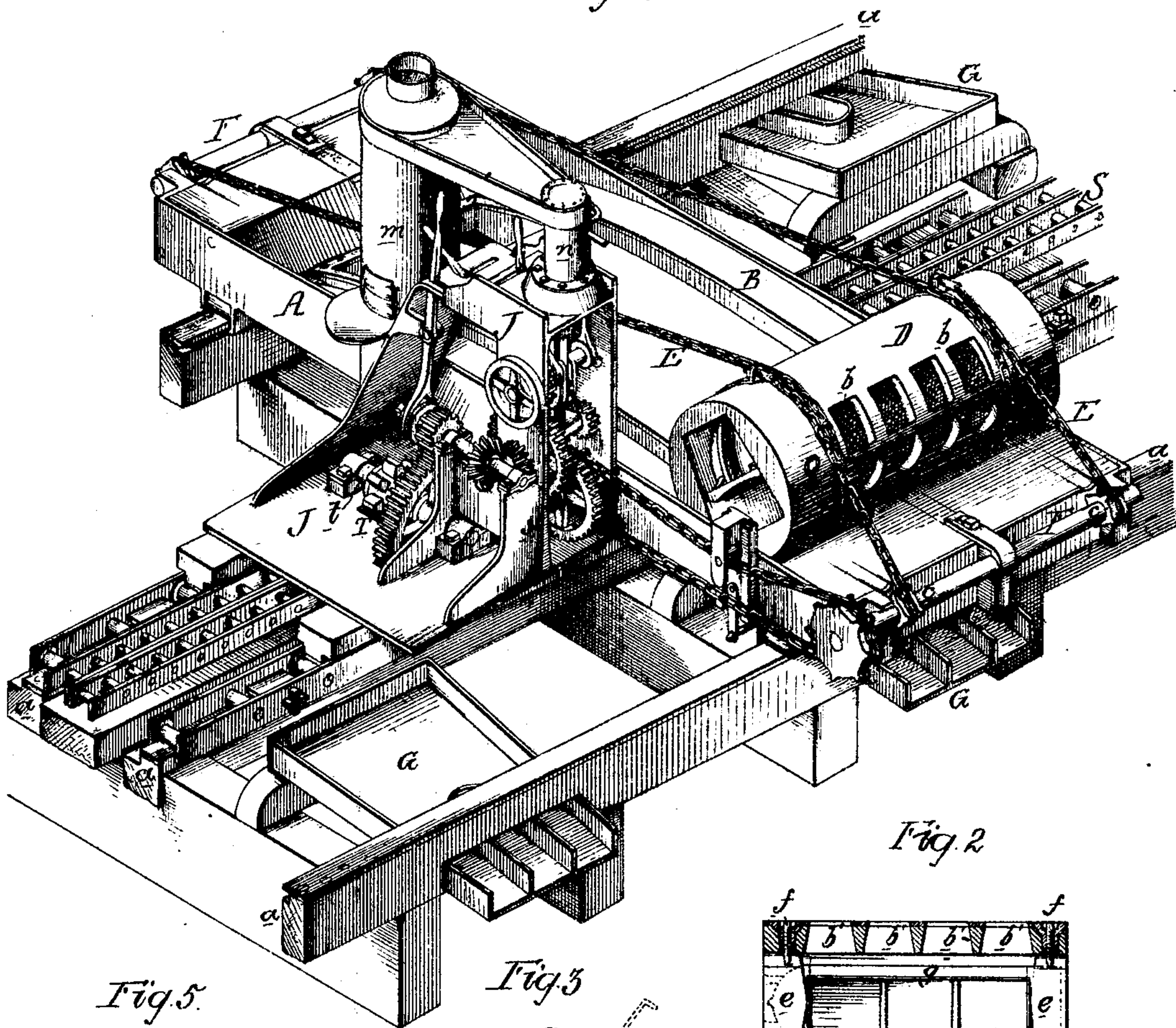


Fig. 2.

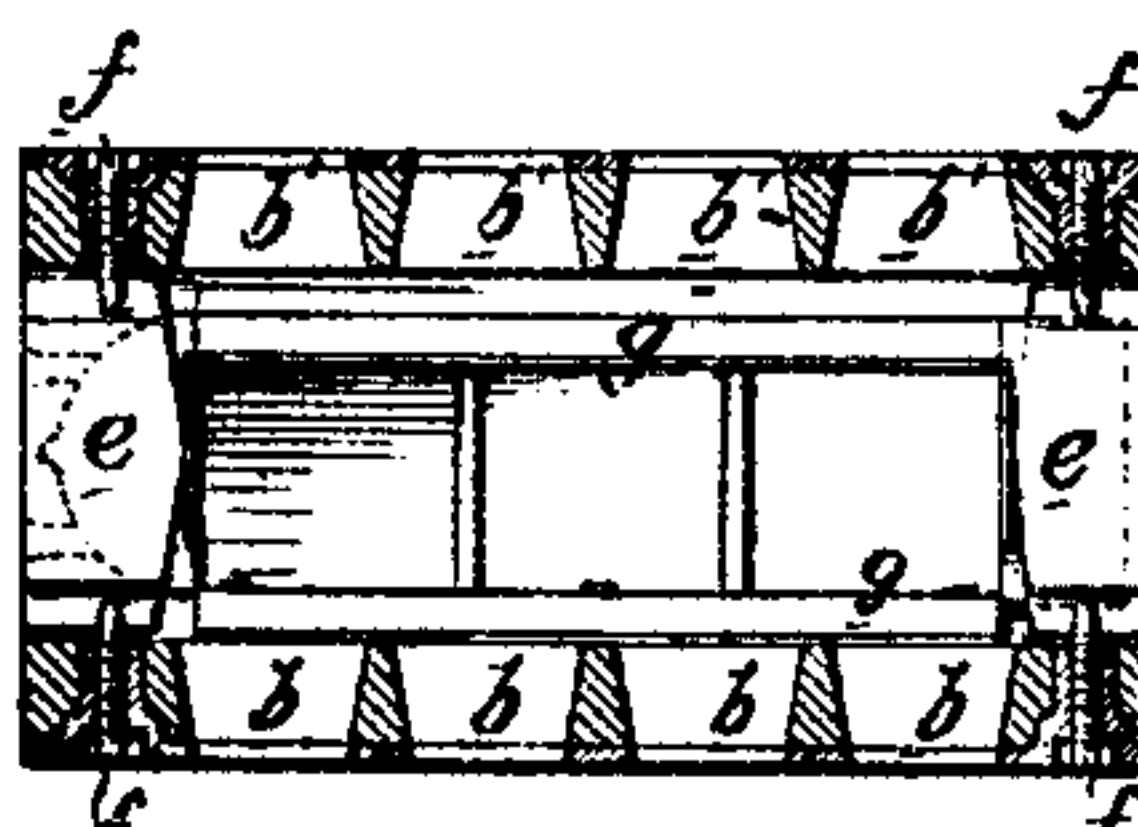


Fig. 5.

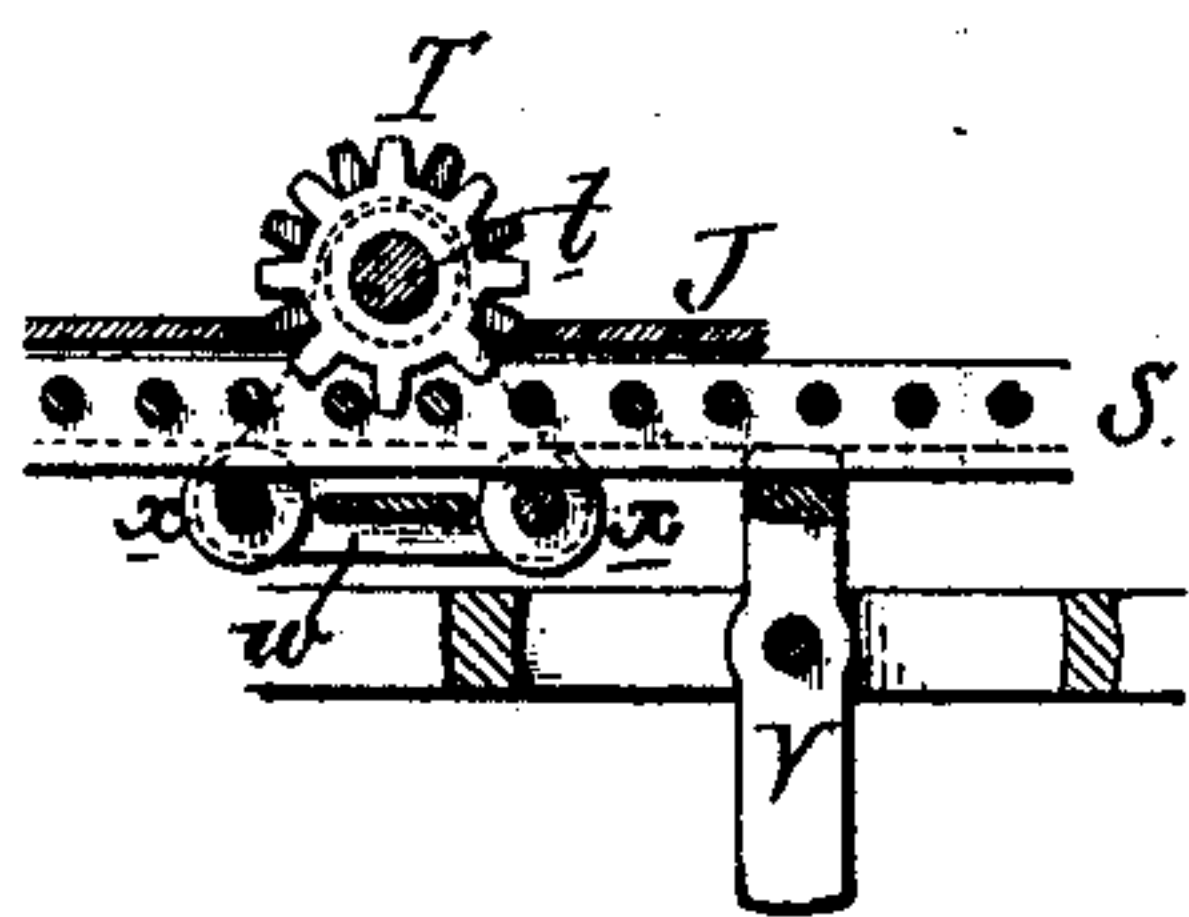


Fig. 3.

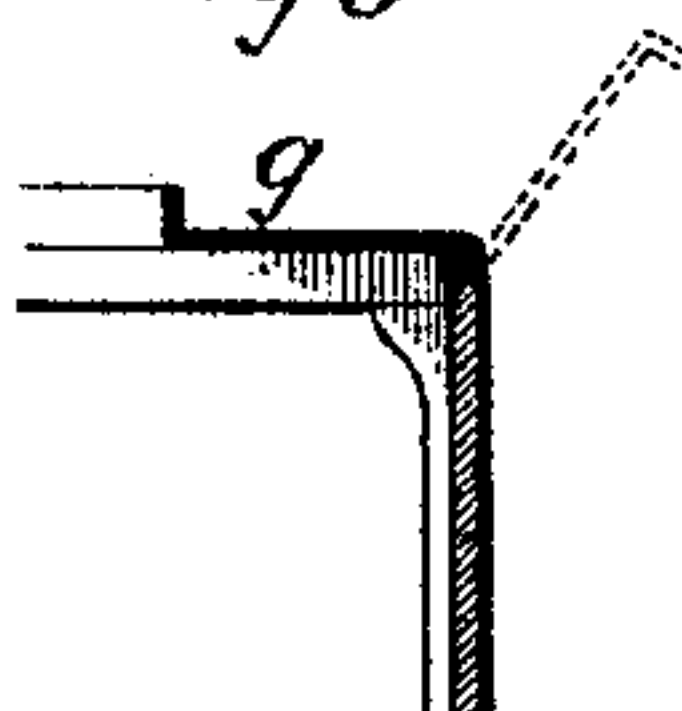
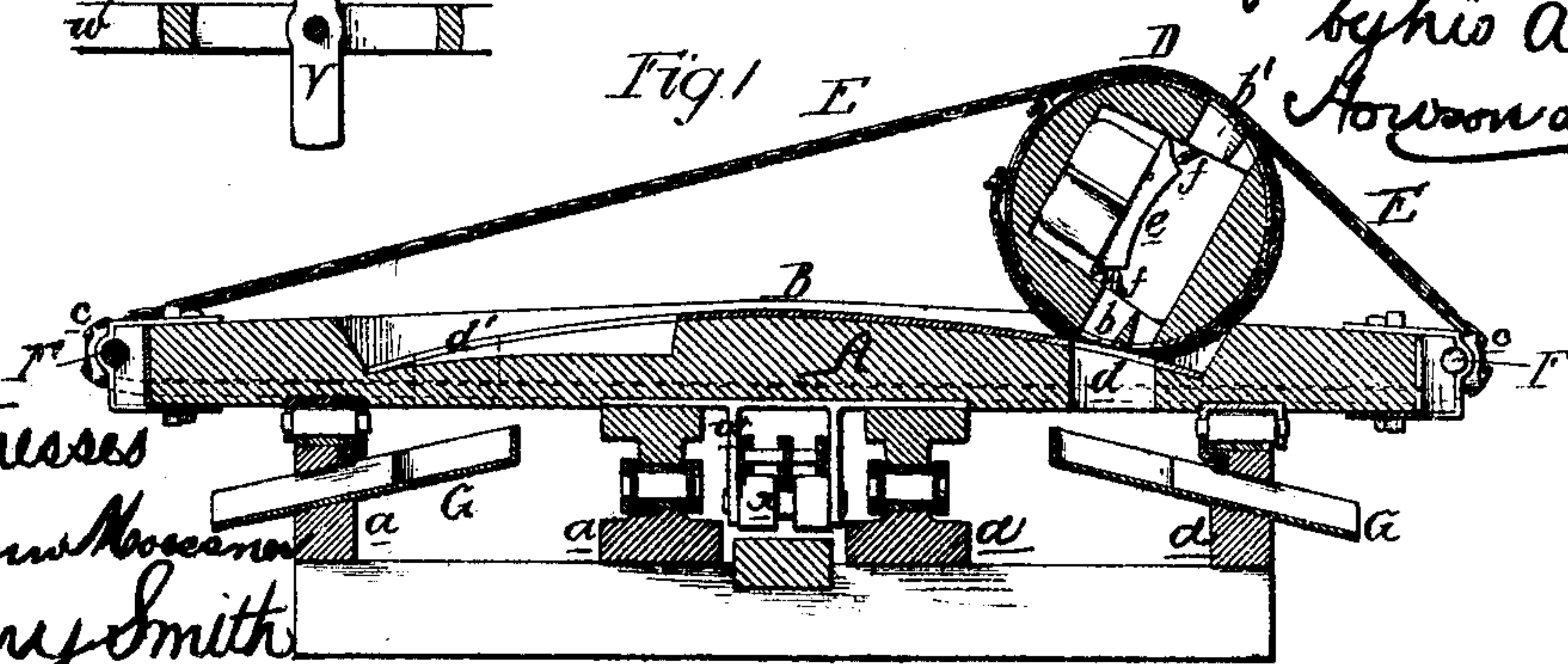


Fig. 1.



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UNITED STATES PATENT OFFICE.

WASHINGTON VAN DUSEN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MODES OF, AND APPARATUS FOR, UNLOADING VESSELS.

Specification forming part of Letters Patent No. **185,596**, dated December 19, 1876; application filed November 28, 1876.

To all whom it may concern:

Be it known that I, WASHINGTON VAN DUSEN, of Philadelphia, Pennsylvania, have invented an Improved Mode of, and Apparatus for, Unloading Vessels, of which the following is a specification:

The object of my invention is to quickly discharge the cargo of barges and other like vessels; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing.

The main feature of my invention can be best explained by referring to Figure 1, in which A represents a carriage resting upon rollers, interposed between it and the four rails *a* of an inclined marine railway of the usual construction, this railway extending from a point some distance above high-water mark to a point where there is always a suitable depth of water. On the carriage A are formed ways B, on which is arranged to roll a hollow cylinder, D, motion being imparted to the latter by means of two chains, E E, which are arranged one at each end of the said cylinder, and pass over chain-wheels *c* on the shafts F F, at opposite ends of the carriage, the ends of each chain, after passing partly round the cylinder D, being firmly secured to the same. In one side of the cylinder D are formed a number of ports, *b*, and in the opposite side are formed a number of similar ports, *b'*, while the bottom of the carriage A, near one end, has ports *d*, and near the other end ports *d'*, the distance on the ways B between the ports *d* and *d'* being equal to the distance from the port *b* to the port *b'*, measured on the circumference of the cylinder D, around the bottom of the same. When the cylinder is in the position shown in Fig. 1, the ports *b* will communicate with the ports *d*, and when the cylinder is at the opposite end of the carriage the ports *b'* will communicate with the ports *d'*.

It will be observed that the ways B are curved, being highest in the center, and descending gradually toward each end of the carriage. The interior of the hollow cylinder D is arranged for the reception of the vessel to be unloaded, the said vessel being retained therein by blocks *e e* at each end, these blocks

being firmly clamped against the deck of the vessel, at both bow and stern, by means of screw bolts *f*, as shown in the section of the cylinder, Fig. 2.

The operation of unloading a vessel is as follows: Supposing the carriage A to be at the upper end of the railway, and the cylinder D to be in a central position on the same, the cylinder being on an "even keel" when in this position. The carriage is lowered into the water until the vessel which has to be unloaded can be floated into the hollow cylinder, in which it is then firmly secured by the blocks *e* and bolts *f*, above referred to. The carriage is now drawn up until it reaches the place where the load has to be discharged, when its movement is stopped and motion imparted to one of the shafts F. This causes a movement of the chains E, and a consequent rolling of the cylinder D over the ways B to one side or the other, according to the direction of the movement imparted to the shaft F. This movement is continued until the ports *b* or *b'* of the cylinder coincide with the ports *d* or *d'* of the carriage, the vessel being then partly overturned, as shown in Fig. 1, so that the cargo will pass from the hold of the vessel by gravity, and escape through the ports of the cylinder and carriage onto a wharf, or into a vessel beneath, or into chutes G, for directing it to any desired point. When the vessel is unloaded, the cylinder D is returned to its central upright position, the carriage A again lowered into the water, the empty vessel released from the cylinder and floated out, and its place occupied by another loaded vessel, prior to a repetition of the above-described operations.

I prefer to construct the vessels with deck-planks *g*, hung at the outer edges to the upper edge of the sides of the vessel, as shown in Fig. 3, so that upon overturning the latter the said deck-planks will assume the position shown by dotted lines, and thus cease to interfere with the complete discharge of the cargo from the hold.

Various means may be employed for causing the movement of the carriage A along the railway, and for causing the rolling movement of the cylinder D; but I prefer the arrange

ment shown in the perspective view, Fig. 4, on account of its compactness and directness of operation.

To the carriage A is secured a strong framework, J, on which is a steam-boiler, *m*, and engine *n*, the driving-shaft of the latter being connected, by means of gearing, which it will not be necessary to describe in detail, to two shafts, *s* and *t*, either or both of which can be thrown into or out of gear with the said driving-shaft by manipulating suitable levers. The shaft *s* is connected in the present instance, by means of chain-gearing, with one of the shafts F at the end of the carriage A, and the shaft *t* carries a double pinion, T, the teeth of which gear into the teeth of a double rack, S, arranged centrally upon and extending the entire length of the railway.

In order to keep the teeth of the pinion T always in gear with the teeth of the rack S, I provide the shaft *t* with a swinging frame, *w*, provided with rollers *x x*, which bear upon the under edge of the rack, and serve to keep its teeth constantly in gear, and in order to permit the passage of these rollers there must be a free space beneath the rack; and to overcome any tendency which the rack might have to sag from this cause, I place at intervals hinged props *v*, the upper ends of which, when the props are in a vertical position, are adapted to and support the rack, these props, however, readily yielding to permit the passage of the rollers *x*. (See Fig. 5.)

Although my invention has been especially designed to facilitate the unloading of canal-barges, it can be adapted to the unloading of

vessels of different classes carrying cargoes in bulk.

I claim as my invention—

1. The cylinder D, constructed for the reception, retention, and overturning of a vessel, and provided with discharge-ports *b* and *b'*, as set forth.

2. The combination of the cylinder D with a carriage, A, adapted to a marine railway.

3. The combination of the cylinder D and its ports *b b'* with the carriage A and its ports *d d'*.

4. The combination of the cylinder D with the carriage A, its shafts F, and chains E.

5. The cylinder D, provided with clamping-blocks *e* and screw-bolts *f*, as specified.

6. The combination of a vessel having hinged gang-planks *g* with devices, substantially as described, by which said vessel may be wholly or partially overturned.

7. The combination of the carriage A and the frame J with the boiler *m*, engine *n*, shaft *s*, operating the cylinder, and shaft *t*, operating the carriage, and with intermediate gearing, substantially as described.

8. The combination of the shaft *t*, its pinion T, and frame *w*, having rollers *x*, with the rack *s* and hinged supporting-props *v*, as set forth.

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

WASHINGTON VAN DUSEN.

Witnesses:

HERMANN MOESSNER,
HARRY SMITH.