2 Sheets—Sheet 1.

G. MILSOM.

UNLOADING GRAIN VESSELS.

No. 183,015. Patented Oct. 10. 1876.

Fig. 1

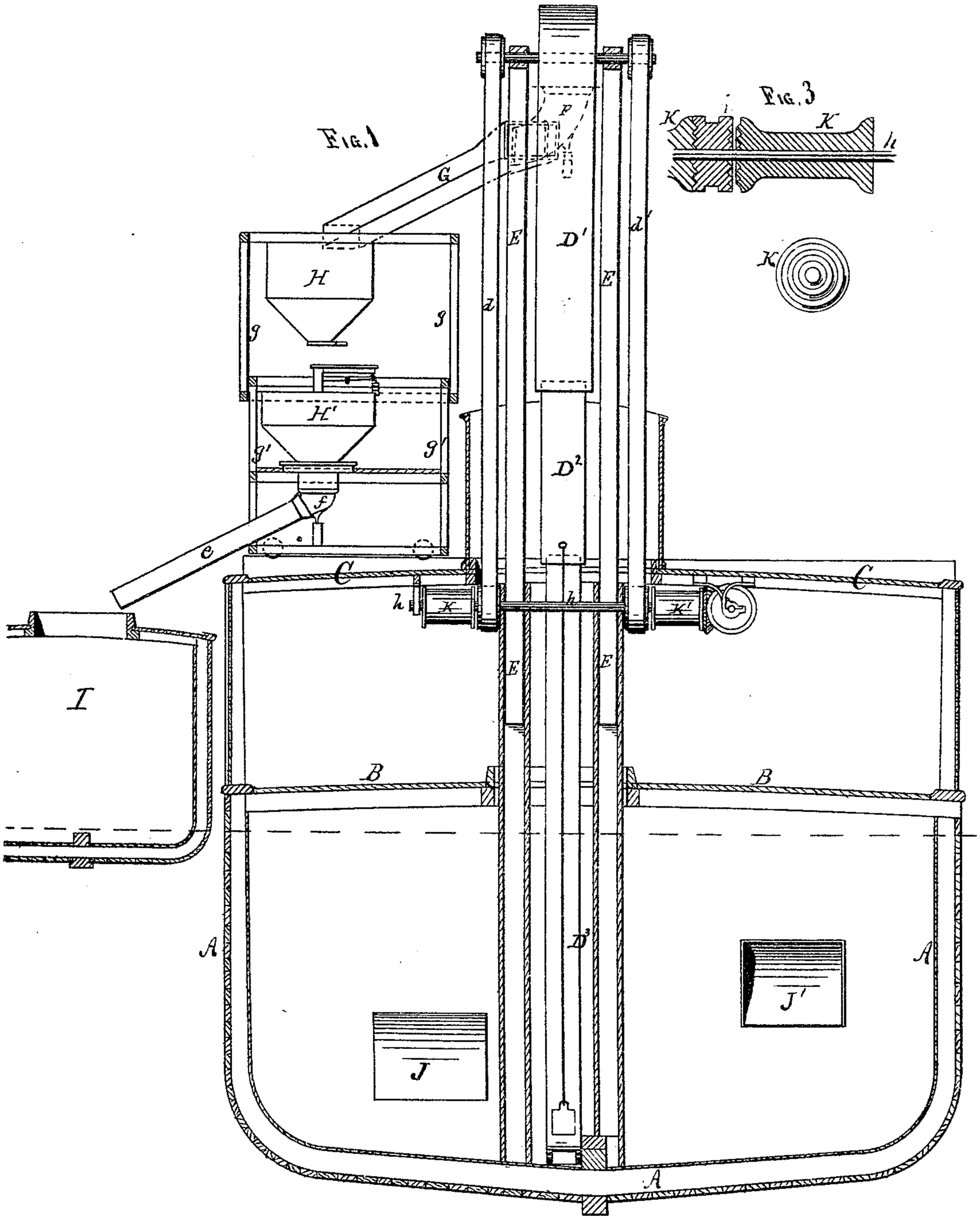


Fig. 3

C. N. Woodward. }
J. H. Parsons } Witnesses

Geo. Milsom,
Inventor, By
J. R. Drake
Atty.

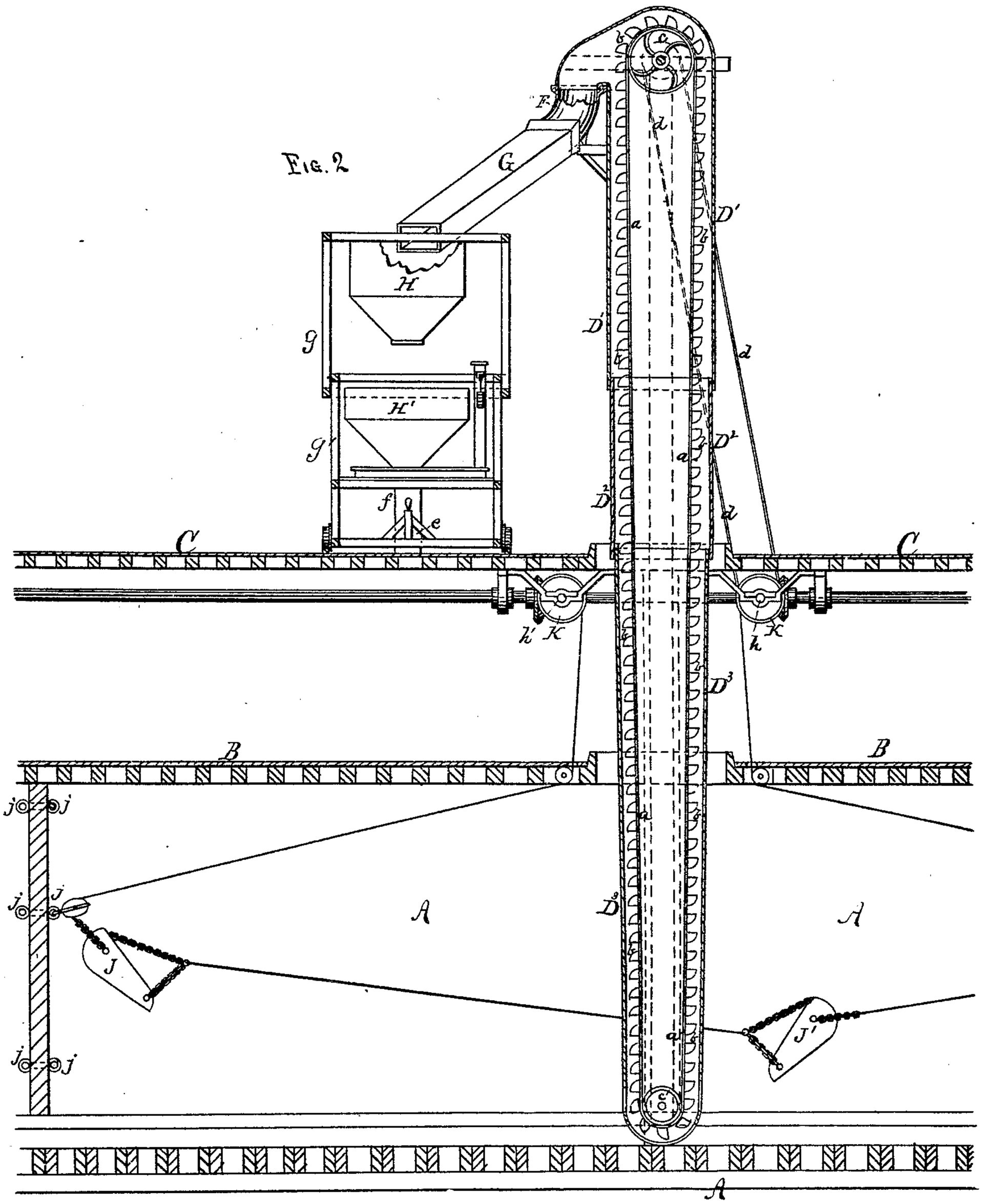
2 Sheets—Sheet 2.

G. MILSOM.

UNLOADING GRAIN VESSELS.

No. 183,015. Patented Oct. 10, 1876.

FIG. 2



C. N. Woodward.
T. H. Parsons.
} Witnesses.

Geo. Milsom.
Inventor, By
J. P. Drake.
Atty

UNITED STATES PATENT OFFICE.

GEORGE MILSOM, OF BUFFALO, NEW YORK.

IMPROVEMENT IN UNLOADING GRAIN-VESSELS.

Specification forming part of Letters Patent No. **183,015**, dated October 10, 1876; application filed April 17, 1876.

To all whom it may concern:

Be it known that I, GEORGE MILSOM, of Buffalo, in the county of Erie, and State of New York, have made certain Improvements in Devices for Unloading Grain-Vessels, of which the following is a specification:

This series of devices is intended to do away, to a certain extent, with expensive hand elevators, shovelers, and also weighing, now done in several and expensive operations, and doing it all aboard the vessel; and the invention consists in discharging grain, &c., from a vessel's hold, compartments, or decks by its own elevator or elevators, and, at the same time, spouting it into a weigh-hopper on board, where it is accurately weighed, thence spouted into a barge or canal-boat alongside, or into any vessel or lighter, or onto a wharf, all accomplished in one operation. It also combines with these a shoveling apparatus, to automatically feed the elevators. The elevators can also act as pumps to relieve the vessel when leaking; also to lighten the cargo if the vessel should get aground. All this will be done on the vessel, and by simple appliances hereinafter described, thereby saving greatly in the expense of hands, shovelers, and extra labor now having to be performed, as well as great expense in elevating and discharging cargo, as is now the case. These appliances can be set in motion in a few minutes, and operated by a "donkey-engine," now generally used on vessels, all as hereinafter described.

In the drawings, Figure 1 is a sectional side elevation of a section of a vessel, showing my apparatus attached thereto. Fig. 2 is a cross-section of the same.

A is the vessel; B, the main or lower deck, and C the hurricane or upper deck. D^1 D^2 D^3 is a leg-case, made in three or more sections, as shown, so that one section will slide over the other, or "telescope" down into a small space. The lower section will be secured permanently to the vessel in the lower hold, while the other sections only will be movable. Inside this leg-case is the usual belt *a*, to which the buckets *b b* are attached, and having the usual pulleys *c c'* at the upper and lower ends, and operated by a belt, *d d'*. E E are two posts or uprights, to which the upper section of the case D^1 is pivoted, and by which the leg is raised or lowered by suitable tackle or gearing. When the leg is lowered down the belt and buckets *a b* will fold down into the hollow case, and thus be out of the way; and, when the leg is again raised, they will rise with it, and resume their proper position. F is a swivel-spout, to which a movable spout, G, will be attached to the head of the leg D^1, through which the grain may be spouted directly into barges or canal-boats, or into weigh-hoppers H H', and from thence into the canal-boats I through a spout, *e*, which will also be supplied with a swivel, *f*. These hoppers H H' will be mounted on wheels running on tracks placed across the upper deck, so that they may be moved from one side to the other, so as to load boats from either side of the vessel. The frame *g g'* of the hoppers will also be made in two or more sections, so that it may be telescoped down into a small space when not in use. J J represent the grain-shovels patented by Milsom, Spendelow & Watson, and which will be used in connection with this apparatus; but, instead of removable clamps to fasten the block that works the buckets, I use a series of eyebolts, *j j*, so as to work higher or lower as the grain is elevated out. The ropes attached to the shovels work on peculiar drums K K' on a loose shaft, *h*, having the heads formed into a series of V-shaped converging friction-rings, which, when forced together by the clutch *i* and levers, move the shovels in one direction, and, when disconnected by the lever or any suitable automatic device, the heads are forced apart from the clutch *i*, and the drum runs loose on the shaft *h*, and the shovel moves back to its original position. By throwing these drums in and out this reciprocatory working of the shovels is accomplished. These drums can be stationary, and placed in any part of a vessel—on the sides, or overhead—so that when not in use they are out of the way.

One advantage of having these shoveling devices aboard is, that the vessel can be readily "trimmed," or cargo can be changed from one hold to another. The elevators will greatly aid this; also, in loading gradually, and putting the cargo where wanted, always keeping the vessel on an even keel. The advantage of the series of V friction-rings on the

drum-heads K and clutches *i* is, that they concentrate the force to the center of the shaft, and make the drums very sensitive, so that they can be handled with that entire exactness that the shovels require. The elevators being all constructed telescopic, will therefore take but little room, either on deck or space through the compartments, and the gearing by which the elevators are run will be simple, and not expensive, or in the way. The elevators will also be found very useful as pumps, to relieve the hold or compartments from water, being of such a nature that they cannot choke, and, at the same time, throw out a large quantity of water. This is an important idea on grain-vessels, as the wet grain swells, gets into, and chokes the ordinary pumps. The use of these elevators on vessels will do away, in a measure, with the vexatious charges and changing tariff of land and floating elevator associations, and will permit of the use of the crew or vessel-hands to unload the cargo, or transfer it to a wharf or vessel alongside, by which a great saving is made. By combining a weigh-hopper with the devices (all to be used in combination) the question of "shortage," or short delivery to and from the regular dock-elevators, will be done away with. Another advantage of having the weigh-hopper on board a vessel is, that the grain can all be spouted on the vessel into bags, and, by that way delivered, if desired, saving greatly in labor und expense. This saves elevating into a storehouse and then bagging it, making several operations of it, all of which cost time and money. The upper part of the elevator can be hinged so as to lay down on the deck, if a lighter, but, if a sea or lake vessel, the telescoping is preferred.

I do not claim, broadly, a grain-elevator on a vessel, as such are called "floating elevators," which transfer out of one vessel on one side to a vessel or barge on the other side; but I claim the stationary elevators on board a grain or other cargo-carrying vessel, and made telescopic, to be out of the way, except when in use.

By these devices on board a loaded vessel can come into harbor, elevate, weigh, and discharge her cargo herself, without outside help or cost, and in a short space of time, thereby saving immensely in a season's work, besides accomplishing everything desired through her own appliances.

I claim—

1. The combination, with a steam or sailing vessel, of the shovels J J, arranged to operate as described with the drums K K′, said drums working on a loose shaft, *h*, and the heads and clutches formed into a series of V-shaped friction-rings, as and for the purpose specified.

2. The combination, with a cargo-carrying vessel, of the stationary elevator or elevators, constructed to telescope down and up, substantially as and for the purpose specified.

3. In a grain-carrying vessel, and in combination therewith, the telescopic elevators and the portable telescopic weighing-hoppers and the spouts, all to be used and operated in comnation, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEO. MILSOM.

Witnesses:
J. R. DRAKE,
T. H. PARSONS.