

(No Model.)

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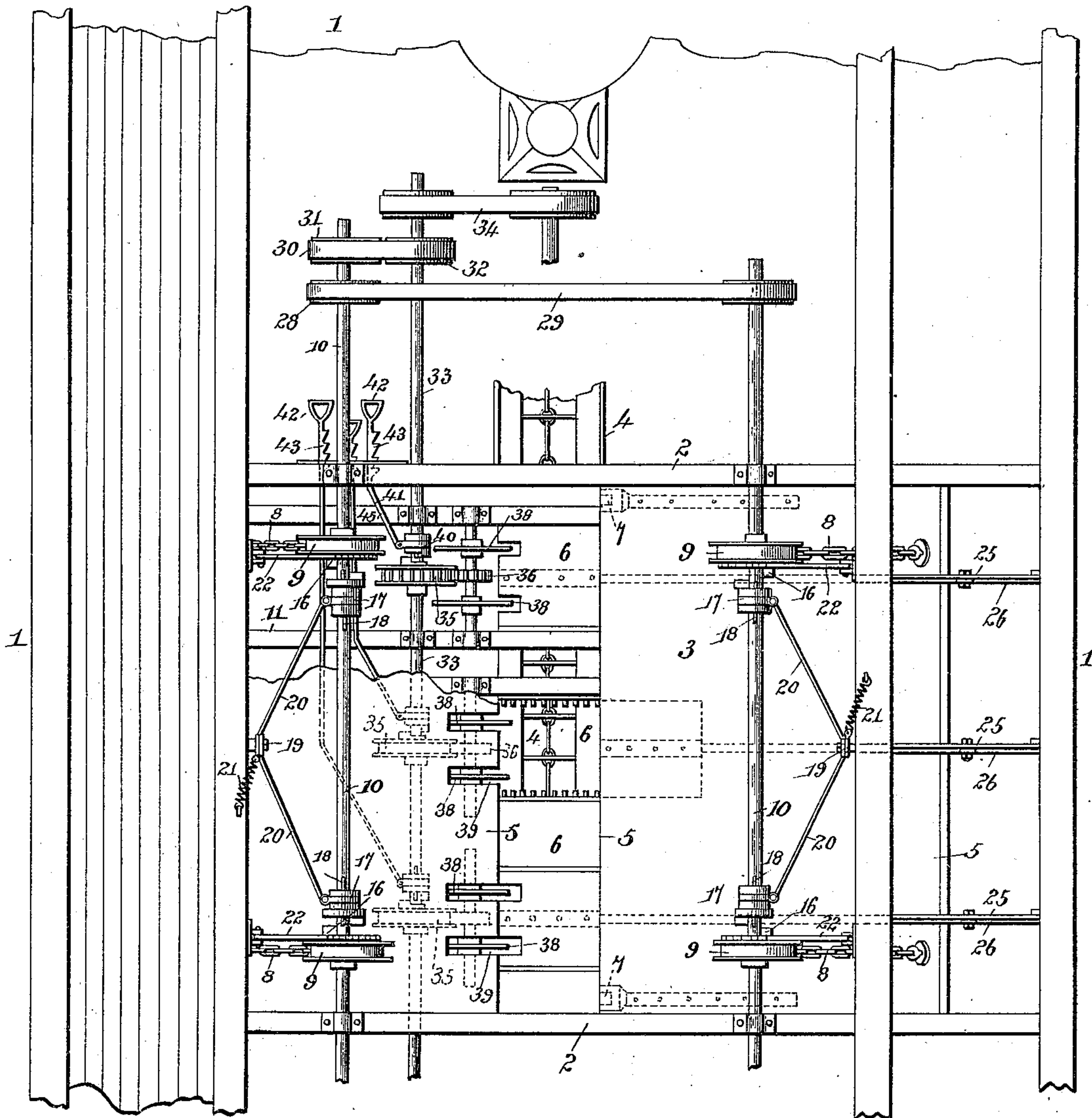
P. B. CLARKE.

APPARATUS FOR HANDLING COAL IN BULK.

No. 512,680.

Patented Jan. 16, 1894.

FIG. 1.



Witnesses

Jas. K. McLathran
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By his Attorneys,

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(No Model.)

3 Sheets—Sheet 2.

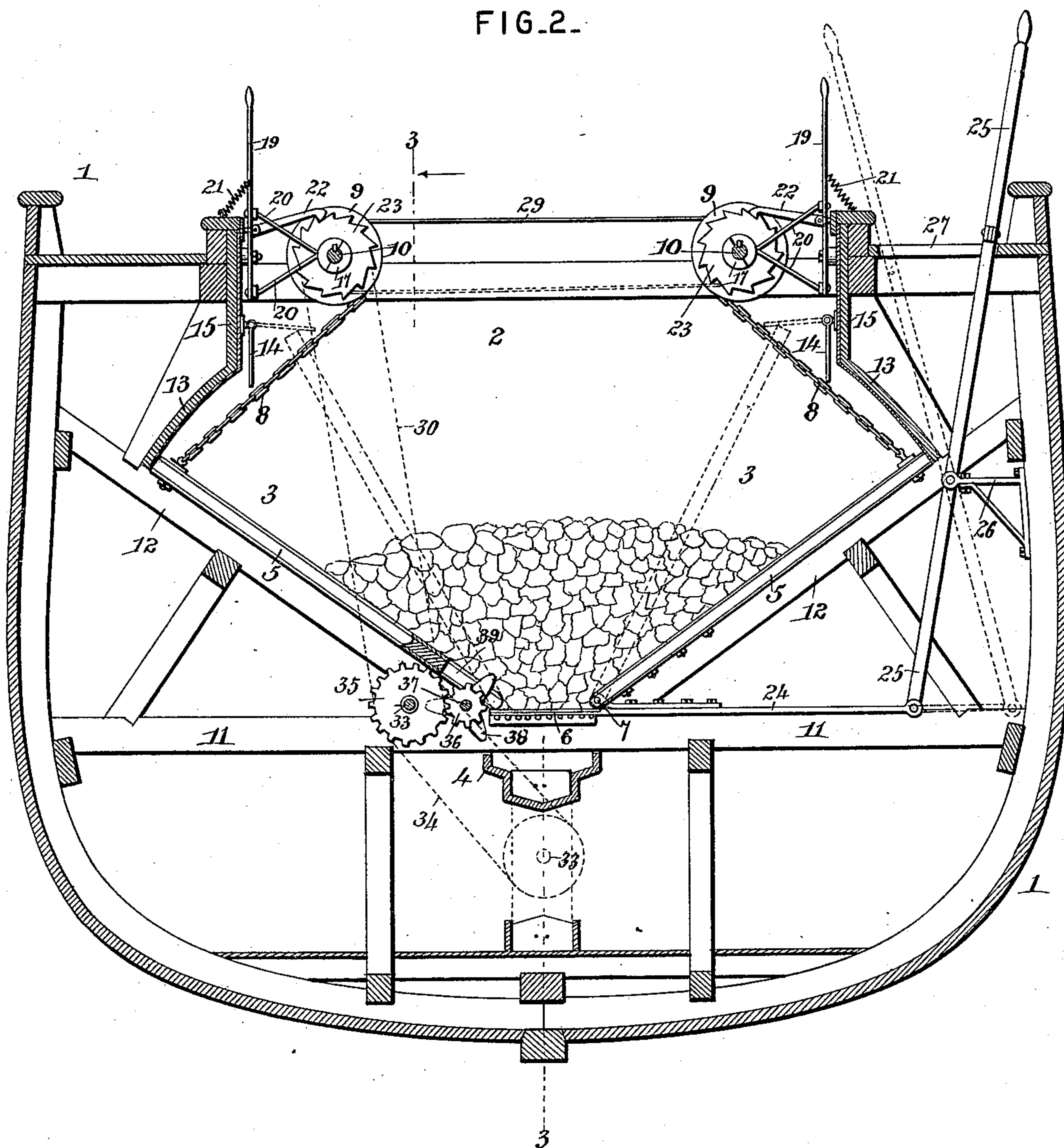
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FIG. 2.



Witnesses

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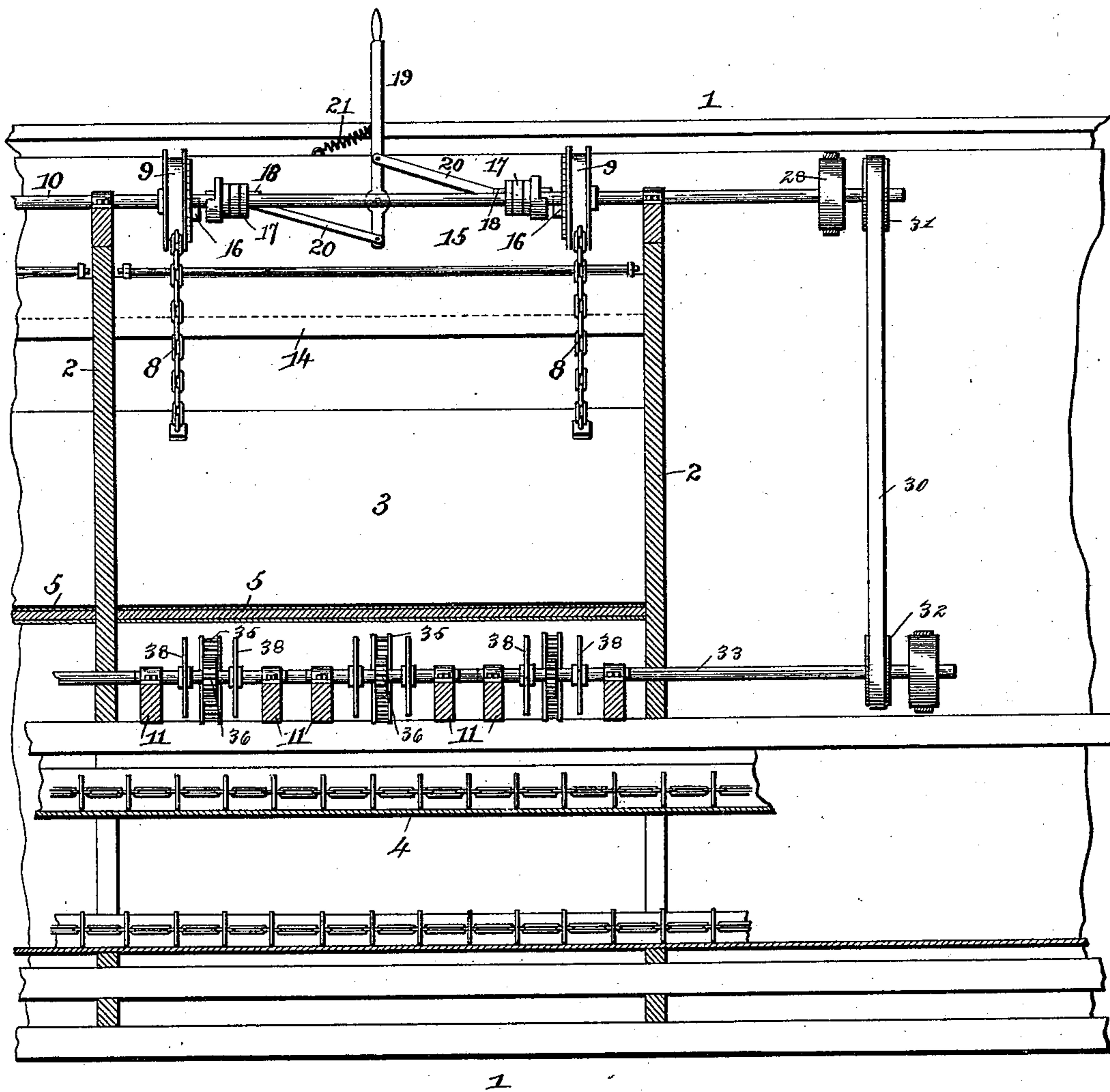
3 Sheets—Sheet 3

P. B. CLARKE.
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FIG. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

PEETE B. CLARKE, OF BIRMINGHAM, ALABAMA.

APPARATUS FOR HANDLING COAL IN BULK.

SPECIFICATION forming part of Letters Patent No. 512,680, dated January 16, 1894.

Application filed February 23, 1893. Serial No. 463,387. (No model.)

To all whom it may concern:

Be it known that I, PEETE B. CLARKE, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented a new and useful Apparatus for Handling Coal and Similar Material in Bulk, of which the following is a specification.

The invention relates to improvements in apparatus for handling coal and similar material in bulk.

The object of the present invention is to provide simple and comparatively inexpensive means for transferring coal and similar material from barges and like crafts to vessels, without the use of shovels and wheelbarrows.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended.

In the drawings—Figure 1 is a plan view of a portion of a barge provided with apparatus for handling coal constructed in accordance with this invention. Fig. 2 is a transverse sectional view. Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a barge provided with transverse bulkheads 2 forming a series of bins 3, beneath which is arranged a longitudinal chute 4, adapted to receive the contents of the bins and provided with an endless conveyor for carrying the contents of the bins to a suitable elevated point to enable the coal or other cargo to be delivered from such point by inclined chutes to the bunkers of a vessel to be loaded. Each bin is provided with the mechanism about to be described, so that only a description of one of the bins will be necessary; and the barge is divided into a number of transverse bins to facilitate loading from a wharf or pier, so that as soon as one bin or compartment is filled the barge may be moved longitudinally to bring another bin or compartment at the place of supply. Each bin is provided with opposite swinging inclined dumping gates 5, extending from bulkhead to bulkhead and forming an oppositely

inclined bottom for the bin to direct the coal into the conveyor chute 4, when horizontal sliding gates or cutoffs 6 are open for this purpose. The dumping gates are hinged at their bottoms at 7 at the sides of a horizontal bottom portion 3^a and above the conveyor chute 4, and their tops or upper ends are connected to chains 8, which are wound around sheave-drums 9 of opposite longitudinal shafts 10; and they are adapted to be arranged at the desired angle or inclination to direct the coal into the chute and to cause the bin to be entirely emptied. The barge is braced and the parts are supported by horizontal and inclined timbers 11 and 12 and suitable connecting braces, and the inclined timbers 12 are arranged to support the dumping gates 5, when the latter are in their lowest position or at their widest angle. The tops of the dumping gates are guided by curved walls 13, and in order to prevent coal getting behind the dumping gates when the latter are raised beyond the upper termini of the curved walls 13, hinged guards 14 are provided. The guards 14 are hinged at their upper ends to vertical walls 15 of the bin, and consist of long narrow plates disposed longitudinally of the barge and adapted to be engaged near their lower edges by the tops of the dumping gates to close the spaces above the latter, as indicated in dotted lines in Fig. 2 of the accompanying drawings.

The drums 9 are loosely mounted in pairs at the side of each bin on the upper longitudinal shafts 10, and are provided with clutch sections 16 adapted to be engaged by corresponding clutch sections 17, which move longitudinally on the shafts 10 and are connected with them by keys 18, whereby when the clutch sections 17 are engaged with the sections 16 of the drums, the latter will be fixed to the shafts and will rotate with the same, and wind up the chains 8 and raise the dumping gates. The movable clutch sections 17 are controlled by levers 19 with which they are connected by rods 20. Each lever 19, which is arranged midway between the drums 9, is fulcrumed near its lower end on the barge, and has the rods 20 pivoted to it above and below the fulcruming points, in order that the clutch sections 17 may be simultaneously moved into and out of engagement with the other clutch sections. When it is desired to raise the dump-

ing gates the levers 19 are moved to bring the sections of each clutch into engagement with each other, thereby causing the drums to rotate and wind up the chains; and after a dumping gate is elevated sufficiently its lever 19 is released and the clutch sections 17 are disengaged from the clutch sections 16 of the drums by a spiral spring 21, which is connected with the lever 19. The drums are held against retrograde rotation, after the clutch sections are separated, to prevent the chains unwinding, by pawls 22 pivotally mounted at the upper edge or top of the bin and engaging ratchet wheels 23 arranged at the sides of the drums. The ratchet wheels 23 are preferably formed integral with the drums, but may be otherwise provided; and after the bin has been emptied the pawls may be disengaged from the ratchet-wheels of the drums by the blow of a hammer.

Any number of sliding gates or cutoffs 6 may be provided in the bottom of the bin, and they are connected by horizontal rods 24 with levers 25 fulcrumed intermediate of their ends on a bearing bracket 26 and extending upward through a slot 27 in the deck of the barge and terminating in a handle.

The rear ends of the upper longitudinal shafts 10 are provided with pulleys 28 and connected by a belt 29; and one of the shafts 10 is connected by a belt 30 and pulleys 31 and 32 with a lower longitudinal shaft 33, which is similarly connected with a driving pulley 34 connected with any suitable power preferably an engine (not shown) designed to be arranged in the stern of the barge or boat.

The lower shaft 33 extends longitudinally of the barge or boat adjacent to the bottoms of the bins and is connected by cog-wheels 35 and pinions 36 with countershafts 37, which carry agitators 38, operating through slots 39 cut in one of the dumping gates and the adjacent edges of the sliding gates. Each agitator 38 consists of a spider, or radial arm extending from the hub, and the rapid rotation of the agitator causes the coal to be quickly fed to the conveyer chute. Any number of agitators may be provided for each bin, but, preferably, three sets are employed, two agitators being on each countershaft, and the sets of agitators are controlled independently of one another, whereby the discharge or feed of coal may be readily regulated. Each countershaft is thrown into and out of operation by a clutch 40 having one section secured to the cog-wheel 35, which is loosely mounted on the shaft 33, and its other section keyed to the shaft and having a limited movement to engage and be disengaged from the clutch section on the cog-wheel. The movable section of the clutch 40 is actuated by a rod 41 extending rearward and designed to communicate with and terminate at the engine room; it is provided at its rear end with a handle 42; and it has adjacent to the handle a series

of teeth forming a rack 43, which is adapted to engage a plate 44, whereby the clutch is held securely against accidental movement. The front portion 45 of the rod 41 is disposed at an angle to the rear portion of the rod, and is connected to the movable section of the clutch 40. The rods 41 gradually increase in length as the clutches 40 are more removed from the engine room; and it will be readily apparent that the agitators by being controlled independently of one another, one or more sets may be put in motion as desired, and the discharge of coal from the bins to the conveyer chute may be rendered uniform.

It will appear that by the apparatus herein set forth, coal or similar material in bulk may be readily removed from a barge or similar craft for transferment to the bunkers of a vessel without employing shovels and wheel barrows, or similar handling of the cargo. It will also be seen that the discharge of coal from the various bins of a barge or vessel is under complete control and may be readily regulated to render such discharge or feed to the conveyer chute uniform throughout the length of the latter.

It will be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In an apparatus for handling material in bulk, the combination of a boat having a bin provided with an oppositely inclined bottom with slots, cutoffs, a conveyer chute arranged below the cutoffs, and agitators having arms operating through said slots and adapted to force the material downward, substantially as described.

2. In an apparatus for handling material in bulk, the combination of a boat having a series of transverse bulkheads forming bins, opposite inclined bottoms for the bins provided with slots, a longitudinally disposed conveyer chute located below the cutoffs, and the sets of independently operated revolving agitators provided with arms operating through the slots, substantially as described.

3. In an apparatus for handling material in bulk, the combination of a boat having a bin, inclined dumping gates hinged at the bottom, the upwardly and inwardly curved walls 13 arranged at the top of the bin at opposite sides thereof and located adjacent to the upper edges of the dumping gates in the curved path of the same, the oppositely disposed narrow guards hinged to the sides of the bin above the upper termini of the curved walls and depending below the same, cutoffs, and a conveyer chute arranged beneath the bin, substantially as described.

4. In an apparatus for handling material in bulk, the combination of a boat provided with a series of transverse bulk-heads forming bins, a conveyer chute arranged beneath the bins,

the opposite inclined dumping gates hinged at the bottoms and arranged in the bins, parallel shafts disposed longitudinally of the boat and arranged at the top of the bins, drums loosely mounted on the shafts and arranged in pairs at each bin and having ratchet-wheels, clutches mounted on the shafts and located adjacent to the drums and adapted to connect the latter with the shafts, chains secured to the tops of the dumping gates and wound around the drum, levers located between the pairs of drums, the pairs of rods connected to the levers above and below the fulcrum points and extending from the levers in opposite directions and connected with the adjacent clutches, and pawls to engage the ratchet wheels, substantially as described.

5. In an apparatus for handling material in bulk, the combination of a boat provided with a series of transverse bins having an oppositely inclined bottom and provided with sliding gates and having slots, a longitudinally disposed conveyer chute arranged below the bins, a longitudinally disposed shaft arranged adjacent to the bottom of the bin, a series of countershafts arranged near the slots, rotary agitators mounted on countershafts and operating through the slots, gearing for connecting the countershafts with the longitudinal shafts and loosely connected with the latter, clutches for connecting the gearing with the longitudinal shaft, and rods connected to the clutches and terminating in handles and

provided with racks, substantially as described.

6. In an apparatus for handling material in bulk, the combination of a boat provided with a series of transverse bulkheads forming bins, a conveyer chute arranged beneath the bins, the opposite inclined dumping gates hinged at the bottom and arranged in the bins, parallel shafts disposed longitudinally of the boat and arranged at the top of the bins, drums loosely mounted on the shafts and arranged in pairs at each bin and having ratchet wheels, clutches mounted on the shafts and located adjacent to the drums and adapted to connect the latter with the shafts, chains secured to the dumping gates and wound around the drums, levers located between the pairs of drums, the pairs of rods connected to the levers above and below the fulcrum points and extending from the levers in opposite directions and connected with the adjacent clutches, spiral springs connected to the levers and adapted to return the same to their initial position, and pawls for engaging the ratchet wheels, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PEETE B. CLARKE.

Witnesses:

WALTER J. HARE,
JAMES J. BOYCE.