J. N. COX.

MATERIAL MOVING MECHANISM.

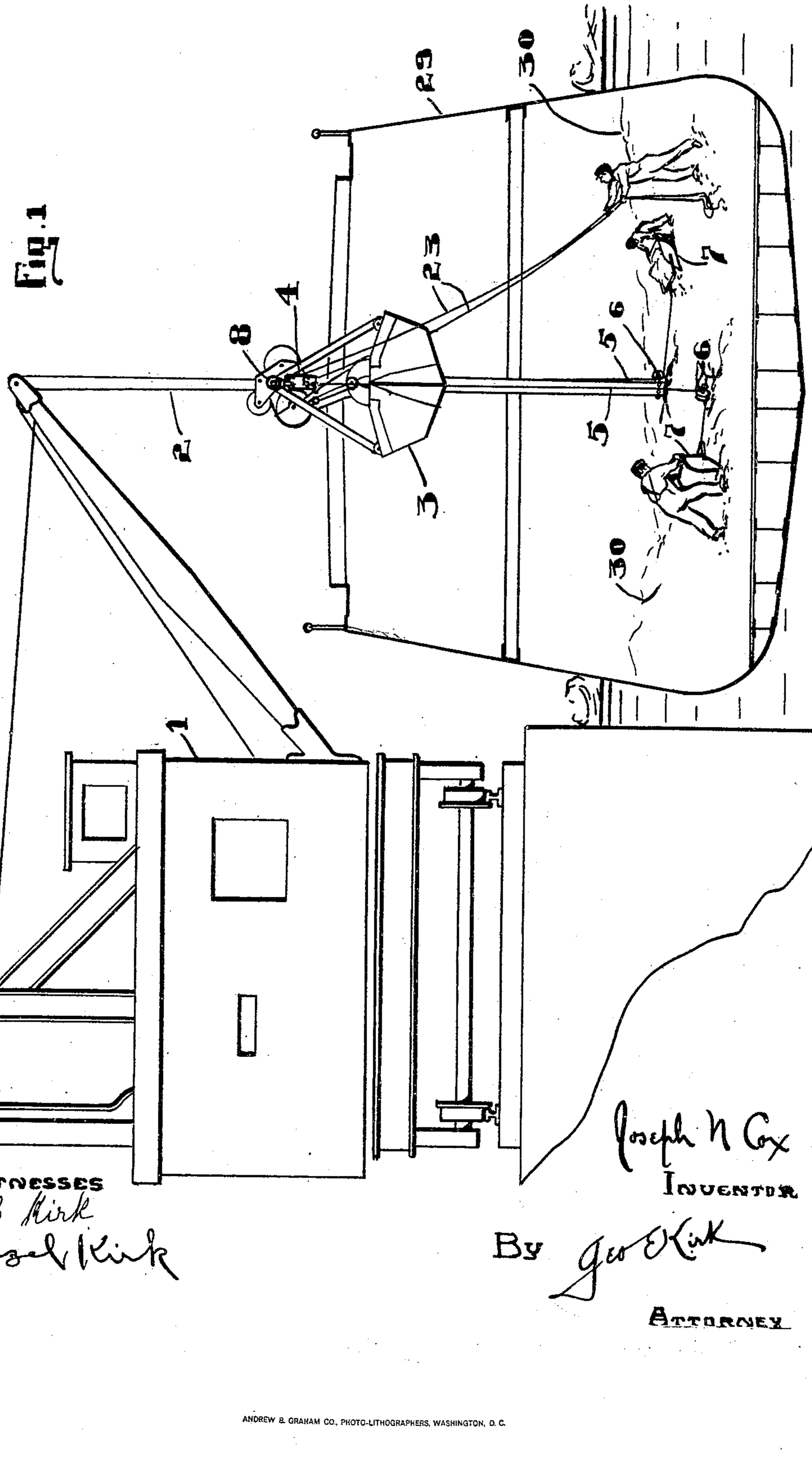
APPLICATION FILED SEPT. 8, 1908.

954,784.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2

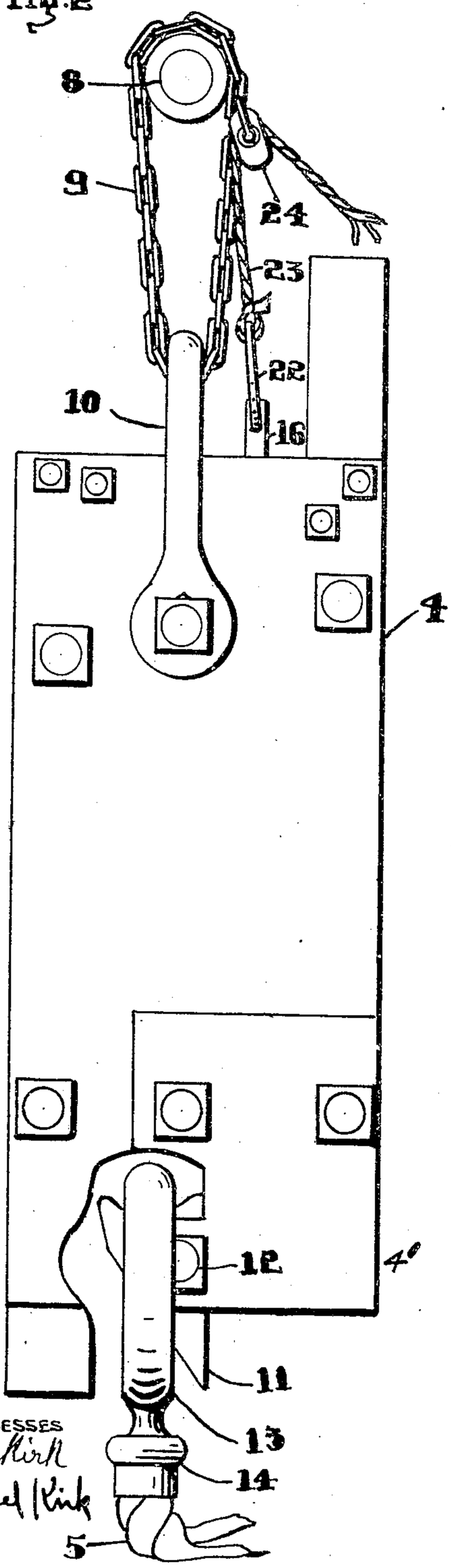

Fig. 3

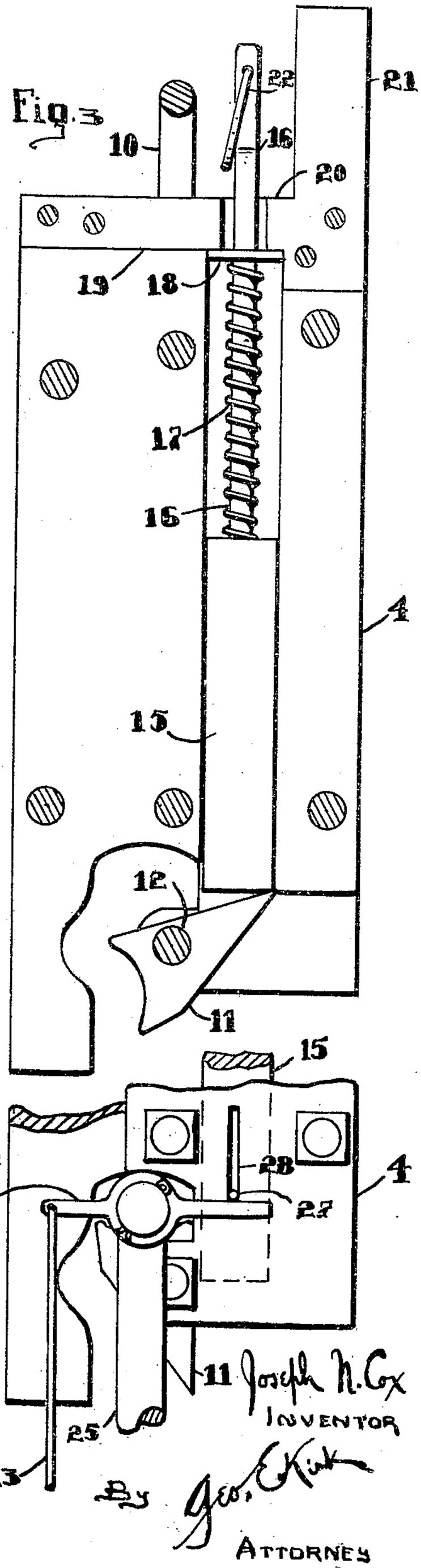

Fig. 4

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UNITED STATES PATENT OFFICE.

JOSEPH N. COX, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO EDWARD F. HOLBROCK, OF TOLEDO, OHIO.

MATERIAL-MOVING MECHANISM.

954,784. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed September 8, 1908. Serial No. 451,988.

To all whom it may concern:

Be it known that I, JOSEPH N. COX, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented new and useful Material-Moving Mechanism, of which the following is a specification.

This invention relates to power actuated mechanism for effecting the accumulation and transporting of commodities, more especially bulk commodities.

This invention has utility when embodied in connection with devices for unloading bulk cargoes.

Referring to the drawings: Figure 1 is an elevation of an embodiment of the invention, showing the manner of adoption for use in a vessel; Fig. 2 is a side elevation of a trip device adapted for use in connection with the mechanism herein disclosed; Fig. 3 is a view of the trip device in tripped position and with cover plate removed; and Fig. 4 is a fragmentary detail of the trip device in which the tripping means are detached in the tripping operation.

From a source of power, as the crane or whirly or rotatable derrick 1, extend flexible connections or cables 2 to the grab, clam or self-loading bucket 3. This bucket 3 and its operating means constitute a normal unloading device which is intermittently operable to transport bulk material.

Attached to the bucket or its operating connections at any convenient point is the block 4 to which is detachably connected the line or cable 5 extending about guide pulley 6 to a material moving element or scoop 7. The pulley 6 may be anchored at any convenient point by engaging with some portion of adjacent structure, or by providing a box with suitable pulley attaching means, locating the box as desired and dumping some of the material in the box to thereby anchor it so that when pulleys 6 are held thereby the loaded scoop will be so drawn that it may be dumped to leave the material in convenient location for the bucket 3 to take.

That portion of the normal unloading or transporting mechanism to which the block 4 is shown attached is the shaft 8 of the bucket mechanism, being held in such position by the chain 9 engaging through the U-shaped member 10 held by bolt in the block 4.

Near the end of the block 4 remote from its connection with chain 9, is a pivoted member or trigger 11 mounted on pin 12 in block 4. In order to insure that block 4 shall be of sufficient strength, it is reinforced by having an extra plate 4′ from the pivot pin 12 to the body of the block. The trigger 11 when set holds the ring 13 connected by swivel 14 to the cable 5, as shown in Fig. 2. Thus connected, as the bucket 3 moves away the cable 5 is drawn along also. To hold the trigger 11 in position, there is the slide bolt or latch 15 (Fig. 3) provided with stem extension 16. Normally holding this bolt 15 to keep the trigger 11 in holding position, is the spring 17 surrounding the stem 16. This spring 17 seats at one end against the bolt shoulder, while at its other end abuts plate 18 which is retained in position in the block 4 by members 19, 20, which are removable to permit of ready withdrawal of the bolt 15. The member 20 has an extension 21 affording a convenient hand rest when ring 22 in stem 16 is grasped in drawing the bolt 15 to permit placing the ring 13 over the trigger 11. Engaging ring 22 is trip line 23, passing through guide pulley block 24 to any convenient point where an operator may be stationed to release the draw line 5 at the proper time.

Trigger 11 may engage a member 25 connected to the draw line, which member affords a mounting for lever 26, connected at one end to trip line 23, while at the other it has engagement with pin 27 carried by bolt 15, which pin 27 is operable in slot 28 in the block 4. In tripping in this device as shown in Fig. 4, the trip line 23 is released from block 4 with the draw line.

In operation, say in unloading cargoes of bulk material, as herein illustrated, the vessel 29 has various hatch openings in its deck, and as the material, say iron ore 30, is taken from directly beneath a hatch opening, one or more scoops 7 may be connected by draw lines 5 each to a trip block 4 variously connected to the normal unloading mechanism. In order to guide the action of the scoops 7, a pulley 6 may be conveniently located by attaching to some portion of the vessel structure, or to some anchoring scheme in the na-

ture of a box which may be held by dumping therein some of the ore 30. In Fig. 1 such a box is shown with a pulley 6 attached thereto, while at another point one of these pulleys 6 is attached to a column of the vessel. These draw cables 5, when working to trim the cargo, bring about a steadying of the bucket in its travel upward through the hatch, thereby minimizing danger of swinging and possible disaster incident thereto. As the bucket 3 moves upward through the hatch, the scoops 7, directed by men in the hold, may be filled, drawn to deliver material 30 to convenient point for the bucket 3 to take out, the scoops 7 dumped and simultaneously the trip 23 operated to release this detachable auxiliary material moving mechanism from the bucket. The releasing or tripping is brought about by pulling the connection or line 23, which lifts bolt 15 against the resistance of spring 17, thereby permitting trigger 11 to swing due to strain on ring 13 from the draw line 5, thereby disconnecting line 5 from the bucket, which bucket continues to place of discharge, while the scoop 7 is free to be drawn back in hold. Accordingly line 5 travels upwardly with the bucket until such line is disconnected therefrom. If more than one draw line 5 is used, these lines each are drawn up by the bucket together and tripped to disconnect as scoops are drawn with their loads under the hatch opening. As the bucket proceeds to point of discharge, discharges and returns to the hold, the men handling the scoops may pull them back to the material inconveniently located for direct grabbing by the bucket in order that more of the inconveniently located material may be moved by a repetition of the operation, while the man operating the trip lines may connect up to the filled bucket 3, the draw lines 5. This auxiliary delivering means is adapted for use incidental to and without interruption of the normal unloading mechanism, which is not the only feature commending its usefulness, for it is simple in construction, comprising a minimum number of elements, and susceptible of ready handling to any desired point for use, being adapted for quick installation in such capacity as to number of scoops as the situation demands.

In view of the foregoing facts, greater rapidity in unloading may be had with a minimum of labor and power installation, resulting not only in a saving of time to the vessel but in a reduction in the expense.

What is claimed and it is desired to secure by Letters Patent is:

1. A material handling mechanism including a bucket, a scoop, a connection between the bucket and scoop to permit the scoop to move material toward the bucket filling point, and a trip for disconnecting the scoop from the bucket as the bucket moves away from the bucket filling point.

2. A material handling mechanism including a bucket for the material, actuating means for the bucket, a material moving means for moving material toward bucket loading point as the bucket moves away from such point, and a releasable connection for detaching the material moving means from the actuating means.

3. A bulk material handling mechanism including a normal transporting device, a material moving means for delivering material toward the device loading point, and a releasable connection between the means and device, said connection comprising a pivoted holding element and a slide bolt for freeing the element.

4. A normal transporting device, and an auxiliary delivering means therefor operated thereby, said means having a releasable connection to the device, said connection embodying a pivoted holding element and a spring held bolt operable against the resistance of the spring to free the element.

5. A releasing mechanism embodying a frame, a pivoted holding member mounted therein, said member having on one side of its pivot a holding seat and on the opposite side a locking face comprising with the frame a guide pocket, a bolt in said pocket, a spring surrounding said bolt and operative to normally hold the bolt in the pocket to be engaged by the locking face of the pivoted member to maintain the member in holding position, and means for reciprocating said bolt against the resistance of the spring to thereby permit freeing of the pivoted holding member.

6. A material transporting device comprising a bucket, actuating means for the bucket, a line connected to and drawn by the actuated bucket, and means placing a load on said line to thereby steady the bucket in its travel.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSEPH N. COX

Witnesses:
GEO. E. KIRK,
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