

975,312.

V. ANDERSON.  
COALING DEVICE.  
APPLICATION FILED NOV. 3, 1909.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

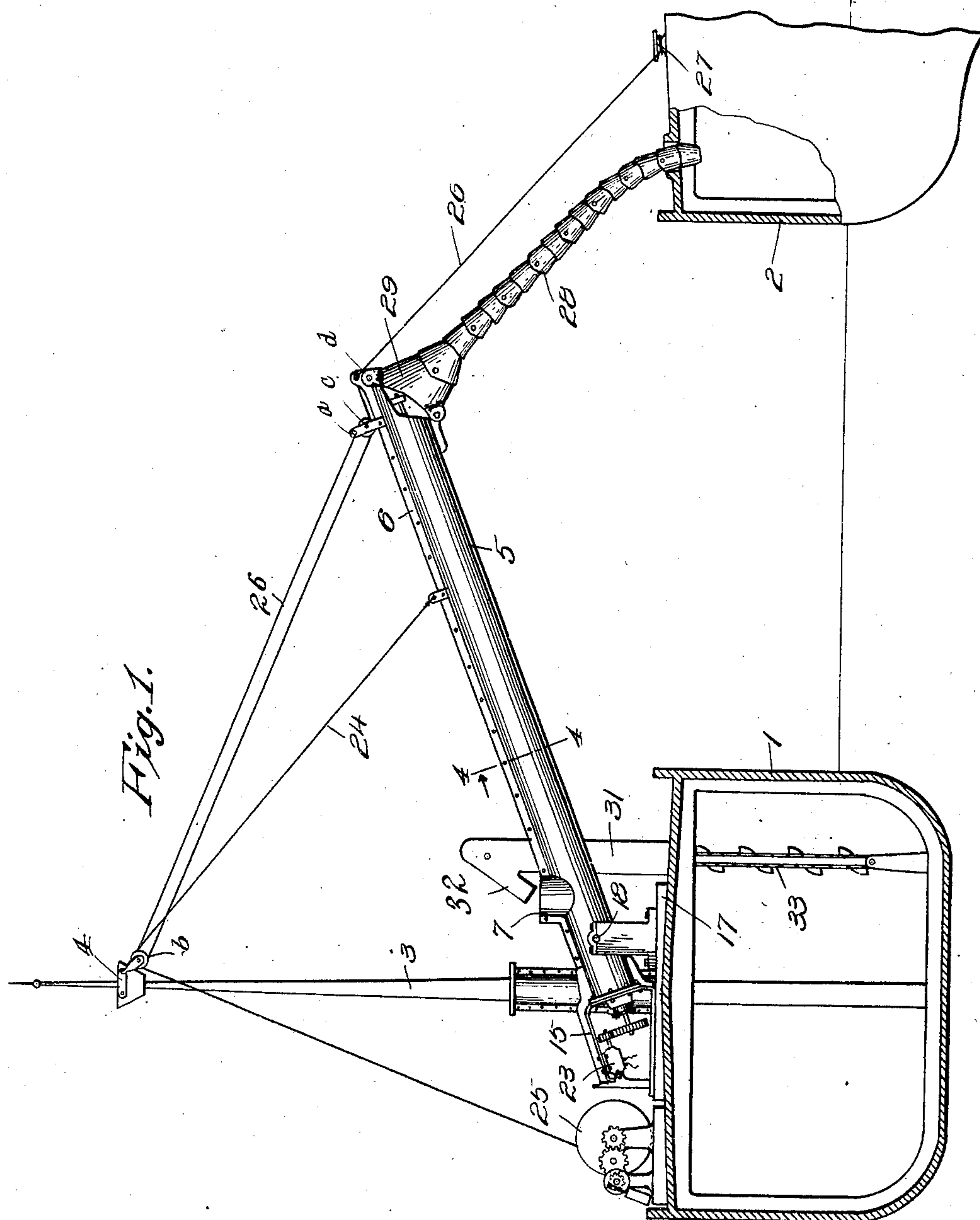


Fig. 1.

Inventor  
Vaino Anderson.

Witnesses

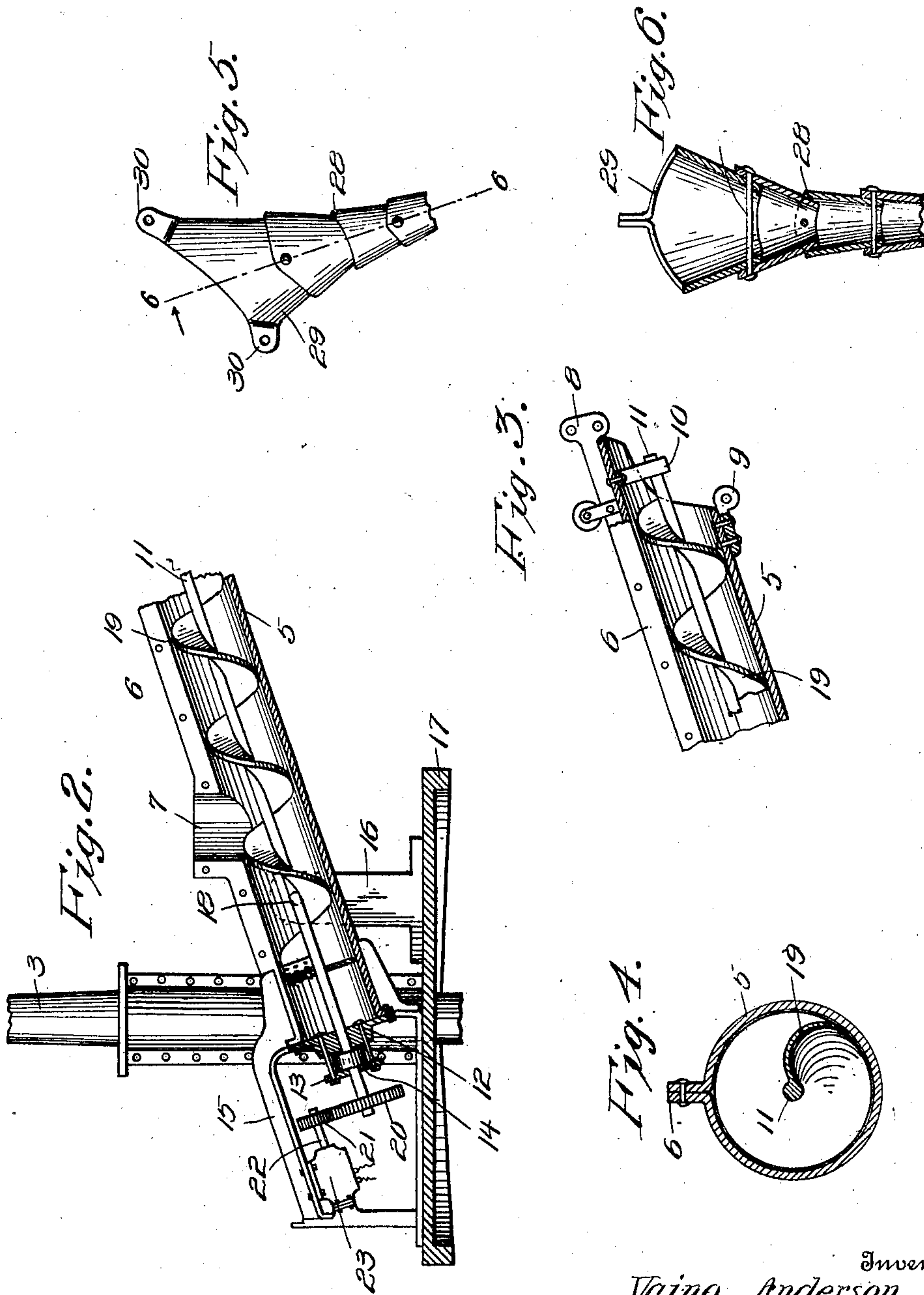
James F. Crown  
U. B. Hillyard.

By Victor J. Evans  
Attorney

975,312.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 2.



Witnesses

James F. Brown  
V. B. Hillyard

Inventor  
Vaino Anderson.

By Victor J. Evans  
Attorney



# UNITED STATES PATENT OFFICE.

VAINO ANDERSON, OF KNAPPTON, WASHINGTON.

## COALING DEVICE.

975,312.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed November 3, 1909. Serial No. 526,118.

*To all whom it may concern:*

Be it known that I, VAINO ANDERSON, a citizen of the United States, residing at Knappton, in the county of Pacific and State of Washington, have invented new and useful Improvements in Coaling Devices, of which the following is a specification.

To coal vessels at sea, particularly in rough weather, involves a problem. The present invention provides means for transferring coal from a barge or other form of carrier to the bunker of a vessel or ship to be supplied with fuel without necessitating the lashing of the barge to the vessel, which in rough weather involves great risk and danger. In accordance with the present invention the barge or other type of coaler is provided with elevating and transferring means, whereby the coal may be discharged from the hold of the coaler into the bunker of the vessel to be coaled while the two are located a safe distance from each other.

The invention contemplates an elevator mounted upon the coaler, means for adjusting the elevator to any elevation, other means for lifting the coal from the hold of the coaler and delivering the same into the elevator, and a jointed chute at the delivery end of the elevator for directing the coal into the bunker of the vessel to be coaled.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claims.

Referring to the drawings, forming a part of the specification, Figure 1 is a side view of a coaling mechanism involving the invention, showing the same in operative relation, the barge or coaler and the vessel to be coaled being indicated in section. Fig. 2 is a detail view of the receiving portion of the elevator, showing the same in section to illustrate more clearly the operation of the conveyer and the operating mechanism therefor. Fig. 3 is a sectional view of the outer end of the elevator. Fig. 4 is a transverse section of the elevator on the line 4—4 of Fig. 1. Fig. 5 is a detail view of the receiving end of the jointed chute. Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

Corresponding and like parts are referred to in the following description, and indi-

cated in all the views of the drawings, by the same reference characters.

The coaler is indicated at 1 and the vessel, ship or the like to be coaled by the reference numeral 2. A mast 3 is provided upon the coaler 1 and is provided near its upper end with a pulley block 4. An elevator is pivotally mounted upon the coaler so as to be adjusted vertically at its outer end. The elevator consists of a tube 5 having a rib 6 along its upper side to stiffen and strengthen the same. In the preferred construction the tube 5 is formed of a strip of plate metal bent upon itself into circular outline and having its longitudinal edge portions bent to provide flanges, which when brought together and bolted, or otherwise secured, form the rib 6. The tube 5 is provided near its inner or lower end with a hopper 7, into which the coal is discharged from the lifting means provided upon the coaler 1 raising the coal from the hold thereof. The outer end of the tube 5 is cut off on a slant and provided with an upper ear 8 and a lower ear 9, said ears being transversely apertured. A hanger 10 is provided upon the inner side of the overhanging portion of the tube 5 at the delivery end thereof and constitutes a bearing for the outer end of a shaft 11, which extends centrally through the tube 5. A cap 12 closes the inner end of the tube 5 and is bolted or otherwise secured thereto and forms a bearing for the inner or lower end of the shaft 11. A plate 13 is spaced from the cap 12 and connected thereto by bolts. A collar or shoulder 14 near the lower end of the shaft 11 is confined between the plate 13 and cap 12 and prevents longitudinal movement of the shaft 11 within the tube 5. A frame 15 is secured to the inner end of the tube 5 and moves therewith. A standard or support 16 is mounted upon a bed plate 17 secured to the deck of the barge or coaler 1 and supports the elevator, which is mounted thereon at 18, thereby admitting of the outer end of the elevator being raised or lowered. Within the tube 5 is located a conveyer of the screw type comprising shaft 11 and a spiral flight 19, which is secured to the shaft 11 in any manner. When the conveyer is rotated the coal discharged into the tube 5 through the hopper 7 is moved upward through said tube and discharged at the outer end thereof. A gear wheel 20, secured to the inner



end of the shaft 11, meshes with a pinion 21 fastened to the shaft 22 of a motor 23 carried by the frame 15. The motor 23 illustrated is of the electric type, thereby admitting of its movement with the elevator when adjusting the outer end of the latter vertically and said motor and adjunctive parts also serving as a counterbalance for the elevator, so that the same may be readily adjusted in a vertical direction at its outer end.

The outer end of the elevator is supported and may be adjusted vertically by means of a rope or cable 24, which is connected at one end to the tube 5 and passes upwardly and over a pulley provided upon the block 4 and extends downwardly and is secured to a windlass 25 mounted upon the coaler and adapted to be rotated in any manner. The outer end of the elevator may be moved automatically by means of a rope or cable 26, which is attached at one end to the tube 5 at *a* and passes around a pulley *b* mounted upon the pulley block 4 and thence around pulleys *c* and *d* near the outer end of the elevator and has its opposite end secured to a cleat 27 or fastened in any manner to the ship or vessel 2. It will be understood that as the rope or cable 26 is alternately pulled upon and released by the movements of the coaler 1 and ship 2, the outer end of the elevator will be correspondingly moved, thereby maintaining a proper relationship with reference to the two vessels.

The chute 28 is sectional in construction, whereby it is made flexible so as to yield in every direction and accommodate itself to the varying movements of the two vessels 1 and 2. The sections comprising the chute 28 taper in length so that the smaller end of one section may enter the larger end of the next section, the joints between the several sections being such as to prevent separation of the sections to a degree to admit of waste of the coal. The intermediate sections are pivoted to one another at a right angle to the pivot connection between the alternating sections, thereby admitting of the sections flexing vertically and laterally. The uppermost section 29 is flared and its larger end is formed at an angle to match the inclined end of the tube 5 to form in effect a minor joint, whereby the elevator and chute 28 may be inclined in opposite directions. The section 29 is formed with ears 30, which are connected to the respective ears 8 and 9 of the tube 5.

The lifting means provided upon the coaler for raising the coal from the hold consist of a tube 31, having a spout 32 and a chain conveyer 33. The buckets of the chain conveyer 33 pick up the coal and carry the same upward through the tube 31 and discharge the same through the spout 32, said spout being arranged to deliver the coal into the hopper 7. As the coal is dis-

charged into the tube 5 it is moved through said tube by the screw conveyer arranged therein and discharged into the chute 28 which directs the same into the bunker of the vessel 2.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention what is claimed as new, is:—

1. In means for transferring coal from one vessel to another, the combination of an elevator comprising a tube pivotally mounted upon the coaler and adapted to incline upwardly and outwardly therefrom, a flexible chute connected with the delivery end of the elevator and inclining outwardly and downwardly therefrom and connected with the vessel to be coaled, and a cable and pulley system between the two vessels and the said tube to automatically raise and lower the adjacent ends of the tube and chute to adapt them to the relative movements of the two vessels when riding the waves.

2. In means for transferring coal from one vessel to another, the combination of an elevator pivotally mounted upon the coaler and inclining upwardly and outwardly therefrom, hoisting means for raising or lowering the outer end of the elevator comprising a cable, a pulley and a windlass, a flexible chute pivotally connected with the delivery end of the elevator and inclining outwardly and downwardly therefrom and connected with the vessel to be coaled, and a cable and pulley system between the two vessels and the elevator to automatically raise or lower the adjacent ends of the elevator and chute to adapt the same to the relative positions of the two vessels when riding the waves.

3. In unloading mechanism of the character described, the combination of an elevator pivotally mounted upon the vessel to be unloaded and inclining upwardly and downwardly therefrom, said elevator comprising a tube or casing and a conveyer, a motor mounted upon the frame of the elevator and movable therewith, connecting means between the motor and conveyer, means for delivering the load from the hold of the vessel to the said elevator, a flexible chute inclining outwardly and downwardly from the elevator to effect delivery of the load therefrom to the vessel to be loaded, means

for raising or lowering the elevator, and a cable and pulley system between the two vessels and the elevator for automatically raising or lowering the elevator at its delivery end to admit of self-adjustment of the elevator and chute and the relative positions of the vessels when riding the waves.

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

VAINO ANDERSON.

Witnesses:

AL. CROCKET,  
H. B. SETTEM.