No. 716,692. Patented Dec. 23, 1902.

H. ELLIS.

LOADING DEVICE.

(Application filed Aug. 19, 1902.)

(No Model.) 2 Sheets—Sheet 1.

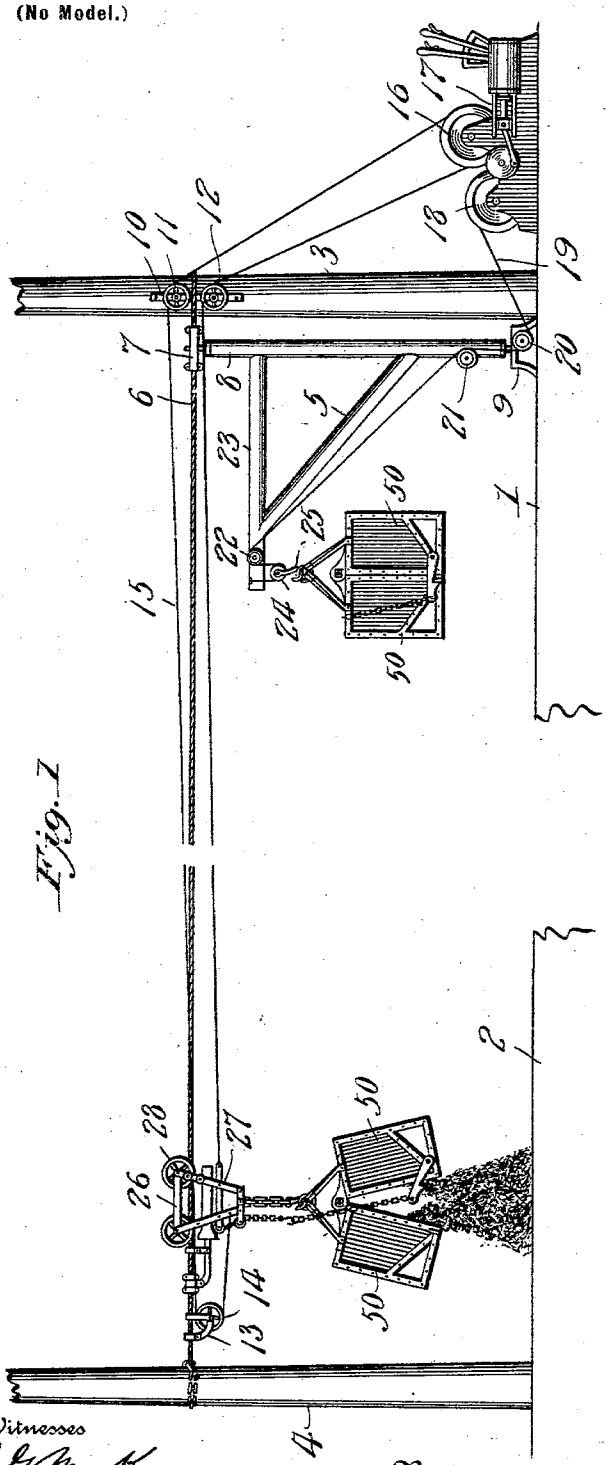


Fig. 7.

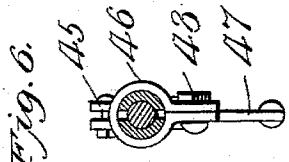


Fig. 6.

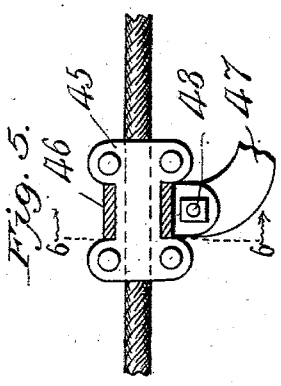


Fig. 5.

Witnesses
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Fig. 3.

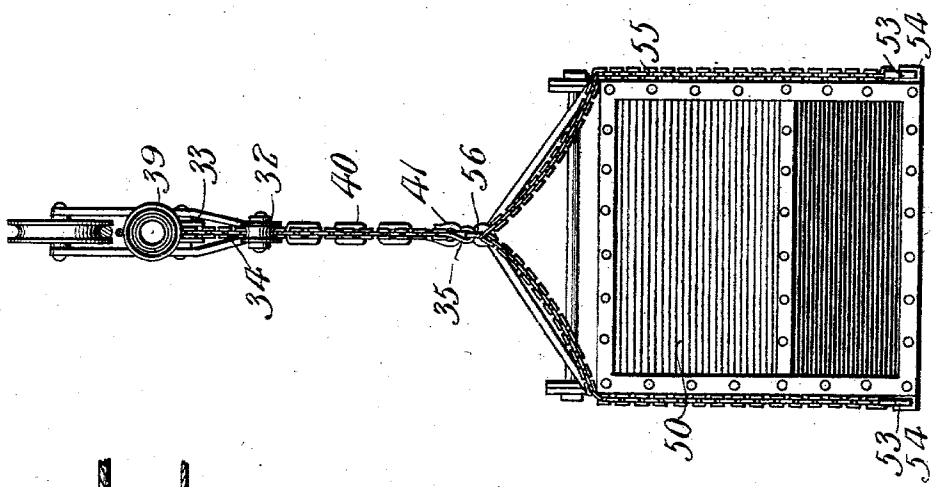


Fig. 2.

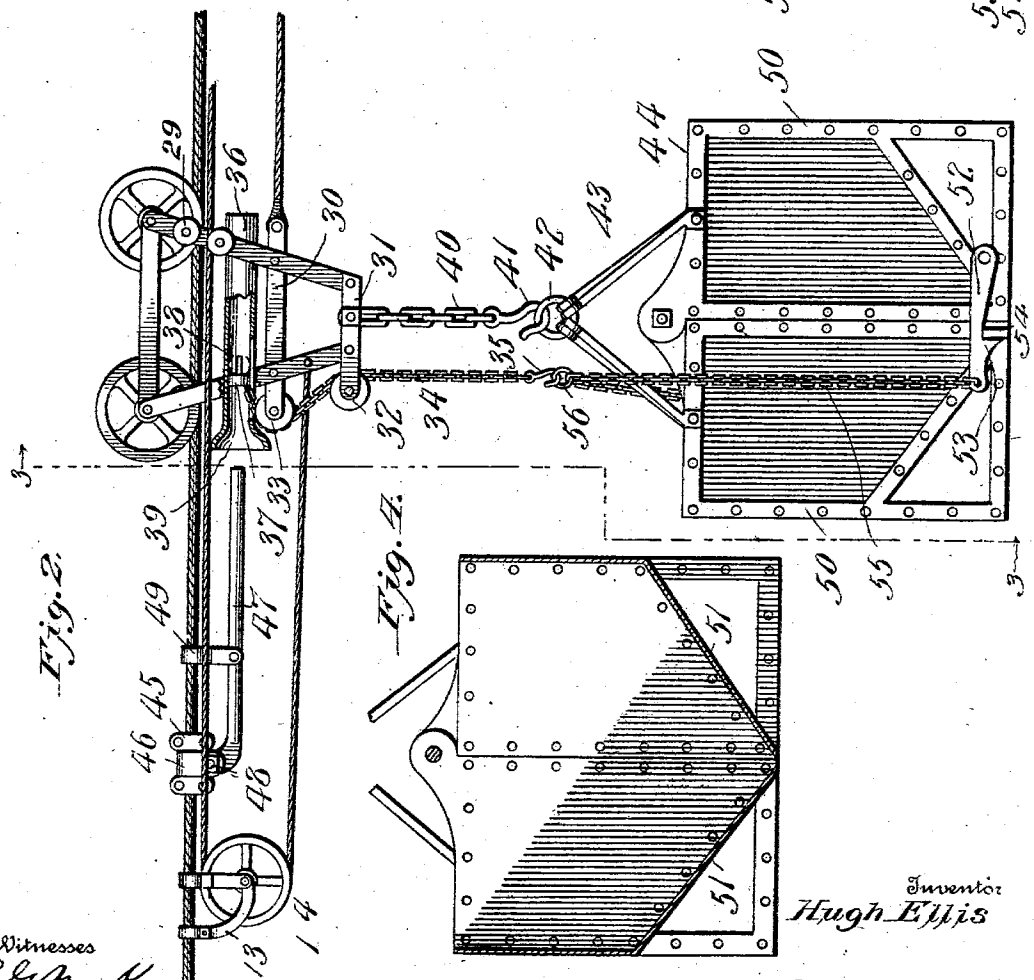


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

HUGH ELLIS, OF BROWNVILLE, MAINE.

LOADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 716,692, dated December 23, 1902.

Application filed August 19, 1902. Serial No. 120,214. (No model.)

To all whom it may concern:

Be it known that I, HUGH ELLIS, a citizen of the United States, residing at Brownville, in the county of Piscataquis and State of Maine, have invented new and useful Improvements in Loading Devices, of which the following is a specification.

This invention relates to an apparatus for loading coal or the like into vessels at sea from barges or other vessels without requiring anchorage of the vessel loaded and the supply vessel; and the primary object of the same is to provide a simple and effective organization of contributing elements whereby a vessel may be expeditiously supplied with coal without liability of injury to such vessel and while a heavy sea is on.

A further object of the invention is to provide a simple apparatus which can be easily rigged or arranged in operative condition without interfering with the ready manipulation of the receiving vessel and supply vessel and wherein the operation of relieving particular forms of carriers of their loads will be automatic when such carriers arrive over the filling means of the bunkers of the receiving vessel.

A still further object of the invention is to provide an apparatus of the class set forth capable of a general use and application where it is desired to utilize a self-acting dumping apparatus.

With these and other objects and advantages in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is an elevation representing the decks of two vessels with portions of masts rising therefrom and illustrating the mode of applying and operating the improved apparatus. Fig. 2 is an enlarged side elevation of a portion of the apparatus broken away to illustrate the means for causing a self-dumping action of the carriers. Fig. 3 is a transverse vertical section on the line 3 3, Fig. 2. Fig. 4 is a longitudinal vertical section of one of the carriers. Fig. 5 is a detail elevation of a portion of the carrying cable and clamp in section for holding the projecting element for causing the self-dumping action of the apparatus. Fig. 6 is a transverse vertical section on the line 6 6, Fig. 5.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numerals 1 and 2 respectively designate the decks of vessels representing a supply vessel or collier and a steamer or other vessel to receive coal or the like from the vessel 1. In other uses of the improved apparatus the numerals 1 and 2 may represent base-supports at distant points. Rising from the vessels 1 and 2 or the supports, as the case may be, are masts 3 and 4, which may be a part of the equipment of the vessels or rigged up for the purpose. Arranged close to the mast 3 is a crane 5, which may be disposed to swing or operate on opposite sides of said masts, and to the latter and the mast 4 the opposite extremities of a cable 6 are secured. This cable 6 may be any suitable length. At a point close to the mast 3 a bearing-plate 7 intersects the cable 6 and rotatably receives the upper end of the mast 8 of the crane 5, the lower end of said mast being stepped in a base-support 9. On the mast 3, close to the point of attachment of the cable 6 thereto, a pulley-frame 10 is secured and has pulleys 11 and 12 above and below the cable. On the cable adjacent to the mast 4 a hanger 13 is secured and has therein a pulley 14, and engaging the pulleys 11 and 12 and the pulley 14 is a drive-cable 15, running to and actuated by a drum 16 of a hoisting and actuating motor or engine 17, also having a second drum 18, from which a hoisting-cable 19 extends to guide-pulleys 20 and 21, respectively, mounted on the base-support 9 and lower extremity of the crane-mast 8. The hoisting-cable 19 continues from the upper guide-pulley 21 to a guide-pulley 22 on the end of the arm 23 of the crane and from the latter passes to a hoisting-block 24 and is then terminally secured to the said arm 23, as clearly shown by Fig. 1. The hoisting-block 24 may be of any preferred form of construction and has a hook 25 for a purpose which will be presently set forth. The motor or engine 17 will be of such form that the

drums 16 and 18 may be unitedly or independently actuated, and any suitable device for this purpose may be employed.

A traveler 26 is mounted and moves over the cable 6 and comprises an inverted substantially triangular frame 27, depending from upper grooved wheels 28, disposed on the cable 6. One member of the depending frame or that nearest to the crane has guide-pulleys 29 thereon between which the driving-cable 15 has movement and is adapted to bear against either one of the said pulleys to prevent said cable from sagging to too great an extent, with obvious advantages in the operation of the apparatus. The one terminal of the driving-cable 15 is secured to the member of the depending frame 27 opposite that having the guide-pulleys 29 thereon and near the lower extremity of said frame. The opposite terminal of said driving-cable is attached to one end of a horizontal pull-bar 30, secured to the depending frame 27, this latter terminal of the driving-cable being located at the side of the frame on which the guide-pulleys 29 are arranged, and by this means it will be seen that the traveler may be readily controlled in its movements in opposite directions over the cable 6, which serves as a support therefor. The opposite side members of the depending frame 27 are arranged in parallel pairs and connect with a bottom bar 31, which is parallel with the pull-bar 30 and projected beyond the side of the frame opposite that having the guide-pulleys 29 thereon. In the ends of the bottom bar 31 and the pull-bar 30 immediately thereabove guide-pulleys 32 and 33 are mounted and engaged by a chain 34, which depends below the bottom bar 31 and has a terminal hook 35, said chain serving as a trip means in a manner which will be presently set forth. Between the members of the sides of the frame above the pull-bar 30 is a horizontally-disposed striking tube 36 with a slot in the bottom thereof near the pulley 33, and the chain 34 after passing over said latter pulley projects upwardly through the slot and is secured to a head 37, slidably mounted in the said striking tube and having spring-fingers 38 to cause it to be properly guided in the said tube with a friction sufficient to prevent it from moving too easily or becoming disarranged. The end of the striking tube 36, which is projected beyond the side members of the depending frame opposite those carrying the guide-pulleys 29, is constructed with a bell-mouth 39 for the entrance thereinto of an actuating element which will be presently set forth. Depending from the center of the bottom bar is a hanger-chain 40, provided with a lower terminal hook 41 for removable engagement with a ring 42, to which extend a series of suspending rods or bars 43, movably attached to the upper end of a bucket or carrier 44, a number of said buckets or carriers being supplied and used with the improved apparatus. On the cable 6, close to the hanger 13, a bearing-clamp 45 is secured and is embraced by a securing-jaw 46 at the upper extremity of a horizontally-projecting striker 47, the said jaw being immovably held in connection with the bearing-clamp 45 by a bolt and nut 48. The striker 47 consists of an elongated bar, and to assist in holding it in a true operative position an auxiliary clamp 49 engages the cable 6 and is also attached to the striker. The striker 47 is disposed in direct alinement with the center of the bell-mouth 39 of the striking tube 36, so that when the traveler moves close enough to the striker, the end of the latter will enter the tube and contact with the head 37 and push the latter toward the opposite end of the tube, and thereby draw upwardly on the trip-chain 34.

The bucket or carrier 44 comprises two members 50, which are exact counterparts in construction and are hinged at the top at opposite ends, so as to open at the bottom. The bottoms 51 of the members 50 incline inwardly and downwardly toward the center, and at the lower portion of each end of the bucket or carrier a latch 52 is secured to one member and has a shoulder 53 to removably engage an outstanding lug or projection 54 on the other member. The end of the latch opposite that which is pivotally attached is projected a sufficient distance beyond the lug or projection 54 and has the lower end of a pull-chain 55 secured thereto, both chains extending upwardly and connecting with a top ring or enlarged link 56, for engagement with the hook 35 on the lower end of the trip-chain 34.

The operation of the improved device is as follows: A bucket 44 is attached to the hook 25 of the block 24 in connection with the crane 5 and is lowered into the hole of the collier or supply vessel, care being first taken to throw the latches 52 over the lugs or projections 54 to hold the two members of the bucket firmly closed. The lowered bucket is then loaded with coal and elevated by the motor or engine 17 and the crane swung to such position that the hook 41 of the hanger-chain 40, depending from the traveler-frame 27, may be placed in engagement with the ring 42, connected to the suspending-bars 43 of the bucket. After the bucket has thus been attached to the traveler the latter is propelled over the cable 6 by properly operating the motor or engine 17 to the vessel 2, over the deck of which the striker 47 will be disposed in a desired position to cause the bucket to dump into a bunker or a receptacle, as the case may be. When the traveler 26 arrives over the vessel 2, the striker 47 enters the striking tube 36 and engages the head 37 with such force as to cause the said head to move toward the end of the striking tube opposite that having the bell-mouth 39, and such movement of the head exerts an upward pulling tension on the trip-chain 34, and such tension is transmitted to

the pull-chains 55 with sufficient force to pull upwardly on and clear the latches 52 from the lugs or projections 54 and permit the two members of the bucket to fly apart and deposit their contents in the vessel 2, as shown by Fig. 1. During this time another bucket will have been attached to the crane loaded and elevated and ready for engagement with the traveler 26 to replace an empty bucket returned by a reverse movement of the engine or motor. This operation can be rapidly carried on, and, as before indicated, instead of using the apparatus for loading or coaling vessels at sea, it is also useful in general transferring and dumping operations on land, though it has been particularly devised for loading coal into vessels, as fully explained. After a vessel has been fully loaded or supplied with the amount of coal desired the cable 6 will be detached from the mast 4 and with the traveler and other devices drawn toward the vessel 1, when the derrick and cable may be dismantled and stored away or reduced to compact form.

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

1. In an apparatus of the class set forth, the combination of a cable, a traveler movably mounted on the cable and having a hanger device depending therefrom, a striking tube carried by the traveler and having a head movable therein, a trip-chain secured to the head and depending below the traveler, a striker secured on the cable to engage the striking tube, a bucket consisting of separable parts having latch devices to which the said trip-chain is separably connected, and means for operating the traveler to move it backwardly and forwardly over the cable.

2. In an apparatus of the class set forth, the combination of a cable, a traveler movable over the cable and carrying a slidable head with a depending trip-chain connected thereto, a striker secured to the cable to engage the said head, a dumping-bucket suspended from the traveler and having latch devices connected to the trip-chain, and means for moving the said traveler.

3. In an apparatus of the class set forth, the combination of a crane having hoisting devices in connection therewith, a cable, a traveler movable on the cable and having a hanger-chain depending therefrom, a slidable head carried by the hanger and provided with a depending trip-chain, a horizontally-disposed immovable striker secured to the cable to engage the said head, a bucket consisting of separable members provided with latch devices detachably connected to the trip-chain, and means for operating the traveler.

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

HUGH ELLIS.

Witnesses:
HIRAM GERRISH,
DAVID ELLIS.