

No. 700,600.

Patented May 20, 1902.

W. D. BALDWIN & A. SUNDH.
SHIFTING DEVICE FOR PIERS, &c.

(Application filed Dec. 17, 1901.)

(No Model.)

FIG. 1.

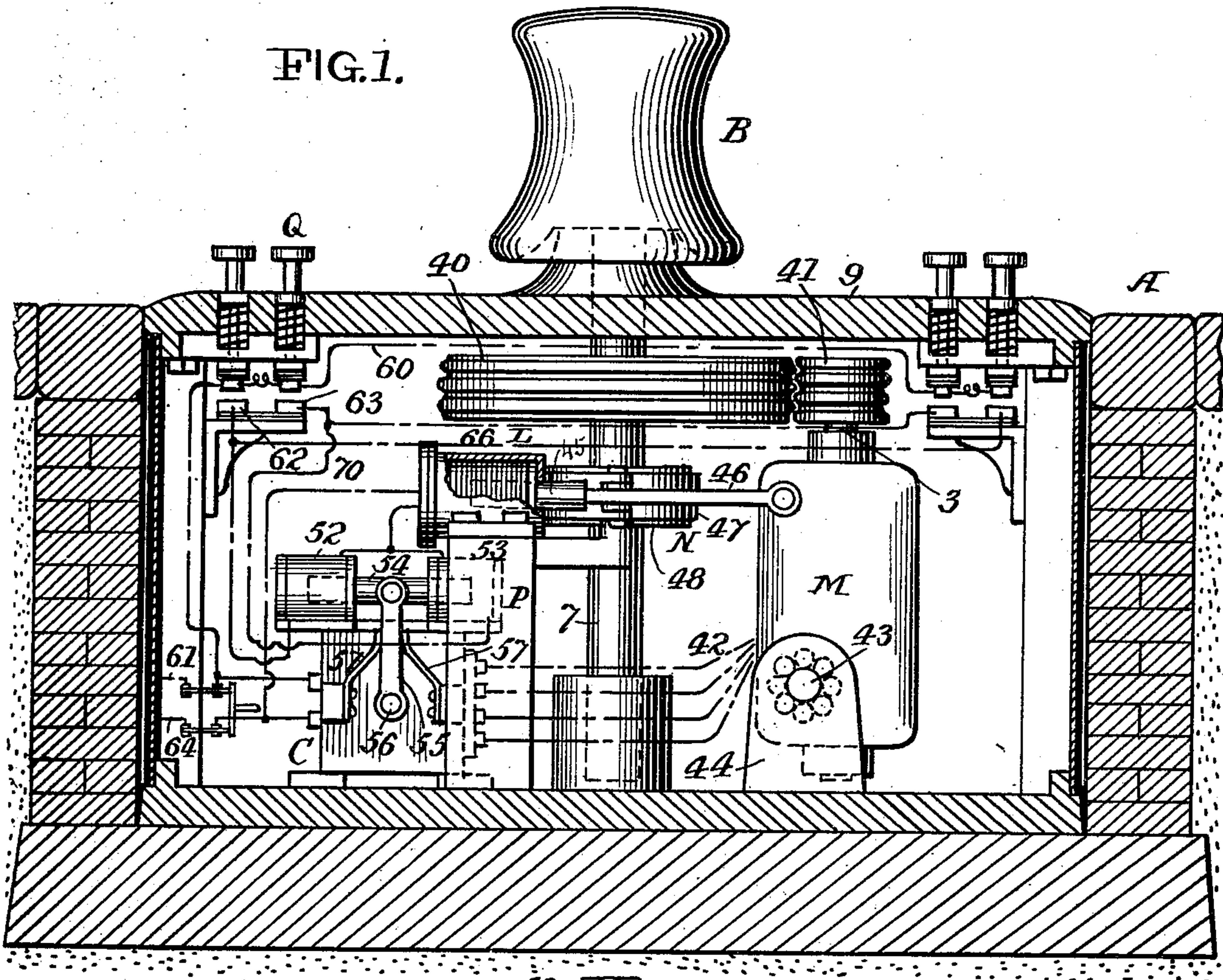
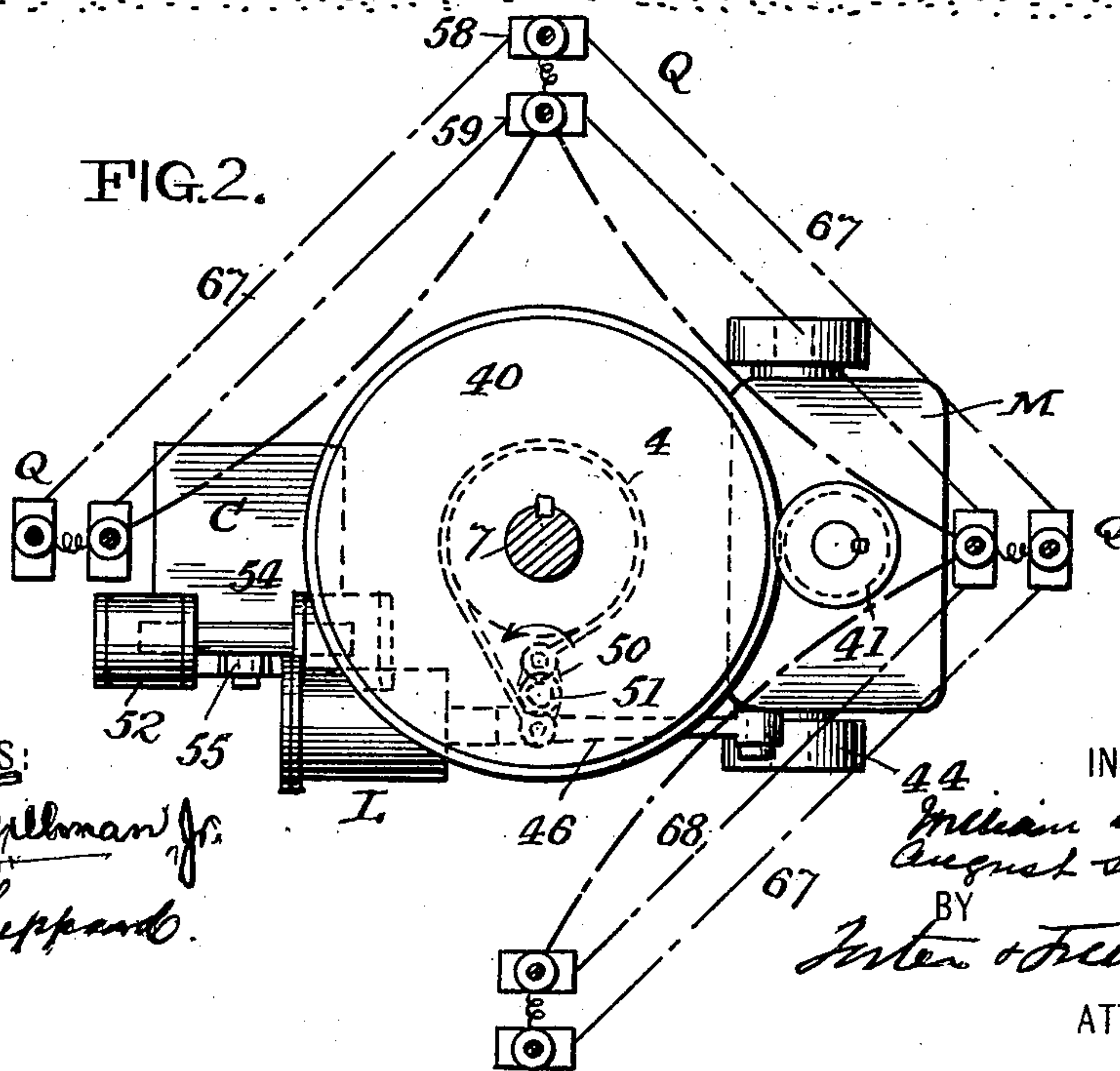


FIG. 2.



WITNESSES:

Am. Gillman Jr.
J. R. Sheppard.

INVENTORS

William D. Baldwin
August Sundh

BY

John & Freeman

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM D. BALDWIN, OF NEW YORK, AND AUGUST SUNDH, OF YONKERS,
NEW YORK, ASSIGNORS TO OTIS ELEVATOR COMPANY, OF EAST ORANGE,
NEW JERSEY, A CORPORATION OF NEW JERSEY.

SHIFTING DEVICE FOR PIERS, &c.

SPECIFICATION forming part of Letters Patent No. 700,600, dated May 20, 1902.

Application filed December 17, 1901. Serial No. 86,334. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM D. BALDWIN, residing in the city and county of New York, and AUGUST SUNDH, residing at Yonkers, in the county of Westchester, State of New York, citizens of the United States, have invented certain new and useful Improvements in Shifting Devices for Piers, &c., of which the following is a specification.

Our invention relates to capstans, and especially to those which are arranged in connection with piers or embankments to facilitate the shifting of loads, vessels, &c.; and our invention consists in means whereby a capstan may be driven by friction-gears adapted to be thrown out of connection as desired, and especially in electrical means for operating the parts, all as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of part of the pier or embankment, showing a capstan and operating devices arranged within a vault in the pier; and Fig. 2 is a plan view showing the main operating parts and electrical connections between the operating devices.

The capstan B is mounted on the upper end of a shaft 7, which has its bearings within a chamber or vault X below the footway A, the cap or cover 9 of the vault being flush with and forming part of the footway.

Upon the shaft 7 is mounted a friction-drum 40, adapted to engage a friction pulley or pinion 41, carried by the shaft 3 of a motor M, which for some purposes may be of any suitable character, but which is shown as an electric motor, to which pass the proper series of conducting-wires 42.

The motor M is provided with trunnions 43, rocking in bearings 44, the trunnions being so arranged that the weight of the motor tends to swing it outward in the direction of the arrow, Fig. 1, to carry the pulley 41 away from the drum 40.

In order to start the capstan in motion, it is necessary to bring the friction-gears into engagement, and we therefore provide an engine L, which may be put into operation to carry the main motor-engine M in the re-

verse direction from that pointed out by the arrow. As shown, this engine L consists of a solenoid 66, the core 45 of which is connected by a link 46 with the frame of the motor-engine M, and when the solenoid is energized the core will be drawn inward, and thereby swing the motor M, so as to bring the gears into engagement.

A band-brake device N is provided with a band 47, encircling a pulley 48 upon the shaft 7, the ends of the band being connected to a lever 50, vibrating on a fixed pivot 51, and with the outer end of this lever is also connected the link 46, so that as the motor M is swung away from the drum 40 the lever 50 will be turned in the direction of its arrow, Fig. 2, to apply the brake, and when the motor M is carried toward the drum to start the latter the brake will be relaxed.

In order to start the motor M in either direction, we make use of a suitable control device P, the character of which will depend upon the character of the motor M. In the case of an electric motor the said control device consists of two solenoids 52 53, having a common core 54, which is connected to an arm 55 upon a rock-shaft 56 of the usual electric switch device C. Springs 57 tend to hold the arm 55 and its connected switch in a central position, and when the arm is swung to one side or the other as one or the other of the solenoids is excited the switch will make the circuit in one direction or the other, so as to start the motor in one direction or the other, in a manner too well understood in connection with electric hoisting apparatus to need further description.

In connection with a capstan-shifting device, where it is necessary to throw a rope or cable in one direction or the other over the top of the capstan and to tighten and loosen it from different points, it is desirable to be able to control the movements of the capstan with the operator stationed at different points in relation to the latter. We therefore provide a series of operating devices Q arranged at different points in the footway or in the cap or roof of the vault, so that the operator by a pressure of the foot can start the engine

in either direction or arrest its motion at will. In the construction shown each operating device consists of two spring-supported pins 58 59, having terminals at their lower ends which are connected in series with each other and with the terminals of all the control devices on the conductor 60, connected with the + leading-in wire 61.

Beneath the terminals of the pins 58 and 59 are contacts 62 63, one contact 62 being connected with the negative leading-in wire 64 in series with the solenoids 52 and 66 and also with the pins 58 by conductor 67, while a return-conductor 68 includes in circuit all of the contacts below the pins 59 and a conductor 70, which includes in series the solenoids 53 and 66 and extends to the — leading-in wire. By this arrangement pressure upon any one of the pins 58 completes a circuit first through the solenoid 52 to swing the arm 55 and start the motor M in one direction and then through solenoid 66 to swing the motor and bring the pulley 41 into connection with the drum 40, while pressure upon one of the pins 59 will complete a circuit including the solenoids 53 and 66, to thereby swing the arm 55 in the opposite direction, starting the motor M in the opposite direction, but also swinging said motor inward to bring the gears into frictional engagement. The removal of pressure upon either one of the pins will tend to break the circuit and cause the motion of the engine to be arrested. There is not only an arrest of the motion of the engine which will result in arresting the driving of the capstan, but it will be seen that there is also a disconnecting of the driving-gear, which will leave the capstan free to turn except so far as it may be resisted by the action of the brake.

It will be evident that some of the features above specified may be used in connection with capstans arranged upon board ship or elsewhere.

Without limiting ourselves to the precise construction and arrangement of parts shown, we claim as our invention—

1. The combination with a capstan, of a shaft secured thereto and extending downward into a vault or chamber, a friction-drum on said shaft, a driving-engine having a shaft carrying a friction-pin, and means for shifting the position of the engine to carry the friction-pin into and out of engagement with said drum, substantially as set forth.

2. The combination with a capstan, of a shaft extending downward therefrom and carrying a friction-drum, a motor carrying a friction-pin, said motor being pivotally supported to swing the pinion away from the drum, and means for swinging the motor to bring the pinion into engagement with the drum, substantially as set forth.

3. The combination with a capstan, of a shaft extending downward therefrom and carrying a friction-drum, a motor carrying a friction-pin, said motor being pivotally supported to swing the pinion away from the drum, means for swinging the motor to bring the pinion into engagement with the drum, and a control device adjacent to the capstan to operate said means, substantially as set forth.

4. The combination with a capstan, of a shaft secured thereto and extending downward into a vault or chamber, a friction-drum on said shaft, an electric driving-engine having a shaft carrying a friction-pin, and an electric motor for shifting the position of the engine to carry the friction-pin into and out of engagement with said drum, substantially as set forth.

5. The combination with a capstan, of a shaft secured thereto and extending downward into a vault or chamber, a friction-drum on said shaft, an electric driving-engine having a shaft carrying a friction-pin, an electric motor for shifting the position of the engine to carry the friction-pin into and out of engagement with said drum, switches, and a control device adjacent to the capstan for operating said switches, substantially as set forth.

6. The combination with a capstan, of a shaft secured thereto and extending downward into a vault or chamber, a friction-drum on said shaft, an electric driving-engine having a shaft carrying a friction-pin, an electric motor for shifting the position of the engine to carry the friction-pin into and out of engagement with said drum, a series of switches, and control devices adjacent to the capstan for operating said switches, substantially as set forth.

7. The combination with a shaft supporting a capstan at one end and carrying a friction-drum, of an electric-motor engine having a shaft carrying a friction-pin and movable to and from said drum, an electric motor for shifting the engine, a reversing-switch, an electric motor for shifting said switch, and means for operating the switch-controlling motor from different positions adjacent to the capstan, substantially as set forth.

8. The combination with a shaft supporting a capstan at one end and carrying a friction-drum, of an electric-motor engine having a shaft carrying a friction-pin and movable to and from said drum, an electric motor for shifting the engine, a control device for stopping, starting and reversing the engine, an electric motor for actuating the control device, and means for putting the control-device motor into and out of operation from different points adjacent to the capstan, substantially as set forth.

9. The combination of a capstan, shaft, friction-gears, movable electric engine, electric motors for shifting the engine and controlling the passage of current thereto, and a brake connected to the engine to be relaxed as the gears are brought into engagement, substantially as set forth.

10. The combination with a capstan, motor-

engine, gears, and electric control device, of solenoids and cores connected to actuate the control device, and means adjacent to the capstan for making and breaking at will circuits including the solenoids, substantially as set forth.

11. The combination with a capstan, motor-engine, gears, and electric control device, of solenoids and cores connected to actuate the control device, a brake and solenoid for operating the same, and means adjacent to the capstan for making and breaking at will circuits including the solenoids, substantially as set forth.

12. The combination with a capstan, movable engine, gears, control device, and electric motors for shifting the engine and actuating the control device, of a plurality of circuit-

breakers arranged adjacent to the capstan to make and break the circuits including the said motors, substantially as set forth.

13. The combination with a capstan, shaft, friction-drum, movable engine, and friction-pulley, of a solenoid having a core connected to the engine, and a brake device connected with the parts operated from said solenoid, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM D. BALDWIN.
AUGUST SUNDH.

Witnesses:

W. H. BRADY,
H. R. MARSDEN.