

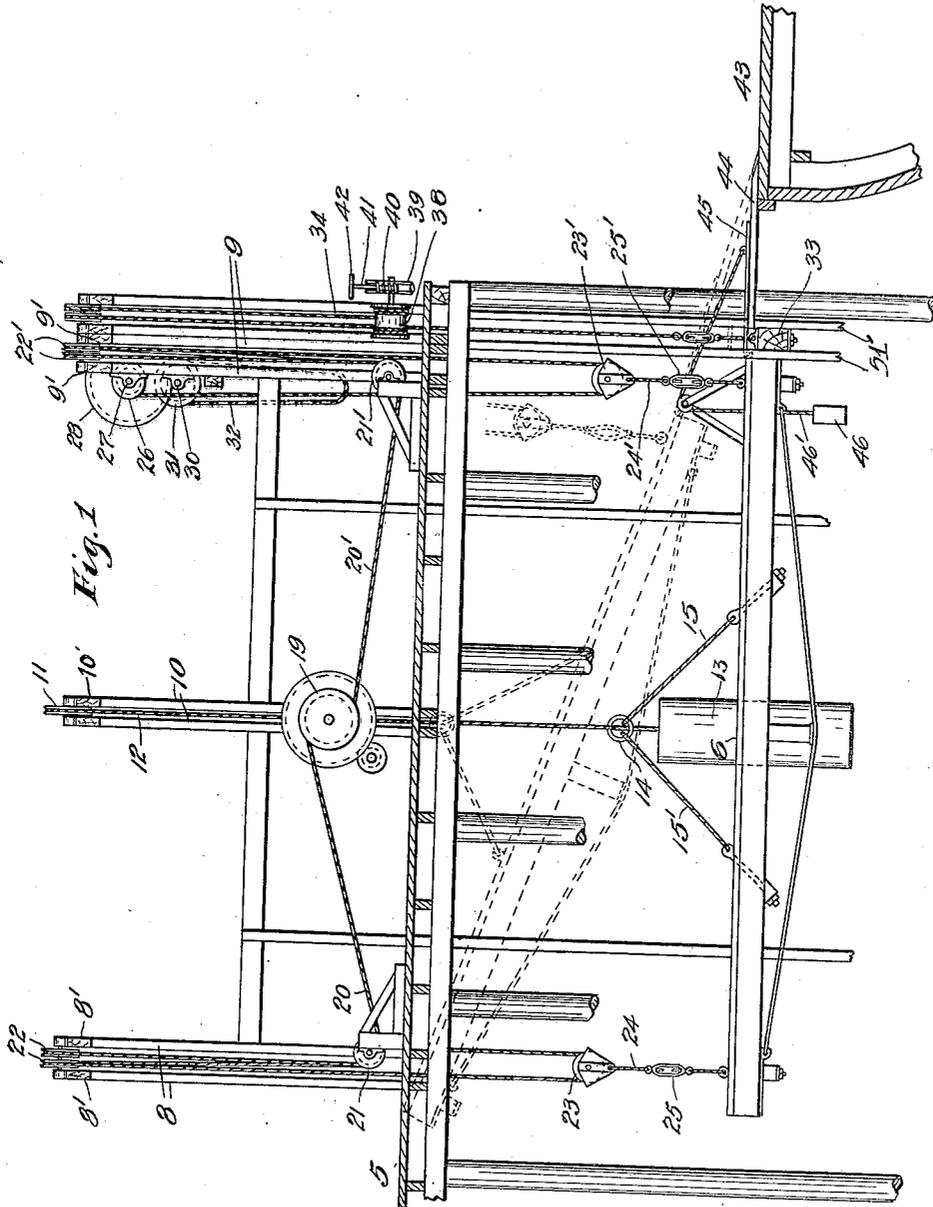
H. BARLOW.
ELEVATOR.

APPLICATION FILED APR. 9, 1913.

1,279,967.

Patented Sept. 24, 1918.

2 SHEETS—SHEET 1.



WITNESSES:
H. L. Opsahl,
E. Peterson

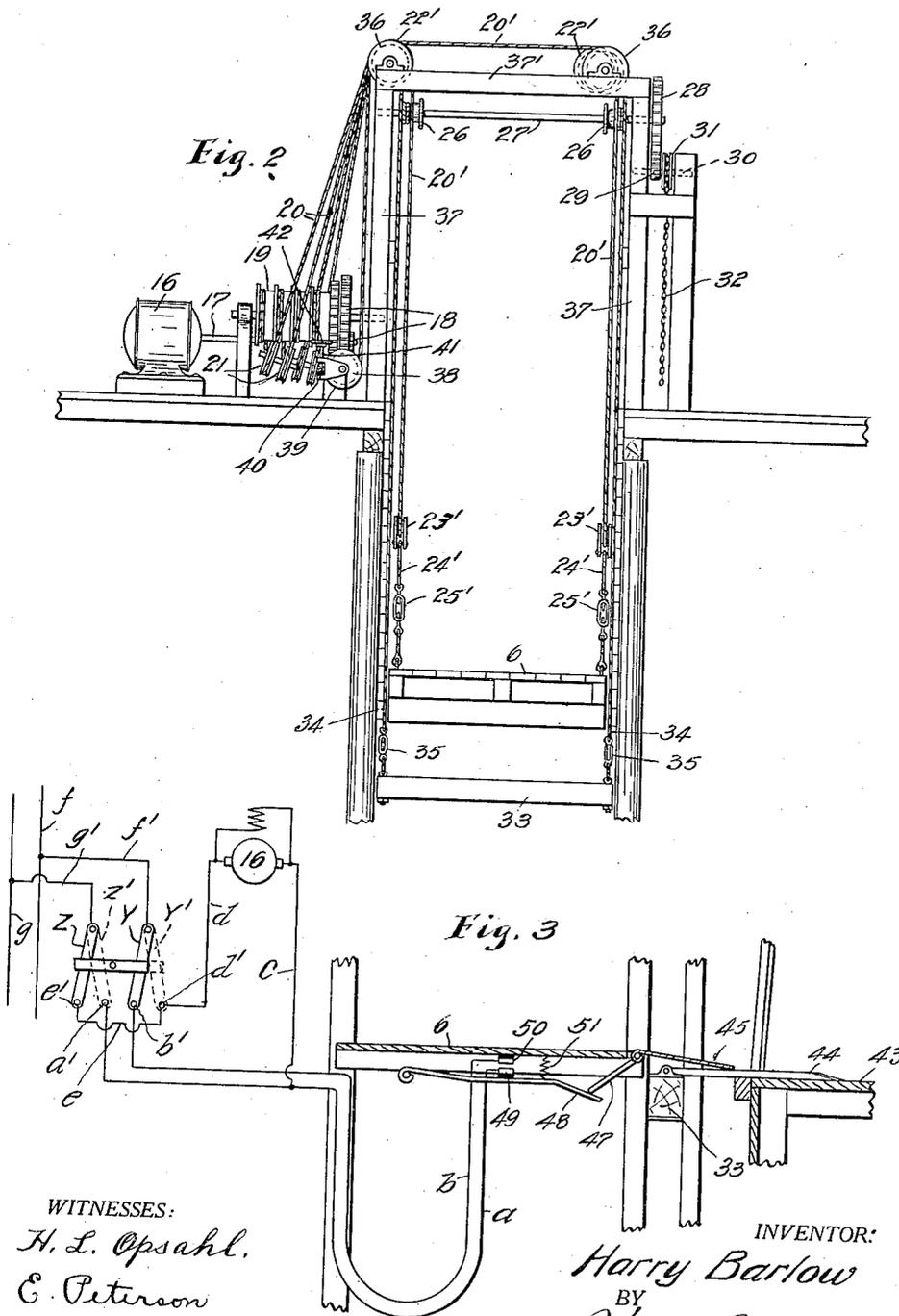
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Harry Barlow
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UNITED STATES PATENT OFFICE.

HARRY BARLOW, OF SEATTLE, WASHINGTON.

ELEVATOR.

1,279,967.

Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed April 9, 1913. Serial No. 760,048.

To all whom it may concern:

Be it known that I, HARRY BARLOW, a citizen of the United States, residing at Seattle, in the county of King and State of Wash-
5 ington, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

This invention relates to apparatus for facilitating the loading and unloading of
10 vessels. The work of lowering or hoisting cargo to or from the deck of a vessel lying alongside of a dock in a harbor has hitherto proved to be an arduous and expensive un-
15 dertaking by reason of the rise and fall of tides and in rough waters to the rocking of a vessel under the influence of waves.

The cargo is oftentimes handled through the medium of "slings" and tackle suspended from the vessel's rigging, or by means of
20 trucks which are drawn up or lowered through the medium of powercables on inclined ways or gang-planks extending from the vessel to the dock platform.

Where the difference in the heights of
25 tides is relatively great, as for example twenty-five feet or more, the personal risks to the operators and the loss of the goods being transported are considerable, and the time and expense for handling the cargo is
30 excessive.

The object of the present invention is the provision of a movable platform which may be interchangeably used as an elevator upon which loads may be elevated or lowered or
35 employed as a gang-plank over which live stock may be driven or the cargo wheeled upon trucks, involving less risk, greater convenience and more despatch than heretofore.

An embodiment of the invention is illustrated in the accompanying drawings, in which—Figure 1 is a longitudinal vertical section of a wharf with my invention applied thereto and shown in side elevation in its relation to a marine vessel. Fig. 2 is a front
40 elevation of the same with the vessel omitted and with the beam and aprons omitted. Fig. 3 is a detail view in vertical section of parts illustrated in Fig. 1 and showing diagram-

matically the electric power control whereby the raising and lowering of the elevator is
50 regulated.

In the drawings, the reference numeral 5 designates the deck of a wharf or dock having at the front a gap to accommodate an elevator platform 6. The framework of the
55 elevator is formed of pairs of end posts 8 and 9 and intermediately disposed posts 10 which are disposed at opposite sides of the gap and the posts of each pair are respectively connected from their upper ends by
60 transversely arranged timbers 8¹, 9¹ and 10¹. Secured to timber 10¹ are the axle-boxes for sheaves 11 for lines such as 12, Fig. 1. One end of each supports a counterweight 13 and the other end is connected to a ring 14 or an
65 equivalent which is connected to the adjacent side of the platform by forwardly and rearwardly extending sling ropes 15 and 15¹. The combined weights of the counterweights are slightly less than the weight of the plat-
70 form 6.

16 represents a motor which is operatively connected by shafting 17 and gears 18 with a hoisting drum 19 upon which is connected and wound four cables, one for each corner
75 of the platform; of which lines 20 for supporting the back end of the platform extend about guide pulleys, such as 21, thence over rope sheaves 22 supported upon the timbers 8¹, then down about block-pulleys, as 23, and
80 have the remote ends suitably secured to the timber 8¹. The block-pulleys 23 are each connected with the adjacent rear end of the platform by line 24 including a turn-buckle 25. The cables 20¹, which support the for-
85 ward end of the platform, extend from the drum 19 about guide-pulleys, as 21¹, thence over rope-sheaves 22¹ supported by timbers 9¹, then about block-pulleys 23¹ to have their ends wound about winch-drums 26 which are
90 keyed or otherwise secured to a shaft 27 journaled in bearings secured to posts 9.

The pulleys 23¹ are connected by lines 24¹, provided with turn-buckles 25¹, with the forward corners of the platform. The office of
95 the turn-buckles is to adjust the platform in

a transverse direction to conform to the longitudinal slope of the deck of a vessel, due either to the "shear" of such deck or to variations in the vessel's trim due to loading.

5 Provided on shaft 27 is a gear wheel 28 which is in mesh with a pinion 29 provided on a shaft 30 having thereon a sprocket wheel 31 for an endless chain 32 whereby the drum shaft 27 may be rotated for winding
10 the lines 20¹ about the drums 26.

33 represents a beam located at the outer end of the wharf gap or slip and is supported from near its ends by lines 34 provided with turn-buckles 35 for regulating its longitudinal inclination to correspond with the platform, as above mentioned and moves up and down in guides 51¹. The lines 34 pass over rope sheaves 36 whose axles are supported upon framework comprising posts 37
15 and horizontal tie-pieces 37¹. From said sheaves the lines 34 extend about a drum 38 having on its shaft a worm wheel 39 which is controlled and actuated by a screw 40 provided upon an upright shaft 41 having a
20 hand wheel 42 for rotating the same. The beam 33 is supported by the lines 34 at adjusted heights corresponding, or nearly so, with the elevation of the deck of a vessel, as 43 (Fig. 1) which is to be loaded or un-
30 loaded.

Hingedly connected to the beam 33 is an apron 44 which serves to bridge the opening between the vessel and the beam. By thus
35 connecting the apron with the beam the former is free to be swung up or down to accommodate any rolling movements occurring to the vessel. Cooperating with said apron is a second apron or plate 45 which is hingedly connected to the front end of
40 platform 6 and serves to afford a bridge between the platform and the aforesaid apron. Counter-weights, as 46, (Fig. 1) are utilized to support the free end of plate 45 in a position inclined below a horizontal plane when
45 such free end of the plate is unsupported by the apron 44.

Referring to Fig. 3, the plate 45 is provided with a finger 47 which is disposed so that, when the bridge is tilted upwardly into
50 suitable position for operating trucks thereover, it will engage and cause to be moved into inoperative position an arm 48 carrying a contact 49, of an electric circuit wire to separate such contact from a comple-
55 mentary contact 50 connected to the elevator.

These contacts constitute a switch and are normally held in juxtaposition by means of a spring 51 acting upon the arm 48. Said
60 contacts are respectively connected by circuit wires *a* and *b* with contact buttons *a*¹ and *b*¹ of a pole changer X; and the wire *a* is connected by a joined wire *c* with the aforesaid motor 16. The other contact but-

tons *d*¹ and *e*¹ of the pole changer are 65 coupled by a circuit wire *e* and are likewise connected with the motor by wire *d*.

The shifter arms Y and Z of the pole changer are respectively connected by wires *f*¹ and *g*¹ with the main or service wires *f* 70 and *g*.

In operating the invention as an elevator, the platform 6 is raised or lowered by actuating the motor to cause the lines 20 and 20¹ to be wound upon the drum 19 or be payed 75 out therefrom.

In lowering the platform as an elevator, the plate 45 encounters the apron 44 or the beam 33 thereby causing the plate to be tilted upwardly and effect a downward movement of 80 the finger 47. Such movement of the finger actuates the arm 48 and opens the electric circuit to stop the motor by separating contact 49 from contact 50.

The contacts 49, 50 being together, the 85 current would flow from current supply wire *f* through *f*¹, Y, *b*, 50, 49, *a* and *e* to the motor and thence by *d*, *e*, Z and *g*¹ to the return wire *g*. The contacts 49, 50 being, as aforesaid, separated, the elevator is stopped. 90 To raise the elevator the reversal of the motor is accomplished in any desired way.

Instead of employing the platform as an elevator, it can be readily converted into an inclined way, as indicated by broken lines in 95 Fig. 1, upon which live stock may be driven or goods wheeled upon trucks to or from the wharf deck and the deck of a vessel. To these ends, the platform 6 may be first raised to the level of the wharf deck, and then the 100 outer end of the platform is raised or lowered, as required, by manipulating the chain 32 to cause the drums 26 to further wind up or pay out the lines 20¹. When the platform is thus used, the slings 15¹ are loose 105 or idle and counterweights 13 act through the medium of lines 12 and slings 15 to prevent the platform from being swung outwardly or toward a vessel when a load is passing over the platform. 110

The elevator may be operated by elevating and tilting same simultaneously and often the elevator is operated in elevating in an inclined position to give impetus to the hand trucks when the upward or downward move- 115 ment of the elevator is stopped and often the construction of the dock requires this operation of elevating in inclined position when the tide is low.

When the platform is utilized either as 120 a gangway or an elevator, the beam 33 would be appropriately raised or lowered through the agency of the hand wheel 42 which controls the winding of the drum 38 about which the beam supporting lines 34 are 125 wound.

Obviously, changes may be made in the form, dimensions and arrangement of the

parts of my invention without departing from the principle or the spirit thereof, the above being only a preferred form of embodiment of my invention.

5 What I claim, is—

1. In apparatus of the class described, a platform, cables supporting the platform from opposite ends, a drum for operating the cables to enable the platform to serve as elevator, and means for regulating the effective lengths of the cables whereby the platform may be employed as an inclined way.

2. In apparatus of the class described, the combination with supporting posts, sheaves carried by the posts, and hoisting cables supporting the platform from its inner and outer ends and operating over said sheaves, of a winding drum to which all of said hoisting cables are connected, a motor for operating the drum, and winch-drums acting supplementary to the aforesaid drum and connected with the cables which support one end of the platform whereby the relative heights of the ends of the platform may be adjusted.

3. In apparatus of the class described, the combination with supporting posts, a platform, sheaves carried by the supporting posts, and hoisting cables supporting the platform and operating over said sheaves, of a winding drum to which said hoisting cables are connected, a motor for operating said drum, a pivoted apron carried by the forward edge of the platform, an arm carried by said apron, a switch located underneath the platform and operated by said arm, and electrical connections between said switch and the motor:

4. In apparatus of the class described, the combination with an elevator platform, of a beam, means for securing the beam at adjusted heights, an apron hingedly connected to the forward edge of said beam, and an apron hingedly connected to the forward edge of the platform to cooperate with the aforesaid apron, means for raising and lowering said platform, and means whereby the platform may be maintained in inclined stationary position.

5. In apparatus of the class described, the combination with posts, sheaves supported by said posts, a drum, means to operate the drum, a platform, pulley blocks connected to the front and rear ends of the platform, cables having one end of each supported by the posts, thence passing about the pulley blocks at the rear of the platform, and about the sheaves to said drum, winch-drums supported by said posts, cables having one end of each secured to said winch-drums, thence passing about the pulley blocks at the forward end of the platform and about the sheaves to the drum, and means for rotating

the winch-drums to regulate the effective lengths of the last named cables. 65

6. In apparatus of the class described, the combination with an elevator platform, a drum, means to operate said drum, a cable operatively connected to said drum and to the rear of said platform, a cable operatively connected to said drum and to the forward end of said platform, a winch-drum, said last-named cables having one end secured to said winch-drum, and means to rotate said winch-drum to regulate the effective length of the last named cable. 75

7. In apparatus of the class described, the combination with a platform, a support at each end of said platform, sheaves carried by said supports, hoisting cables operatively connected to said platform and operating over said sheaves, a drum about which said cables are wound to raise and lower said platform, a motor for operating the drum, and means to adjust the relative heights of the ends of the platform. 85

8. In apparatus of the class described, the combination with an elevator platform, a drum, means to operate said drum, a cable operatively connected to said drum and to the rear of said platform, a cable operatively connected to said drum and to the forward end of said platform, and means whereby the last named cable may be operated to raise and lower the forward end of the platform independently of said drum. 95

9. In apparatus of the class described, the combination with a platform, propelling means to operate said platform as an elevator, and means to maintain said platform in inclined stationary position, of a beam, means for securing the beam at adjusted heights, and an apron hingedly connected to said beam. 105

10. In apparatus of the class described, the combination with a combined slip and elevator platform and means for operating said platform as such, of a beam mounted in vertical guides near the end of, but not as a part of, the said platform, cable means for adjustably supporting said beam, and apron hingedly connected to said beam, and an apron hingedly connected to said platform to cooperate with the aforesaid apron. 115

11. In apparatus of the class described, the combination with a platform, means for supporting the platform at various inclinations, a counterweight, and lines connecting said counterweight to the platform whereby the effect of said counterweight is resistant to the outward movement of said platform. 120

12. In apparatus of the class described, in combination with an elevator platform, and means to operate said platform, means for inclining said platform in longitudinal directions, a counter-weight operatively connected to said platform, said con- 125

nections including slings respectively connected upon opposite sides of the transverse axis of the platform.

5 13. In apparatus of the character described, in combination, spaced landings, an elevator for bridging the space between said landings, means for adjusting the angular position of said elevator with respect to said landings, means for securing said elevator

in adjusted position, and means for raising 10 and lowering said elevator relatively to both of said landings.

Signed at Seattle, Wash., this 29th day of March, 1913.

HARRY BARLOW.

Witnesses:

HORACE BARNES,
E. PETERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."