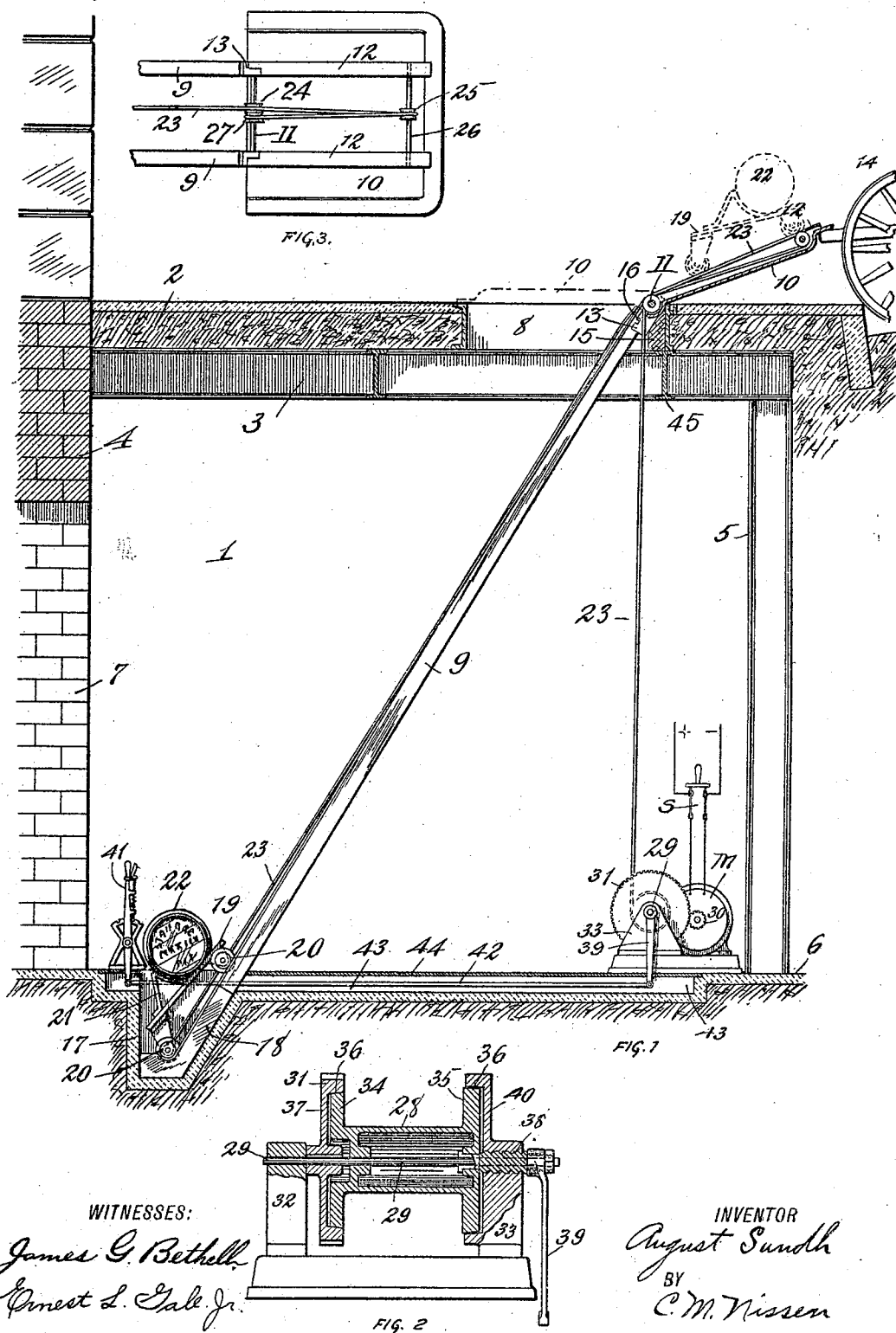


A. SUNDH.
BELOW SURFACE HOIST.
APPLICATION FILED SEPT. 5, 1907.

950,251.

Patented Feb. 22, 1910.



WITNESSES:

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AUGUST SUNDH, OF YONKERS, NEW YORK, ASSIGNOR TO OTIS ELEVATOR COMPANY,
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BELOW-SURFACE HOIST.

950,251.

Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed September 5, 1907. Serial No. 391,461.

To all whom it may concern:

Be it known that I, AUGUST SUNDH, a citizen of the United States, residing in Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Below-Surface Hoists, of which the following is a specification.

My invention relates to a hoisting device or elevator especially adapted to elevate barrels or other articles from a cellar or basement located below the sidewalk up through an opening in the walk, and deposit them on a wagon or cart at the curbstone.

One of the objects of my invention is to provide a device of this character in which barrels or other articles are conveyed from the level of the basement floor up an inclined frame and on to the wagon without any manual lifting or handling being required.

Other objects of the invention will appear hereinafter, and the novel combinations of elements being pointed out in the appended claims.

Referring to the drawings in which is illustrated one form of my invention, Figure 1 represents an elevation of the hoisting device, showing also in section the sidewalk and the compartment beneath the walk in which the hoisting device is installed; Fig. 2 is a sectional elevation of a winding drum, friction clutch and brake; and Fig. 3 is a plan view of the trap door in the sidewalk, showing the door open and the guide rails carried thereby.

The hoisting device as shown is installed in a compartment 1 located beneath a sidewalk 2. The portion of the walk 2 over the compartment 1 may be conveniently supported by a framework comprising horizontal I-beams 3 secured to the foundation wall 4 and supported at their outer ends by vertical I-beams or supports 5. These vertical supports 5 rest on the cement floor 6 of the compartment 1. The compartment 1 communicates through a door or passageway 7 formed in the wall 4 with a basement or cellar in which may be stored barrels, boxes or any form of merchandise which may be handled with my hoisting device.

The hoisting device comprises inclined guide rails 9 extending from the floor of the compartment 1 up through an opening 8

in the walk. A trap door 10 for the opening 8 is hinged by a rod 11 and carries on its under surface guide rails or tracks 12 extending from the hinge rod 11 to the outer end of the door. Pivoted on the rod 11 are short rail sections 13 which form a connection between the rails 9 and 12, so that when the parts are in the position shown in Fig. 1 the guide rails of the track extend from the bottom of the compartment 1 to the outer end of the door 10. The door, when open, extends out toward the outer edge of the walk, and when a wagon 14 is backed up to the curbstone the outer end of the door may be supported thereon.

The short sections 13 are held in an inclined position when the device is in use, by blocks 15 placed behind the sections 13 and held in position in any convenient way, as, for example, on an extension of the I-beam 45. The rails 9 are removably connected to the sections 13 by interlocking projections 16. At the lower end of the rails 9, a pit 17 is formed below the surface of the floor 6. Within this pit are short sections 18 which form continuations of the rails 9 when said rails are in position for use. When not in use, the rails 9 may be removed from the sections 13 to permit the trap door to be closed. In some instances I may connect the sections 13 rigidly with the door rails 12.

A truck or carrier 19 provided with flanged wheels 20 spaced apart to correspond with the rails 9, is adapted to travel back and forth between the pit 17 and the wagon 14. The carrier is in this instance provided with supporting arms or brackets 21 suitable for holding a barrel 22 in position on the carrier. The carrier 19 when in its lowest position extends into the pit 17 below the surface of the floor so that a barrel may be rolled on to or off of the carrier without any lifting being required.

The carrier is elevated by means of a rope or cable 23 attached at one end to the rear axle of the carrier, extending between the rails 9 over a direction sheave 24 on the hinge rod 11, to and around a sheave 25 journaled on a rod 26 near the outer ends of the rails 12, back to a sheave 27 journaled on the rod 11, and from the sheave 27 vertically downward to a winding drum 28.

Any convenient form of motor or other source of power may be employed for oper-

ating the winding drum 28. In this instance I have shown an electric motor M connected through a switch S to the positive and negative mains of an electric circuit. On the motor shaft is a drive pinion 30 in mesh with a gear wheel 31 mounted for rotation on a shaft 29 supported in standards 32 and 33 mounted on the frame of the motor. The winding drum 28 is also rotatably mounted on the shaft 29. The drum 28 is formed with end flanges 34 and 35 having inclined peripheral surfaces 36. The flange 34 fits in a correspondingly shaped recess 37 in the inner face of the gear wheel 31, and its periphery 36 is adapted to frictionally engage the peripheral surface of the recess 37. This forms a clutch between the gear 31 and the drum 28. At the other end of the drum is a similar clutch comprising the disk member 35 carried by the drum and the extension of the fixed standard 33, having a recess 40 and a peripheral friction surface 36. This latter clutch operates as a brake.

Mounted on the end of the rod 29 adjacent the flange 35 is an externally screw-threaded sleeve 38. The standard 33 has an internally threaded bore in which the sleeve 38 is journaled for oscillating and the pitch of the threads on the screw 38 and standard 33 is sufficient to give said sleeve considerable endwise movement as it oscillates. The gear wheel 31 is keyed to the shaft 29 but the latter extends loosely through the drum 28 and the sleeve 38. The left-hand journal of the shaft 29, as viewed in Fig. 2, has its bearing in the standard 32, while its right-hand journal has its bearing in the sleeve 38. The inner end of this sleeve extends through an opening in the adjacent end of the winding drum which is free to rotate thereon, and the sleeve is provided with flanges or shoulders to prevent relative endwise movement between the spool and sleeve 38.

Rigidly connected to the outer end of the sleeve 38 is a downwardly extending crank arm 39, to which is connected a rod or link 42 extending to a controlling lever 41 located near the pit 17. This link 42 is preferably located in a recess 43 below the level of the floor 6 and is protected by a board or cover 44.

The operation of the hoisting device is as follows: Assuming that the parts are in the position shown in full lines and that it is desired to hoist the barrel 22 on to the wagon 14, the operator swings the controlling lever 41 to the right. This moves the connecting rod 42 to the left and the crank arm 39 to the left, turning the sleeve screw 38 and moving it to the left as viewed in Fig. 2. The screw 38 moves the drum 28 longitudinally with it to the left, bringing the flange 34 into frictional engagement with the gear wheel 31, whereupon the drum 28 begins to

rotate. As the cable 23 is wound on the drum the carrier 19 is pulled up along the tracks 9 until it reaches its dotted line position where the barrel 22 may be rolled onto the wagon. When it is desired to stop the carrier 19 in its upward travel the operator brings the controlling lever back to central position to release the clutch by separating the member 34 and gear 31. This releases the drum 28 from the driving gear. The carrier 21 is now free to descend by its own weight, unwinding the rope 23 from the winding drum. If, however, it is desired to hold the carrier in its elevated position the controlling lever 41 is moved to the left to operate the brake by bringing the flange 35 into frictional contact with the peripheral flange on the standard 33. This retards the drum or prevents rotation thereof. The speed with which the carrier 19 descends is also regulated by pulling the controlling lever with more or less power to the left and thus regulating the power with which the friction brake is applied.

When the device is not in use the main line switch S is opened to cut off current from the motor, the blocks 15 are removed or taken out of the way and the cover 10 swung down to cover the opening 8.

The hoisting device is adapted for lowering articles as well as lifting them, the carrier and its load being carried down by their own weight, and the speed being under the complete control of the operator. If desired, an automatic limit stop may be used to stop the carrier in its dotted line position independent of the lever 41.

Although I have shown and described a preferred form of my invention, various changes in the details of construction and arrangement of parts might obviously be made by those skilled in the art without departing from the spirit and scope of the invention, and I do not, therefore, wish to be limited to the exact construction disclosed.

What I claim as new and desire to have protected by Letters Patent of the United States is:—

1. The combination with a cover for an opening, of a carrier movable through the opening, mechanism for guiding the carrier, and means carried by the cover forming a continuation of said guiding mechanism.

2. The combination with a walk formed with an opening therethrough, a cover for the opening, and a compartment beneath the walk, of guide rails extending through the compartment, and guide rails carried by the cover.

3. The combination with a hinged door for an opening, of inclined guide rails, and guide rails carried by the door and forming a continuation of the first-named rails when the door is open.

4. The combination with a walk formed

with an opening therethrough, a hinged door for said opening, and a compartment beneath the walk, of guide rails comprising sections carried by the door and sections loosely connected thereto, and stationary sections.

5 5. The combination with a walk formed with an opening therethrough, a door for said opening, a hinge rod connecting the door to the walk, and a compartment beneath the
10 walk, of guide rails comprising sections secured to the door and extending from the hinge rod toward the opposite end of the door, short sections hinged to the rod, and removable sections extending from the short
15 sections to the floor of the compartment.

6. In a hoisting device, the combination with guide rails, means for supporting the rails in an inclined position, and a carrier mounted to travel on the rails, of a winding
20 drum, a cable connecting the carrier and winding drum, a motor, a friction clutch between the motor and drum, a friction brake similarly located, and a controlling lever connected to both the clutch and brake.

25 7. In a hoisting device, the combination with guide rails, a carrier mounted to travel on the rails, a winding drum, and a cable connecting the carrier and drum, of a motor, a friction clutch between the motor and drum, a brake for the drum, and a controlling lever operatively connected to both the
30 brake and clutch.

8. The combination with a walk formed

with an opening therethrough, a door for said opening, a hinge rod connecting the door
35 to the walk, and a compartment beneath the walk, of inclined guide rails in the compartment and on the door, a carrier mounted to travel on the rails, direction sheaves on said hinge rod, a direction sheave at or near the
40 outer end of the door, a winding drum, and a cable connected to the carrier extending up over one of the sheaves on the hinge rod, from thence to and around the sheave near the outer end of the door, back to and over
45 the other sheave on the hinge rod, and to the winding drum.

9. The combination with a walk formed with an opening therethrough, and a compartment beneath the walk, of inclined guide
50 rails extending from the floor of the compartment through said opening, a carrier mounted to travel on said rails, a winding drum and motor located in the compartment and at a distance from the rails, means for
55 controlling the rotation of the drum, a controlling lever located adjacent the rails, and mechanical connections between the lever and said means.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUST SUNDH.

Witnesses:

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ALFRED C. BECHET.