

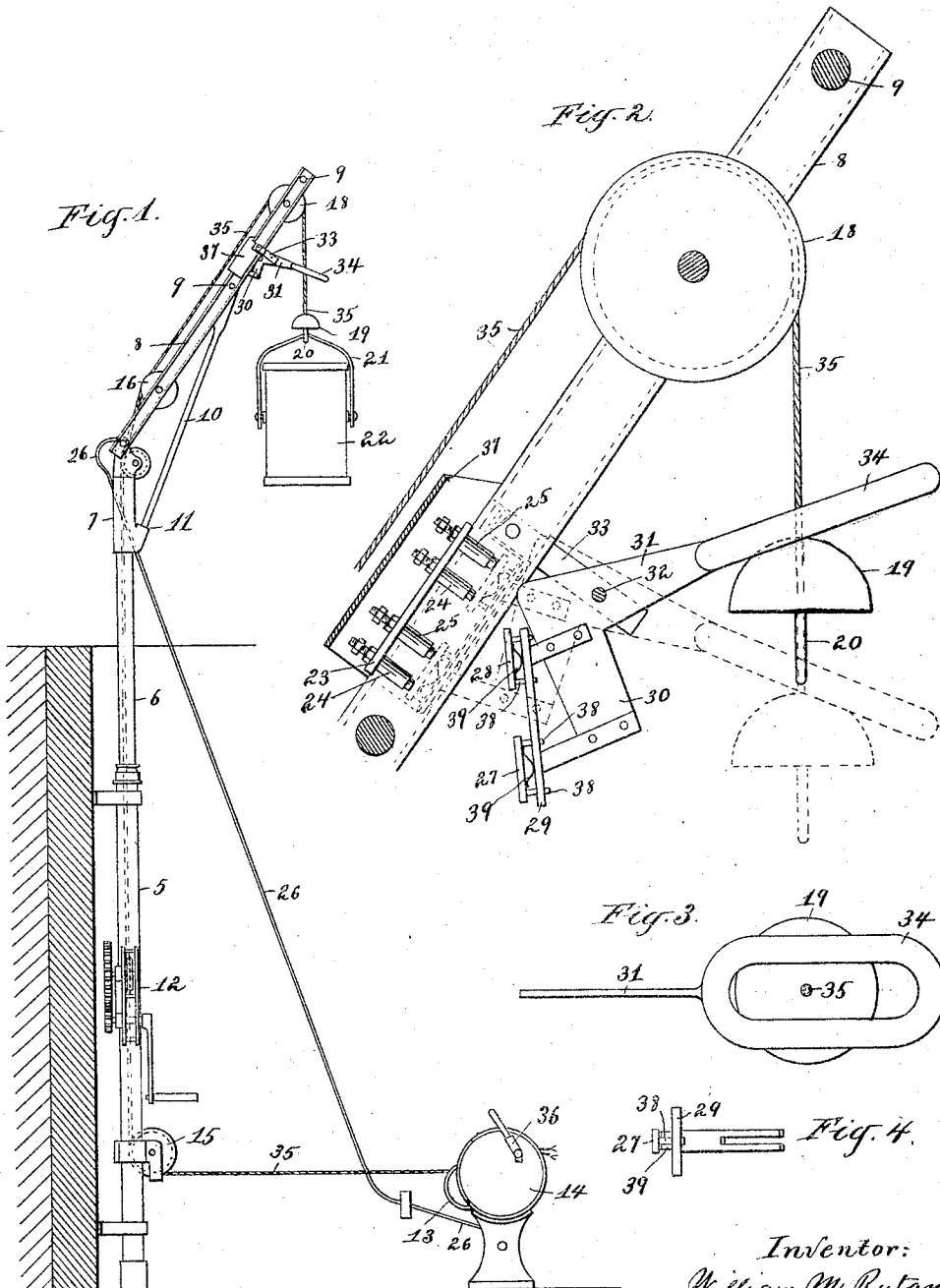
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HOISTING APPARATUS

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UNITED STATES PATENT OFFICE.

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HOISTING APPARATUS.

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To all whom it may concern:

Be it known that I, WILLIAM M. RUTAN, a citizen of the United States, residing at Roosevelt, in the county of Nassau and State of New York, have invented a certain new and useful Improvement in Hoisting Apparatus, of which the following is a specification.

The invention relates to hoisting mechanism of the crane type, and more specifically to that class having means for preventing overwinding of the hoisting cable in such mechanism.

The object of the present invention is to provide simple, easily installed and operated means actuated by a member on the hoisting cable, which will positively and automatically stop the motor when the load has risen to a predetermined point in its upward travel, thus avoiding all danger of overwinding regardless of changes in cable length, and permitting a smooth cylindrical drum to be employed upon which the coils of the cable may overlap harmlessly.

The invention consists in certain novel features of construction and arrangement by which the above objects are attained, to be hereafter described and claimed.

The accompanying drawings form a part of this specification and show the invention as it has been carried out in practice.

Figure 1 is a side elevation showing the hoisting mechanism and its operating means installed in a sidewalk hoistway.

Figure 2 is an elevation of the improved limit device on a larger scale, with certain parts of the jib or crane arm in vertical section.

Figure 3 is a plan view of a lever forming part of the limit device.

Figure 4 is an end view of a portion carried by the lever.

Similar reference numerals indicate the same parts in all the figures.

The invention is shown as applied to a well-known type of ash-hoist, in which a tubular post 5 mounted in the sidewalk hoistway, received telescopically a tubular standard 6 carrying a rotatable head 7 in which one end of the jib 8 is pivoted. The jib is formed of two parallel channel bars held side by side and separated by transverse distance stubs 9, and is supported in the angular elevated position by a strut 10 pivotally mounted in the jib

with its free end demountably engaged upon the shoulder 11 of the head 7. The jib is arranged to fold downwardly and the whole adapted to be collapsed and lowered below the sidewalk level by the mechanism at 12 in Figure 1.

The hoisting cable 35 extends from a drum 13, operated by the electric motor 14 on the floor of the hoistway, to a pulley 15 on the post 5 and thence upwardly within the hollow post and standard to a pulley 16 mounted in the head 7, and over a pulley 17 near the pivoted end of the jib 8, to and partially around a similar pulley 18 at the free end of the jib, and terminates in a stop 19 shown as a hemispherical weight carrying on its under face a hoisting hook 20 adapted to engage the bail 21 of an ash-can 22, or other load.

On a plate 23 of insulating material mounted on the jib adjacent the pulley 18 are contact points 24 and 25 shown in two separated pairs; the wires therefrom, not shown, are inclosed in an electric cable 26 extended along the jib and thence to the motor 14 and are connected to the latter in such manner as to permit the motor to run and rotate the hoisting drum 13 when the contact points 24 and 25 are electrically connected, and to stop the motor and drum when such connection is broken. The cable 26 has sufficient slack to permit the movement of the head 7 and jib 8.

This make and break connection is effected by metallic bridge pieces 27 and 28 mounted on a plate 29 of insulating material carried on the short arm 30 of a vertically swinging L-shaped lever 31 pivotally mounted at 32 in a downwardly projecting bracket 33 on the jib. The long arm of the lever is provided with a loop 34 through which the hoisting cable 35 passes.

When the jib is in the elevated position shown, and the hoisting cable 35 lowered, the lever is held by gravity in the position shown in dotted lines in Figure 2, with the bridge pieces 27 and 28 in contact with and completing the circuit between the contact points 24 and 25 of each pair, and the motor is then in condition to be operated and controlled by any suitable switch actuated by a controller lever as indicated at 36, to raise the load.

Overwinding is automatically prevented by the lifting contact of the stop 19 on the

hoisting cable 35 with the under face of the loop 34 which by a slight continuation of the lifting movement tilts the lever 31 and draws the bridge pieces 27 and 28 from the contact points 24 and 25, as shown by the full lines in Figure 2, and thus breaks the circuit and stops the motor independently of the motor switch.

The lowering operation is controlled by the controller lever 36 as usual, and as soon as the stop 19 descends sufficiently, the gravity of the loop 34 swings the lever 31 into position to complete the circuit again ready for another hoisting operation by the manipulation of the controller lever 36.

The contact points are inclosed in a protecting housing 37 on the jib; and the bridge pieces 27 and 28 are movably mounted in their insulated plate 29 on legs 38 extending loosely through the plate and are supported resiliently on springs 39 to provide yielding contact with the points 24 and 25.

The device permits the hoisting operation to be performed in all respects as usual but insures against overwinding regardless of the length of the hoisting cable or the manner in which it is laid on the hoisting drum, or lack of care by the operator at the con-

troller lever. The usual limit device operated by the drum may be omitted.

I claim:—

1. In a hoisting apparatus a jib, an electrically operated hoisting cable carried thereby, a lever pivotally mounted on the jib and having at its free end a loop through which the hoisting cable passes, relatively fixed contacts on the jib, contacts carried by the lever upon one side of its pivot, and means on the cable cooperable with said loop to control the movement of said lever in upward direction of movement of the hoist.

2. A hoisting apparatus comprising a jib, an electrically operated hoisting cable carried thereby, a lever pivotally mounted on the jib and having at its free end a loop through which the hoisting cable passes, relatively fixed contacts on the jib, contacts carried by the lever upon one side of its pivot, means cooperable with said loop and movable with the cable to control the movement of said lever in upward direction of movement of the hoist, and a depending bracket on said jib upon which said lever is pivoted.

In testimony that I claim the invention above set forth, I affix my signature hereto.

WILLIAM M. RUTAN.