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OPERATING APPARATUS FOR GRABS OR THE LIKE

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his ATTY.
The present invention has for its object an operating apparatus for grabs having a single cable and an opening ring.

In previous patents, the applicant described apparatus and plants for the operating of grabs having a single cable and an opening ring, and chiefly in the French Patent No. 801,633 of May 6, 1935, entitled “Apparatus for the operating of grabs for the sinking of shafts and like operations, and derricks and like devices provided with said apparatus.”

This patent describes an apparatus which operates with an opening ring of a known type, mounted on a movable device adapted for displacement in a single vertical plane. This displacement of the ring and of the grab attached to the latter, takes place in this vertical plane, from the loading point to the discharging point, by the sole action of the weight of the grab with its load.

The certificate of addition No. 48,859 of March 19, 1937, accompanying the Patent No. 801,633, describes an improved apparatus comprising a horizontal guiding track and a carriage adapted to roll upon the same and carrying the opening ring, or the like, which is suspended from it by one or more cables or chains which are wound upon drums or pulleys mounted on said carriage and driving the rollers or other devices for the rolling of the carriage during the unwinding of the cables or chains supporting the ring, the lifting cable or chain passing over a pulley which is loose upon the said carriage.

The present invention relates to an operating apparatus which comprises a horizontal track and a carriage movable upon the same and carrying the opening ring with which the grab is engaged at the end of its upward movement, said apparatus being chiefly characterised by the fact that the movable carriage is provided with a pulley device used for the operating chain or cable which is actuated by a drum situated at one end of the apparatus or of the track, and further, with a return device acting upon the said carriage in order to bring it to the other end of the said track.

According to another feature of the invention, the apparatus comprises a device for the holding or braking of the carriage upon the track at a point above the loading point of the grab, said device being released when the grab is engaged with the carriage.

It will be readily observed that by giving a certain slack to the operating cable, at the time when the grab is supported by the opening ring, the carriage will now be actuated by the return device.

Further characteristics will be set forth in the following description.

In the accompanying drawings, which are given solely by way of example:

Fig. 1 is a diagrammatic general view of an apparatus according to the invention;

Figures 2 and 3 are detail views showing the movable carriage in two different positions.

In the embodiment herein represented, the apparatus is mounted in a fixed installation comprising supports or a framework 1 upon which is mounted a track 2 and a platform 3 on which is located a motor 4 and a cable drum 5.

At one end of the track 2 is mounted, at 6, a pulley 7 carrying a cable or chain 8 which is wound upon the drum 5. The outer end 9 of said cable is attached for instance to a chain 10 carrying a grab 11 provided with a ring, of any type, whether known or not.

A carriage 12 is mounted on the track 2, and it travels upon the latter by means of rollers 13. It carries a pulley 14 which supports the chain 10. A lever 15 is pivoted to the carriage at 16, and to one end 17 of this lever is attached a cable 18 carrying an opening ring 19; a stop 20 limits the movement of the said lever.

A braking device, such as a shoe 21, as fastening belt, or the like, is mounted near the pivoting point 16 and cooperates with the track 2.

The other end 22 of the lever 15 carries a light counterweight 23 adapted to apply the shoe 21 against the track with sufficient force to prevent any improper movement of the carriage when the grab is released.

A tappet or stop 24 limits the movement of the carriage towards the left (see the figures). Another stop 25 limits the movement of the carriage towards the right. The carriage is connected at 26 to a return device consisting of a counterweight, a spring, a small motor, or the like.

The present apparatus is provided with a counterweight device, comprising a cable 27 passing over a pulley 28 mounted on the track and carrying a movable pulley to which is secured a counterweight 30. The outer end of the cable 27 is attached at 31 to any stationary part of the plant.

The operation is as follows. The carriage 12 being in the position shown in
Figure 2, that is, at the time of lifting the grab 11, this latter engages in the ring 19 from which it is now suspended.

If the motor 4 is operated in the direction required for unwinding the cable 8 (contrary to the arrow f), the grab will rest upon the ring 19 and its weight will act upon the end 17 of the lever 15 thus releasing the shoe 21.

If more slack is given to the cable 8, the carriage, which is constantly urged by the counter-weight 30 acting upon the cable 27, will now move to the right (according to the figure) until it comes against the stop 25, as shown in Figure 3. The carriage is thus held fast, and by continuing to give slack to the cable, the grab will open and is thus emptied.

When the grab is open, it is held in this position by a suitable device, known per se. By again drawing upon the cable 8 in the direction of the arrow f, the carriage will be moved into its original position.

The grab is now released from the ring 19, and the shoe 21 makes contact with the track 2, thus holding the carriage in the fixed position. The grab can now descend, and the cycle thus continues.

The said apparatus can obviously be used for all handling operations, and it is also feasible, without departing from the spirit of the invention, to provide auxiliary devices by which the operation is made automatic or semi-automatic.

In like manner, the shoe 21 may be replaced by a tappet or like means for holding or locking. The return device 26, 29, 30 might also have any other equivalent form.

Obviously, the invention is not limited to the embodiment herein described and represented, which is given solely by way of example.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Apparatus for handling goods or the like and adapted to operate with a grab of the single rope type, comprising a practically horizontal guide way, a carriage movable thereupon, means on this carriage adapted to hold the grab and to permit its opening, the grab being hooked to and suspended from said means at the end of its lifting movement, means for winding the rope of the grab, guiding means for said rope disposed at one end of the apparatus, and a reaction means adapted to act on said carriage and to exert a force thereon for bringing it in contact with a stop when, the grab being suspended from the carriage, the lifting rope of this grab is slackened, and further means for stopping the displacement of the carriage when the grab is not suspended therefrom, these latter means automatically releasing the carriage when the grab is suspended therefrom, and further lever like means and a counterweight secured at one end of said lever, the other end carrying said opening means and said braking means.

2. Apparatus according to claim 1, wherein stops are provided for limiting the stroke of the carriage and means combined with said stops for automatically controlling the apparatus.

3. Apparatus for handling goods and the like, adapted to operate with a grab of the single rope type, comprising a practically horizontal guide way, a carriage movable thereupon, a guiding means for said rope located at one end of the guide way, another guiding means for the rope on said carriage, a lever pivoted to said carriage and carrying at one end an opening member for the grab and at its other end a brake and a counterweight, another rope secured to said carriage and to a stationary point and a counterweight on said rope situated at the end of the apparatus which is opposite the end comprising the first guiding means for the rope.

4. Apparatus for handling goods or the like and adapted to operate with a grab of the single rope type, comprising a practically horizontal guide way, a carriage movable thereupon, means on this carriage adapted to hold the grab and to permit its opening, the grab being hooked to and suspended from said means at the end of its lifting movement, means for winding the rope of the grab, guiding means for said rope disposed at one end of the apparatus, and a reaction means adapted to act on said carriage and to exert a force thereon for bringing it in contact with a stop when, the grab being suspended from the carriage, the lifting rope of this grab is slackened, and further means for stopping the displacement of the carriage when the grab is not suspended therefrom, these latter means automatically releasing the carriage when the grab is suspended therefrom, and further lever like means and a counterweight secured at one end of said lever, the other end carrying said opening means and said braking means.

5. Apparatus for handling goods or the like and adapted to operate with a grab of the single rope type, comprising a practically horizontal guide way, a carriage movable thereupon, means on this carriage adapted to hold the grab and to permit its opening, the grab being hooked to and suspended from said means at the end of its lifting movement, means for winding the rope of the grab, guiding means for said rope disposed at one end of the apparatus, and a reaction means adapted to act on said carriage and to exert a force thereon for bringing it in contact with a stop when, the grab being suspended from the carriage, the lifting rope of this grab is slackened, and further means for stopping the displacement of the carriage when the grab is not suspended therefrom, these latter means automatically releasing the carriage when the grab is suspended therefrom, and further lever like means and a counterweight secured at one end of said lever, the other end carrying said opening means and said braking means, and stops on said guide way for limiting the stroke of the carriage.

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