

1,267,345.

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STOP MECHANISM FOR HOD-ELEVATORS.

1,267,345.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES W. ANDERSON, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Stop Mechanism for Hod-Elevators, of which the following is a specification.

This invention relates to a hod elevator such as is shown and described in my co-pending application Serial No. 161,343 filed on even date herewith, and particularly to improved means for causing the operation of the elevator to be automatically arrested at appropriate times during its use.

A more particular object is to provide simple and efficient driving connections for operating the elevator from a suitable motor, and to provide means whereby the connections are automatically broken at a given time, as when a hod is elevated to the proper elevation, said connections to remain broken, regardless of the disposal of the hod, until the connections are deliberately manually reset, to the end that the elevator will have no movement while the hod is being removed or immediately following the removal of the hod.

A further object is to provide a simple and efficient form of driving connections.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of embodiment of the invention:

Figure 1 is a side elevational view, part diagrammatic, of a hod elevator constructed in accordance with this invention, moving parts being shown in dotted positions.

Fig. 2 is an enlarged detail view of a part of the structure illustrated in Fig. 1.

Fig. 3 is a further enlarged transverse sectional view taken upon the plane of line III of Fig. 2, and

Fig. 4 is a fragmentary sectional view illustrating a modification.

Referring to the drawings for describing in detail the structure which is illustrated therein, the reference character L indicates the elevator chain. This passes over wheels 1 at its upper and lower ends in a well known manner, said wheels being mounted upon shafts 2. The upper shaft 2 carries a gear 3 which is mounted to be driven from a drive pinion 4 through a train 5 and 6. Rotation of the pinion 4 will cause the forward lead 7 of the chain L to move upwardly so that any hods or the like, as 8, in Fig. 2, which are supported upon the lead 7 will be caused to move upwardly. When the hod reaches a given position it is desirable that the movement of the chain should automatically cease lest the hod be carried to too great an elevation, or entirely over the top wheel 1.

Various means have heretofore been employed for automatically stopping the movement of the chain.

By the present invention the motor, as G, is connected by a belt 9 with a pulley 10 which is fixed to the shaft 11 upon which the pinion 4 is also fixed. An idler 12 is carried upon a swinging arm 13 mounted on shaft 14 and a pull rod 15 is connected to the free end of the arm 13 for pulling the idler 12 into engagement with the belt 9, said idler and associated parts thereby serving as a tightening means for the belt. The belt normally is loose upon the motor pulley and the pulley 10 so that unless the idler 12 is in tightening position no motion is transmitted from the motor to the pulley 10.

The relation of the shaft 14 to the belt is such that the arm 13 and the idler 12 normally hang away from the belt.

The shaft 14 is stationary being fixed in its support 16 as by the pin 17. The arm 13 is pivoted to swing about this shaft and a clutch member as 18 is fixed to or made integral with the arm at one side thereof concentric with the shaft. The outer face of the clutch member is provided with teeth therein.

A cooperating clutch member 20 is mounted upon the shaft 14 to slide longitudinally thereon toward and away from the clutch member 18 the opposing face of the clutch

member 20 being provided with teeth 21 for engaging the teeth 19. A pin 22 carried by the clutch member 20 extends transversely through slots 23 formed in the shaft, said
 5 pin adapted to retain the clutch member 20 against any rotary movement about the shaft.

A spring 24 is interposed between the clutch member 20 and the opposing face of the adjacent support 16 adapted to urge the
 10 the clutch member 20 toward and into engagement with the clutch member 19. At least the adjacent end portion of the shaft 14 is made hollow and mounts a roller 25 about
 15 which passes a cable 26, the end of the cable extending through the bore of the shaft and into fixed engagement with the pin 22. Pull upon this cable serves to overcome the tendency of the spring 24 and move the
 20 clutch member 20 backwardly away from the clutch member 18.

If desired an auxiliary spring 27 may be arranged within the bore of the shaft for engaging the pin to assist the spring 24 in
 25 moving the clutch member 20 toward the clutch member 18. This spring 27 may be made to surround a portion of the cable 26 and a pin 28 may be provided for engagement by the outer end of the spring.

30 If desired the spring 24 may be omitted and dependence placed upon the spring 27, according to requirements.

When the arm 13 is in belt tightening position and the clutch members 18 and 20
 35 are in engagement said clutch members will serve to positively retain the arm until the clutch member 20 is drawn backwardly.

A swinging arm H is mounted upon the standard 29 said arm having its outer end
 40 portion disposed directly in the path of movement of the hod which may be carried by the lead 7 of the chain so that whenever the hod strikes said arm said arm is raised, as from the position shown in full lines in
 45 Fig. 1 to the position shown in dotted lines.

At its pivoted end the arm H is provided with a heel 30 arranged to limit the downward movement of the arm, and a second heel 31 for limiting the upward movement of the arm.
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The cable 26 extends upwardly from the belt tightening device into engagement with the arm H, being connected to the arm at a point spaced from the pivot of the arm, as at
 55 the point 32, so that whenever the arm is lifted the cable will be drawn upwardly and will move the clutch member 20 out of engagement with the clutch member 18.

When the arm H is in its lower position the cable is slightly slack so that the springs
 60 24 and 27 hold the clutch member 20 in its normal position against clutch member 18.

The arm H is arranged at the proper
 65 point where it is intended that the hods

shall be delivered. When the hod has lifted the arm, and thereby withdrawn the clutch member 20, the belt tightening idler 12 will fall by gravity away from the belt. The motor which may be constantly rotating, is
 70 released from the pulley 10 by the slackening of the belt, and said pulley will stop and leave the pinions and gears 3 to 6 dead so that the chain will stop and the hod will stand ready to be removed. When the hod
 75 has been removed the arm H will return to its original position and the clutch member 20 will move again into engagement with the teeth of the clutch member 18 but the idler 12 will not move to belt tightening position until the workman has drawn outwardly upon the pull rod 15. The clutch members 18 and 20 will thereafter hold the idler in any position to which it is drawn until the arm H is again lifted.
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By making the belt tightening means inoperative until manually moved the danger of a resumption of movement by the chain before the workman has freed himself is entirely avoided. This is a very important
 90 consideration in view of the fact that various articles follow one another closely upon the chain and one of these articles is likely to injure a workman where the movement of the chain is automatically resumed upon the
 95 removal of an article above it.

Furthermore, it is frequently found in practice that certain workmen prefer to have the hod stop at a different level from other workmen. A tall workman will be
 100 content to have the hod automatically stopped as described above but a shorter workman will prefer to have the hod stop at a lower level. By the present invention the workmen are able to stop the hods where-
 105 ever they desire by simply lifting the arm H by hand. The belt tightening means will be released in the same manner as if the hod had lifted the arm and the chain will stand still until the workman resets the belt tight-
 110 ener.

The modification Fig. 4 is intended to illustrate the use of a bell crank as 33 in lieu of the pulley 25 shown in Fig. 2. The bell crank is pivotally mounted upon the
 115 shaft 14 as at 34 and has a short arm within the shaft connected to a link 35 which extends to the pin 22. The long arm of the bell crank is pivotally connected to a rod 36 which extends upwardly to the arm H.
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As many changes could be made in the above described construction, and various embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in
 125 the above description, or shown in the accompanying drawing, shall be interpreted as illustrative only, and not in a limiting sense, and that the following claims are intended to cover all the generic and specific
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features of the invention which may be said to fall within the language of said claims.

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

1. A power control mechanism for hoist elevators comprising a motor having a pulley, a slack belt engaging between said pulley and a drive pulley of the elevator, a belt tightener bent into non-tightening position in which the driving connection between the motor pulley and the drive pulley is inoperative, the belt tightener comprising a pivotally mounted arm having a roller at its free end to swing into and out of engagement with the belt, a shaft upon which said arm is pivotally mounted, a clutch member slidably mounted upon said shaft to move into and out of engagement with said arm adapted when in engagement with said arm to retain the arm against swinging in one direction, means for manually swinging the arm at will in the opposite direction, and means whereby said clutch may be automatically slid out of engaging position at a predetermined time.

2. A power control mechanism for hoist elevators comprising a motor having a pulley, a slack belt engaging between said pulley and a drive pulley of the elevator, a belt tightener bent into non-tightening position in which the driving connection between the motor pulley and the drive pulley is inoperative, the belt tightener comprising a pivotally mounted arm having a roller at its free end to swing into and out of engagement with the belt, a non-rotatable supporting shaft for said arm about which said

arm swings, said arm having a clutch surface formed thereon concentric with said shaft, means for manually swinging the arm at will into tightening position, a clutch member non-rotatably mounted upon the shaft and slidable along the shaft into and out of engagement with the clutch surface of said arm adapted when in engagement with the clutch surface of said arm to retain the arm against swinging in a direction out of tightening position, and means whereby said clutch member may be automatically slid out of engagement with the clutch surface of said arm at a predetermined time.

3. A power control mechanism for hoist elevators or the like, said mechanism comprising a motor pulley, a slack belt engaging between said motor pulley and a pulley to be driven, and a belt tightener comprising a pivotally mounted arm having a roller at its free end to swing into and out of engagement with the belt, a shaft upon which said arm is pivotally mounted, a clutch member slidably mounted upon said shaft to move into and out of engagement with said arm adapted when in engagement with said arm to retain the arm against swinging in one direction, and means whereby said clutch member may be automatically slid out of engagement with said arm at a pre-determined time.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES W. ANDERSON.

Witnesses:

L. GESSFORD HANDY,
GUSTAV GENZLINGER.