

No. 672,985.

Patented Apr. 30, 1901.

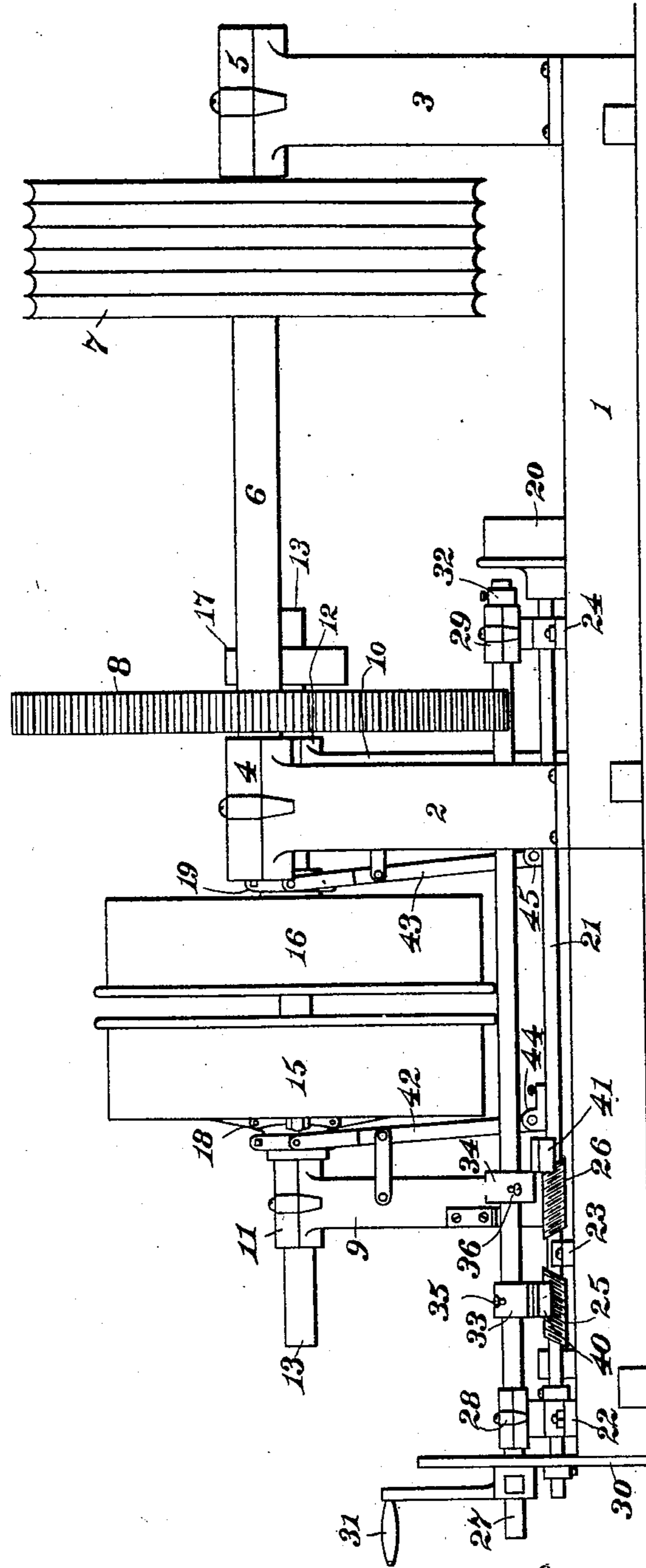
G. W. NISTLE.
ELEVATOR MACHINERY.

(Application filed Nov. 5, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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2 Sheets—Sheet 2.

Fig. 2.

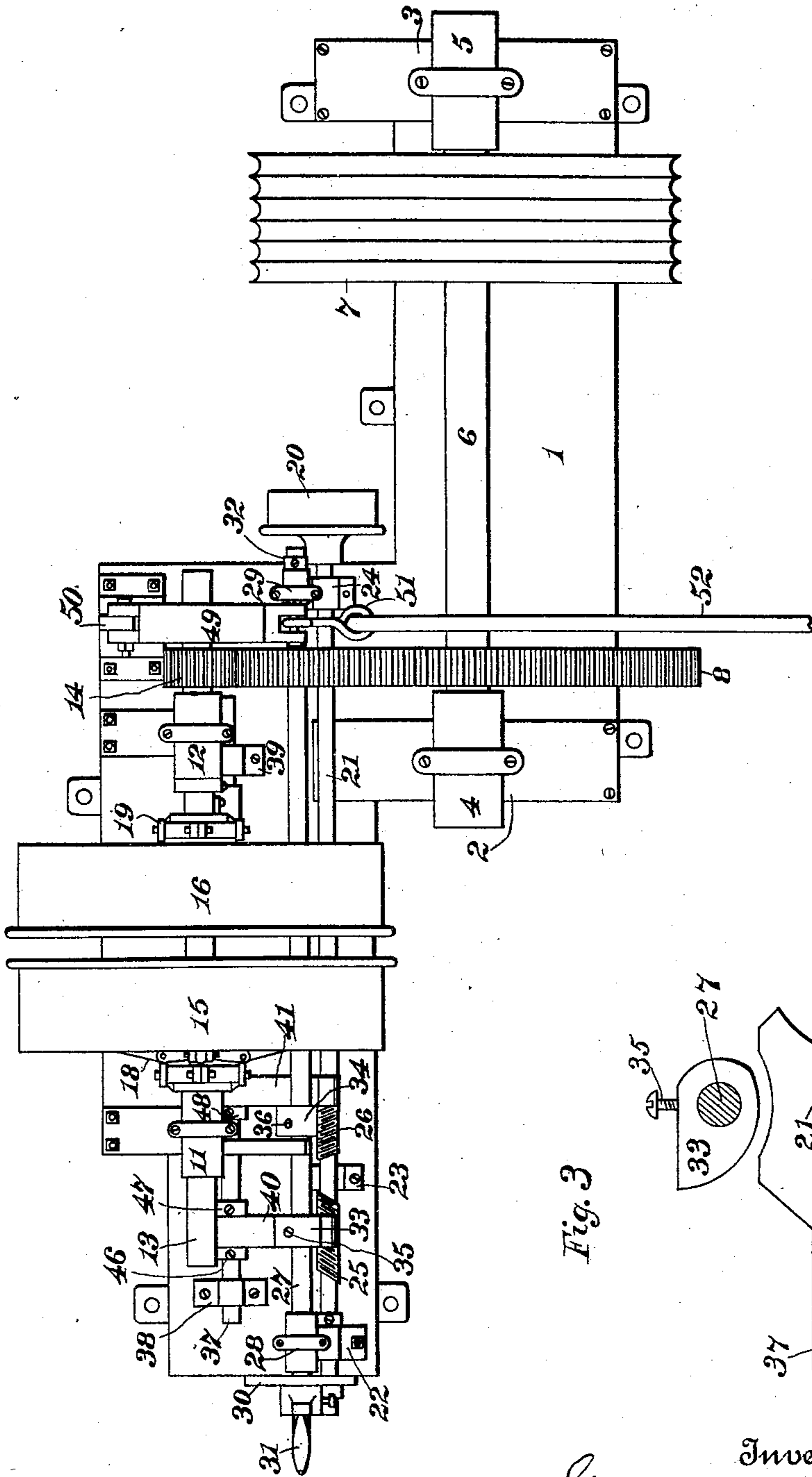
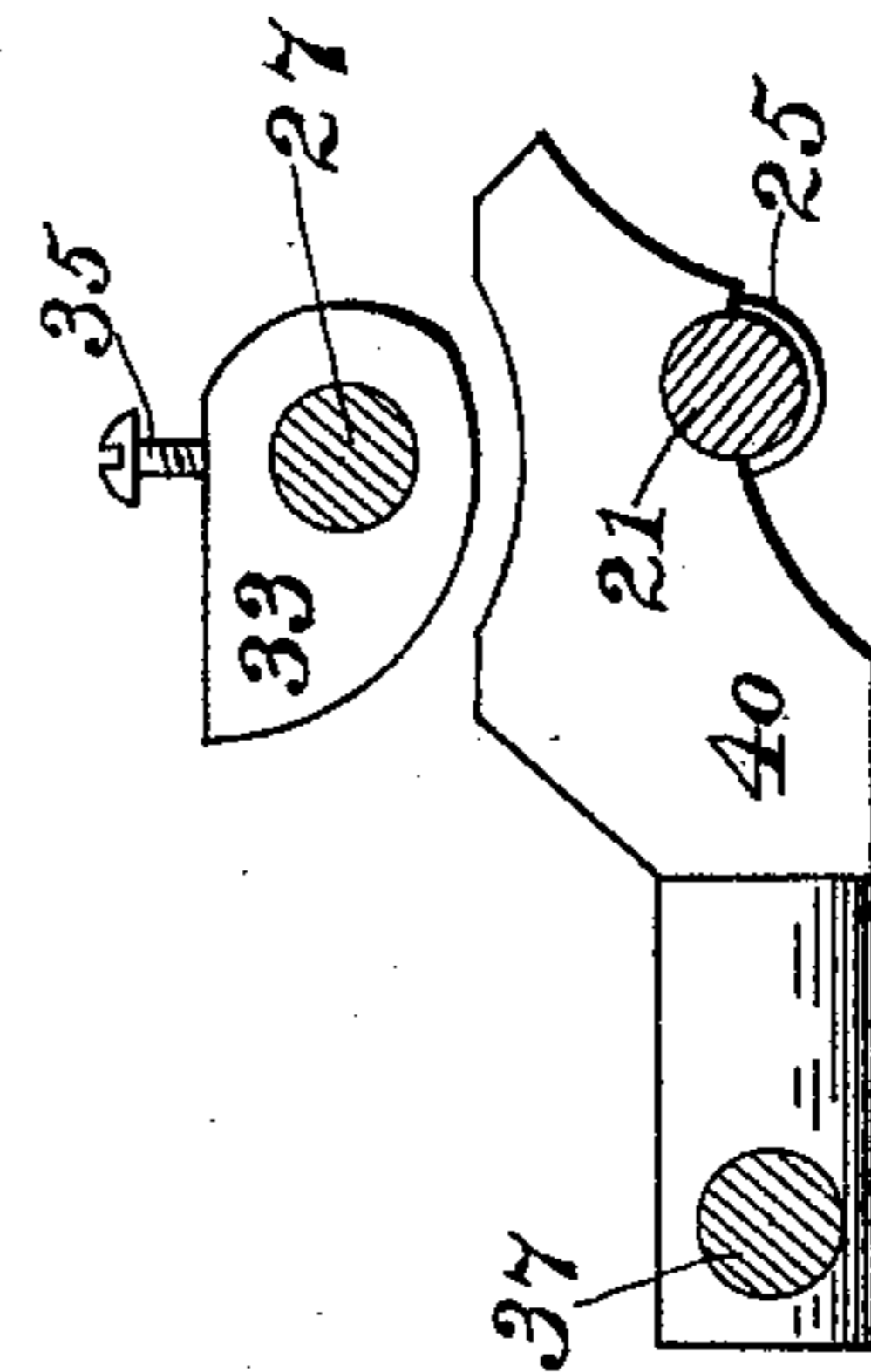


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE W. NISTLE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO ROBERT L. GIFFORD AND EVERETT W. BROOKS, OF SAME PLACE.

ELEVATOR MACHINERY.

SPECIFICATION forming part of Letters Patent No. 672,985, dated April 30, 1901.

Application filed November 5, 1900. Serial No. 35,484. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. NISTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Elevator Machinery; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to elevator machinery, more particularly to power-operated hoisting apparatus wherein the drum-shaft may be driven in either direction, the power being applied directly thereto or to an adjacent driving-shaft by means of clutches.

The object of my invention is to provide an improved device for operating the levers of the clutches positively and through a certain distance in either direction, thereby causing the clutch which is thrown into engagement to exert a frictional grip of only a given force, which may be greater or less in accordance with the adjustment of the parts.

Each constituent element of my invention is described in detail and its individual office, together with the mode of operation of the whole, fully explained herein.

In the accompanying drawings, throughout which like numbers designate like parts, Figure 1 represents a side view of my invention, the brake mechanism being omitted to avoid confusion; Fig. 2, a top plan view, and Fig. 3 a side view of one of the cam-blocks and half-nut arms.

Considering Figs. 1 and 2, numeral 1 marks the bed-plate, of any desired contour or weight, upon which are erected the standards 2 and 3, furnishing journal-bearings 4 and 5 for the drum-shaft 6. This shaft carries the drum 7 and the large driving gear-wheel 8. Upon the bed-plate are also erected the standards 9 and 10, furnishing bearings 11 and 12 for the power or driving shaft 13.

At the right-hand end of this shaft (see Fig. 2) is the pinion 14, meshing with gear 8 and

by means of which the drum is revolved. Riding shaft 13 loosely are band-pulleys 15 and 16, and secured to the right-hand end of shaft 13 is a brake-wheel 17. The pulleys are to be driven by belts from a source of power and suitably arranged to revolve them in opposite directions. It is my customary practice to provide each pulley with interiorly-placed clutch mechanisms 18 and 19, and it is believed to be within the scope of my invention to introduce any known and desired clutch construction. Those indicated are of common form and operation and need no detailed description. The clutches join the pulleys alternately to shaft 13.

Further considering Figs. 1 and 2, there will be observed between the drum and the gearing a small belt-wheel 20. This wheel is continuously revolved. It is secured at the extremity of a shaft 21, supported in pillow-blocks 22, 23, and 24 and having two threaded portions 25 and 26, the threads being respectively left and right hand. Immediately above and to the rear of shaft 21 is the rocking shaft 27, provided with suitable bearings 28 and 29. On the left this shaft passes through the vertical plate 30, which is fixed at the end of the bed-plate, and a crank arm or lever 31 is secured upon the shaft just beyond the plate 30. It will be noted also that the right-hand end of shaft 27 carries a collar 32 just outside bearing 29 and that while the shaft may be turned in either direction it cannot slip longitudinally. The rocking shaft 27 has secured to it in proper relative positions the cams or pressure-blocks 33 and 34. In practice these cams are laterally and rotatively adjustable by means of set-screws 35 and 36 or in any convenient and effective way.

The cam-blocks 33 and 34 are precisely alike in construction and operation; but they are arranged to extend or project upon opposite sides of the rocking shaft 27. For example, if cam-block 33 points to the rear, as illustrated in Fig. 3, the cam-block 34 would be secured upon shaft 27 to point forwardly. It is immaterial which block points forwardly and which points to the rear, as the shaft 27 may be rocked in either direction and either clutch can be operated at will by pressing one

or the other of the blocks down on its underlying half-nut arm, which is thus caused to engage one of the threaded portions of shaft 21 and by that engagement is moved side-
5 wise, as hereinafter stated.

The sliding rod 37, located in rear of the parts just described, is best seen in Fig. 2. Pillow-blocks 38 and 39 support it and permit free longitudinal reciprocation. To the
10 sliding rod are attached the half-nut arms or pieces 40 and 41. One form of these arms is shown in Fig. 3. I do not limit myself to this particular shape. Arm 40 has a half-cylindrical surface threaded to correspond with
15 and engage the threaded portion 25 of shaft 21, and arm 41 has a like surface threaded for portion 26 of that shaft. By reference to Fig. 1 it will now be noted that the clutch-levers 42 and 43 are pivotally connected with the
20 sliding rod by means of the connectors 44 and 45, and it will be readily understood that these connectors may be adjusted along rod 37 and secured at points thereon found to most effectively work the clutches.

In the drawings the right-hand clutch is shown to be engaged, and the pulley on that side drives the hoisting parts in one direction. The half-nut arm 41 has passed from beneath the cam-block 34 and cannot be moved farther toward the right. The parts are so arranged that when the half-nut reaches this position the clutch concerned has acquired its maximum grip, frictional or otherwise, of the pulley, and no further force should be
35 applied to the clutch-lever. The instance illustrated, it is believed, clearly shows how the force applied to the clutch-lever is automatically limited. The right-hand clutch cannot be disengaged until lever 31 is pushed
40 back from its present vertical position, bringing the cam-block 33 to bear upon the half-nut piece 40, pressing the piece down upon the threaded portion 25 of shaft 21 and into engagement therewith. These threads obviously move the half-nut to the left, and the sliding rod is likewise so moved. The right-hand cam-block is during this operation raised out of the path of the half-nut to which it is related. The hand-lever may be held or
45 locked in an intermediate position, in which case neither half-nut would be pressed into engagement with the threads of the shaft and both clutches would be in released position, the belt-pulleys rotating idly.

The half-nuts 40 and 41 must be allowed movement in vertical planes and prevented from moving lengthwise on the sliding rod. Collars 46 and 47 are secured to the rod on opposite sides of half-nut 40, and half-nut 41
50 is similarly provided. Only collar 48 for this piece is shown. (See Fig. 2.)

I do not restrict myself to the mere contour of any of the parts herein described.

In connection with my invention, but forming no part thereof, I usually employ a brake.
65 About the brake-wheel 17, shown in Fig. 1 at the right-hand end of the driving-shaft 13,

is a strap-brake 49, (see Fig. 2,) pivoted at the rear to a standard 50 and connected in front by the link 51 with a brake-lever 52. 70 The office of the brake is to prevent the parts from revolving when the power is taken off and to hold the raised load at any point.

I am aware that elevator machinery has been constructed and used in which the clutch-
75 levers are actuated alternately by mechanisms adapted for the purpose, and I do not claim such mechanism broadly.

Having thus explained my invention, what I claim, and seek to secure by Letters Patent
80 of the United States, is—

1. In elevator machinery, the combination of the driving-shaft, clutch-pulleys loose upon the said shaft, clutches arranged to act upon the pulleys, levers adapted to operate the
85 clutches, a sliding rod, the said levers being pivotally connected with the said rod, a rocking shaft and means for actuating it, a shaft 21 having right and left hand threaded portions, a belt-wheel secured on the threaded
90 shaft, half-nut arms pivotally connected with the sliding rod, and cam-blocks secured to the rocking shaft and projecting upon opposite sides thereof whereby the said half-nut arms may be pressed downwardly and alter-
95 nately held in engagement with the threaded portions of shaft 21, substantially as described.

2. In elevator machinery, the combination of the sliding rod, a rocking shaft and means
100 for actuating it, a shaft 21 having right and left hand threaded portions, a wheel by which the said shaft may be rotated, half-nut arms pivotally connected with the sliding rod, and cam-blocks secured upon the rocking shaft
105 whereby the said half-nut arms may be alternately pressed down and held in engagement with the threaded portions of shaft 21, substantially as described.

3. In elevator machinery, the combination
110 of the sliding rod, a rocking shaft and means for actuating it, a shaft 21 having right and left hand threaded portions, a wheel by which the said shaft may be rotated, half-nut arms pivotally connected with the said sliding rod
115 and capable of a vertical swing thereon, devices adjustable on the said sliding rod whereby lateral movement of the said half-nut arms compels a corresponding movement of the sliding rod, and cam-blocks adjustably se-
120 cured upon the rocking shaft whereby the said half-nut arms may be alternately pressed into engagement with the threaded portions of shaft 21, substantially as described.

4. In elevator machinery, the combination
125 of the sliding rod, a rocking shaft and means for actuating it, a shaft 21 having right and left hand threaded portions, a wheel by which the said shaft may be rotated, half-nut arms pivotally connected with the said sliding rod
130 and capable of a vertical swing thereon, devices adjustable on the sliding rod whereby lateral movement of the said half-nut arms compels a corresponding movement of the

sliding rod, cam-blocks adjustably secured upon the rocking shaft whereby the said half-nut arms may be alternately pressed into engagement with the threaded portions of shaft 5 21, lever-operated clutch mechanisms, and connectors adjustable upon the said sliding rod and adapted for pivotal juncture with the levers of the clutches, substantially as described.

10 5. In elevator machinery, the combination of the sliding rod, a shaft 21 having right and left hand threaded portions, half-nut arms pivotally connected with the sliding rod, and

adjustable devices constructed and arranged to effect the alternate engagement of the said 15 half-nut arms with the threaded portions of shaft 21 and to maintain that engagement during a predetermined movement of the sliding rod, substantially as described.

In testimony whereof I affix my signature 20 in presence of two witnesses.

GEORGE W. NISTLE.

Witnesses:

MARY SIMMS,
E. M. SIMMS.