H. S. GERMOND, Jr.

MACHINE BRAKE.

APPLICATION FILED OCT. 4, 1913.

1,228,203.

Patented May 29, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

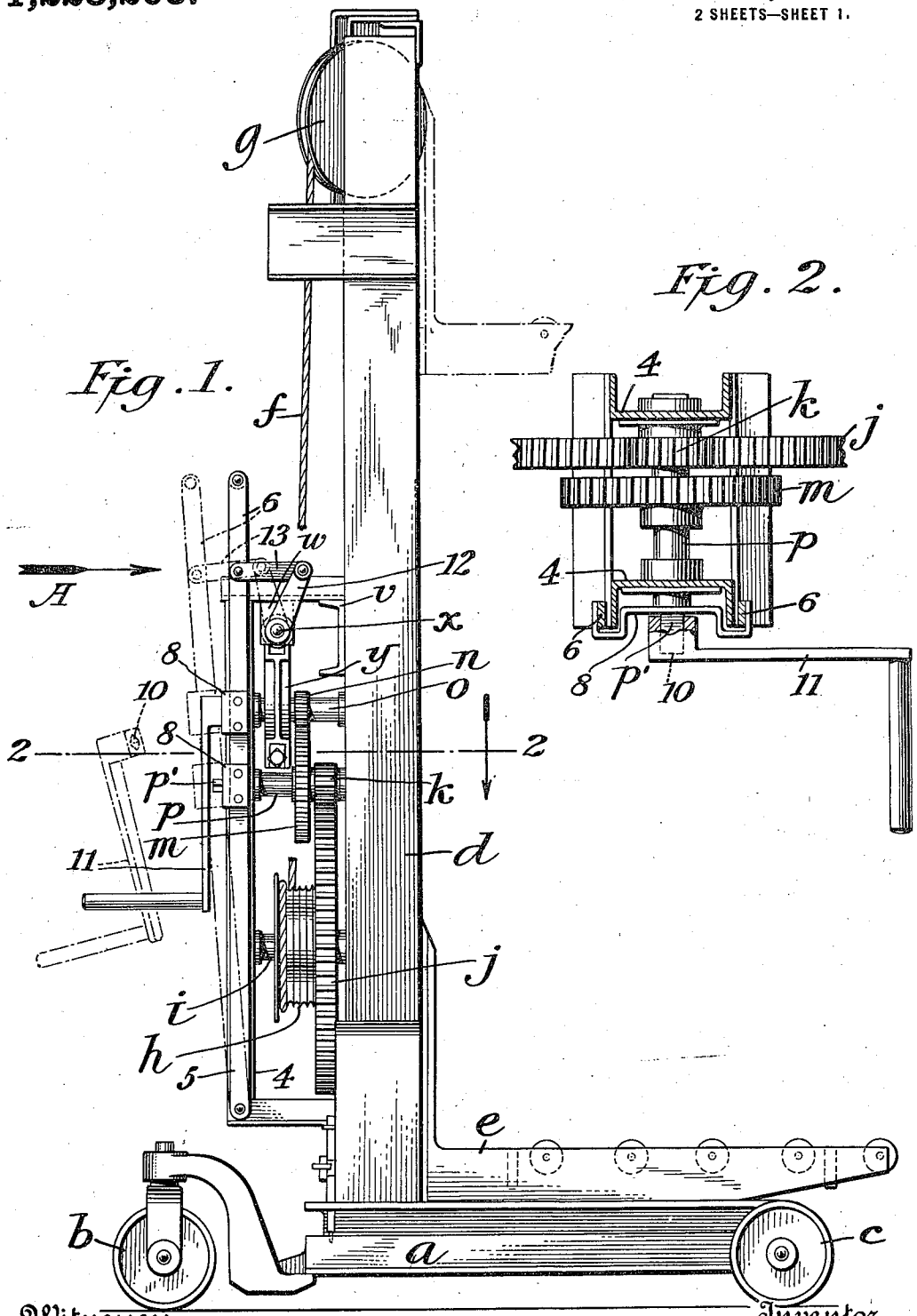


Fig. 2.

Witnesses:
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W. H. Hawkins

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Fig. 3.

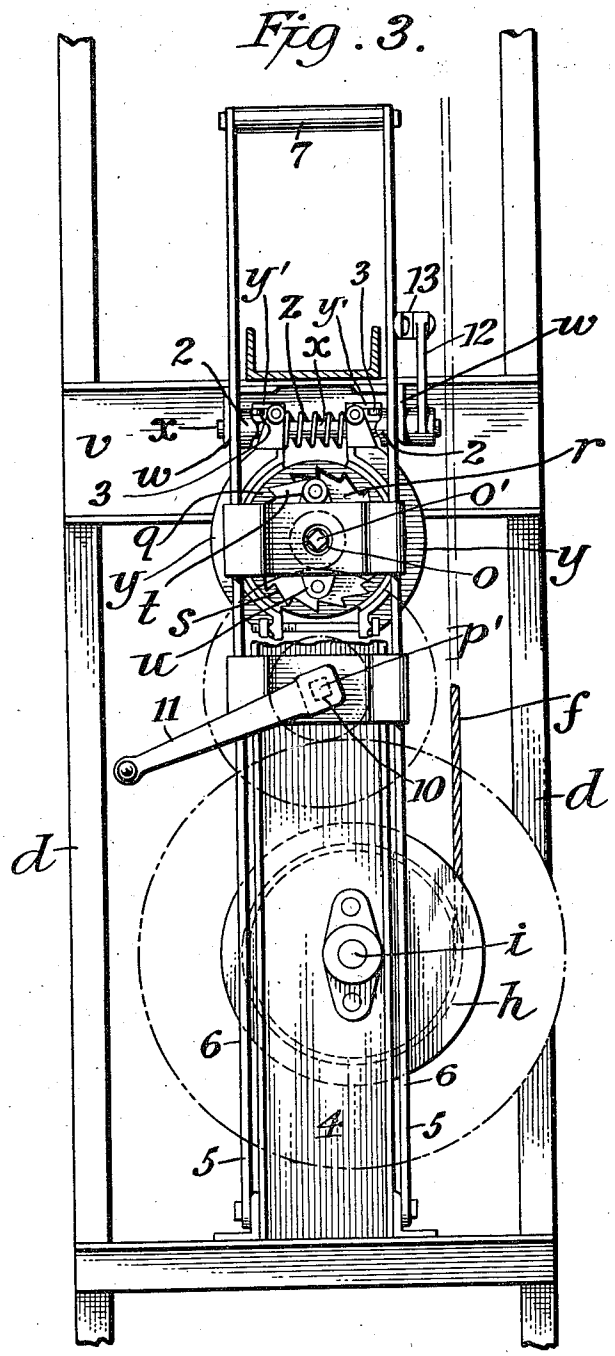


Fig. 4.

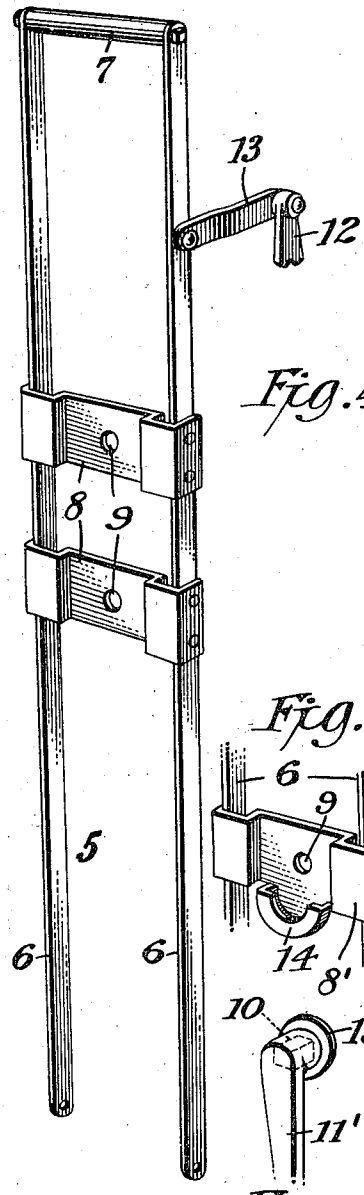


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY SHELDEN GERMOND, JR., OF BAYONNE, NEW JERSEY, ASSIGNOR TO NEW YORK REVOLVING PORTABLE ELEVATOR COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE-BRAKE.

1,228,203. Specification of Letters Patent. Patented May 29, 1917.

Application filed October 4, 1913. Serial No. 793,390.

To all whom it may concern:

Be it known that I, HENRY SHELDEN GERMOND, JR., a citizen of the United States of America, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Machine-Brakes, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in portable elevators (sometimes called tiering machines) and particularly to improvements in the hand-hoist or hand-winch with which such machines are commonly provided; and an object of this invention is to provide a hand-operated hoisting mechanism which will safeguard the operator from injury due to the backward or retrograde rotation of the removable crank with which the windlass-shaft is turned. Another object of this invention is to provide a manually-operated hoisting mechanism which will with entire safety to the operator permit the rapid reversal of the direction of movement of the load-carrying platform. A further object of this invention is to provide a manually-operated hoisting mechanism which will be simple in construction, comparatively cheap in manufacture and efficient, handy and durable in operation and use and the cost of upkeep of which will be relatively small.

In the drawings illustrating the principle of this invention and the best mode now known to me of applying that principle, Figure 1 is a side elevation of a tiering machine embodying this invention; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a view of the hoisting mechanism taken in the direction of the arrow A in Fig. 1; Fig. 4 is a detail showing the brake-lever in perspective; and Figs. 5 and 6 are detail views showing modified forms of the wiper-plate and crank, respectively.

The base *a* is supported on the caster-wheel *b* and the other two wheels *c* and in turn carries a pair of guide-standards *d* between which the load-carrying platform *e* is aranged to slide up and down. To the load-carrying platform *e* is attached one end of a winding cable *f* which passes over the pulley *g* and the other end of which is attached to the windlass-drum *h* mounted upon a windlass-drum shaft *i*, to which is rigidly fastened a spur-gear *j*, so that when the latter is turned, the windlass-drum *h* will turn with it, whereby the cable *g* will be wound up or paid out and the load-carrying platform *e* raised or lowered, depending upon the direction in which the spur-gear *j* is rotated. In order to rotate the spur-gear *j*, a train of gearing *k*, *m*, *n*, is provided. The uppermost pinion *n* is mounted upon the winding-shaft *o* and meshes with the intermediate gear *m*, upon the same shaft *p* with which there is mounted fast a pinion *k* which meshes with the spur-gear *j*. The shaft *p* may be used as a winding-shaft where the load is relatively light or speed in raising the load is a matter of importance or the distance the platform is to travel is relatively short. In order to prevent backward rotation of the upper winding-shaft *o* during the ascending movement of the load-carrying platform *e*, there is provided a brake mechanism which is substantially the same as that shown and described in an application filed by William Edward Boehck, April 19, 1913, Serial No. 762,236. This brake mechanism may be briefly described as follows: Upon the winding-shaft *o* there is idly or loosely mounted a brake-disk *q* formed with a recess *r* the annular wall of which is provided with internal ratchet-teeth *s* with which is adapted to engage the toe of a spring-controlled pawl *t* pivotally mounted upon the pawl-carrier *u* which is fast upon the winding-shaft *o*. From the cross-beam *v* there depends a pair of shaft-hangers *w*, in which is rotatably mounted a cam-shaft *x*. This cam-shaft *x* passes through holes in the upper ends of the brake-jaws *y* which are arranged to clasp tightly the periphery of the brake-disk *q* and are thrown into releasing position by a coil-spring *z* mounted upon the cam-shaft *x*, when the same is turned to permit the spring *z* to expand. Upon the cam-shaft *x* there is formed a pair of cams 2; and the upper ends of the brake-jaws *y* are provided with lugs *y'* which carry cam-rollers 3. These cam-rollers 3 are pressed firmly against the cams 2 by the coil-spring *z*; and, by rotating the cam-shaft *x* into the proper position, the cams 2 may be turned so as to force the upper ends of the brake-jaws *y* toward each other, against the tension of the coil-spring

z, whereby the brake-jaws y are caused to clasp firmly the periphery of the idly mounted brake-disk q and hold the same against rotation upon the winding-shaft o. This is the normal position of the brake-jaws; however, in Fig. 3 the cam-shaft x is shown turned so that the brake-jaws y are thrown into releasing position.

It is obvious that, as the winding-shaft o is turned in a direction to wind up the cable f, the pawl-carrier u will rotate with the winding-shaft o and the toe of the pawl t will travel or slip idly over the internal ratchet-teeth s. The load-carrying platform e being released, backward rotation of the winding-shaft o is prevented by the engagement of the toe of the pawl t with the internal ratchet-teeth s of the brake-disk q, which is clasped firmly between the brake-jaws y; and, since this brake-disk q is held fast by the latter, backward rotation of the winding-shaft o is prevented. However, when it is desired to permit backward rotation of the winding shaft o, the cam-shaft x is turned into the position shown in Fig. 3, whereby the cams 2 are thrown into a position permitting the coil-spring z to force the upper ends of the brake-jaws y apart, thereby releasing the brake-disk q from the grip thereof. Since the idly-mounted brake-disk q will now be free to rotate upon the winding-shaft o, the weight of the load-carrying platform e will tend to cause the retrograde movement of the winding-shaft o and the brake-disk q locked thereto by the pawl t and pawl-carrier u; and the platform will be free to descend.

In order to turn the cam-shaft x, the following mechanism is provided: Near the base of the upright 4 there is fulcrumed a brake-lever 5 comprising a pair of arms 6 the upper ends of which are joined by a handle 7. About midway of the arms 6 there is provided a pair of wiper-plates or guard-plates 8, each of which is formed with an aperture 9. Through the upper aperture 9 there projects the squared end o' of the winding-shaft o and through the lower aperture 9 there projects the squared end p' of the lower winding-shaft p. The squared ends, o', p', of the winding-shafts o, p, are the same in shape and are so shaped as to engage snugly in the socket 10 of the crank 11. Upon one end of the cam-shaft x there is mounted a rocker-arm 12 the upper end of which is connected by a link 13 with one of the brake-lever arms 6. When the brake-lever 5 is in the full-line position of Fig. 1, the rocker-arm 12 is so thrown as to cause the brake-disk q to be held firmly against rotation by the brake-jaws y. When, however, it is desired to reverse the direction of movement of the load-carrying platform and to allow the same to descend, the operator grasps the handle 7 and pulls the brake-lever 5 outward and away from the frame of the tiering-machine. During this outward movement of the brake-lever 5, the guard-plates 8 travel outwardly over the squared ends o', p', of the winding-shafts o, p; and, should the workman have been so careless as to have left upon either of these shafts his crank 11, the wiper-plates or guard-plates 8 will wipe or knock the same from off the end of the winding-shaft (see dotted lines in Fig. 1). The cams 2 are so positioned that the coil-spring z will not be permitted to force the brake-jaws y into releasing position until the wiper-plates 8 have traveled over the squared ends o', p', of the winding-shafts o, p, sufficiently to throw off the crank 11, if the same has been left on the shaft by the workman. In this way, it is insured that the workman will be saved from injury by reason of backward rotation of the crank, when the brake is released and the load-carrying platform e is allowed to descend.

In Figs. 5 and 6 are shown, respectively, a modified form of wiper-plate 8′ and a modified form of crank 11′. In this form the wiper-plate 8′ is formed with a semicircular lip 14 and the crank 11′ is formed with a flange 15. When the crank 11′ is wiped free of the winding-shaft o (or p) and thereby disconnected therefrom, the flange 15 of the crank will, when the latter drops, engage with the semicircular lip, 14, whereby the crank will be caught and held from dropping on the floor and in a position where it may be readily seized and connected with the shaft o (or p), when it is desired to wind up the cable f and raise the platform e again.

I claim:

1. A hoisting mechanism comprising a driving shaft therefor; means for holding said shaft against retrograde rotation; and mechanism which is mounted free to slip outwardly along said shaft and wipe therefrom articles slidably mounted thereon and which when slipped outwardly along said shaft throws said means into releasing position.

2. A hoisting mechanism comprising a driving shaft therefor; means for holding said shaft against retrograde rotation; a device for operating said shaft and slidably mounted thereon; and mechanism which is mounted free to slip outwardly along said shaft and wipe said device therefrom and which when slipped outwardly along said shaft throws said device therefrom and said means into releasing position.

3. A hoisting mechanism comprising a driving shaft therefor; an operating device for turning the latter and removably connected therewith; a brake for holding said shaft against retrograde movement; and brake-controlling mechanism provided with

means for disconnecting said shaft from its operating device.

4. A hoisting mechanism comprising a driving shaft therefor; locking mechanism which prevents the retrograde movement of said shaft; and means which wipe said shaft clear and release said locking mechanism.

5. A hoisting mechanism comprising a driving shaft therefor; an operating device for turning the latter and removably connected therewith; a brake for holding said shaft against retrograde movement; and a brake-lever provided with a wiper for disconnecting said shaft from its operating device.

6. A hoisting mechanism comprising a driving shaft therefor; an operating device for turning the latter and removably connected therewith; locking mechanism for holding said shaft against retrograde movement; means which release said locking mechanism and disconnect said shaft and its operating device; and retaining means which engage said operating device after its disconnection from said driving shaft.

Signed at the borough of Manhattan, city, county and State of New York, this second day of October, 1913, in the presence of the two undersigned witnesses.

HENRY SHELDEN GERMOND, JR.

Witnesses:

M. E. WOARDELL,

JAMES HAMILTON.