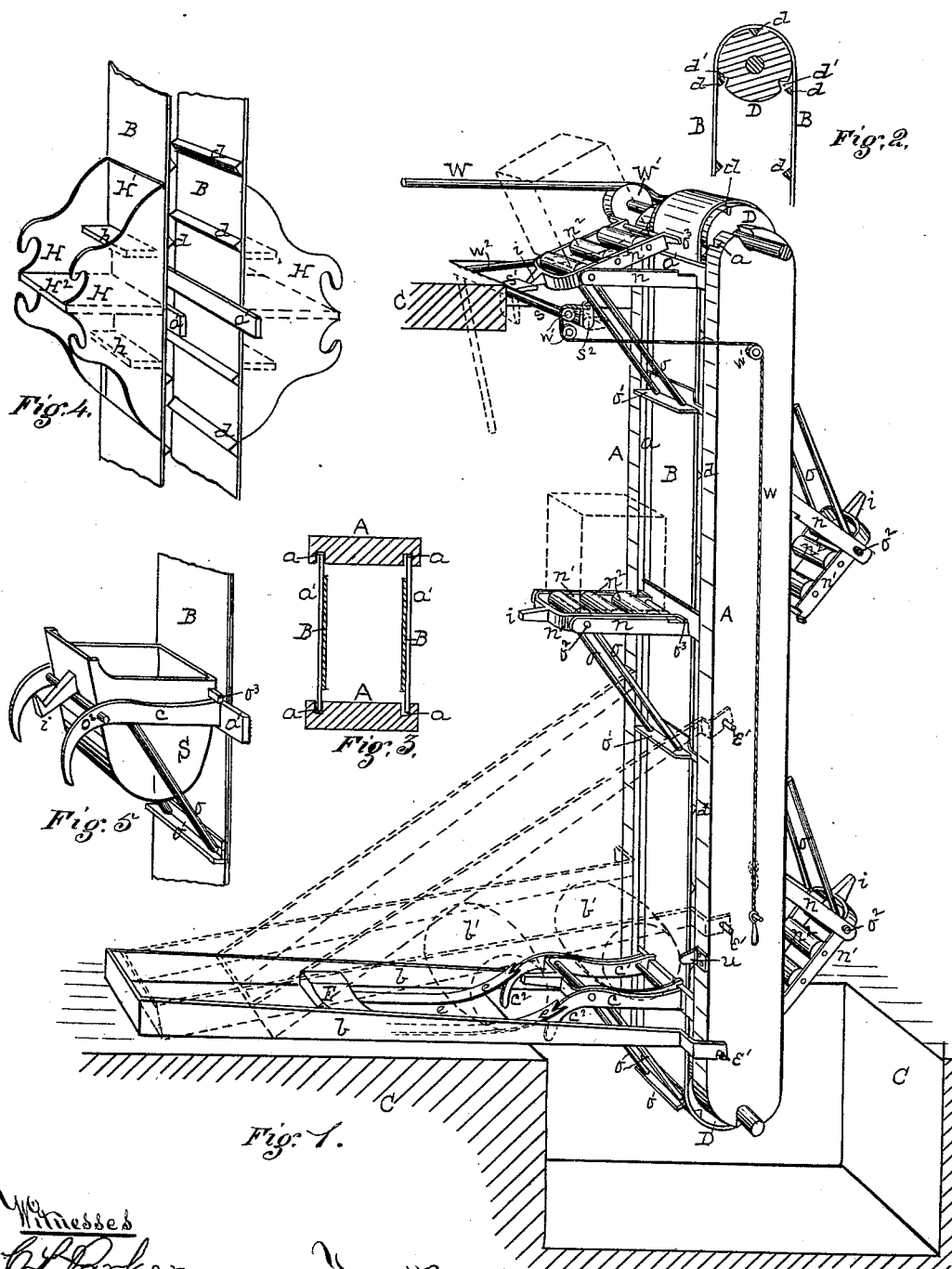


S. A. BATES.  
Elevator.

No. 214,233.

Patented April 15, 1879.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **214,233**, dated April 15, 1879; application filed  
February 19, 1879.

*To all whom it may concern:*

Be it known that I, SAMUEL A. BATES, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Elevators; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved elevator. Figure 2 is a vertical sectional view through the carrying-belt and one of the driving-drums. Fig. 3 shows a transverse section through the carrying-belt and sides of the elevator. Fig. 4 is a perspective view of a front and back portion or section of the carrying-belt with passenger-cars arranged thereon; and Fig. 5 is a like view of a portion of the belt with a water-bucket arranged thereon.

My present invention relates to certain improvements in that class of elevators described and shown in Letters Patent granted to me, as assignor, September 25, 1877.

In the drawings, A A represent the sides of the main frame of the elevator; B, an endless carrying apron, belt, or chain, which is operated over and by top and bottom drums, D, which are journaled and driven in any convenient way.

I have found, in actual use, that the belt B, when carrying a heavy load, has more or less tendency to slip on the drums D, especially when the belt becomes a little loose by wear. To avoid this difficulty, I attach a number or series of cleats or ribs, *d*, transversely across the inner face of the belt, and also make longitudinal grooves *d'* in the face of the drums at proper intervals for receiving the ribs *d* as the belt is carried over the revolving drums; or, if preferred, the ribs *d* may be secured to the outer face of the belt, and pins be driven in the drums at proper intervals for engaging the projecting ends of the ribs.

The operation of this improvement is clearly illustrated in Figs. 1 and 2.

In order to prevent sagging or swaying of the belt, I make grooves *a* in the side frames A A, such grooves being in line with and ad-

jacent to the edges of the belt, and, by preference, on both the front and rear sides, as shown in section, Fig. 3. Guide-bars *a'* are firmly secured to the belt, across either its outer or inner face. These bars project beyond the edges of the belt on either side, and the projecting ends work or slide in the grooves *a*. One or more of these guide-bars may be employed with each carrying-platform of the belt, and they operate to hold the belt in place between the drums, and prevent it from sagging.

At the lower end or bottom of Fig. 1, I have shown a tilting platform, *c c'*, adapted to hoisting or carrying barrels, the same being constructed and operating substantially as described in my aforesaid patent, except that the side rails *c* of the outside supporting-frame are carried forward and the ends bent downward, as shown at *c''*. These ends, extending forward near to the edge of the floor or deck, C, operate as skids to conduct the barrel well onto such floor or deck when it is rolled off the platform, and the downwardly-bent ends *c''*, following after the platform proper, prevent the barrel from rolling back while the platform is passing. Such extended ends *c''* are also arranged to operate, in connection with springs *e*, to prevent more than one barrel from rolling forward onto the platform at one time.

These springs *e e* are secured to a block, E, pivoted to the side bars of the skid *b*, so that the springs, when not in use, may be turned over and extend back from the pivoted block. The operation of this device is clearly illustrated at the bottom of Fig. 1, barrels *b' b'* being represented by dotted lines. As there shown, one barrel only is received on the platform, and the extended ends *c''* of the side bars *c* press the ends of the springs *e* from the under side, and raise them sufficiently to prevent other barrels from rolling down onto or against the platform, and the ends *c''* are extended down to such length as to keep the ends of the springs elevated until the platform has been raised out of the way. The springs then return to their position below the surface of the skid, and the barrels roll forward, the foremost one being in position to be received by the next ascending platform. The front end

of the skid *b* may be supported by hooking onto pins *e'* set in the side frame, or in other convenient way.

At *n n'*, Fig. 1, I have shown a platform adapted to hoisting and discharging rectangular boxes or packages. This platform consists of an outer frame, *n*, which is rigidly attached to the belt in any convenient way, and braced by rods *o*, which are rigidly attached at one end to the frame *n*, near its outer end, while the other end rests in steps *o'*, secured to the face of the belt in proper position. This frame *n* and its supports are substantially the same as shown in the aforesaid patent. The inner tilting frame, *n'*, however, has journaled in its side rails two, three, or more rollers, *n''*, on which the package rests. This inner frame is pivoted to the outer one by a rod, *o''*, passing through both near the front edge, while lateral arms *o'''* support the rear or back edge by resting on the bars of the outer frame. The inner frame is thus free to be tilted on its pivot *o''*, as seen at top of Fig. 1, and when thus tilted the package resting on the rollers *n''* will be passed forward onto the edge of the floor or deck *C*, out of the way of the next succeeding platform. The device is thus made self-discharging, and is adapted to carry and discharge packages of various forms having plane sides without necessarily stopping the elevator.

When lowering packages, the front end of the skid *b* may be elevated, as shown in dotted lines, Fig. 1, so as to receive such packages as are extended over the platform-frame, whether round or of other form, and pass them down the incline-way from the elevator; or the lateral pins *o'''* may be extended out far enough to engage suitably-shaped stops *u* on one or both sides of the frame *A*. The rear of the tilting frame will thus be raised, turning on the pivot *o''* sufficiently to discharge the load and allow the platform to pass.

I prefer to make the stop *u* removable, so as to be moved out of engagement with the arms *o'''* when the platforms are ascending.

When ascending, the several platforms are tilted by means of tappets *i*, projecting out from the front of the tilting frames *n'* and *c'*. These tappets engage trips or stops *s'*, arranged in proper position to tilt and unload the platforms at the desired time. The stop *s'* is attached to a rock-shaft, *s*, which is journaled to the elevator-frame in any convenient way, so as to bring the stops in proper relation to the tappets *i*.

When the shaft is rocked so as to bring the stop into a horizontal position, as shown in full lines, Fig. 1, it will be engaged by the several tappets *i* as they pass. The shaft and stop are given this position by means of hand-cord *w*, passing from a crank-arm, *s''*, on the shaft, over pulleys *w'*, to the operator's stand. When this cord is released a weighted lever, *w''*, will rock the shaft and carry the stop down, as shown in dotted lines, Fig. 1, so as to be out of en-

gagement with the tappets, or out of their line of motion.

A bar, *W*, arranged to bear upon a friction-wheel, *W'*, will afford a suitable brake to regulate or check the motion of the elevator.

If desired, any suitable brake-shoe may be attached to the bar *W* so as to bear on the face of the wheel *W'*. The bar is hinged or jointed at one end to the elevator-frame, and from the other end a hand-cord may pass to the operator's stand.

In Fig. 4 I have shown a passenger-car adapted for use in my elevator, the same consisting of back *H'* and side brackets *H*, between which is a platform, *H''*; and, if desired, seats *h* may be arranged on both sides of the platform. The back *H'* is secured to the belt at its central transverse line, so that it may turn freely over the drums *D*. The length of the back is, by preference, sufficient to give the requisite bracing support, though the platform may be braced as before described.

As thus arranged the car will operate both on the front and back sides in ascending and descending, as shown in Fig. 4, and it may be used alone on an endless belt, *B*, for passenger purposes only, or it may be used in addition to or along with platforms for hoisting goods of various kinds.

Also, in Fig. 5 I have shown a tilting water-bucket, *S*, pivoted by rod *o''* to frame *c*, which is attached to belt *B* and supported by braces *o*, substantially as before described. Side arms *o'''* also support the rear of the bucket on the frame *c*. One or more such buckets may take the place of the tilting platforms *c'* of the elevator, and are more especially adapted for use on shipboard, where they may be used in combination with the apparatus described for pumping or raising water out of the ship's hold. A tappet, *i*, extending out from the front of the bucket will, in combination with the described trip, tip the bucket *S* at the desired point and discharge the contents.

I claim herein as my invention—

1. In a self-loading barrel-hoist, the combination of platform-frame *c*, having downwardly-bent projections *c''*, springs *e*, and skid *b*, substantially as and for the purposes set forth.
2. In a self-discharging elevator, the combination of platform-frame *n*, tilting platform *n'*, pivoted to and carried by said frame, two or more rollers, *n''*, journaled in the tilting platform, and mechanism for tilting the platform at the desired point, substantially as and for the purposes set forth.
3. As a device for tilting the platform of a self-discharging elevator, and in combination with such platform, a rock-shaft, *s*, having a projecting stop, *s'*, attached thereto, adapted to engage with or clear the platform by the rotation of the shaft, and having suitable mechanism for imparting such rotary motion at the will of the operator, substantially as described.
4. The combination of endless belt *B*, carrying one or more elevating-platforms, guide-

bars  $a'$ , arranged across the belt at or near the platforms, and side grooves  $a$  in the main frame, on either side of and in line with the belt, and adapted to receive the ends of the bars, substantially as set forth.

5. In an elevator apparatus, the combination of an endless and continuously-operating belt, and a passenger-car having main platform  $H^2$ , secured to the belt and supported by extended back  $H^1$  and brackets or braces  $H$ , the same being arranged and operated, substantially as described.

6. The combination of endless belt  $B$ , frame  $c$ , secured to the belt and supported by braces  $o$ , bucket  $S$ , pivoted to the frame, rear support  $o^3$ , tappet  $i$ , and a suitable stop or trip for engaging the tappet and tilting the bucket, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SAMUEL A. BATES.

Witnesses:

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