2 Sheets—Sheet 1.

S. A. BATES.

BARREL-HOISTING APPARATUS.

No. 195,475. Patented Sept. 25, 1877.

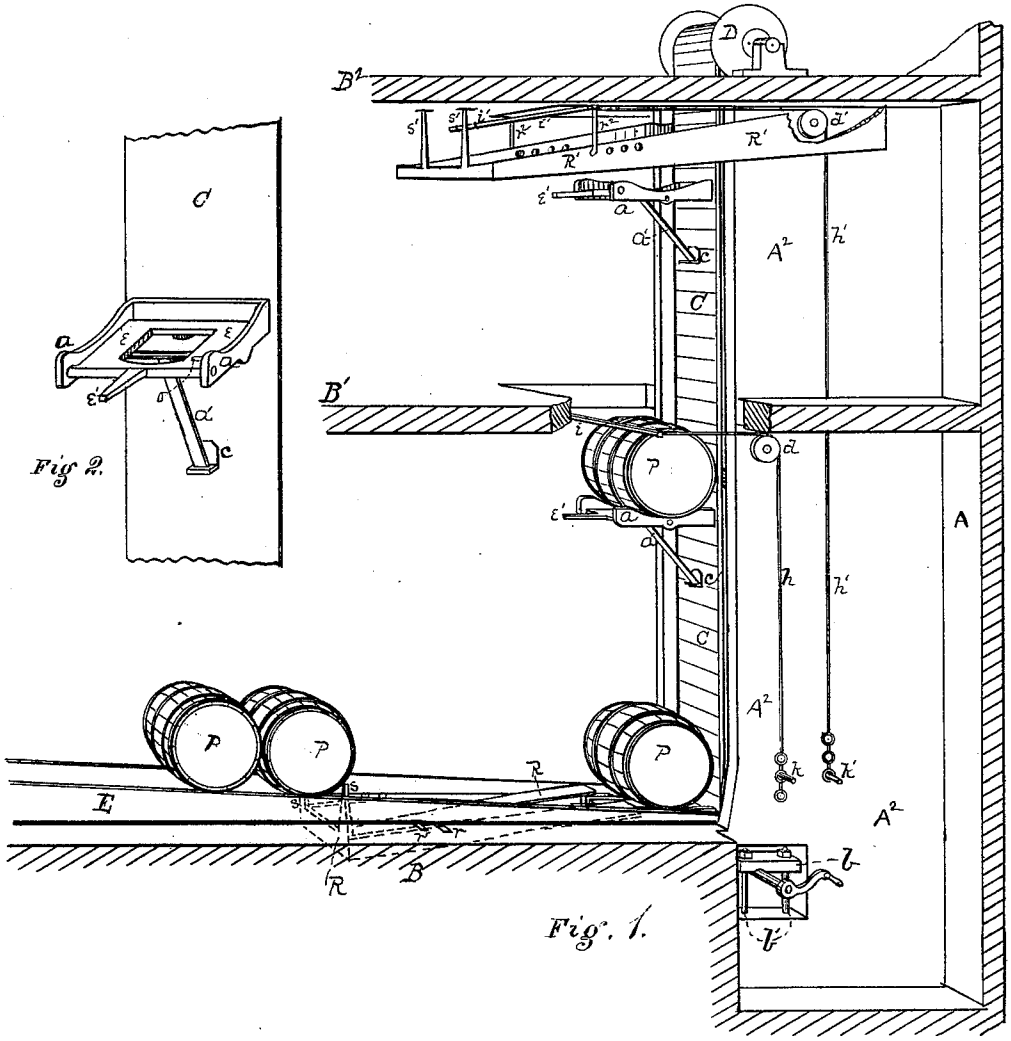


Fig. 1.

Fig 2.

Witnesses
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2 Sheets—Sheet 2.

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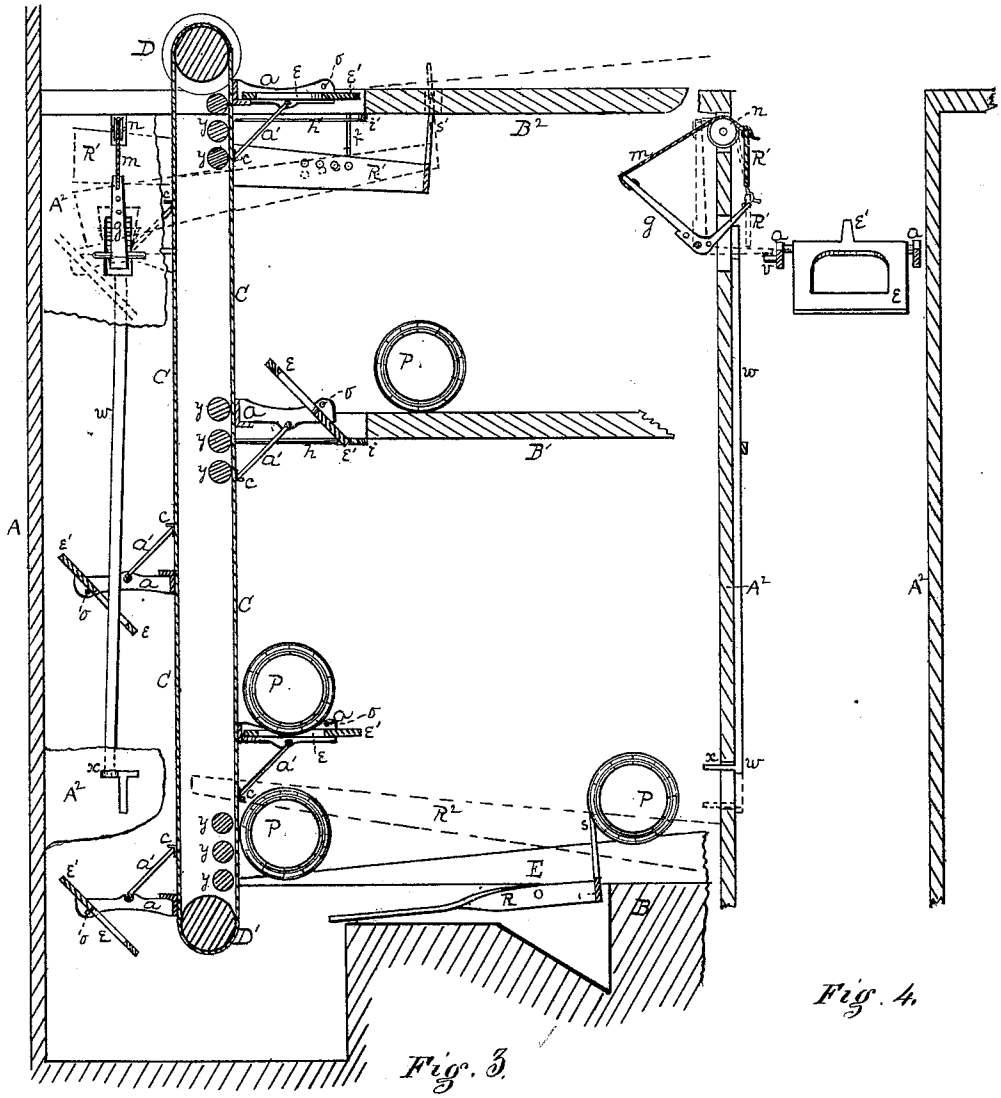


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

SAMUEL A. BATES, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, J. J. McCORMICK, AND ROBERT LIDELL, OF SAME PLACE.

IMPROVEMENT IN BARREL-HOISTING APPARATUS.

Specification forming part of Letters Patent No. **195,475**, dated September 25, 1877; application filed July 9, 1877.

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 Elevating or Hoisting Apparatus; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved hoisting apparatus or elevator. Fig. 2 is a like view, somewhat enlarged, of a portion of the elevating-belt, carrying one of the elevating tables or platforms. Fig. 3 is a vertical sectional view of the apparatus, but showing a side elevation of certain devices for operating the upper loading mechanism; and Fig. 4 further shows, in elevation, partly in section, the same devices.

My present invention relates to an elevating or hoisting apparatus in which the elevating tables or platforms are automatically loaded or unloaded.

The apparatus as described is especially designed for moving barrels, casks, kegs, and other like round packages, and may be used with advantage in warehouses, breweries, packing establishments, and also in lading and unlading ships, oil-barges, and other like conveyances; and while it is more particularly designed to automatically load and unload the elevating-platforms when moving such round packages, yet, when the nature of the package requires, such loading and unloading may be done by hand, as with the ordinary apparatus.

In the drawing, A represents the side wall, and B B^1 B^2 the different floors of a warehouse or the decks of a ship.

C is a belt or endless chain, working on or carried by rollers or pulleys D D′, which are supported in the frame-work A^2 of the elevator. One of these rollers, as the lower one, D′, has its bearings in adjustable blocks *b*, which are secured in place by bolts *b′*. By screwing down the nuts on the bolts *b′* the roller D′ will be lowered, which will result in tightening the belt or chain C. This belt or chain may be driven from either the upper or lower roller by any suitable power.

To the belt C are firmly secured, at proper intervals, table-frames or platforms *a*, which are supported in a horizontal position by braces *a′*. One end of these braces is pivoted or jointed to the table-frame, and the opposite end or foot rests in a step or metal socket, *c*, which is securely attached to the face of the belt. The upper edges of the side pieces of the tables or platforms are, by preference, hollowed out, or made slightly concave, so as to form a bed in which the cask or barrel may rest securely.

In order to discharge or unload a barrel or other like package from this platform *a*, I make use of a tilting plate, *e*, or similar device. This tilting plate is pivoted to the sides of the table or platform, preferably near its front edge. An arm, *e′*, extends out from the front edge of the plate *e*, which, coming in contact with a suitable trip, arranged on the floor or deck, will operate as a lever to tilt up or raise the rear edge of the plate, and thus roll the barrel off the platform. The trip employed for tilting the plate is, by preference, made so that it may be adjusted to engage the arm *e′* or not, at pleasure, and it may be of any desired construction with reference to this end.

As shown in the drawings, a spring bar or rod, *i*, is connected at one end to the floor or deck, in such manner that it may be drawn forward so as to engage the arm *e′* when desired, but when released will spring back out of working position.

A cord, *h*, attached to the free end of the rod *i*, is passed over a pulley, *d*, to a hook and pin, *k*, within reach of the operator. A similar trip device may be arranged on each or any floor or deck, as is represented on the floor B^2, Fig. 1, *i′* being the spring-bar, *h′* the cord, *d′* the pulley, and *k′* the fastening device. The operator, by pulling down the proper cord, can draw forward either trip into working position, so that the arms *e′* of the tilting plates shall engage the same, and, by tilting the plate, roll the package carried on the platform onto either floor or deck, as desired.

To prevent the tilting plates from turning

too far, so as to overbalance both when discharging a package and also when descending on the back side, I make use of a pin, *o*, projecting from the inner side or face of the table-frame, which will stop or check such overbalancing and keep the plate *e* in proper position.

I have shown the devices for automatically loading the several platforms arranged upon both the upper and lower floors. Their general construction and operation are the same, differing only in minor details of adaptation.

A will first describe the devices as arranged upon the lower floor.

A skidway, E, is, by preference, arranged immediately in front of the elevator, with its track having a little incline toward the elevator. The barrels or packages P which are to be moved are arranged on this skidway.

A stop device, R, having arms *s s*, is pivoted to the floor by means of suitable bearings, resting in the gains *r*, or in other convenient way. The arrangement of the stop R is such that when the end next the elevator is down to the level of the skid-track, as seen in Fig. 1, the arms *s* will project above the top of the skid, so as to prevent packages from rolling forward. When this stop device R rests in the gains *r* next the elevator its ends will be engaged by the upwardly-moving platforms *a*, and raised thereby, and the arms or forks *s* will be correspondingly depressed, so as to allow a package to roll forward. The stop R is also so arranged as to be engaged with the platform only a sufficient time to allow one package to pass; and the end of the stop next the elevator, being made heavier than the other, will, when released, fall by its own weight, and, elevating the forks *s*, will prevent other packages from rolling forward until the operation is repeated by the next ascending platform.

The package thus released will roll down the inclined skidway against the frame A^2 of the elevator, in position to be carried up by the next succeeding platform. In this manner each platform elevates a package as it ascends, and at the same time operates the stop device, whereby another package is rolled forward in position to be elevated by the next platform.

When desired, as when loading the elevator by hand, or when lowering packages from an upper floor, the stop R may be moved back into the second set of gains r^1, so as not to engage with the moving platforms. It will then remain at rest.

When loading packages from an upper floor I use a skidway inclining toward the elevator, as before described, also, as seen in Fig. 1, a stop device, R^1, having forks or arms *s'*. The stop R^1 is pivoted to the floor or deck by hooks r^2, or in any convenient way, and the end next the elevator is made heavier, so as to fall by its own weight and carry the arms *s'* up through the floor, to prevent packages from rolling forward, as before described, and as shown in dotted lines, Fig. 3.

The devices for automatically operating this stop R^1 are shown in Fig. 4.

A bell-crank lever, *g*, is pivoted to the elevator-frame near its upper end. To the outer end or arm of the bell-crank is attached a cord, *m*, which works over a pulley-wheel, *n*, and connects with the inner end of one arm of the stop R^1. The inner arm of the bell-crank passes through an opening in the elevator-frame, and extends in far enough to be engaged by a pin, *v*, projecting out from the platform-frame *a*, as shown in Fig. 4, the bell-crank being shown by dotted lines in position of engagement.

This device is more especially designed for use when lowering packages, and in such case the platforms on the rear belt will be ascending. The pins *v*, then engaging the arm of the bell on the under side, as shown, will raise the crank-arm as they ascend. Such elevation of the crank-arm will, through the devices described, operate to raise the inner end of the stop R^1 and depress the arms *s'*, so as to allow a package to roll forward upon the descending platform.

The pin *v* passing the crank-arm at the proper time, the stop will return, by its own weight, to its first position, and, elevating the arms *s'*, will prevent other packages from rolling forward until again operated by the next ascending platform.

Packages thus loaded from an upper floor may be unloaded on any lower floor by placing skids in such position as to receive the packages as the platforms descend, and to this end the carrying-platform should be narrower than the length of the package, so that the overhanging ends of the package may rest upon the skids. I have shown one such skid in dotted lines, as at R^2, with one end resting on suitable elevated supports on the elevator-frame, and the other on the floor or deck.

When not in use, the upper loading device may be left in the position shown in full lines, Figs. 3 and 4, where the arms or forks *s'* are depressed to or below the level of the floor. This may be accomplished by drawing down the outer arm of the bell-crank lever *g* until its inner arm is elevated sufficiently to allow the pins *v* to pass without engaging the same.

I have shown a rod or bar, *w*, for moving and holding the bell-crank out of working position. This rod extends from the under side of the inner arm of the bell-crank down the side of the elevator-frame to some point within convenient reach of the operator. By shoving the rod upward, the bell-crank will be moved out of working position, and, by moving the foot of the rod a little to one side into a suitable notch or keep, *x*, the crank will be held in that position along with the balance of the upper loading device. By releasing the foot of the rod *w*, the several parts will return, by their own weight, to a working position.

I do not limit myself to the use of the rod *w*, as many well-known devices may be substituted therefor—as a cord attached to the outer end of bell-crank, and provided at its free end with some suitable means of attachment.

I also provide friction-rollers *y* against the inner face of the front or working belt, to prevent it from sagging when loaded; and, if desired, side guides may also be provided for the edges of the belt to run in.

Neither do I limit myself to the use of any particular kind of belt, as different kinds may be used, corresponding to the work to be done, as gum, leather, chain, &c.

I claim herein as my invention—

1. In an elevating or hoisting apparatus, the combination of an endless belt, C, a series of platforms or tables, *a*, attached thereto, a tilting device, *e*, in each table, and a movable trip, *i*, with connection thence to the operator's stand, for shifting the position of the same, substantially as set forth.

2. The combination of platform *a*, brace *a'*, step or socket *c*, tilting plate *e*, having an arm *e'*, and an adjustable trip device, *i*, substantially as set forth.

3. In an elevating apparatus, the combination of an inclined skidway and a pivoted or tilting stop device, arranged to be automatically operated by the elevating apparatus, substantially as described, whereby, upon the passage of each ascending platform, a package is carried forward to be received by the next succeeding platform.

4. The combination of pivoted stop R^1, having arms *s'*, bell-crank *g*, and cord *m*, arranged to be automatically operated by the ascending elevating apparatus, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand.

SAMUEL A. BATES.

Witnesses:

J. J. McCORMICK,

CLAUDIUS L. PARKER.