March 18, 1924. 1,487,196

C. F. BLEDSOE

MATERIAL HANDLING DEVICE

Filed June 16, 1922 3 Sheets-Sheet 1

Fig. 1

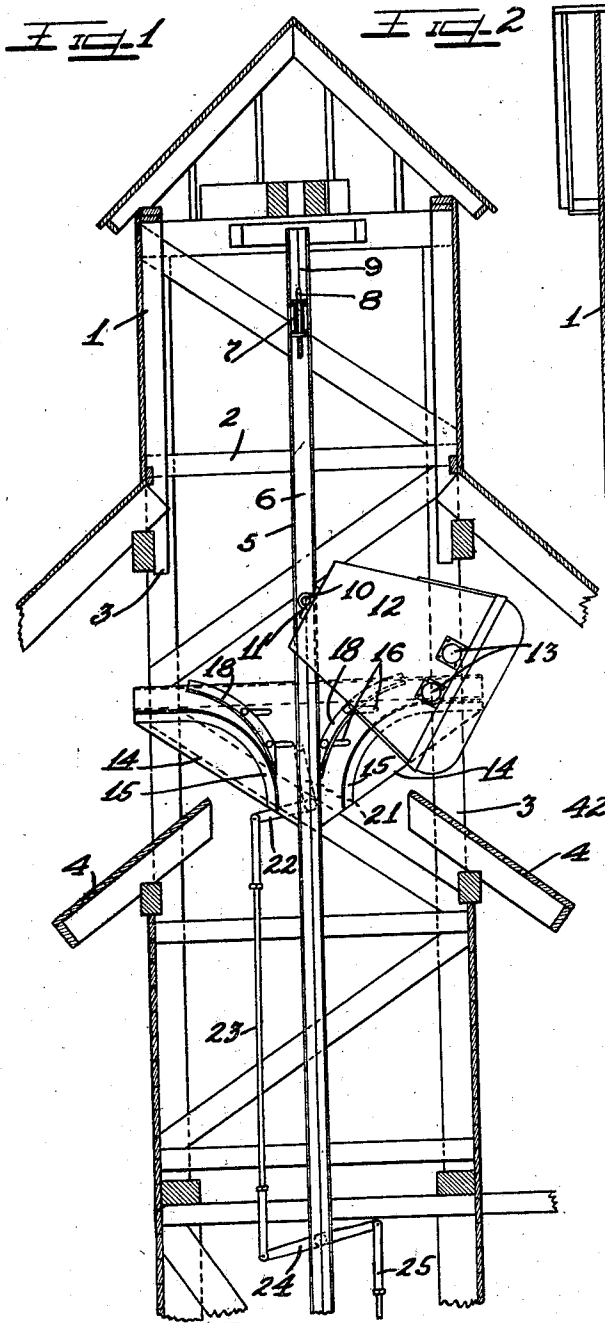
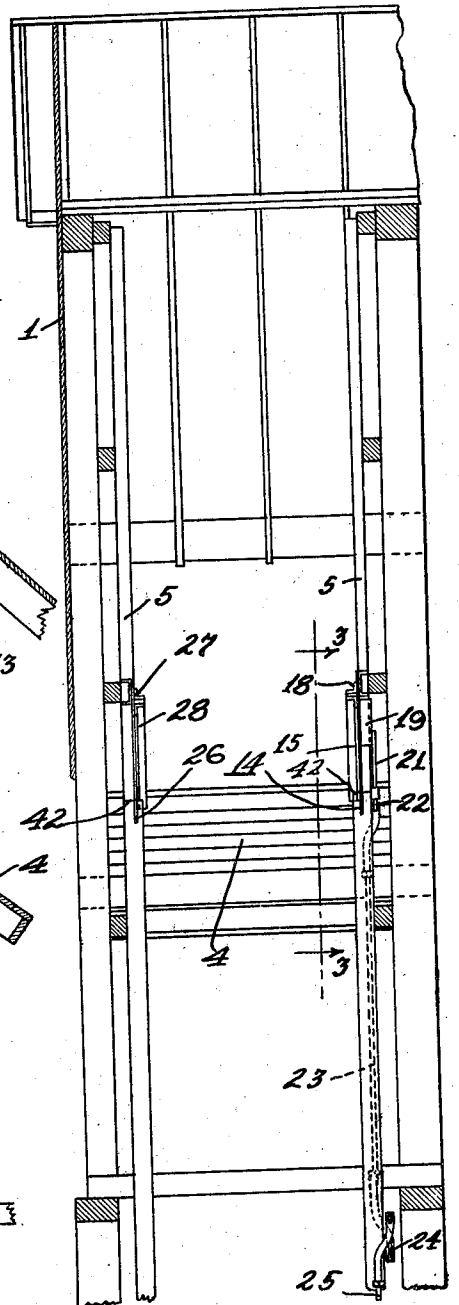


Fig. 2



Witnesses

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MATERIAL HANDLING DEVICE

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FIG. 3

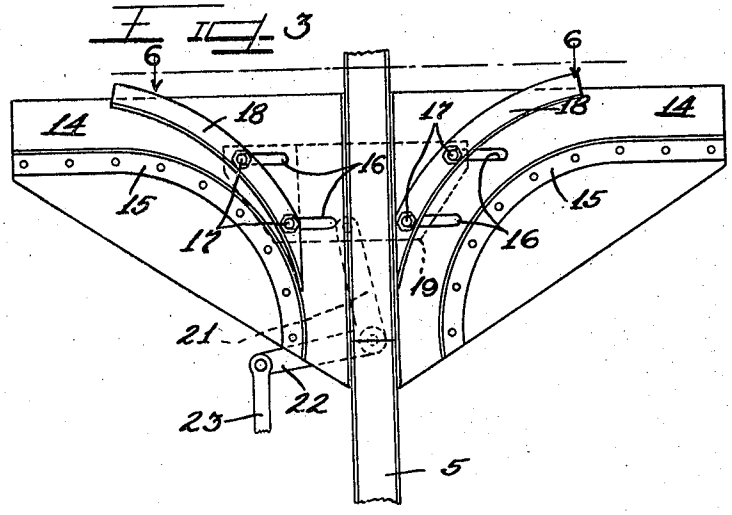
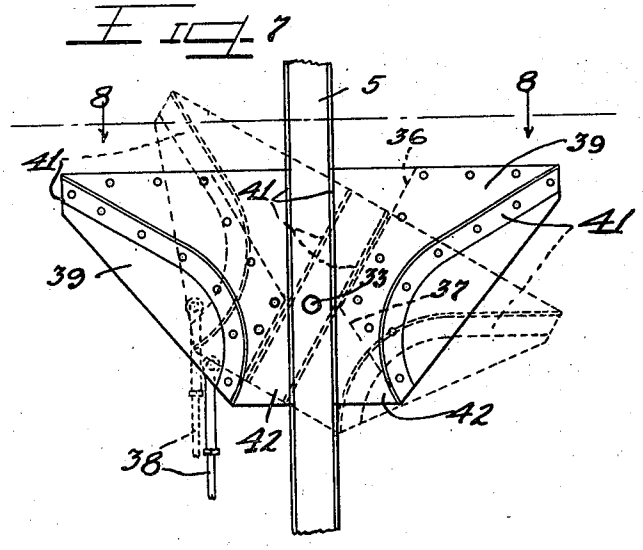


FIG. 7



Witnesses

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MATERIAL HANDLING DEVICE

Filed June 16, 1922 3 Sheets-Sheet 3

FIG. 4

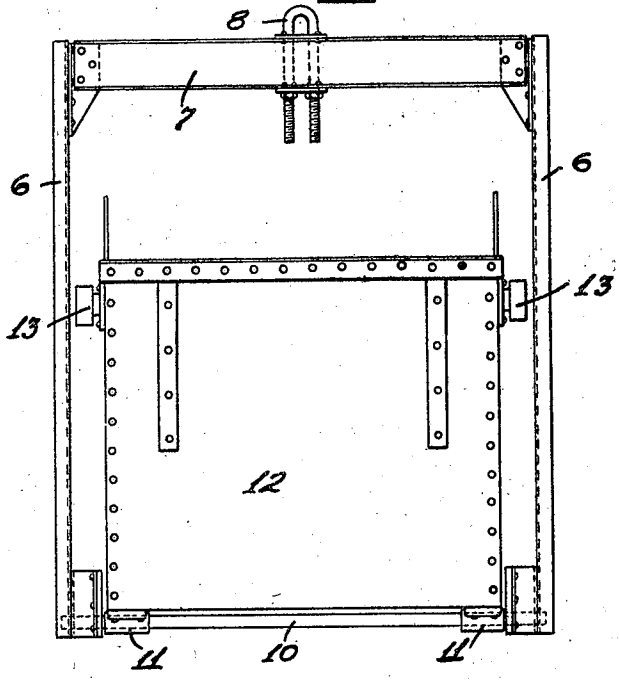


FIG. 8

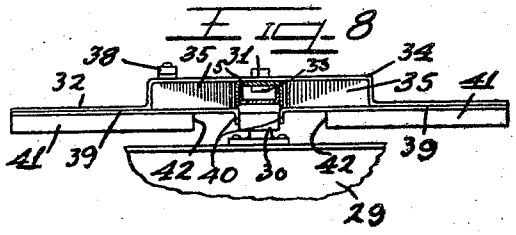


FIG. 6

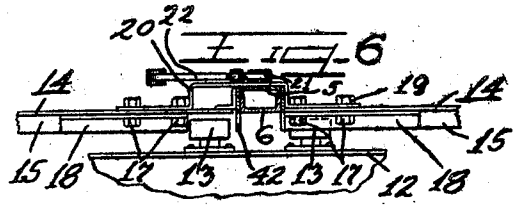
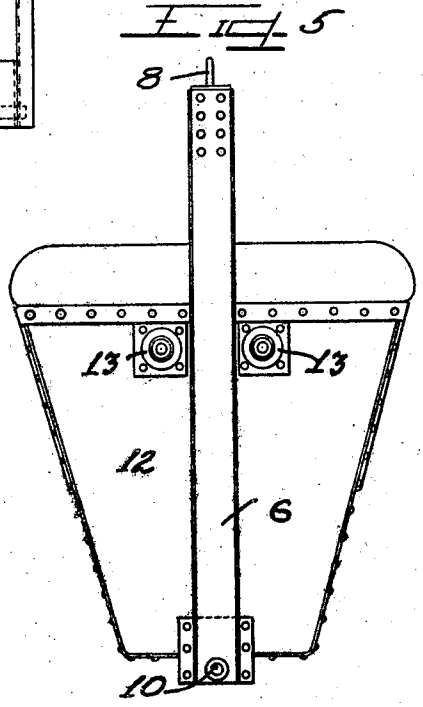


FIG. 5



WITNESSES

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ATTY.

Patented Mar. 18, 1924. 1,487,196

UNITED STATES PATENT OFFICE.

CARL F. BLEDSOE, OF CHICAGO, ILLINOIS.

MATERIAL-HANDLING DEVICE.

Application filed June 16, 1922. Serial No. 568,698.

To all whom it may concern:

Be it known that I, CARL F. BLEDSOE, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Material-Handling Device; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to a material handling device wherein a material handling bucket when elevated by a hoist is adapted to be automatically dumped to one side or the other, depending upon the position of adjustment of shiftable switch plates carrying controlling guide rails positioned to coact with stationary two-way turn-out guide rails mounted on the framework of a housing.

It is an object of this invention to provide a material handling device having a switch mechanism adapted to control the direction of dumping a bucket.

It is also an object of the invention to provide a material handling device wherein movable guide rails are adapted to be shifted with respect to stationary rails to determine in which direction a bucket is to be dumped.

It is a further object of the invention to provide a material handling device wherein a bucket bail, when elevated, is guided in guide members to permit a bucket pivoted on the bail to tip out of the plane of said bail in either one of two directions, depending upon the adjustment of a control switch.

It is an important object of this invention to provide a material handling device of simple and effective construction having a manually operable control track switch which governs the direction of dumping of a bucket having rollers for coaction with said track switch and pivoted at its bottom to a bail operable by a hoist and running in guides.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a fragmentary vertical transverse section through a material handling device embodying the principles of this invention and disclosing the bucket dumped in one direction.

Figure 2 is a fragmentary longitudinal section through the device.

Figure 3 is a fragmentary detail view of the switch mechanism taken on line 3—3 of Figure 2.

Figure 4 is a front elevation of the bail and bucket.

Figure 5 is an end elevation thereof.

Figure 6 is a fragmentary detail view taken on line 6—6 of Figure 3.

Figure 7 is a view similar to Figure 3 of a modified form of switch mechanism illustrating the operation in dotted lines.

Figure 8 is a sectional view taken on line 8—8 of Figure 7.

As shown on the drawings:

The reference numeral 1 indicates a tower or housing having a framework 2 and oppositely disposed discharge openings 3. Inclined discharge chutes or platforms 4 project through said housing openings. Rigidly secured vertically to the housing framework are the oppositely positioned guide channel bars 5 within which the side sills 6 of a bail frame are slidably engaged. The flanges of the channel bars 5 are widest from the bottom up to a point 42, which is at the level of the lower ends of the guide rails 15 and 28. From the point 42 the channel bar flanges are cut away to reduce the width thereof.

The two bail sills 6 are connected at their upper ends by a cross beam 7 to which a staple bolt 8 is secured to permit attachment of a hoisting cable 9 to the bail. The hoisting cable 9 leads to a hoisting machine which is not disclosed, but which may be mounted in any convenient position either within or outside of the housing as desired. A shaft or rod 10 connects the lower ends of the bail sills 6 and has pivotally supported thereon pivot bearings 11 which are rigidly secured to the bottom of a material carrying bucket 12. Rotatably mounted near the top of each end of the bucket 12 are two spaced rollers 13.

Rigidly secured to the flanges of one channel guide bar 5 are a pair of oppositely projecting plates 14, each having an upwardly and outwardly curved guide rail 15 rigidly

secured on the inner surface thereof. Each plate 14 is provided with guide slots 16 through which bolts 17 project. The inner ends of each set of bolts 17 are secured to a shiftable curved guide rail 18 disposed on the inner side of the plate 14 to afford a roller guide passage with the stationary guide rail 15 when the rails 15 and 18 are separated. The outer ends of each set of the bolts 17 are secured to one end of a shiftable switch plate 19. The switch plate 19 has the middle portion 20 thereof U-shaped to straddle the guide bar 5, as illustrated in Figure 6. The rails 18 are of sufficient length to prevent fowling of the bucket rollers 13 against the ends of said rails when the bucket is tilted.

Pivoted on the back of one of the guide channel bars 5 is a bell-crank having one arm 21 thereof pivoted on the switch plate 19. Pivoted to the end of the other arm 22 of the bell-crank is the upper end of a connecting rod 23, the lower end of which is pivoted to one end of a bar 24. The bar 24 is pivoted intermediate its ends to the back of the guide bar 5 and has pivotally attached to the other end thereof the upper end of an operating rod 25 which extends downwardly to a convenient position to permit operation of the switch plate 19 by an operator. The rods 23 and 25 are connected to the pivoted bar 24 to allow for shrinkage or expansion in the metal framework and also affords an arrangement for easily operating the switch plate.

Rigidly secured to the flanges of the other guide bar 5 are a pair of oppositely projecting plates 26 at the level of the plates 14. Each plate 26 has rigidly secured to the inner surface thereof spaced curved guide rails 27 and 28 positioned in a manner similar to the arrangement of the rails 15 and 18 shown in the right hand half of Figure 3.

Figures 7 and 8 illustrate a modified switch arrangement adapted for use with a bucket 29 having but a single roller 30 mounted on each end thereof. The bucket is provided with a bail 31 to which the bottom of said bucket is pivotally attached, similar to the arrangement disclosed in Figure 4. The switch device comprises a plate 32 which is pivoted at 33 to the outer side of one of the bail guide bars 5 and is provided with a projecting portion 34 having inclined walls 35 along the dotted lines 36 and 37. This particular shape of the switch plate permits the same to be engaged around the guide bar 5 and be rocked thereon by means of an operating rod 38. One end of the connecting rod 38 is pivotally connected to the switch plate 32. The lower end of the connecting rod 38 is connected with the operating members 24 and 25 similar to the arrangement illustrated in Figure 1. Pivoted to the switch plate 32 are two plates 39 spaced apart and having their adjacent margins bent outwardly to form guide flanges 40. Rigidly secured to each plate 39 is a curved guide rail 41. Roller guide passages 42 are thus provided between the plate flanges 40 and the flanges of the guide rails 41.

The operation is as follows:

A bucket 12 filled with a material at the bottom of the tower or housing 1 is elevated by means of the cable 9 which is connected with a hoisting machine located in any convenient position. The bucket bail sills 6 are disposed to slide in the channel guide bars 5 which hold the bail in a predetermined path.

The bucket is adapted to be dumped in one direction or the other, depending upon the position of adjustment of switch mechanism. To cause the bucket to dump in the direction illustrated in Figure 1, the operating rod 25 is pushed upwardly thereby causing a downward pull on the connecting rod 23 and operation of the bell-crank 21—22 into the position shown in Figure 3. Operation of the bell-crank causes the switch plate 19 to slide toward the left looking at Figure 3, thereby moving the adjustable guide rails 18 into a set position wherein the right hand guide rail 18 is spaced from the right hand rail 15 to afford a roller guide passage between the rails 15 and 18. The left hand guide rail 18 is moved against the left hand rail 15, as illustrated in Figures 1 and 3.

With the switch mechanism set as described, the filled bucket is hoisted by the cable 9 with the rollers 13 disposed to the outside of the wide portions of the guide bar flanges thereby preventing premature tipping of the bucket. When the filled bucket and bail reach a position wherein the rollers 13 pass the points 42 of the guide bars, the bucket is no longer held against tipping. One of the rollers 13 on the switch side of the bucket now passes into the guide path between the separated guide rails 15 and 18, while the other roller 13 at that side of the bucket passes to the right of the contacting guide rails 15 and 18 looking at Figure 3. The guide roller 13 passing between the rails 15 and 18 determines the direction of tipping of the filled bucket. As the bail continues upwardly past the switch mechanism, the bucket is gradually tipped into the position illustrated in Figure 1 and deposits the contents thereof upon the inclined chute 4 on that side of the housing 1.

With a setting of the switch mechanism, the bucket may be repeatedly elevated to dump in a certain direction. When it is desired to have the bucket dump in the opposite direction, the operating rod is pulled downwardly thereby causing rocking the bell-crank 21—22 in the opposite direction to shift the switch plate 19 to the right looking at Figure 3, thereby moving the

guide rails 18 so that the roller guide passage will be between the left hand guide rails 15 and 18. With the next elevation of the bucket 12, said bucket will be dumped toward the left. It will thus be noted that by simply shifting the switch plate 19 the bucket when reaching a certain level will dump either in one direction or the other. Lowering of the bail will cause the bucket to be drawn back into vertical position to be returned to the loading platform.

Figures 7 and 8 disclose a modified form of switch mechanism adapted for use with buckets which are equipped with but a single roller 30 at each end of the bucket. In this construction the bucket is adapted to be dumped in one direction by simply pushing upwardly on the rod 38, thereby causing the switch plate 32 to be tipped into the dotted line position of Figure 7. With the switch plate tipped as described, the roller 30 on the switch side of the bucket will contact one of the inclined flanges 40 to cause the bucket to be dumped outwardly with the rollers 30 riding on the guide rails 41. The flanges of the guide bar 5 of Figure 7 are cut away at the elevation of the switch mechanism to permit the guide roller to move out of the guide bar passage into the switch mechanism passage when the switch plate 32 is tilted to one side or the other.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. A material handling device, comprising a housing, a bucket, means for hoisting said bucket, a switch mechanism at a predetermined elevation in said housing for causing automatic dumping of said bucket at said predetermined elevation, and means operable from the base of said housing for positively operating said switch to cause dumping of said bucket in one of a plurality of directions.

2. A material handling device, comprising a housing, a bucket, means for elevating said bucket, a guide on said housing for said bucket, slotted plates secured to said guide at a dumping elevation, fixed guide rails secured to said slotted plates upon opposite sides of said guide, shiftable guide rails, a shiftable plate to which said shiftable guide rails are secured, bolts on said shiftable plate engaging the slots in said slotted plate for guiding the movement of said shiftable plate, means for shifting said shiftable plate to adjust the shiftable guide rails with respect to said stationary guide rails, and members on said bucket adapted to coact with said guide rails to permit dumping of the bucket to either side as desired.

3. A material handling device, comprising a bail and bucket pivotally connected one to the other, means for elevating the bail and bucket, a guide for said bail, slotted plates secured to said guide at a dumping elevation, fixed guide rails secured to said slotted plates, shiftable guide rails, bolts connected thereto and projecting through said slotted plates, a shiftable plate to which said bolts are secured, means for shifting said shiftable plate to adjust the shiftable guide rails with respect to said stationary guide rails, and members on said bucket adapted to coact with said guide rails to permit dumping of the bucket in a predetermined direction.

4. In a material handling device, the combination with a pivotally connected bail and bucket, of a guide therefor, slotted plates secured to said guide, bolts projecting through said slotted plates, a shiftable plate secured to said bolts, shiftable guide rails also secured to said bolts, stationary guide rails on said slotted plates, rollers on said bucket to coact with said rails, a bell crank pivoted on the bail and bucket guide and pivotally connected to said shiftable plate, and operating mechanisms connected to the bell crank to permit adjustment of the shiftable guide rails with respect to the stationary guide rail to determine the direction in which the bucket is to be dumped.

5. The combination with a material handling bucket, of a two-way bucket dumping control switch comprising a stationary plate having slots therein, stationary guide rails on said plate, a shiftable plate, bolts secured thereon projecting through said slots, shiftable guide rails secured to said bolts, and means connected with said shiftable plate to adjust the same to position the shiftable guide rails with respect to the stationary guide rails to determine the direction of dumping of the material handling bucket.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

CARL F. BLEDSOE.

Witnesses:
CARLTON HILL,
FRED E. PAESLER.