June 19, 1928. 1,673,911

W. E. HALE

DOUBLE DUMP SKIP HOIST

Filed June 23, 1923 3 Sheets-Sheet 1

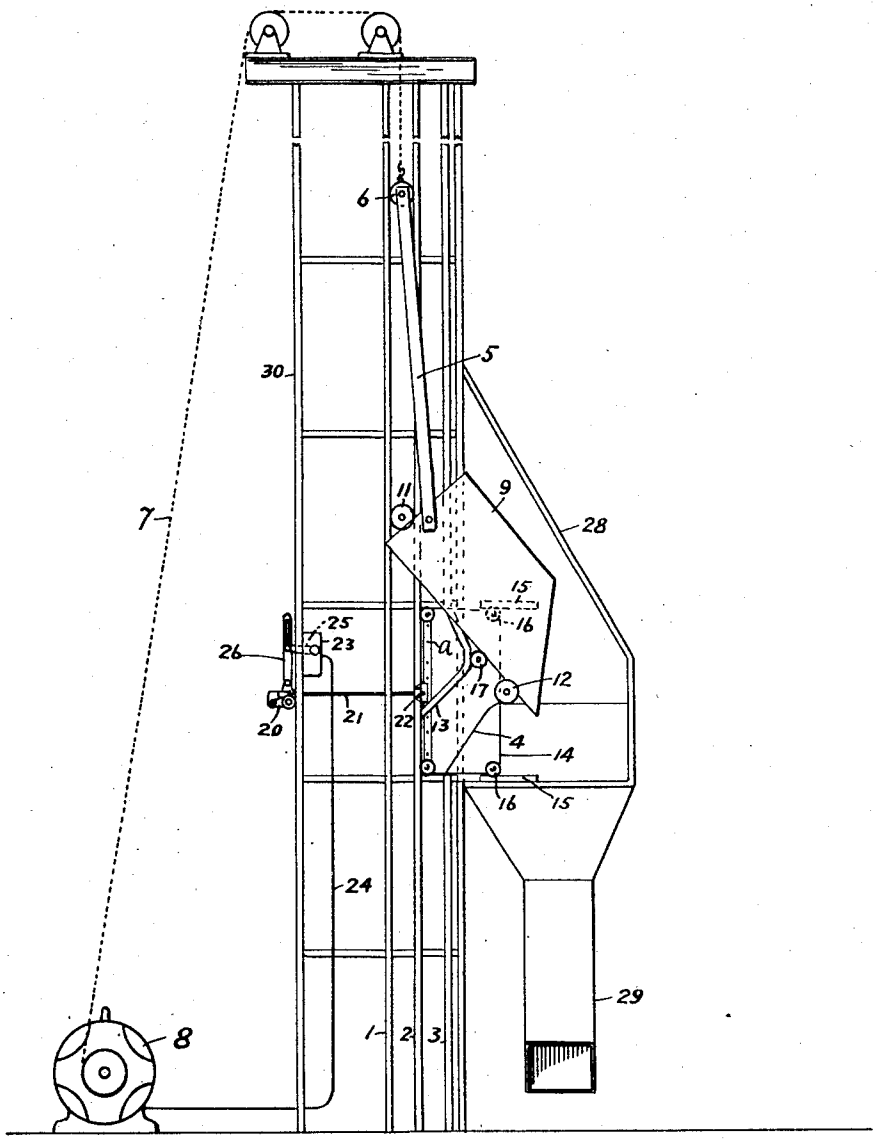


FIG. 1.

WITNESS:
Robt R. Mitchell.

INVENTOR
William E. Hale
BY
Augustus B. Stoughton
ATTORNEY.

June 19, 1928. 1,673,911

W. E. HALE

DOUBLE DUMP SKIP HOIST

Filed June 23, 1923 3 Sheets-Sheet 2

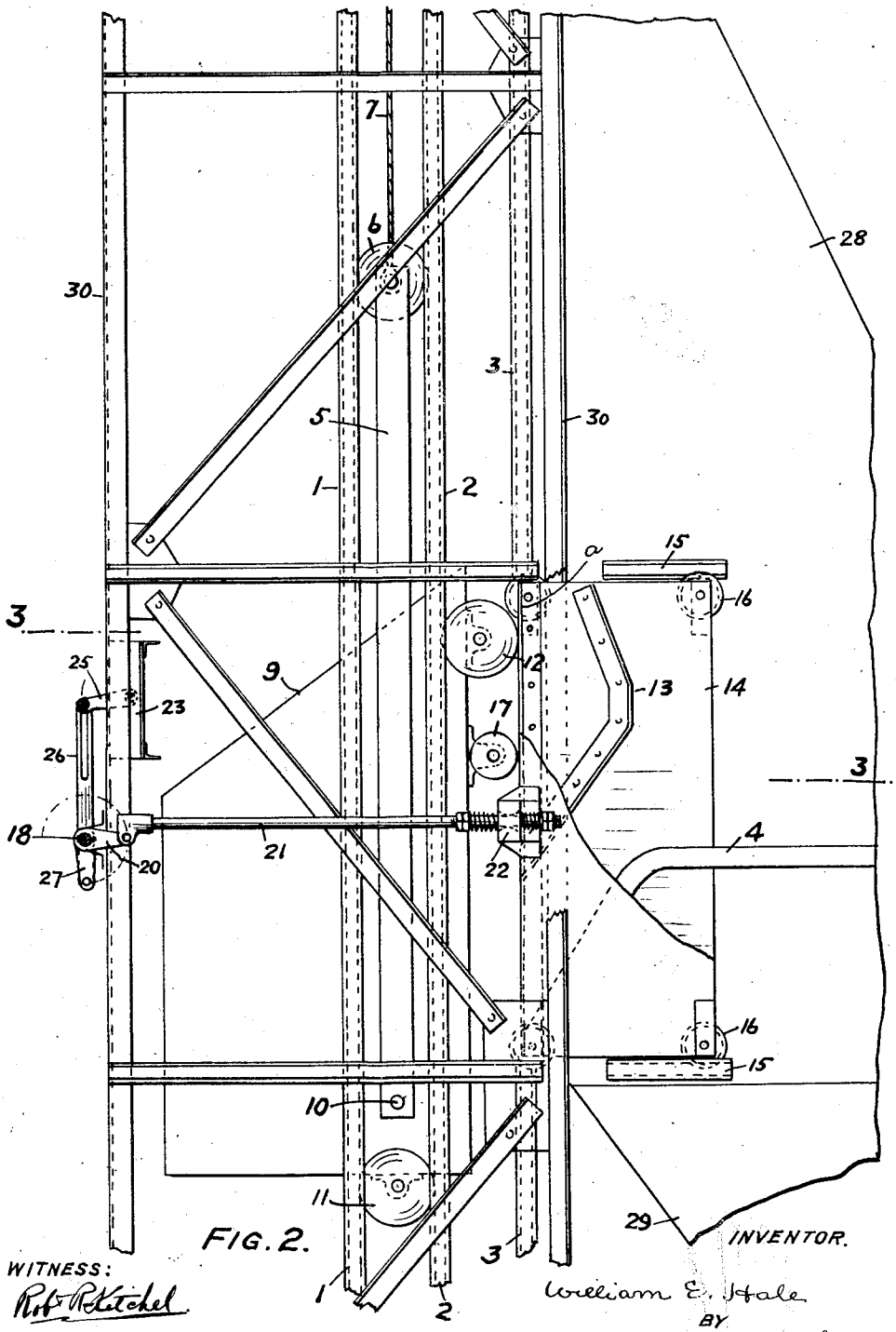


FIG. 2.

WITNESS:
Robt R Kitchel

INVENTOR.
William E. Hale
BY
Augustus B. Stoughton.
ATTORNEY.

June 19, 1928. 1,673,911

W. E. HALE

DOUBLE DUMP SKIP HOIST

Filed June 23, 1923 3 Sheets-Sheet 3

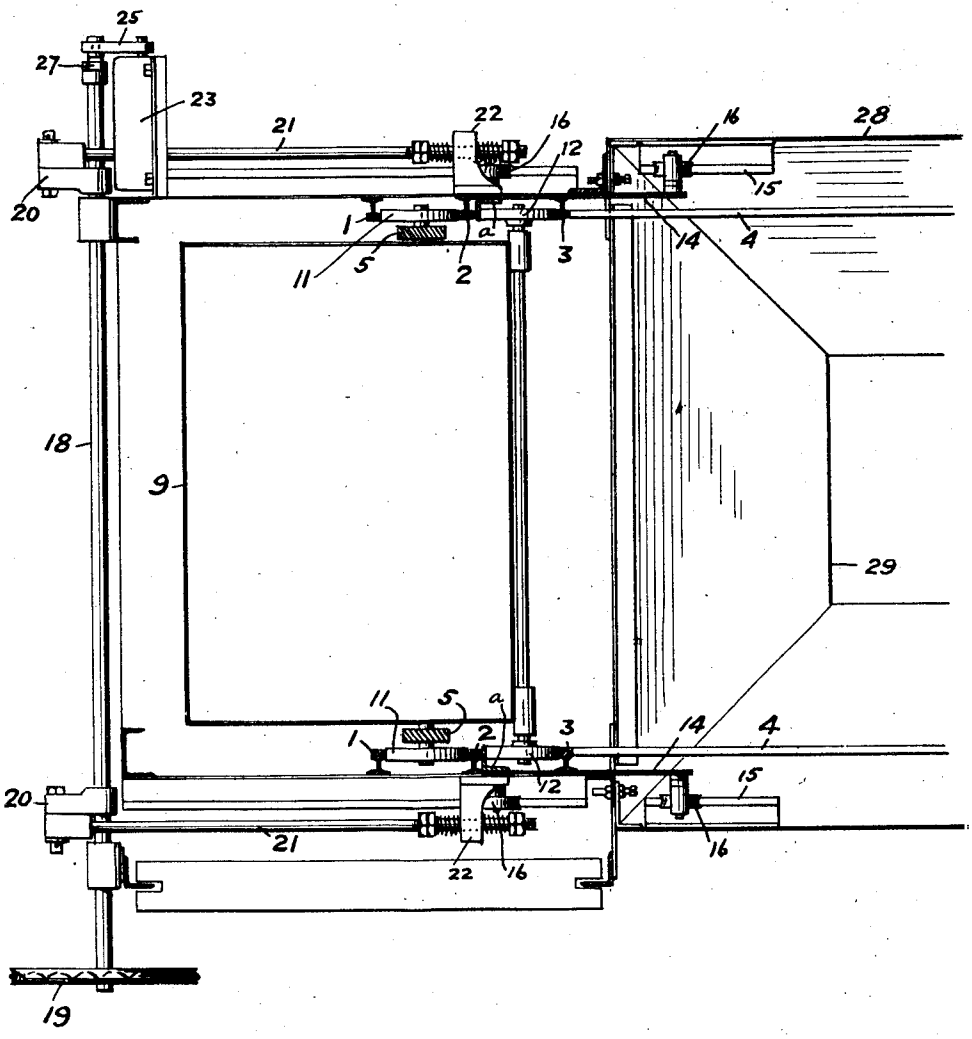


FIG 3.

INVENTOR

William E. Hale.

BY

Augustus B. Stoughton.

ATTORNEY.

WITNESS:

Robt. R. Stitchel

Patented June 19, 1928. 1,673,911

UNITED STATES PATENT OFFICE.

WILLIAM E. HALE, OF FORT WASHINGTON, PENNSYLVANIA, ASSIGNOR TO R. H. BEAUMONT CO., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DOUBLE-DUMP SKIP HOIST.

Application filed June 23, 1923. Serial No. 647,260.

The principal object of the present invention is to provide an efficient, reliable and satisfactory skip hoist adapted for dumping at two or more different points at different heights. Another object of the invention is to provide a satisfactory construction for the discharge point structure. Another object of the invention is to co-ordinate the operation of the hoist and switch in such a way that proper and safe movements of the bucket in dumping are assured. Other objects of the invention will appear from the following description and, generally stated, it may be said that in this invention the switching is done by tracks mounted on plates slid or rolled from one side making the skip bucket go on to the next dump point, or to the other side, which causes the skip bucket to dump at the switch, and in this invention the track switch and the electrical transfer switch which controls the hoisting apparatus are interconnected so that both are operated at the same time and by the same means in such a way that if the track switch is set to have the skip bucket go through to the next switch point, then the proper electrical connections are automatically made to change the electrical control to make the bucket go through, or if the track switch is set to dump the bucket at that point then the electrical connections are so made that the bucket will not go on any further than that point and from there will automatically return after dumping.

The invention also consists in the improvements to be presently described and finally claimed.

In the following description reference will be made to the accompanying drawings forming part hereof, which are more or less diagrammatic or schematic, and in which

Figure 1 is a side elevational view showing the top part of the structure and also showing one of the discharge point structures, the other or others being omitted.

Fig. 2 is a similar view drawn to an enlarged scale of an intermediate discharge point structure with parts broken away, and

Fig. 3 is a sectional view generally on the line 3—3 of Fig. 2.

In the drawings the bale guides 1 and 2 are continuous and the bucket guide 3 is interrupted at the discharge point, and an extension 4 of the part of the bucket guide 3 which lies below the interruption constitutes a dumping guide for the bucket. The part referred to as a bale guide 2 also guides the bucket. 5 is the bale and its rollers 6 run between the guides 1 and 2. The bale is moved by the cable 7 and hoist 8. The bucket 9 is pivoted at one side of its center of weight or load as at 10 to the bale. The bucket 9 is provided with rolls 11 and 12 of which the former run between the guides 1 and 2 and the latter run between the guides 2 and 3. The rollers 12 in the construction shown by reason of the location of the pivots 10 may be said to bear principally upon the guide 2, and these rollers 12 also run onto the extensions 4 when the bucket is dumped as will be described. 13 is a switch track and *a*, Fig. 3, is a guard track paralleling the inner edge of the plate or frame 14, and both the switch track 13 and the guard track *a* are mounted on a plate or frame 14 which can be slid or rolled crosswise. For this purpose horizontal rails 15 and rolls 16 are shown. It will of course be understood that two plates 14 and their accessories disposed on opposite sides of the structure are shown but a description of one is sufficient as they are duplicates in all substantial respects. The bucket is provided with switch wheels 17 disposed to run on to the rails 13, when the plate 14 is in the position shown in Fig. 1 and to thus dump the bucket; and when the plate 14 is in the position shown in Fig. 2, the track 13 is out of the path of the switch wheels 17 so that the bucket goes on to the next dumping point with its wheel 12 bearing on the guide 2. There is a shaft 18 which as shown is operated by a hand chain wheel 19. This shaft, when turned, shifts the plates 14 to which it is connected by duplicate connections of which one will be described. 20 is a crank arm on the shaft 19 and it is connected by a link 21 with the plate 14, by a connection 22 which affords some rocking motion and which provides some yielding connection. As shown the free ends of the crank arm 20 turn through 180°. 23 is an electrical transfer switch arranged at the discharge point structure and connected by an electric or current carrying cable 24 with the motor of the hoist 8, and its position or, more accurately, the position of its arm 25 controls and determines the operation of the hoist to stop the bucket at an intermediate dumping point or to run the

bucket past an intermediate dumping point. The arm 25 is connected by a link 26 with a crank arm 27 on the shaft 18, and this connection is shown as of the slot-and-pin variety to afford lost motion. In other words, the crank arm 27 travels through 180° and moves the crank arm 25 through only a few degrees. 28 is a dust hood of which parts are broken away, and it is arranged over the chute or hopper 29 into which the material is dumped. 30 are parts and members of the towerlike structure of the skip hoist and they need no particular description.

The mode of operation may be described as follows:

If it is desired to have the bucket pass the intermediate discharge point structure shown in Fig. 2, the shaft 18 is properly positioned for that purpose, for example, by means of the hand chain wheel 19. The positioning of the shaft does two things: It slides or rolls (the two being equivalent) the plates 14 and tracks 13 into the position indicated in Fig. 2, and it sets the transfer switch 23 into position for operating the motor or hoist in such a way that the bucket goes up past the discharge point structure, it being understood that the track 13 is clear of the switch wheels 17. If it is desired to have the bucket dump at the intermediate discharge point structure shown in Fig. 2, the shaft is properly positioned to shift the plates 14 into the position shown in Fig. 1 and to set the transfer switch 23 in position for causing the hoist to properly move the bucket to and stop it at the intermediate discharge points for dumping, which latter is effected by the engagement of the switch wheels 17 with the tracks 13 that have been positioned in the line of travel of the wheels 17.

By way of further description it may be said that when it is desired to have the bucket dump, the guard track *a*, shown in Fig. 3 to consist of an angle iron paralleling the inner edge of the plate 14 and carried thereby, lies up against the guide 2 and the bucket wheels ride on the outer face of the guard track *a*, as shown in Fig. 3, and then onto the switch rail 13, Fig. 1; and when it is desired not to dump, the plate 14 is moved into outer position and the guard rail *a* extending across the interruption in the guide 3 presents its inner face in position for preventing the bucket wheels from falling outward at the interruption.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of construction and arrangement and in mere matters of form without departing from the spirit of the invention which is not limited as to those matters or otherwise than as the prior art and the appended claims may require.

I claim:

1. In a skip hoist the combination of a pair of continuous bale guides, an interrupted bucket guide having beneath the interruption a horizontal extension, a bale movable in said bale guides, a bucket pivoted in unbalanced relation to the bale and provided with guide rolls arranged one between said guide rails and one outside of said bale guides and inside of the bucket guide and made effective to hug the bale guide at the interruption of the bucket guide by the unbalanced support of the bucket, and a switch element transversely movable into and out of the path of the last mentioned bucket roll to overcome its tendency to hug the bale guide.

2. A discharge point structure for skip hoists comprising in combination a pair of continuous bale guides of which one serves also as an inner continuous bucket guide, an interrupted bucket guide, a discharge extension at the interruption, a slidable plate or frame movable crosswise of said guides and provided with a switch track and at its inner edge with a guard track, and means for positioning the plate in inner position with the switch track adjacent the inner bucket guide, and in outer position with the guard track aligned with the interruption in the bucket guide and with the switch track outside of the interrupted bucket guide.

WILLIAM E. HALE.