Dec. 30, 1930. C. F. BLEDSOE 1,786,734

MATERIAL HANDLING PLANT

Filed June 21, 1929 2 Sheets-Sheet 1

Fig. 2

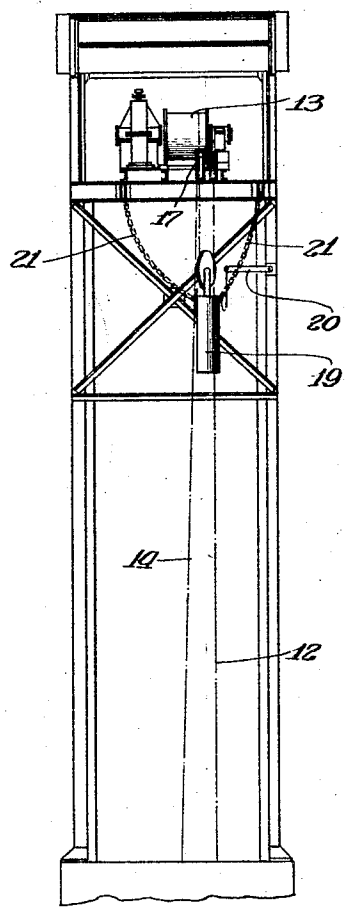

Fig. 1

Inventor:
Carl F. Bledsoe.
By: Charles F. Blessing
Atty.

Dec. 30, 1930. C. F. BLEDSOE 1,786,734

MATERIAL HANDLING PLANT

Filed June 21, 1929 2 Sheets-Sheet 2

Fig. 4

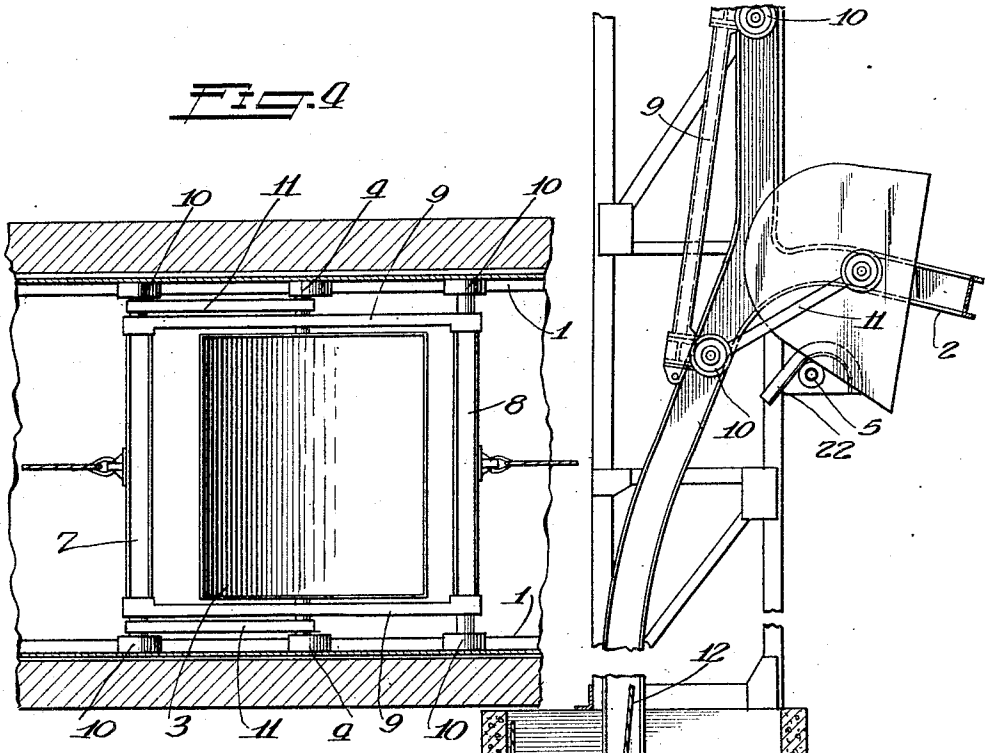

Fig. 3

Inventor:
Carl F. Bledsoe.
By: Charles Ellis
Atty.

Patented Dec. 30, 1930 1,786,734

UNITED STATES PATENT OFFICE

CARL F. BLEDSOE, OF CHICAGO, ILLINOIS, ASSIGNOR TO OGLE CONSTRUCTION COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

MATERIAL-HANDLING PLANT

Application filed June 21, 1929. Serial No. 372,626.

This invention relates to a material handling plant of that type involving a vertical tower and a horizontal runway in combination with a skip or bucket that is supported for traveling movement in the runway and tower for receiving material in the runway and conveying the same to a suitable point in the tower and dumping the same.

Material handling plants of this character are frequently used for coaling and decindering locomotives. As the horizontal runway is usually in the form of a shallow pit beneath the surface of the ground, there is always more or less moisture or water in the pit with the result that the operating cable especially when it is attached to the bottom of the bucket or when it is guided beneath the supporting tracks, for the bucket will become saturated with moisture or water and will soon deteriorate. It is an object of this invention to overcome this objection in the provision of an organization in which the hoisting cable is supported and travels above the tracks in the shallow pit.

A further object of this invention resides in an organization that will allow the bucket to dump a considerable distance from the tower whereby the usual discharge chute may be eliminated if desired.

A further object of this invention resides in the provision of a safety device for shutting off the motor in case that the operating cable becomes slack.

Another object of the invention resides in a novel mounting for the traveling bucket that will always maintain the bucket in upright position and that will allow the bucket to be easily moved on the tracks and around the lower curve that connects the pit with the vertical tower.

The invention comprises the novel structure and combinations of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a sectional view through an apparatus involving this invention showing the power house in elevation with parts broken away.

Figure 2 is a fragmentary elevational view of a part of the apparatus showing the vertical tower in end elevation.

Figure 3 is an enlarged fragmentary and broken sectional view taken in a plane substantially the same as Figure 1 showing parts in elevation.

Figure 4 is an enlarged sectional view taken through the shallow pit upon a line IV—IV of Figure 1.

In referring to the drawings, it will be noted that a pair of spaced parallel guides 1 which are in the form of channel members extend in the horizontal portion of the coal bin or runway and then extend up the tower where they are shown as inclining from one side of the tower to the other side where the dumping occurs. Each guideway 1 has an offset branch 2 which extends outwardly from the dumping side of the tower. It will be noted that the guides 1 extend above the branch 2 for a purpose that will later appear. A skip or bucket 3 is adapted to travel on the guideways 1 and to this end said bucket is provided with a pair of lateral wheels 4 which are mounted upon suitable stub shafts extending from the sides of the bucket. The forward end of the bucket is equipped with a pair of lateral rollers 5 which may be secured upon a shaft or rod attached to the front part of the bucket. These rollers 5 are adapted to travel upon horizontal track members 6 which extend in the horizontal runway beneath the guides. Consequently when the bucket is pulled in a horizontal direction, the rollers 5 will engage the track members 6 and will maintain the bucket in an upright position.

The bucket is adapted to be propelled by means of a bail which is attached to the bucket by suitable links. This bail consists of a rear transverse member 7 and a forward transverse member 8 which are suitably connected by side members 9. The transverse members 7 and 8 carry suitable shafts for supporting rollers 10 which are designed for travelling in the guideways 1. The axle of the rear rollers 10 is pivotally

connected by means of links 11 with the bucket 3. In the illustrated embodiment of this invention, the forward ends of the links 11 are shown as coaxially pivoted with respect to the rollers 4 on the bucket.

The bucket is adapted to be raised by means of a cable 12 which is attached to the forward end of the bail. This cable 12 is trained over a guide pulley 16 and then ascends to the top of the tower where it is wound around a hoisting drum 13 which is adapted to be driven by a suitable reversing motor. The bucket 3 is caused to descend by means of a tail line 14 which is in the form of a cable attached to the rear end of the bail and trained over a pulley 15 and over a second guide pulley 16 alongside the first mentioned one. The tail line 14 then extends to the power house on the top of the tower where it is trained over a guide pulley 17 and then downwardly in the form of a loop for suspending a movable pulley 18 having a counterweight 19 attached thereto. From the movable pulley 18 the tail line ascends and is wrapped around the drum 13. When the drum 13 is operated in an anti-clockwise direction as viewed in Figure 1, the bucket line 12 will be wound upon the drum for hoisting the bucket while the tail line will be fed out. On the other hand, if the drum 13 is rotated in the opposite direction, the tail line 14 will be wound upon the drum and will cause the bucket 3 to be lowered while the bucket line 12 will be fed out.

In referring to Figure 2, it will be noted that a switch lever 20 is connected with the counterweight 19 and is adapted to be actuated thereby for shutting off the motor when a slack or tightening in the tail cable occurs. To this end, the switch that is actuated by the lever 20 should be of the type that will open as soon as the lever 20 is moved up or down. Such switches are well known and require no illustration. The counterweight 19 is also preferably connected by means of chains 21 with the bottom of the power house so that in the event that the tail line should break, the counterweight 19 will be suspended by the chains which will prevent the same from falling and injuring a workman. If any slack should occur in the tail cable due to the breaking of the main cable or for any other reason, the counterweight 19 will descend and actuate the lever 20 downwardly to open the switch. If the bucket should get caught so that the tail cable would tighten and elevate the weight 19, the lever 20 will move upwardly and open the switch to stop the motor.

With reference to Figure 3, it will be noted that the horizontal and vertical portions of the guides 1 are connected by a substantially inclined portion for guiding the bucket from the horizontal portion of the guides to the vertical portion thereof. Below the dumping switch branches 2 of the guides 1 there are small curved guides 22 which are attached to suitable gusset plates extending from the frame of the tower. These curved guides 22 act as anchors for receiving the forward rollers 5 on the bucket when it ascends and causing the bucket to turn and rotate in the position shown in Figure 3. When the bucket turns and rotates the side rollers 4 thereon will travel outwardly in the guides 2 and cause the contents of the bucket to be dumped. Due to the link connection of the bail with the bucket, it is possible to project the bucket outwardly a considerable distance on the main guides 1 depending of course upon the length of the links 11.

It will be noted that the hoisting cable 12 as well as the tail cable 14 are supported above the bucket guides and are hence removed from any water that may exist in the bottom of the pit. It is hence possible to maintain the cables in a better state of preservation than if they were allowed to drag through the water at the bottom of the pit or runway. It will also be apparent that the safety device will shut off the motor when the cables fail, or a slack occurs in the tail cable or when the bucket gets caught in its travel.

I am aware that many changes may be made and 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 hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a material handling plant, horizontal guides terminating in vertical guides, a pair of track members below the horizontal guides, a bucket having rollers traveling on said guides and forward rollers for traveling on said track, a bail having rollers traveling on said guides and links connecting said bail and bucket coaxially with said first mentioned rollers and means attached to said bail for operating the same.

2. In a material handling plant, a pair of parallel guide channels, a bucket having side rollers traveling in said guide channels, a track beneath said guide channels, rollers on the front end of said bucket for traveling on said track, a pair of links pivoted coaxially with said side rollers, and a bail connected to said links, said bail having rollers traveling in said parellel guides.

3. In a material handling plant, a pair of parallel guide members, a bucket having lateral rollers traveling in said guide members, a bail having terminal rollers traveling in said guide members, links connecting said bail and bucket, head and tail cables connected to said bail and means above said guide members for guiding said cables.

4. In a material handling plant, a pair of

spaced guides, a bucket having lateral rollers traveling in said guides, a bail having means operating in said guides, links connecting said bail and bucket coaxially with said lateral rollers, a guiding track beneath said guides and means on said bucket cooperating with said guide track for maintaining said bucket in upright position.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

CARL F. BLEDSOE.