April 7, 1931. B. C. RIBLET 1,799,534

TRIP DEVICE

Filed June 17, 1929

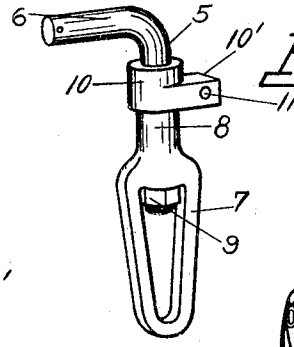


Fig. 3

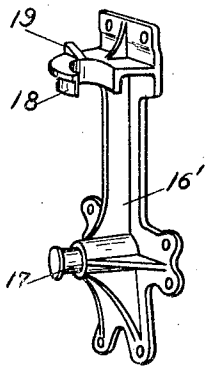


Fig. 4

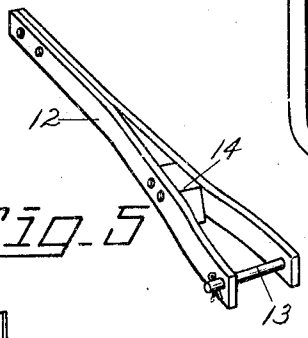


Fig. 5

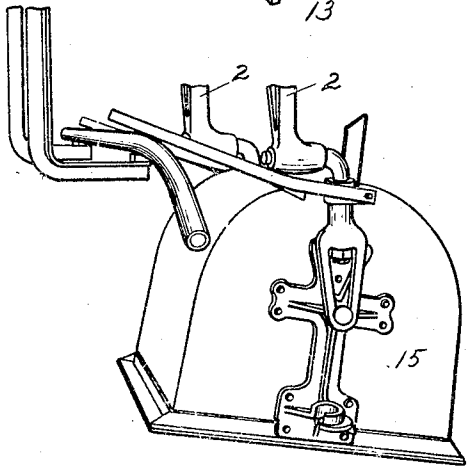


Fig. 2

Fig. 1

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UNITED STATES PATENT OFFICE

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TRIP DEVICE

Application filed June 17, 1929. Serial No. 371,659.

My present invention relates to an improved trip device for conveyer buckets and especially applicable for use in connection with dump buckets travelling over overhead rails or tracks as in mining operations, excavating different kinds of material that are conveyed in buckets, and for other purposes.

The trip device is adapted for use with suspended trolley-carried buckets that are overbalanced and which overturn by gravity for the purpose of dumping their contents, and the trip device includes a normally engaged trip lever carried by the bucket which lever is released by co-action with a cam device in the path of the lever and located at the dump for automatically reversing or overturning the bucket. Means are provided at the loading end of the overhead trolley track for righting the bucket or automatically returning it to upright loading position and for fastening the trip lever in position to retain the loaded bucket in upright position during the course of its travel to the dump.

By the utilization of the trip device of my invention the conveyer bucket is automatically released so that it may be turned over and emptied with facility, and the empty bucket is again automatically righted to loaded position and locked in that position to receive a load of material.

The invention consists in certain novel combinations and arrangements of parts as will hereinafter be more fully pointed out and claimed. In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a perspective view showing a bucket suspended from an overhead trolley and track, equipped with the trip device of my invention, and in position to swing or turn to reverse or dumping position.

Figure 2 is a perspective view showing the bucket after it has overturned to dumping position.

Figure 3 is a perspective view of one of a pair of swiveled suspending yokes journaled in the trolley frame for supporting the bucket.

Figure 4 is a perspective view of one of a pair of right and left hand brackets attached at the ends of the bucket for co-action with the suspending yokes.

Figure 5 is a perspective view of one of a pair of levers located at opposite ends of the bucket.

In order that the general arrangement and relation of parts may readily be understood I have illustrated in Figure 1 a single trolley track or rail 1 of an overhead tramway or railway over which the conveyer passes, said conveyer comprising a trolley frame made up of upright beams 2, 2, and a pair of two-wheel trolley-trucks 3, 3. At the lower ends of these two beams are fashioned bearing bosses 4, 4, disposed transversely of the direction of travel of the trolley, and designed to receive suspending bolts 5 that are provided with journal ends 6 fitted into the bearing bosses. Upon these bolts 5 are swiveled suspending yokes 7, one at each end of the bucket, and these yokes have sleeves 8 surrounding the bolts and retained by nuts 9 on the bolts. The journals in their bearings permit a slight play of the yokes in the direction of travel of the trolley, and the swiveled yokes permit the bucket readily to take curves or irregularities in the overhead track when the bucket is traveling.

At the upper end of the sleeve of the yoke at each end of the trolley frame a rigid boss 10 surrounds the sleeve and this boss is fashioned with a lateral lug 10′ that is perforated at 11. These perforated lugs are designed for the support of a pair of trip levers 12, each having a pivot bolt 13 passed through a perforated lug 10′ for its support and the levers are each fashioned with a locking block 14. As shown in Figure 5 the levers are fashioned of two metal plates or straps that diverge at their pivoted ends, and the locking block 14 is riveted within the space between the two straps.

The bucket is designated 15, and at its ends it is provided with brackets 16 in Figure 1 and 16′ in Figure 4, said brackets bring right and left hand devices for use at the opposite ends of the buckets to which they are riveted or

bolted. Each bracket has a trunnion 17 journaled in a yoke 7, and at their upper ends the brackets have hooks 18 disposed in horizontal positions for straddling the sleeves 8 below the bosses 10, and with their openings both toward the right in Figure 1 so that the bucket when released may overturn, by swinging under action of gravity, in an anti-clockwise direction. The hooks 18 have retaining lugs or locking lugs 19 for co-action with the lugs 14 of the trip levers to hold the bucket in upright position. The levers as shown extending transversely from the pivoted center of the bucket and the free ends of the levers project beyond the edge of the bucket, and in locked position the levers are approximately horizontal with the face of the lever lug 14 engaging the vertical face of the lug 19, thereby holding the bucket against rotation. When the free ends of the levers are lifted (as in Fig. 3) to free lug 14 from lug 19, the bucket may overturn by gravity.

The levers are tripped and the bucket is released by coaction with the levers of a trip cam 20 supported from a stationary frame 21 in the path of travel of the free ends of the levers. Assuming that the bucket is traveling away from the observer in Figure 1, the front lever 12 has ridden up the cam 20 and is resting on a horizontal portion 20′ of the cam, and the rear lever has just passed over the cam, therefore both levers have been tripped, the bucket is released, and is about to swing on its trunnions to position of Figure 2 leaving the levers in their unlocked positions.

On the ends of the bucket, at the bottom, a trip arm 22 is riveted, and this trip arm coacts with a cam 23 at the loading end of the conveyer line for righting the bucket to loading position, and in such position the two trip levers 12, 12 fall into engagement with the cam 19 of the bracket for locking the bucket with the hooks 18 encircling the sleeves 8. The bucket is then ready for another load to be conveyed to the dump, at which place the trip device automatically operates to again release the loaded bucket so that it may empty its contents of material.

In many instances the cable 1 is inclined, or the cable may sag and cause inclinations at its ends, thus requiring the trolley to run up grade or down grade, but these conditions are compensated for by the hooks 18, which are disposed transversely of the trunnions 17, and pass partly around the sleeves 8 and across their sides that are remote from the bucket. By this arrangement of the hooks the yokes and sleeves are held in alinement with the beams, which are parallel, and the yokes and sleeves are held parallel with the opposite ends of the bucket, regardless of whether the trolley and bucket are traveling upgrade or downgrade.

The hooks 18 also hold the yokes against movement with relation to the bucket, and hold the bearing ends of the yokes in proper position on the trunnions to prevent disengagement of these parts. It will be apparent that if the yokes were permitted to swing on the trunnions along the line of the horizontal or longitudinal axis of the bucket, the hooks might become disengaged from the sleeves and thus permit accidental dumping of the bucket.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The combination with a tiltable bucket having trunnions and retaining hooks rigid therewith, of a carrier frame having suspending bolts pivoted in the frame for co-action with the hooks, yokes swiveled on the bolts for supporting said trunnions, a trip lever pivotally supported on one of said bolts, and co-acting means on the trip lever and a hook for retaining the bucket in upright position.

2. The combination with a tiltable bucket having a bracket, a trunnion on the bracket, a hook at the upper end of the bracket and a locking lug on said hook, of a trolley frame having a bearing boss, a bolt having a journal in said boss and a yoke swiveled, on the bolt for suspending the trunnion and for engagement with the hook, a trip lever pivoted on the yoke and a locking lug on said lever for co-action with the locking lug on the hook.

In testimony whereof I affix my signature.

BYRON C. RIBLET.