Oct. 7, 1924. 1,511,115

R. R. DOWNIE

LATCH MECHANISM FOR DUMPING SCOOPS

Original Filed June 29, 1921

Fig. 1.

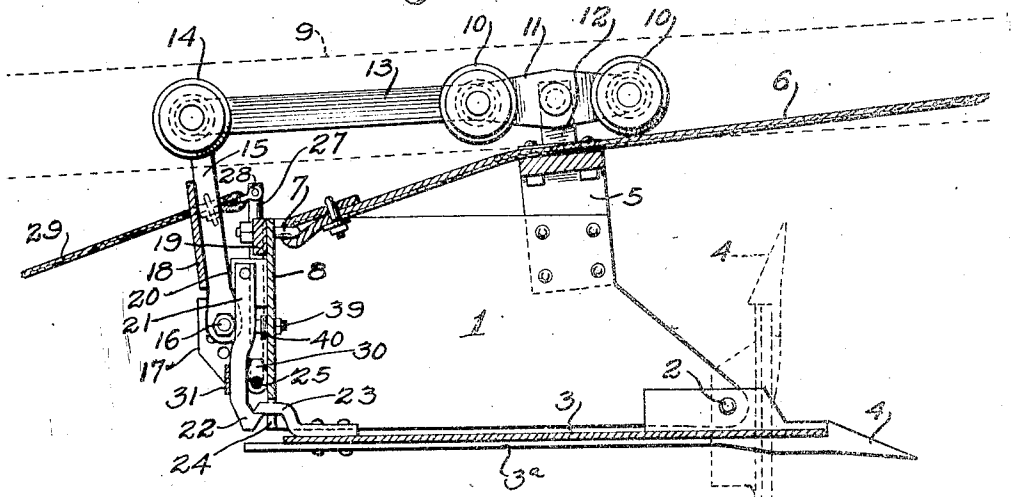



Fig. 2.

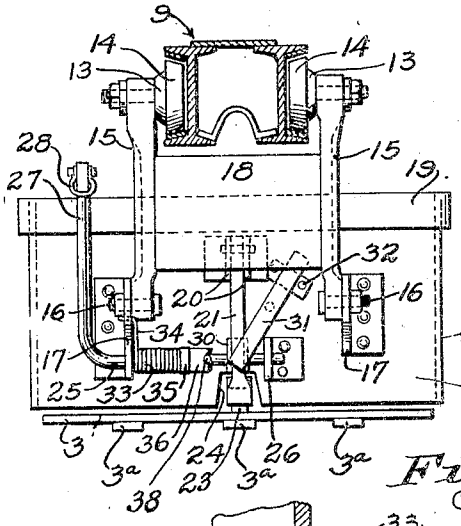



Fig. 5.

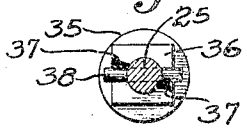



Fig. 4.

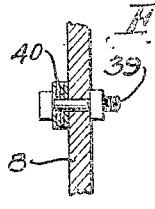
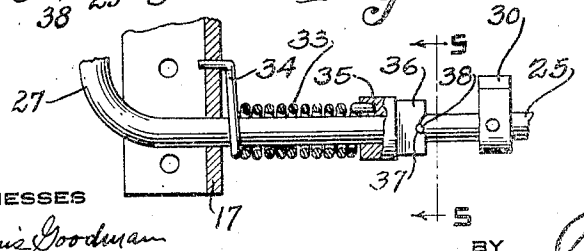



Fig. 3.




WITNESSES

Louis Goodman

Howard D. Orr

BY

R. R. Downie

INVENTOR

E. G. Siggers

ATTORNEY

Patented Oct. 7, 1924. 1,511,115

# UNITED STATES PATENT OFFICE.

ROBERT REX DOWNIE, OF BEAVER FALLS, PENNSYLVANIA, ASSIGNOR TO KEYSTONE DRILLER COMPANY, OF BEAVER FALLS, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## LATCH MECHANISM FOR DUMPING SCOOPS.

Original application filed June 29, 1921, Serial No. 480,717. Divided and this application filed June 21, 1923. Serial No. 646,868.

*To all whom it may concern:*

Be it known that I, ROBERT REX DOWNIE, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented a new and useful Latch Mechanism for Dumping Scoops, of which the following is a specification.

This invention relates to a latch mechanism for dumping scoops.

The object is to provide latch mechanism for the bottoms of dumping scoops wherein the bottom is permitted to dump the contents of the scoop at the desired place by the pull of a cable from a remote point, the cable actuating certain latch or holding members engaging the bottom which is pivoted in a manner to cause the weight of the contents to tilt the same and to freely drop therefrom, with the front end of the bottom extending upwardly.

Another object is to provide simple and efficient means of this character which is located at the rear and exterior of the scoop so as not to interfere with the filling or the dumping thereof, and which is thus held free from becoming clogged with matter from the contents of the scoop, the latch and releasing means being arranged to act automatically to lock the bottom in closed position when the said bottom is swung upwardly into closed position and to open unfailingly when the cable is pulled.

The present application is a division of the application No. 480,717 filed by me on June 29, 1921 for patent on a skimmer scoop assembly, and while the invention has been illustrated in the present application in connection with a scoop of this character, it will be apparent that the same may be used in connection with other kinds of scoops or similar devices having pivoted bottoms.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification; it being understood that while the drawing shows a practical form of the invention, the latter is not confined to strict conformity with the showing thereof, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawing, in which similar reference characters designate corresponding parts throughout the several figures:

Figure 1 is a longitudinal sectional view of a skimmer scoop having the improved latch means applied thereto.

Figure 2 is a rear elevation of the same.

Figure 3 is a detail view partly in section of the latch releasing cam and shaft and the return spring for the same.

Figure 4 is a detail sectional view of an adjustable stop for the latch lever or arm.

Figure 5 is a detail section on the line 5—5 of Figure 3.

Referring to the drawing, there is shown in Figure 1 a scoop 1 of the type disclosed in the hereinbefore mentioned application, the said scoop having the lower front portions of its side plates or walls projected forwardly, to which is pivotally connected, at 2, the swinging bottom 3, having its front end provided with the teeth 4 for penetrating the earth.

The upper edges of the side walls, at their open forward end, are connected by the front bail 5, over which passes a pulling cable 6 having its terminal secured to an eye 7, suitably secured to the rear wall 8 of the scoop, and extending forwardly over a suitable sheave (not shown) carried by the boom 9 of any form of excavating machine. The boom preferably consists of spaced I-beams suitably braced and connected and adapted to have their lower outer flanges serve as tracks for front wheels or rollers 10, mounted on rocker arms 11 centrally pivoted to upright brackets 12 carried by the front bail 5. The rear ends of the rocker arms are connected by links 13 to the axles of rear wheels or rollers 14 and which also carry hangers 15, the lower ends of which are connected to bolts 16, which pivotally and adjustably connect the same to rearwardly extending ears or brackets 17 suitably secured to the rear wall 8 of the scoop, the said hangers being joined together by a plate 18. As thus far described the invention is covered by the claims in the aforesaid application, and no claim is herein made to the same.

Midway between the ears or brackets 17 and located adjacent to the re-inforcing band 19 surrounding the scoop at the top thereof, is bolted or otherwise secured another pair of ears 20 somewhat smaller than the first mentioned brackets, and having a latch lever 21 pivoted therebetween, the said lever having its intermediate portion offset rearwardly and provided at its lower end with a forwardly projecting tooth 22, adapted to engage with a keeper 23 secured to the upper face of the scoop bottom 3 and overhanging the rear edge thereof. The rear end of the keeper is elevated above the bottom and extends rearwardly through a slot 24 formed in the rear wall of the scoop, the upper edge of the keeper and the lower front face of the tooth 22 being oppositely bevelled so as to cause the automatic engagement of the two members when the rear end of the bottom 3 is forced upwardly.

The bottom 3 is preferably strengthened and stiffened by reinforcing strips 3* extending rearwardly from the teeth 4, the rear ends of said strips extending somewhat to the rear of the wall 8, and the whole structure is thus greatly strengthened and capable of resisting great strain while in use.

One of the brackets 17, preferably the left hand one, serves as a bearing for a transverse rocker shaft 25, which passes through the lower portion thereof and has its other end pivotally mounted in a smaller bracket 26 arranged beyond the center line of the scoop and adjacent to the other bracket 17, the same being suitably riveted or otherwise secured to the rear face of the rear wall 8.

The outer end of the rocker shaft 25 is bent upwardly to form an actuating crank arm 27, the upper end of which extends above the top of the scoop, and is provided with a swivelled eye 28 to which is secured a cable 29 which passes back to the excavating machine and within reach of the operator.

The rocker shaft passes between the rearwardly bent portion of the latch lever 21 and the rear wall 8 of the scoop, and is provided with a cam 30 which normally stands upright and bears against said lever 21, which is at all times pressed forwardly into such contact by means of a leaf spring 31 extending upwardly and outwardly and secured to a spacing block 32 attached to the rear wall 8.

In order that the cam 30 may be returned to its normal upright position, a coiled spring 33 surrounds the rocker shaft 25, and has its outer end bent upwardly and anchored in the adjacent bracket 17, as shown at 34, while the other or inner end of said spring is anchored in a collar 35 rotatably mounted on the shaft and having a polygonal head 36, provided with opposite notches 37 each having one bevelled face and adapted to receive opposite pins 38 projecting from the shaft (Figure 5).

When the crank arm 27 is pulled by the operating cable 29, the connection of the coiled spring 33 through the collar 35 and the notches and pins 37 and 38 respectively, serves to rotate the shaft 25, and the upstanding cam 30 will cause the spring pressed arm or lever 21 to be forced rearwardly to release the engagement between the tooth 22 and the keeper 23, against the pressure of the leaf spring 31, and the bottom 3 will immediately fall under the pressure of the load thereon, which will be entirely dumped or unloaded from the scoop. When the cable 29 is released, the spring 33 will immediately return the arm 27 and the cam 30 to upright position, which permits said leaf spring to force the latch arm 21 forwardly and in position to be engaged by the bevelled upper edge of the keeper 23, when the bottom 3 is forced upwardly into closed position by the manipulations of the operator.

In order to stop the arm 21 at the exact point to be thus engaged by the keeper, a bolt 39 is mounted in the rear wall 8 of the scoop, and is provided with a plurality of washers 40 mounted thereon at the outer face of the rear wall to adjust the head of the said bolt inwardly or outwardly and vary the engagement with the inner edge of the latch lever 21, and thus compensate for the wear of the tooth 22 and the keeper 23 (Figure 4).

When it is desired to put more or less tension on the coiled spring 33, the polygonal head 36 may be engaged by a wrench and the collar 35 and the head 36 slid along the shaft 25 to free the pins 38 from the notches 37, when a turning movement may be imparted to the said collar to either tighten or loosen the spring, as the case may be, to increase or decrease the resistance of the same in a manner well understood.

From the foregoing it will be seen that a simple, cheaply manufactured and easily operated latching mechanism has been provided which greatly facilitates the operation of unloading scoops of the above described class and other similar devices.

I claim:

1. In an excavating machine, a scoop, means for moving the scoop in a direction to gather dirt, a dumping bottom for the scoop, a latch for holding the dumping bottom in closed position, a rockable cam for disengaging the latch from the bottom of the scoop, and means for rocking the cam to cause the release of the latch.

2. In an excavating machine, a scoop, a dumping bottom therefor having earth-entering teeth at the forward end, a spring-actuated latch at the rear end, and a cam release for the latch.

3. In an excavating machine, a scoop, a dumping bottom therefor, a vertically disposed spring actuated latch at the rear of the scoop, a keeper on the bottom to be engaged by the latch, a cam located between the latch and the scoop, and means for turning the cam to release the latch from the keeper.

4. In an excavating machine, a scoop, a dumping bottom therefor, a vertically disposed spring-actuated latch at the rear of the scoop, said latch automatically engaging with said bottom to hold the same closed, a shaft, a spring on said shaft located between the latch and the back of the scoop, and a cam on said shaft to engage said latch, said shaft having one end provided with an arm which extends above the rear end of the scoop.

5. In an excavating machine, a scoop, a dumping bottom therefor, a substantially vertically disposed spring-actuated latch at the rear of the scoop, a keeper on said bottom to be engaged by said latch, a shaft journaled on the rear end of the scoop, a loose collar on the shaft provided with a notch, a pin on said shaft to be engaged by said notch, a spring coiled on said shaft and engaging said collar to hold it against said pin, a cam mounted on said shaft to engage said latch, and means for actuating said shaft to rotate the cam against said latch.

6. The combination with a scoop, a dumping bottom pivoted to the scoop at the front end and swinging downwardly at the rear end, a latch for engaging the dumping bottom at the rear end, a cam releasing device located between the latch and the rear wall of the scoop, and means for actuating the releasing device to disengage the latch from the bottom.

In testimony that I claim the foregoing as my own I have hereto affixed my signature.

ROBERT REX DOWNIE.