

No. 677,560.

Patented July 2, 1901.

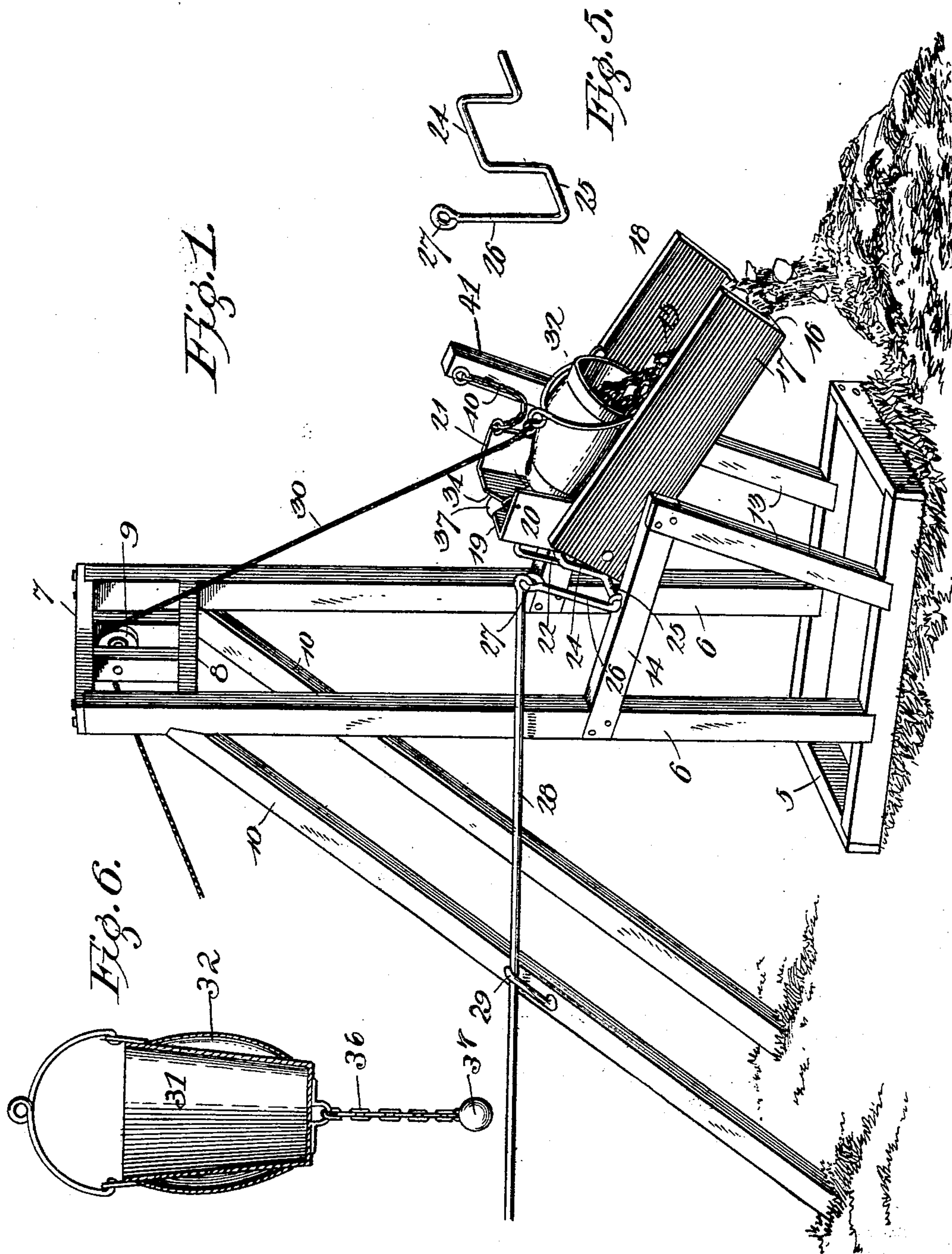
L. COLLIER.

ORE\_BUCKET DUMPER AND CHUTE.

(Application filed Mar. 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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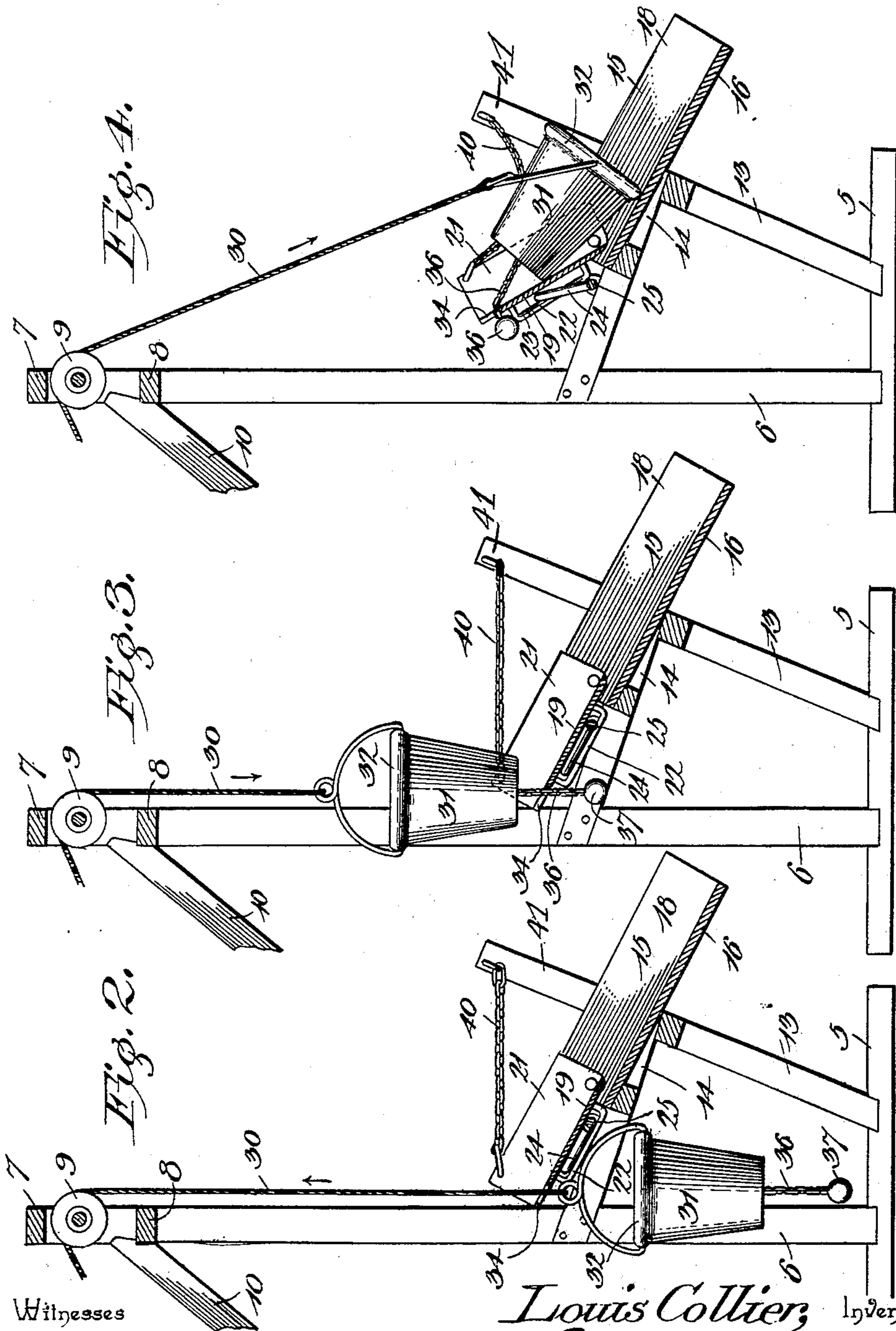
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# UNITED STATES PATENT OFFICE.

LOUIS COLLIER, OF CRIPPLECREEK, COLORADO.

## ORE-BUCKET DUMPER AND CHUTE.

SPECIFICATION forming part of Letters Patent No. 677,560, dated July 2, 1901.

Application filed March 16, 1901. Serial No. 51,498. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS COLLIER, a citizen of the United States, residing at Cripple-creek, in the county of Teller and State of Colorado, have invented a new and useful Ore-Bucket Dumper and Chute, of which the following is a specification.

This invention relates to the hoisting apparatus used in connection with mining-shafts; and it has for one object to provide a construction whereby the ore-bucket may be raised, dumped, and returned by the engineer who operates the hoisting apparatus without leaving his post beside the engine, a further object of the invention being to provide a construction of bucket which will not catch upon obstructions and which, furthermore, will be shaped so as to facilitate discharge of ore therefrom. It is well known that the usual ore-bucket is larger at the middle than at the top to prevent the upper edge from engaging with projections, the enlarged middle acting to deflect the bucket from the sides of the shaft. The ore, however, wedges in this bucket and does not discharge freely, and with the present invention a bucket may be used tapered from the upper end downwardly, and at the same time catching of the bucket on projections is provided against by the use of a swelled middle band on the outside.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view showing the apparatus, the bucket being shown as having dumped its load. Fig. 2 is a sectional view showing the bucket in position below and just before engaging the hinged end of the chute. Fig. 3 is a view similar to Fig. 2 and showing the bucket in position above the hinged end of the chute and ready to be lowered thereonto. Fig. 4 is a view similar to Figs. 2 and 3 and showing the bucket in position after it has dumped its load. Fig. 5 is a detail perspective view showing the bell-crank lever by means of which the movable member of the chute is operated. Fig. 6 is a vertical section through the bucket and showing the connection of the stop thereto.

Referring now to the drawings, there are

shown sills 5, forming a frame at the mouth of a shaft and upon which are erected the uprights 6 of a gallows-frame, these uprights or posts having cross-pieces 7 and 8 at their upper ends, and in the upper portion of the gallows-frame is the sheave-wheel 9. Batter-posts 10 are engaged with the uprights and prevent rearward displacement of the upper end of the gallows-frame. Upon the sills 5 are additional uprights 13, having beams 14 at their upper ends connected also with the uprights 6, and between the uprights is secured the fixed section 15 of a chute, which is disposed to direct the ore dumped therein away from the mouth of the shaft.

The fixed section of the chute comprises a bottom 16 and sides 17 and 18, and to the sides and against the inner faces thereof is pivoted or hinged a second chute-section, including a bottom 19 and sides 20 and 21, this pivoted or hinged section being adapted to lie with its bottom against the bottom of the fixed section and projecting rearwardly therefrom over the mouth of the shaft and to tilt, so that its bottom will stand vertical, so as to be out of the way of a bucket lifted from the shaft.

On the bottom of the pivoted or hinged section of the chute are attached guide-bars 22 and 23, with their ends secured to said section and their body portions spaced therefrom, and between these bars and the bottom of the pivoted section is engaged the crank portion 24 of a bell-crank lever 25, the ends of which are journaled in bearings upon the beams 14. The arm 26 at one end of the bell-crank lever has a terminal eye 27, and engaged therewith is a shift-rod 28, passed through a guide 29 on a batter-post, and which rod leads to the engine-house, so that it may be operated by the engineer. It will be seen that by reciprocation of this shift-rod the bell-crank lever may be rocked and will act to raise and lower the pivoted or hinged section of the chute.

The hoisting-cable 30 is passed over the sheave-wheel 9 and is then taken rearwardly to the winding-drum, (not shown,) and at the opposite end of the cable is attached the bucket 31. This bucket is tapered from its upper end to its lower end, so that there can be no wedging of the ore in the bucket when the



latter is inverted to discharge its contents, and at the middle of the bucket there is formed a cross-sectionally arc-shaped flange 32, which projects outwardly from the side of the bucket to such an extent as to strike any obstructions, such as projections upon the wall of the shaft, and to cause the bucket to glance off from any such obstructions and not catch thereon. The bucket is directly connected with the cable through the medium of a bail.

As above intimated, when the pivoted or hinged section of the chute is in lowered position it projects over the mouth of the shaft, and in the rear end of the bottom of this pivoted or hinged section there is formed a notch 34, through which the lifting-cable is passed and through which it hangs vertical. Thus when the bucket is raised its upper edge will strike the bottom of the pivoted section of the chute, and if its upward movement be continued it will act to raise the pivoted section and pass therebeyond, after which the pivoted section will drop back into place. A chain or cord 36 is attached to the bottom of the bucket and centrally thereof, and the free end thereof is connected to a button or stop 37, which is freely suspended thereby, and when the pivoted or hinged section of the chute drops back into place this cord or chain engages in the notch in the bottom of said pivoted section. The bucket may be then lowered onto the pivoted section of the chute with its contents intact. By operation of the shift-rod the pivoted section of the chute is then tilted to the position shown in Figs. 1 and 4, when the bucket is tilted to lie upon the inclined fixed portion of the chute, so that its contents are discharged thereon and run down and from the outer end thereof away from the shaft. After the bucket has been thus discharged the lifting-cable is operated and draws the bucket upwardly and away from the chute and into position above the mouth of the shaft. It may be then lowered into the shaft to receive another load. Instead of depending upon the upward movement of the bucket to raise the pivoted section of the chute this section may of course be raised by operation of the shift-rod and may be lowered by operation thereof after the bucket has passed above it.

In practice modification of the specific construction may be made and any suitable materials and proportions may be used for the various parts without departing from the

spirit of the invention. Furthermore, to positively limit the return movement of the pivoted chute to prevent discharge of any residue back into the shaft a chain or other flexible connection 40 may be attached to the rear end of the pivoted section and to a suitable support, such as the upwardly-projecting portion 41 of one of the uprights 13.

It will be noted that while in Fig. 1 the bucket is shown with the central portion thereof bulged to form the flange, in Figs. 2, 3, and 4 the flange is formed at the upper end, and in both constructions the interior of the bucket is tapered from the upper end in the direction of the lower end.

What is claimed is—

1. A device of the class described comprising a fixed chute-section a chute-section pivoted to the fixed section at its rear end, said pivoted section having a notch in its free end, a bucket having a button attached to and suspended from its bottom, the connecting medium for said button being adapted to engage in the notch, to hold the bucket while being dumped into the fixed chute-section.

2. A device of the class described comprising a fixed chute-section and movable chute-section pivoted to the fixed chute-section, a shift-rod connected with the pivoted section for operating it, and a bucket adapted to rest upon the pivoted section and for movement thereby to lie upon the fixed section, said bucket having means for engagement with the pivoted section for holding it while being dumped into the fixed chute-section.

3. A device of the class described comprising a fixed chute-section, a movable chute-section pivoted to the fixed chute-section and having a notched free end, guides upon the bottom of the pivoted chute-section, a rock-lever slidably engaged with the guides, a shift-rod connected with the rock-lever for operating it, and a bucket having a button attached to the bottom thereof and spaced therefrom, said button being adapted to lie against the bottom of the pivoted chute-section and with its connection in the notch thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LOUIS COLLIER.

Witnesses:

JAMES H. PARKS,  
ELMER J. CHUTE.