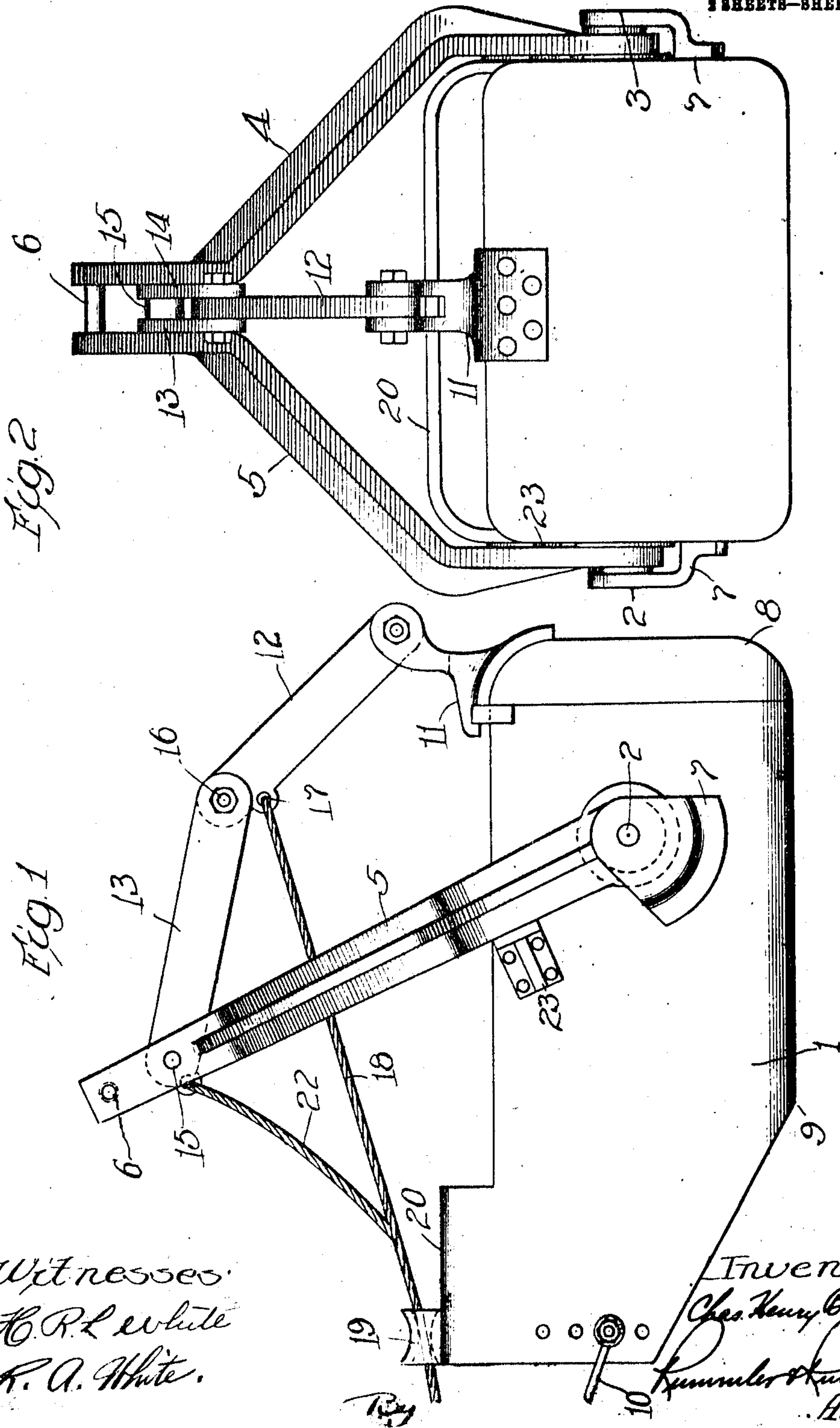


C. H. BRAINARD.
EXCAVATOR BUCKET (TOGGLE MECHANISM).
APPLICATION FILED DEC. 31, 1909.

953,020.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.



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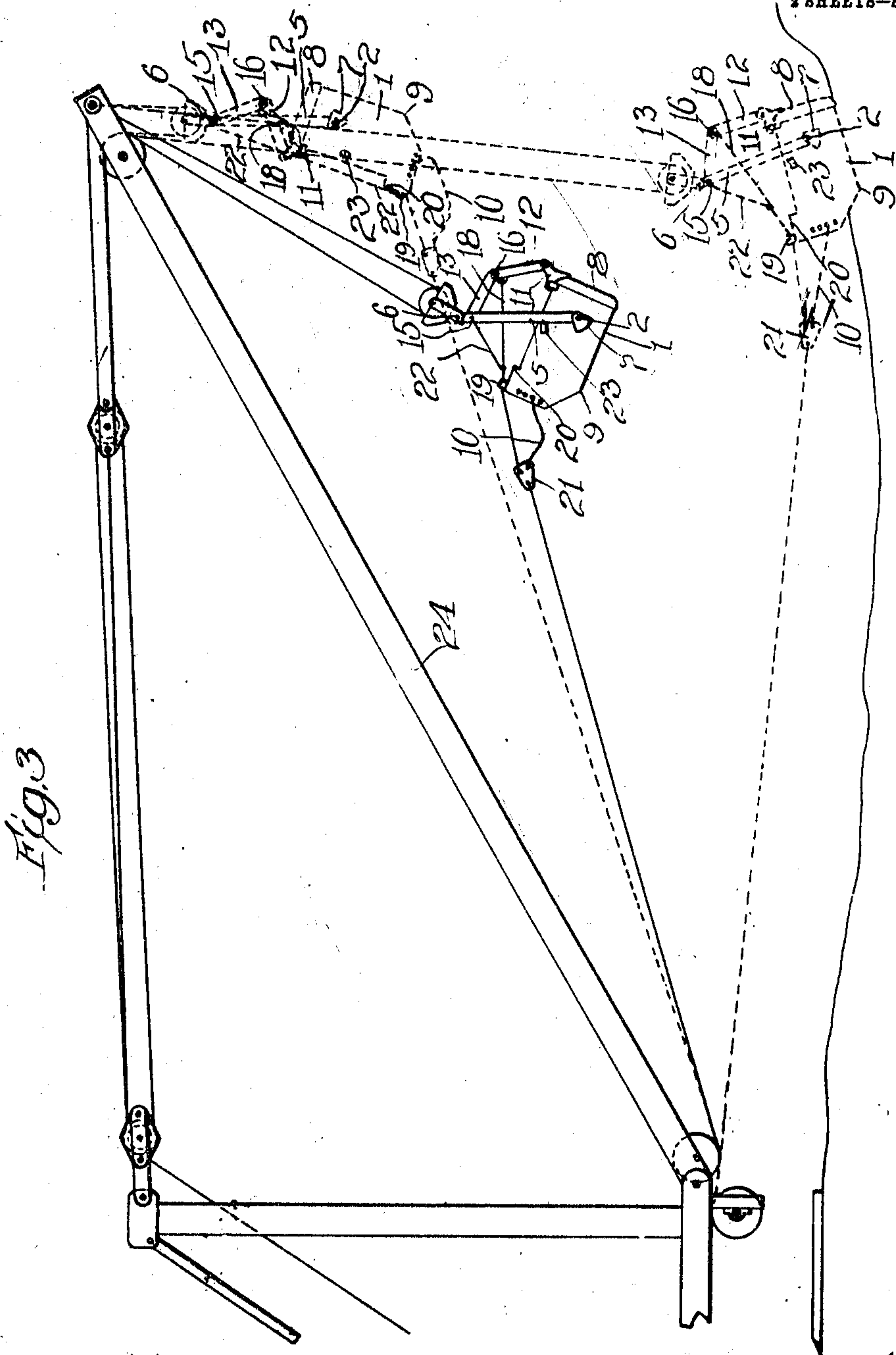


Fig. 3

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UNITED STATES PATENT OFFICE.

CHARLES HENRY BRAINARD, OF CHICAGO, ILLINOIS.

EXCAVATOR-BUCKET (TOGGLE MECHANISM).

953,020.

Specification of Letters Patent.

Patented Mar. 29, 1910.

Application filed December 31, 1909. Serial No. 535,859.

To all whom it may concern:

Be it known that I, CHARLES HENRY BRAINARD, a citizen of the United States of America, and a resident of Chicago, county
5 of Cook, State of Illinois, have invented certain new and useful Improvements in Excavator-Buckets, (Toggle Mechanism,) of which the following is a specification.

The main objects of this invention are to
10 provide an improved scraper bucket suitable for use in conjunction with a derrick for digging and transporting gravel, clay, rock and the like; to provide a bucket whereby the dumping operation is in large measure
15 automatic, and whereby the loading and unloading operations may be controlled from the derrick platform by proper manipulation of the hauling and hoisting lines; to provide a bucket in which the elements for
20 insuring automatic operation are in large measure located above the bucket and out of contact with the material on which the work is being done; to provide a device free, in large measure, from pulleys and similar ele-
25 ments which could become clogged with clay, or choked with rock; and to provide a structure in which a toggle is used to establish a holding relation between certain elements of the structure, whereby the bucket is dumped
30 only after release of the hauling line.

A specific construction embodying this invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of a complete
35 bucket; Fig. 2 is a rear end elevation of the same; and Fig. 3 illustrates the mode of operation, indicating in dotted lines several successive positions of a bucket.

In the construction shown, the sheet metal
40 bucket 1 is provided with trunnions 2 and 3 located back of the center of gravity of the bucket. Pivotally connected to the bucket is a bail consisting of right and left halves 4 and 5 connected together at their tops by a
45 pin 6 to which the hoisting line or tackle may be connected. Trunnions 2 and 3 are each reinforced or braced by an ear 7 riveted to the side of the bucket. The rear end 8 of the bucket is closed, and the cutting edge 9
50 is located under the over-hanging front of the bucket as shown on the drawing. The front of the bucket is provided with hauling chains 10 whereby the bucket may be drawn or scraped through the soil.

Mounted on the rear end of the bucket is
55 a standard 11, and between this standard and the bail of the bucket extends a toggle comprising a link 12 pivoted to the standard at its lower end, and pivotally connected at its upper end to two links 13 and 14 placed side
60 by side, and both pivotally mounted on a pin 15 extending between the bail arms 4 and 5. Near the central pivot 16 of this toggle is an eye 17, to which may be secured a controlling line 18, which threads through an eye or
65 guide 19, mounted on the arched front 20 of the bucket. This line can be connected with the hauling cable through a triangular block 21, as shown in Fig. 3. Spliced into the controlling line 18 at a point back
70 of the guide 19 is a second line 22, operatively connected to the bail in the neighborhood of pivot 15. At either side of the bucket 1 is a bracket or stop 23, serviceable to limit the forward movement of the bail.
75

The operation of the bucket is as follows: With the bucket in the conveying position, as shown in full lines in Fig. 3, the hauling cable acts through controlling line 18 to
80 keep the toggle from collapsing, thereby holding the bail against the stops 23 and preventing the bucket from dumping. After the bucket has been hoisted and swung to a position near the end of the derrick boom
85 24, the hauling cable can be released by the operator, thus releasing the toggle and allowing the bucket to tilt forward and dump as shown in dotted lines in Fig. 3. When
90 the bucket is in the dumping position, the toggle mechanism is folded up at the rear end of the bucket. When the bucket is dropped into the pit for another load, it strikes on its forward end and then tilts over into normal digging position. Then
95 when tension is put on the hauling cable, the line 22 swings the bail forward until finally the toggle comes into normal position where it is held by the controlling line 18. The normal tension on line 18 crowds the
100 bail forward against its stops 23 and pushes down on the standard 11 at the rear of the bucket in such a manner that the bucket can be drawn or scraped along the ground without danger of disturbing the rigid relation
105 between the bail and the bucket.

Although but one specific embodiment of this invention is herein shown, it will be understood that numerous details of the

construction shown may be altered or omitted without departing from the spirit of this invention.

I claim:

5 1. In an excavator, the combination of a bail, a bucket pivotally mounted thereon, and a toggle connected between said bail and said bucket to control the tilting of the bucket.

0 2. In an excavator, the combination of a bail, a bucket pivotally mounted thereon, a toggle connecting said bail to said bucket, a hauling cable operatively connected to the front of the bucket, and controlling means for said toggle operative through said hauling cable.

15 3. In an excavator, the combination of a bucket, means for pivotally supporting said bucket, a toggle connection between said bucket and said supporting means, and a line for controlling said toggle to govern the dumping of the bucket.

20 4. In an excavator, the combination of a bucket pivoted at a point back of its center of gravity, a hauling cable operatively connected to the front of said bucket, hoisting means for lifting said bucket, and a toggle operatively connected to said bucket to prevent dumping while said hauling cable is under tension.

30 5. In an excavator, the combination of a bucket pivoted back of its center of gravity, hoisting means for lifting said bucket, a toggle operatively connected between said bucket and said hoisting means, and means for preventing said toggle from collapsing until the bucket has been conveyed to a predetermined dumping position.

40 6. In an excavator, the combination of a bail, a bucket pivotally mounted thereon at a point back of its center of gravity, a hauling cable operatively connected to the front

of said bucket, a hoisting cable connected to said bail, a toggle connecting said bail to said bucket, and means controlled 45 through one of said cables for governing the position of said toggle.

7. In an excavator, the combination of a bucket, a bail pivotally mounted thereon, a toggle connecting said bucket to said bail, 50 a hauling cable operatively connected to the front of said bucket, and a controlling line connecting said toggle to said hauling cable.

8. In an excavator, the combination of a bucket, a bail pivotally mounted thereon, 55 stops for limiting the forward movement of said bail, a toggle connected between said bail and said bucket, a hauling cable operatively connected to the front of said bucket, and a controlling line operatively connected 60 to said bail and controlled through said hauling cable.

9. In an excavator, the combination of a bail, a bucket pivoted thereon back of its center of gravity, stops on said bucket for 65 limiting the forward movement of the bail with respect to the bucket, a standard carried by the rear end of the bucket, a toggle connected between said standard and said bail, hauling means operatively con- 70 nected to said bucket, a controlling line passing through a guide on the front end of the bucket and having one end connected to said toggle and the other end operatively connected to said hauling means, and a sec- 75 ond line connected between said bail and said controlling line.

Signed at Chicago this 24th day of December 1909.

CHARLES HENRY BRAINARD.

Witnesses:

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