A. W. FRENCH.

DUMPING BUCKET.

APPLICATION FILED JULY 15, 1908.

975,345.

Patented Nov. 8, 1910.

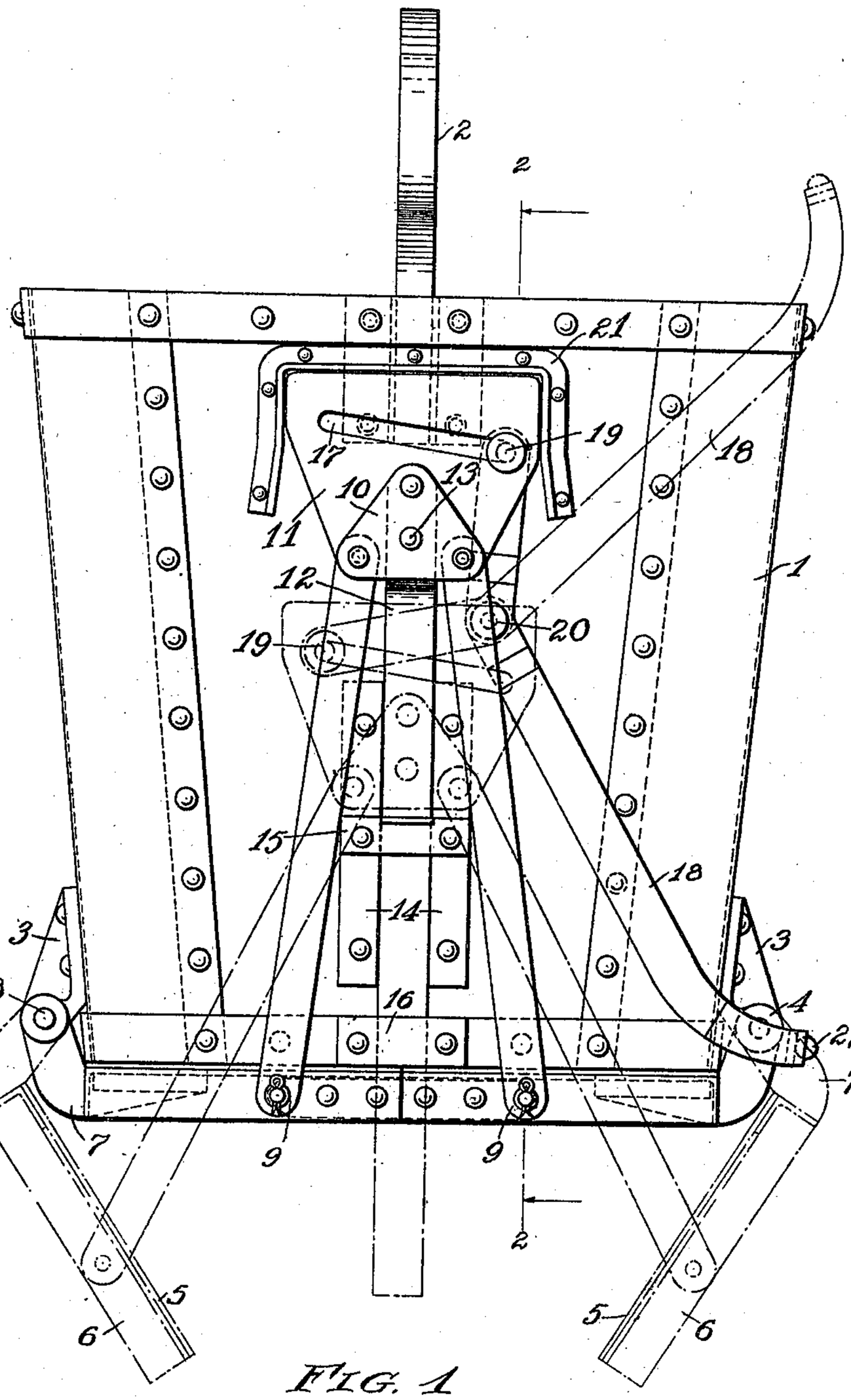

FIG. 1

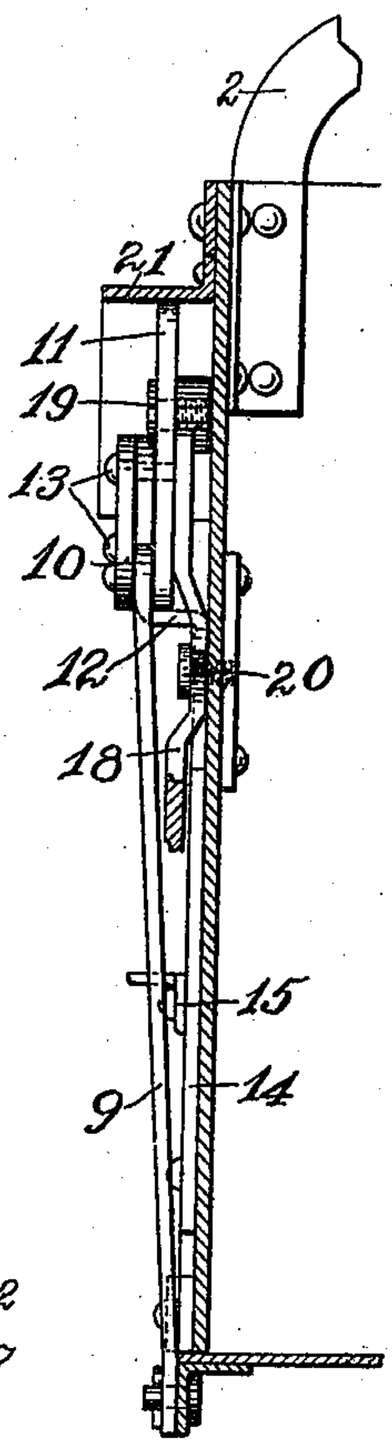

FIG. 2

WITNESSES:

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DUMPING-BUCKET.

975,345. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed July 15, 1908. Serial No. 443,616.

To all whom it may concern:

Be it known that I, ALFRED W. FRENCH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Dumping-Buckets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to buckets of the type which are adapted to be transported in any suitable manner and to convey any desired material from place to place.

More particularly, it relates to that type of buckets which are known as dump buckets, and the object of my invention is to provide suitable mechanism mounted upon the bucket which will operate the members upon the bucket that are adapted to be opened and closed for the purpose of discharging the load.

My invention comprises a mechanism which will be locked when in closed position and will be held locked by its own weight and when the bucket is loaded, the pressure of the load upon the closing members will assist the locking action, and moreover provides a mechanism which, when moved from its locked position, will be operated by the load contained within the bucket to release the closure members and open the same, while at all times being under the control of the operator.

Reference should be had to the accompanying drawings, in which—

Figure 1 is a side elevation of the bucket showing the operating mechanism on one side thereof; Fig. 2 is a sectional elevation along the line 2—2 in the direction of the arrows.

The bucket, generally represented at 1, is of sheet metal, the various component sheets of the bucket being riveted together as shown in the drawing. The particular bucket shown in the drawing is rectangular in cross section, but I do not limit myself to such form of bucket, for the operating mechanism for the closure members upon the bucket will be equally applicable to round buckets, or indeed for buckets of any desired form. The sides of the bucket are made to converge toward the bottom so as to direct the material contained within the bucket toward the opening in the bottom thereof.

Across the top of the bucket is secured a bail 2 which is of ordinary construction and is adapted to be engaged by the hoisting tackle upon any form of crane, whereby the bucket may be lifted and transported from place to place.

Upon the outside of the bucket near the bottom thereof are riveted brackets 3, there being two such brackets upon each side of the bucket. These brackets at their lower end are provided with bosses 4, which at their central portions are provided with an opening. The doors 5 are formed of sheet metal, the top portions being composed of a single sheet of metal and are provided with depending flanges 6. Right angled brackets 7 are secured at opposite ends of each door, one arm of said brackets engaging the lower side of the top plate upon the doors, the other of said arms being provided with a boss having a central perforation. The bosses upon the brackets 7 occupy a position inside the bosses 4 upon the brackets 3 and by means of a pintle 8 which extends through the perforations upon both the brackets 3 and 7 the said brackets are held in their relative positions. This permits the doors 5 to swing upon the pintles 8.

Upon the doors are secured link members 9 which are pivotally secured to the doors at their lower ends and at a point upon the doors slightly removed from their center of the bucket. At the opposite ends these links are pivotally secured to a triangular member 10, which triangular member is secured to a plate 11 that assumes the general configuration shown in the drawing. The plates 10 and 11 are both secured upon a bar 12 by means of rivets 13. This bar projects downwardly and slides upon the side of the bucket. Retaining members 14 and 14 are securely riveted upon the side of the bucket and the bar 12 is adapted to slide between said members. A strap 15 is riveted to the members 14 and 14 and to the side of the bucket, which strap is adapted to extend across the path of the bar 12 and to be above the same. A similar strap 16 is secured upon the bucket at the lower end thereof. By means of the guide bars and straps just described, the bar 12 is confined in its movements to vertical motion, there being sufficient play between the guiding members and the bar to reduce the amount of friction. The strap 15 forms a lower stop for the door operating mechanism. When the plates 10 and 11 contact with this strap, the doors can

open no farther and the doors are held in a slanting position as shown in the drawing, so that the contents of the bucket are discharged in a pile instead of being scattered.

Upon the bucket near the top thereof is secured a member 21, having an outwardly projecting flange. The width of the member 21 is just sufficient to accommodate the plate 11. The purpose of this member is to hold the plate 11 and associated parts from lateral movement when the doors are in closed position.

The plate 11 is provided with a slot 17 which is slanting, the lower end of said slot being toward that side of the bucket upon which the handle is adapted to operate.

The handle 18 comprises a lever bent to form two arms, as shown in the drawings, the angle between the short arm and the long arm being greater than 90 degrees and less than 180 degrees. Upon the outer end of the short arm is secured a pin 19 which is adapted to engage within the slot 17. If desired, a roller may be mounted upon this pin to roll within the slot to reduce the friction of the parts. The lever 18 is pivoted at the point 20, which pivot is secured to the side of the bucket.

The arrangement of the slot and the angle between the long arm and short arm of the lever are so proportioned that when the operating arm 18 is in its lowermost position, the pin 19 will be at the inner and lower end of the slot and will occupy a position which is slightly beyond the vertical plane through the pivot 20, and when the doors are in open position, the pin 19 will occupy a position at the outer and highest end of the slot.

Upon the opposite side of the bucket is provided an operating mechanism which is the exact duplicate of that just described, and the similar handles 18 are joined by means of a cross bar indicated at 22, the mechanisms of the opposite sides working simultaneously as the bar 22 is operated.

It will be observed that in the position of the mechanism shown in full lines in Fig. 1, the doors are closed and, due to the construction before stated, the pin 19 occupies a position a little beyond the vertical plane of the pin 20. It will thus be apparent that any weight which is placed upon the doors 5 will be transmitted through the links and will act upon the pin 19, but the only tendency of such weight will be in a downward direction and will hold the doors securely in their closed position. However, when the handle 18 is raised and the pin 19 travels outwardly along the slot, the said pin 19 will soon pass the vertical plane through the pivot 20 and, when beyond such plane, if the handle is released by the operator, the material upon the doors will of its own weight cause the doors to open and the parts of the operating mechanism to assume the position shown in dotted lines in the said figure. However, the levers connecting the doors with the handle are so arranged that the operator may easily control the rapidity of the opening of the doors by manipulation of the handle.

The long handle 22 extending across the bucket permits the attendant to hold the same when the bucket is being transported by the hoisting mechanism so that the bucket is always under his control.

From the construction which has been described above it will be apparent that the operating mechanism upon the bucket is simple in construction and provides an efficient locking mechanism to hold the doors closed even when the bucket is loaded, so that there is no danger of dumping the load from accidental causes, it being necessary in every instance to operate the handles 18 before such dumping can occur. Moreover, due to the proportion of the parts, the leverage obtained in closing the doors is sufficiently great so that very little effort is required to close the doors after dumping.

Having thus described my invention, I claim:

1. In a dumping bucket, a door pivoted thereon to close the bottom of the bucket, a member adapted to move vertically along the side of the bucket, connections between the said member and the door, an operating lever pivoted upon the bucket and a link connection between the member and lever, said connection causing the doors to be locked when in closed position.

2. In a dumping bucket, a door for closing the bottom of the bucket, said door being pivoted upon the bucket, an operating member mounted on the bucket, a movable member to which the doors are connected, and a pin and slot connection between the operating member and the movable member, the pin occupying a position in the slot beyond the medium line of the movable member when the doors are closed, whereby the doors are locked.

3. In a dumping bucket, a door for closing the bottom of the bucket and pivoted upon the bucket, an operating mechanism mounted on the bucket, a movable member to which the doors are connected, said movable member also having a cam slot, a pin engaging said slot, which pin was carried by the operating mechanism, the relation being such that the doors are locked when they are in closed position.

4. In a dumping bucket, a plurality of doors, pivoted thereon, operating levers pivoted upon opposite sides of said bucket, members upon opposite sides of the bucket adapted to slide vertically along the sides thereof, operative connections between the said levers and the said members, link con-

nections between said doors and the said members, and a member connecting the outer free ends of said levers forming an operating handle, said lever connection to the sliding member causing the doors to be locked when in closed position.

5. In a dumping bucket, a door pivoted thereon, an operating lever pivoted upon said bucket for operating the door, a member adapted to slide vertically along the side of said bucket, a link connecting the door with the vertical sliding member, and a sliding connection between the operating lever and the vertically sliding member.

6. In a dump bucket, a door pivoted thereto, mechanism for operating said door, said mechanism comprising a member adapted to slide vertically upon the side of the bucket, a link connecting said member with the door, a pivoted lever, and a connection between one end of said lever and the sliding member whereby the door may be opened and closed.

7. In a dump bucket, a closing door pivoted thereto, mechanism for operating said door, a member adapted to slide upon said bucket, a link connecting said member with the door, an operating lever pivoted adjacent said sliding member, one end of said lever being connected with the sliding member, said operating mechanism being adapted to lock the door when in closed position.

8. In a dump bucket, closing doors pivoted thereto, mechanism for operating said doors, members adapted to slide upon opposite sides of the said bucket, links connecting said members with the doors, operating handles pivoted adjacent said sliding members, one end of said handles being connected with the sliding members, said operating mechanism being adapted to lock the doors when in their closed position.

9. In a dumping bucket, a door pivoted upon said bucket, mechanism for operating said door comprising a plate adapted to slide upon the side of said bucket and provided with a slot, a connection between said plate and door, and a lever pivoted adjacent said plate, one end of said lever being adapted to engage the slot in the plate.

10. In a dumping bucket, a door pivoted thereto, mechanism for operating said door, said mechanism comprising a member adapted to slide upon the side of said bucket, means for guiding said member during its sliding motion, a link connecting said member with the door, and a lever pivoted adjacent said member, one end of said lever engaging the said member to open and close the door.

11. In a dumping bucket, a door pivoted thereto, mechanism for operating said door, said mechanism comprising a member adapted to slide vertically upon the side of said bucket, means for guiding said member during its sliding motion a link connecting said member with the door, and a lever pivoted adjacent said member, one end of said lever engaging the said member to open and close the door.

12. In a dumping bucket, a door pivoted thereto, mechanism for operating said door, said mechanism comprising a member adapted to slide upon the side of said bucket, a connection between said member and the door, said sliding member being provided with a slot, and a lever pivoted adjacent said member, one end of said lever being adapted to engage said slot and slide therein, the end of the lever engaging the slot being adapted to occupy a position beyond the pivotal point of the lever when the doors are closed, whereby the doors will be locked.

13. In a dumping bucket, a door pivoted thereto, a member adapted to slide upon the side of said bucket, a connection between the said members and door, means for guiding said member in its travel, and a lever pivoted adjacent said member, said sliding member being provided with a slot, one end of said lever being adapted to engage the said slot, the end of the lever engaging the slot occupying a position beyond the pivotal point of the lever when the doors are closed, whereby the doors will be locked.

14. In a dumping bucket, doors pivoted thereto, members adapted to slide upon the sides of said bucket, a connection between each of said members and the doors, means for guiding said member in its travel, and a lever pivoted adjacent each of said members, each of said sliding members being provided with a slot, one end of each lever being adapted to engage the said slot, the end of the lever engaging the slot occupying a position beyond the pivotal point of the lever when the doors are closed, whereby the doors will be locked.

15. In a dumping bucket, a plurality of doors pivoted at the lower part thereof, operating levers pivoted upon opposite sides of the bucket, sliding link connections between said doors, and a handle connecting the levers.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

ALFRED WM. FRENCH.

Witnesses:
S. E. FOUTS,
A. J. HUDSON.