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DUMPING BUCKET.

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965,511.

Patented July 26, 1910.

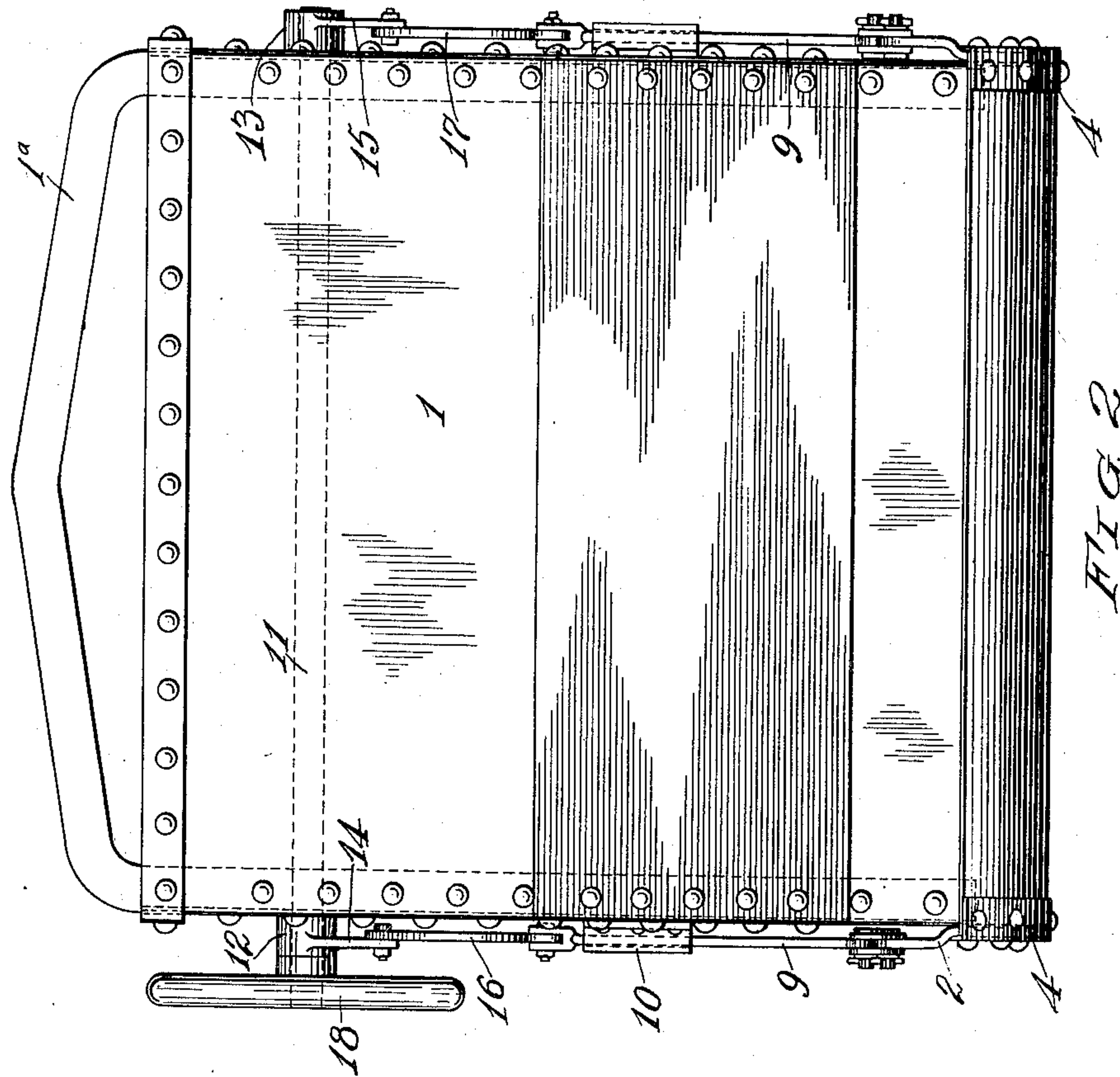


FIG 2

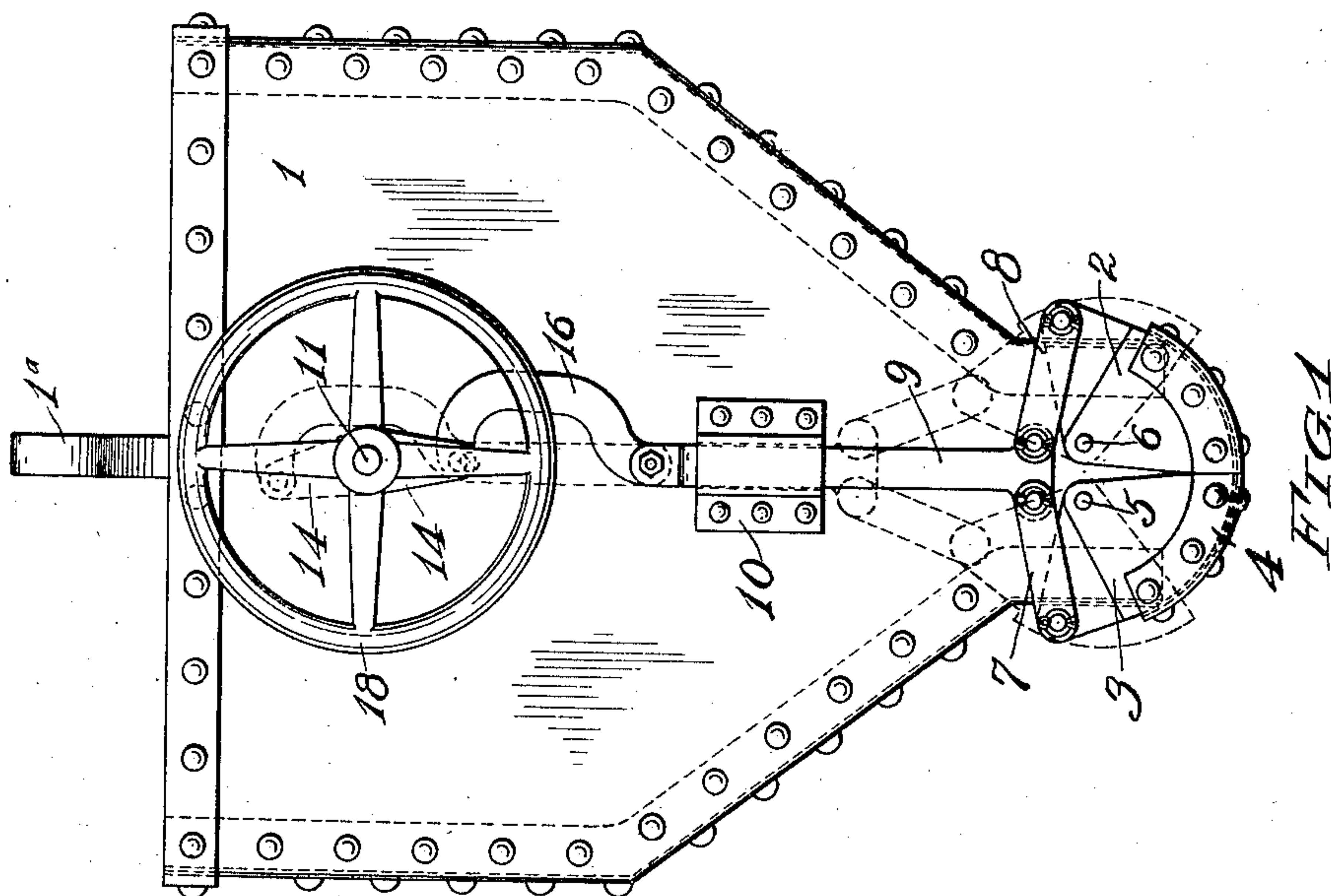


FIG 1

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DUMPING-BUCKET.

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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 Improvements 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 and more particularly to the type of buckets known as dumping buckets, and provides for pivoted closure members upon the lower part of said bucket and mechanism mounted upon opposite sides of said bucket for operating said closures. Moreover, the mechanism is adapted to hold the doors from movement in their opened or closed positions.

Generally speaking, the invention comprises the elements and combinations thereof recited in the claims.

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

Figure 1 is an end elevation of the bucket, and Fig. 2 is a side view thereof.

The bucket is generally represented at 1 and is formed with a rectangular upper portion and with a lower portion having converging sides, the end pieces being formed straight.

The bucket is made of sheet metal and is secured together by means of rivets, as is well known in the art.

The lower edges of the converging side pieces are spaced apart forming an opening which extends from end to end of the bucket, and are formed as downwardly projecting vertical flanges. Upon the upper part of the bucket and extending from side to side thereof is a bail 1^a by means of which the bucket is transported by any suitable hoisting and conveying mechanism.

The opening in the bottom of the bucket is closed by means of two doors 2 and 3, which extend throughout the length of the bucket and are hinged upon the end thereof. The doors are curved and at their ends are formed with triangular flanges projecting at right angles to the body portion of the door. The flanges and bottom are secured together by means of angles 4. Near the apex of the triangular end pieces, pivotal holes are formed which are in engagement with pivots 5 and 6, said pivots being secured upon the end of the bucket. This allows the closing doors to swing outwardly to allow the load

to be discharged. Near the outer ends of the lower portions of the closing members are pivotally secured levers 7 and 8, which at their opposite ends are pivotally mounted upon a vertically reciprocative bar 9. This bar is held in place by means of a cross strap 10 which is riveted upon the end of the bucket. The mechanism thus described is duplicated upon the opposite end of the bucket and is secured thereto in a manner similar to that just described.

At the upper end of the bucket, and in the same vertical plane as the bar 9, is mounted a shaft 11, which extends across the bucket and beyond the sides thereof. Upon this shaft and outside of the end members are secured hubs 12 and 13, which are formed with integral arms 14 and 15, depending therefrom. The ends of the arms 14 and 15 are connected to the ends of the vertically reciprocating bars by means of links 16 and 17, the said links being formed with a recessed portion at the central part thereof in order to extend around the shaft 11 when the levers are in the position shown in dotted lines in Fig. 1. Upon one end of the shaft is secured a wheel 18 by means of which the shaft 11 is rotated to operate the door operating mechanism. It is evident that any desired means may be used to rotate this shaft, and that if desired, means may be located upon both ends of the shaft for rotating the same.

When the door operating mechanism is in the position shown in full lines in Fig. 1, the doors will be closed, and the levers 14 and 15 will be in the same vertical plane as the sliding bars 9. Therefore there will be no tendency for the closure members at the bottom thereof to open when material is thrown into the bucket, and any tendency of the doors to open would be overcome, due to the fact that the arms 14 and the bar 9 are in a straight line. To open the doors the shaft 11 is rotated in a counter-clockwise direction, which raises the levers 14 and 15 to a position shown in dotted lines in Fig. 1, at which time the lower end of the levers occupies a position slightly beyond the vertical plane passing through the shaft 11, the sliding bar 9 will be drawn up carrying with it the links 7 and 8 to the position shown in dotted lines, and opening the closing members 2 and 3.

Due to the construction just described, viz: that the end of the lever 14 will occupy

a position beyond the vertical plane passing through the shaft 11 when the said lever is in its raised position, the said closing members 2 and 3 will be securely locked in their open position, for the weight of the mechanism and doors will be borne upon the pin forming the pivotal connection between the end of the lever 14 and the link 16, and the weight thereon will be exerted in a vertical direction, the tendency of which will be to lock the mechanism and thereby prevent the doors from closing. However, as soon as the end of the lever 14 passes beyond the vertical plane of the shaft 11, the doors will of their own weight, return the mechanism to the position shown in full lines in Fig. 1. This state of facts is true only when the bucket is empty, for when the bucket is more or less filled, the material therein will fill the spaces between the flanges depending from the lower edges of the slanting sides and the doors. As the doors open, they swing back of and under the said depending flanges just described, the material being scraped off from the doors by the flanges. The binding due to the friction of the material upon the flange and door between the same is sufficient to hold the doors open in any position between closed and full open so as to control the discharge of the material from the interior of the bucket.

It will be noted that the radius of the doors from their pivotal points to the bottoms thereof changes, being greatest at their inner ends, that is, at the points where the doors meet and decreases toward the opposite ends of the doors. This construction will greatly reduce the friction between the door and the material resting thereon as the doors are opened, for the doors will continually move away in a downward direction or drop away from the material resting upon them.

The levers 7 and 8 are arranged with reference to the doors 2 and 3, and the bar 9, so as to form a toggle connection, thereby securing a constantly increasing leverage to close the doors, as they approach their closed position.

As was before stated, the doors may remain stationary when opened to any desired extent and as much of the contents of the bucket may be discharged as desired, and the doors easily closed.

It will be observed that I have provided a bucket having an operating mechanism which is simple in construction, composed of few parts, and efficient for the purpose for which it is designed.

Having thus described my invention, I claim:

1. In a dumping bucket, a closing member for the bottom thereof, a bar adapted to slide vertically along the side of the bucket,

connections between the bar and the door, means for moving the bar, the last mentioned means being adapted to lock the bar against movement at the ends of its sliding movement.

2. In a dumping bucket, a closing member for the bottom thereof, a bar adapted to slide vertically along the side of the bucket in a vertical direction, connections between the bar and the door, means for moving the bar, the last mentioned means being adapted to lock the bar against movement at the ends of its sliding movement.

3. In a dumping bucket, a plurality of closures pivotally secured at the lower end of said bucket for closing the same, a rod adapted to slide along the side of the bucket, links connecting said closures with said rod, and a lever connected with said rod for operating the same.

4. In a dumping bucket, a plurality of closures for the lower end thereof pivoted upon said bucket, a bar adapted to slide along the side of the bucket, links connecting the said closure members to the bar, a lever pivoted upon the side of the said bucket, connections between the said lever and the bar for operating the doors.

5. In a dumping bucket, a plurality of closures for the lower end thereof pivoted upon said bucket, bars adapted to slide along the opposite sides of the bucket, links connecting the said closure members to the bars, levers pivoted upon the said bucket, connections between the said levers and the bar for operating the doors, and means for operating both levers simultaneously.

6. In a dumping bucket, a closure member pivotally secured upon said bucket for closing the lower end thereof, a bar adapted to slide along the side of the said bucket, connections between the said bar and the closure member, a shaft secured at the upper end of said bucket, an arm secured upon said shaft, and connections between the sliding bar and the shaft for operating the closure member.

7. In a dumping bucket, a closure member pivotally secured upon said bucket for closing the lower end thereof, bars adapted to slide along the opposite sides of the said bucket, connections between said bars and the closure member, a shaft secured at the upper end of said bucket and extending across the same, arms secured upon said shaft at the opposite ends, and connections between the sliding bars and the shaft for operating the sliding bars simultaneously.

8. In a dumping bucket, a closure member pivoted upon said bucket for closing the lower end thereof, a bar adapted to slide along upon the side of said bucket, means for guiding said bar, connections between the said closure member and the bar, a shaft mounted near the upper end of the said

bucket, an arm secured upon the said shaft, and a recessed link connecting the said bar with the arm upon the shaft.

9. In a dumping bucket, a closure member pivotally secured upon said bucket, a vertically movable bar secured upon the side of the bucket connections between said bar and the closure member, a rotatable arm pivotally secured upon the bucket, and a link connection between the end of the arm and the slidable bar, the said arm and slidable bar being in a straight line when the closure member is in closed position.

10. In a dumping bucket, a closure member pivotally secured upon said bucket, a bar adapted to slide vertically upon the side of the bucket, connections between the said bar and the closure member, a lever pivotally secured at one end in the same vertical plane as the sliding bar, a link connection between the sliding bar and the end of the lever, the end of the said lever which is secured to the sliding bar being adapted to occupy a position slightly beyond the plane passing through its pivot and the vertical bar, when the closure members are open.

11. In a dumping bucket, a plurality of closure members pivotally secured upon said bucket, a vertically reciprocating bar upon the side of the bucket, links connecting each of said closure members with the reciprocating bar, a lever pivotally secured upon the bucket, the pivot of the lever being in the same vertical plane as the reciprocating bar, a recessed link connecting the free end of said lever with the reciprocating bar, the end of the said lever being adapted to occupy a position when the doors are opened beyond the plane passing through its pivot and the reciprocating bar.

12. A dumping bucket having converging sides and straight portions at the lower ends of the sides, said straight portions being parallel to each other and close together forming an elongated and comparatively narrow outlet opening, and a member pivoted upon said bucket forming a closure for the outlet.

13. A dump bucket, having converging sides and straight portions at the lower edges of said sides, and a plurality of movable members adapted to close the space between the lower edges of said straight portions.

14. A dumping bucket having a body portion provided with an opening in the bottom thereof, a door pivoted upon the bucket to close the opening, the distance from the pivotal point to one side of the door being greater than the distance from said pivotal point to the other side of the door.

15. A dumping bucket having a body portion provided with an opening in the bottom thereof, a pair of doors pivoted upon

the bucket to close the opening, the inner sides of the doors meeting, the distance from the pivotal point of each door to the outer side thereof being less than the distance from their respective pivotal points to the inner side or meeting side of each door.

16. A dumping bucket having a body portion provided with an opening in the bottom thereof, a curved door pivoted upon the bucket and adapted to close the opening in the bottom thereof, the radius of curvature of said door decreasing from one side of the door to the opposite side thereof.

17. A dumping bucket having a body portion provided with an opening in the bottom thereof, a curved door pivoted upon said bucket to close the said opening, the radius of curvature of said door with respect to its pivotal point decreasing from one side to the other.

18. A dumping bucket having an opening in the bottom thereof, a pair of curved doors pivoted upon said bucket to close the said opening, the radius of curvature of said doors decreasing from their inner sides or meeting point to their outer sides.

19. A dumping bucket having an opening in the bottom thereof, said opening being inclosed on two sides by depending flanges, a number of doors pivoted upon the bucket to close the opening, the said doors being so pivoted that in being opened they move beneath the flanges, and any material on the doors is removed from the doors by the flanges, the material in the bucket occupying the space between the flanges and doors will frictionally hold the doors in any degree of open position.

20. A dumping bucket having an opening in the bottom thereof, said opening being inclosed on two sides by depending flanges, a pair of doors pivoted upon the bucket to close the same, the inner sides of the doors meeting, the distance from the pivotal point of each door to the outer side thereof being less than the distance from respective pivotal points of the doors to the inner side or meeting edge of the doors, whereby the material in the bucket occupying the space between the flanges and the doors will frictionally hold the doors in any degree of open position.

21. In a dumping bucket having an opening in the bottom thereof, a door pivoted upon the bucket to close the opening, the distance from the pivotal point to one side of the door being greater than the distance from said pivotal point to the other side of the door, mechanism for opening and closing the doors, said mechanism being adapted to lock the doors against movement in either the open or closed positions.

22. A dumping bucket having an opening in the bottom thereof, of a pair of doors pivoted upon the bucket to close the open-

ing, the inner sides of the doors meeting, the distance from the pivotal point to the outer side of each door being less than the distance from the respective pivotal points of the doors to their inner side or meeting edge, mechanism for operating the doors, said mechanism being adapted to lock the doors in their closed or open positions.

23. A dumping bucket having an opening in the bottom thereof, a pair of curved doors pivoted upon said bucket to close the opening, the radius of curvature on said doors decreasing from their inner sides or meeting points to their outer sides, mechanism for operating the doors, said mechanism being adapted to lock the doors against movement in either their open or closed positions.

24. A dump bucket, an opening in the bottom thereof, doors for closing said opening, bars upon opposite sides of the bucket adapted to slide upon the sides of said bucket, levers connecting said bars with the doors whereby a toggle is formed, and means for operating the said bar.

25. In a dump bucket, a downwardly extending flange upon the said bucket, a curved door adapted to move beneath the lower edge of said flange when being opened, whereby material contained in the bucket and occupying the space between the flange and door will frictionally hold the door in any degree of open position.

26. In a dump bucket, downwardly extending flanges upon the said bucket, curved doors adapted to move beneath the lower edges of the said flanges when being opened, whereby material contained in the bucket and occupying the spaces between the flanges and doors will frictionally hold the doors in any degree of open position.

27. A dump bucket having converging sides and straight portions at the lower edges of said sides, and a curved door pivoted upon the bucket and adapted to close the opening in the bottom thereof, the radius of curvature of said door decreasing from one side of the door to the opposite side thereof.

28. A dump bucket having converging sides and straight portions at the lower edges of said sides, and a pair of curved doors pivoted upon said bucket to close the opening, said doors being adapted to move beneath the said straight portions, the radius of curvature of said doors decreasing from their inner sides or meeting point to their outer side.

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

ALFRED WM. FRENCH.

Witnesses:

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