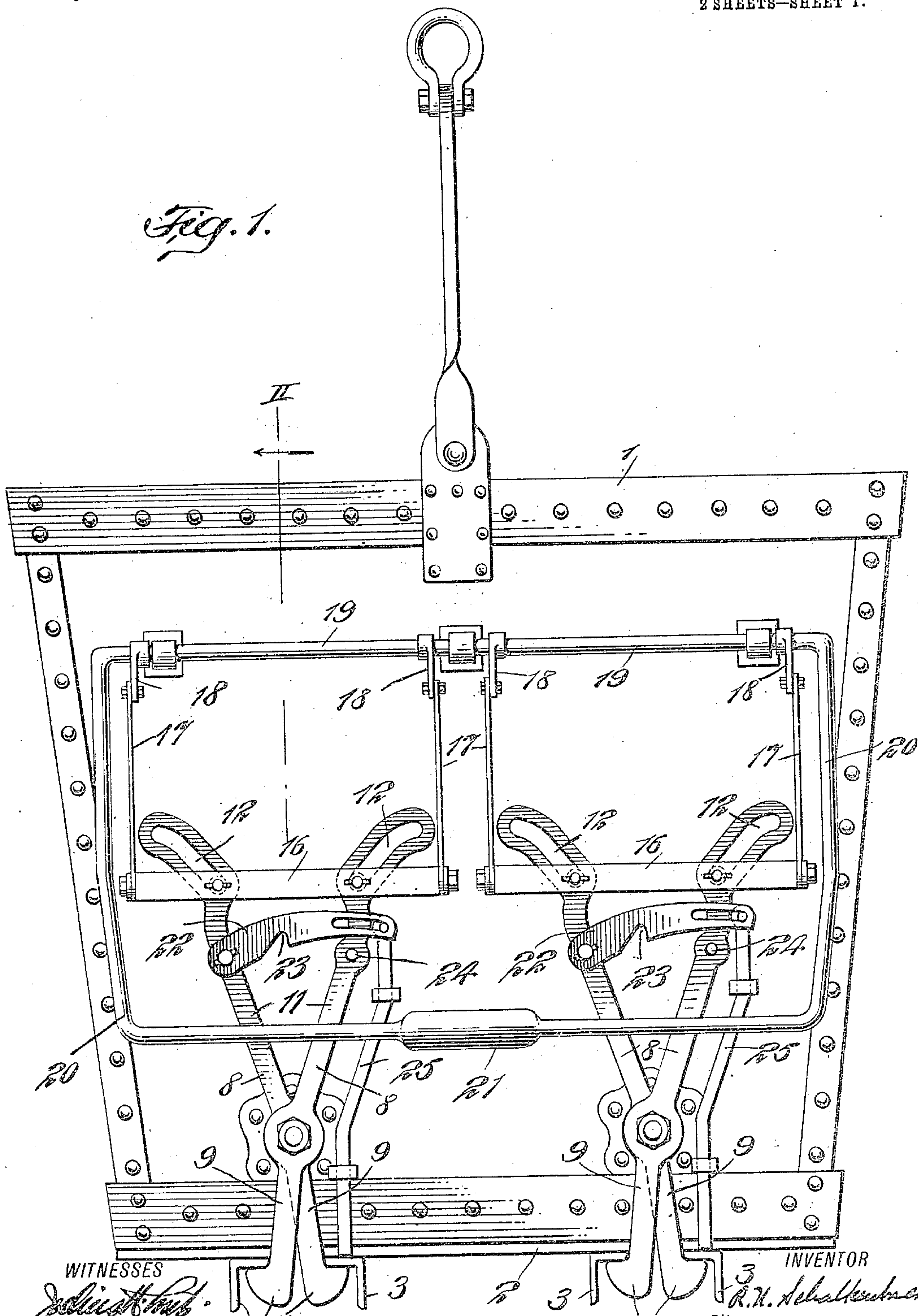


R. N. SCHALKENBACH.
SELF CLOSING BOTTOM DUMPING BUCKET.
APPLICATION FILED FEB. 26, 1909.

958,323.

Patented May 17, 1910.

2 SHEETS—SHEET 1.



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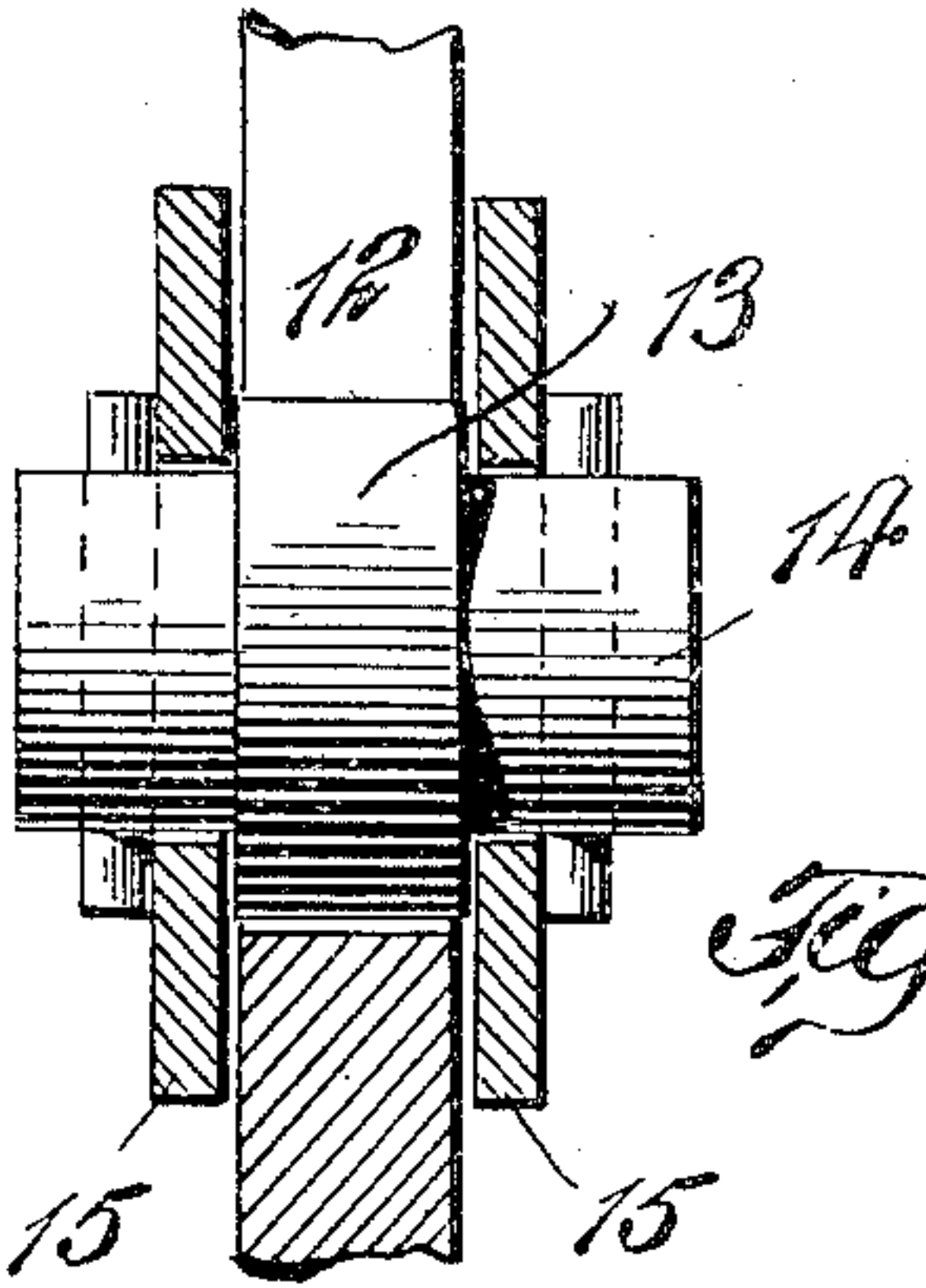


Fig. 3.

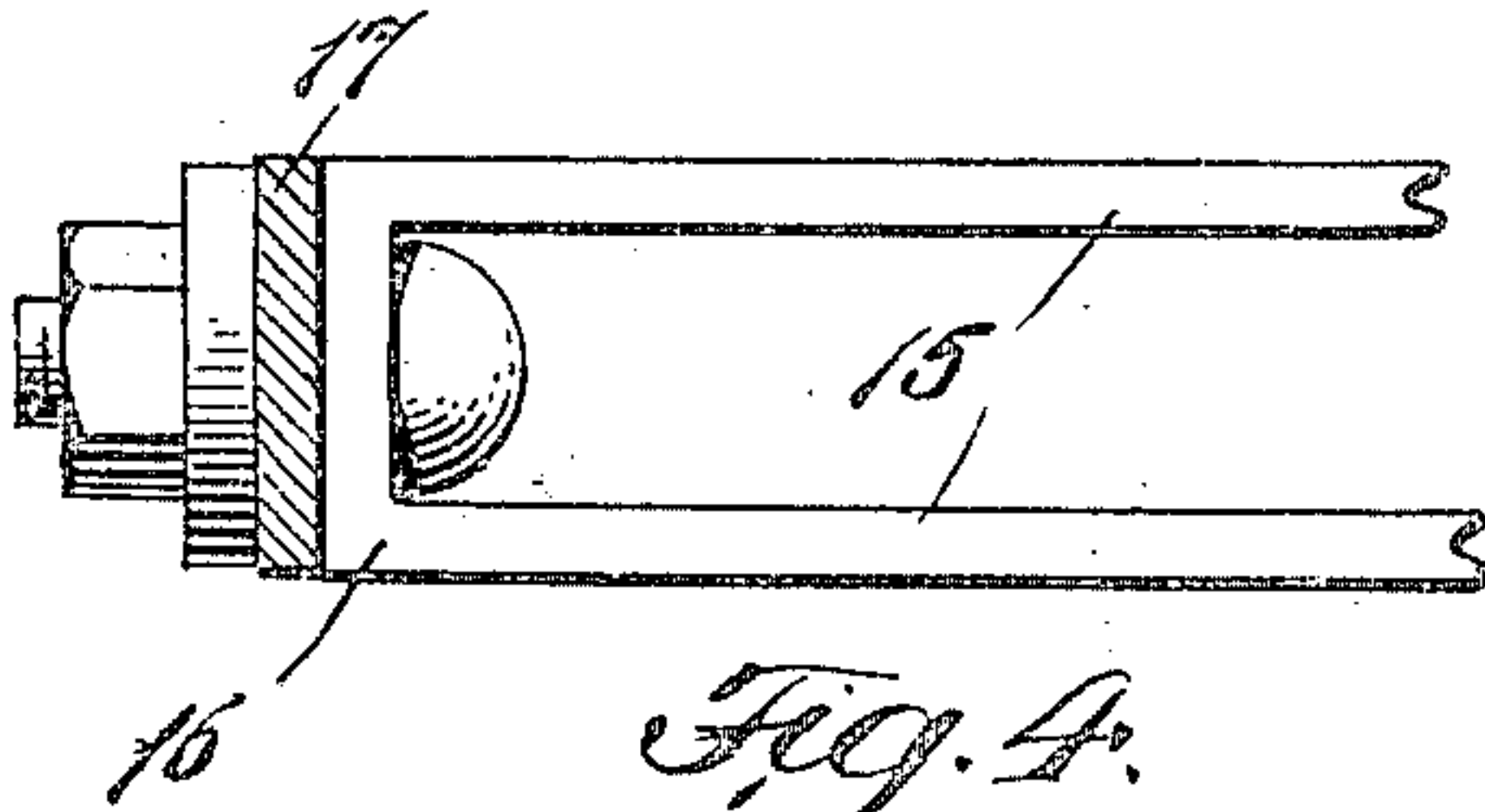
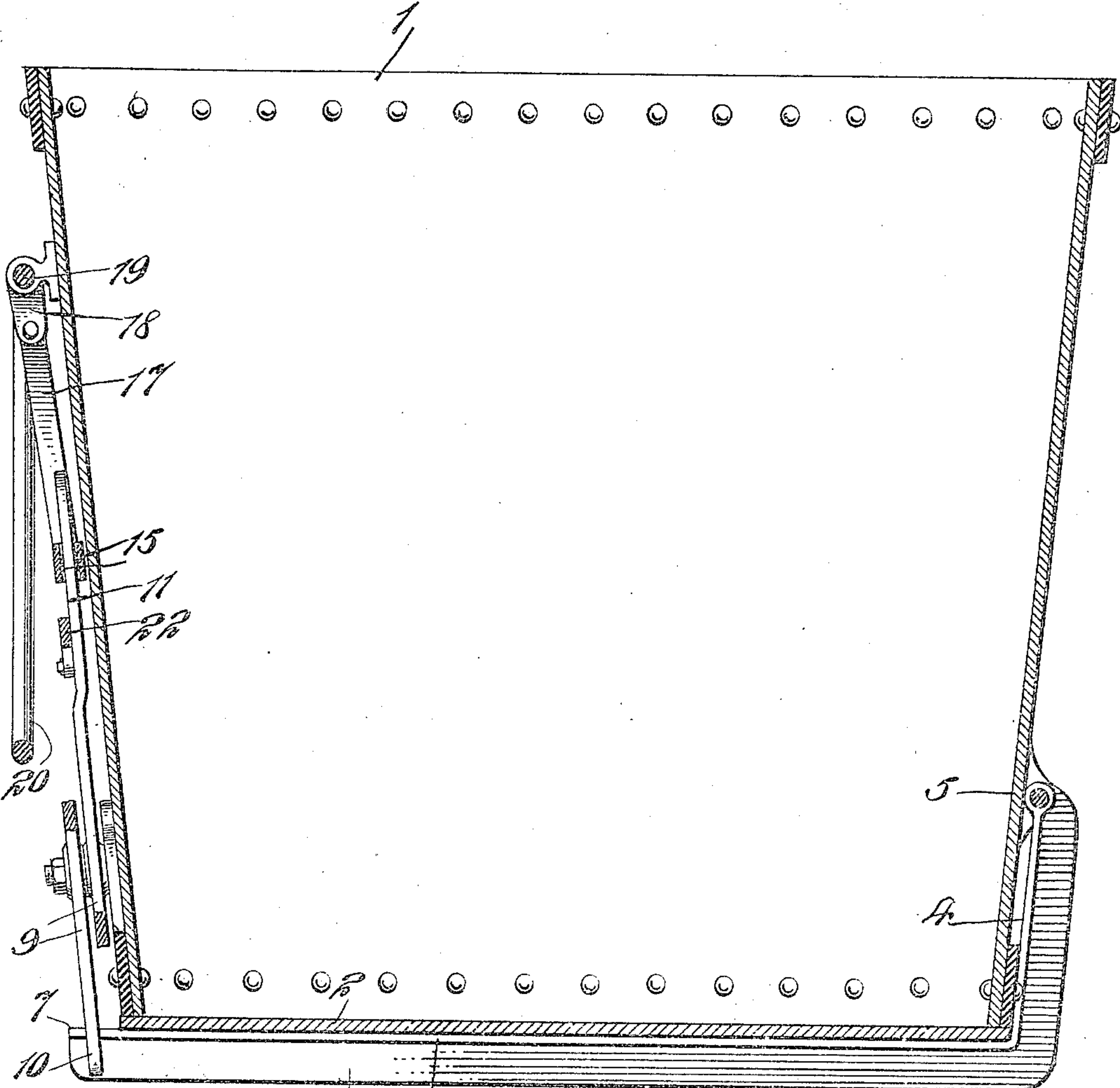


Fig. 4.



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ROBERT N. SCHALKENBACH, OF JERSEY CITY, NEW JERSEY.

SELF-CLOSING BOTTOM-DUMPING BUCKET.

958,323.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed February 26, 1909. Serial No. 480,155.

To all whom it may concern:

Be it known that I, ROBERT N. SCHALKENBACH, a citizen of the United States, and resident of Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Self-Closing Bottom-Dumping Buckets, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a front elevation of the bucket showing the bottom locked in its closed position; Fig. 2 a vertical sectional view on the line II—II of Fig. 1; Fig. 3 a detail vertical sectional view showing the connection between one of the locking levers and its operating cross-frame; and Fig. 4 a detail horizontal sectional view showing the connection between the lever-operating frame and one of its connected links.

It is one of the main objects of this invention to provide means for automatically locking the bottom of a dump bucket when it is swung into its closed position, whereby it will be only necessary to close the bottom of the bucket either by lowering the bucket to the ground or by swinging the bottom up into proper position to engage the locking devices.

Another object of the invention is to provide means whereby the locking devices may be released and locked in their released position by the movement of a single operating device. The means for holding the locking devices in their release position is arranged to hold them in that position until the bucket bottom is swung into closed position said bottom then automatically releasing the locking devices.

Other objects of the invention are to provide an extremely durable locking means that will stand the excessive strain and wear brought on such devices when attached to dump buckets; and which will be simple in operation so that the unskilled labor usually employed in handling buckets of this kind will have no difficulty in understanding its operation and its construction.

Referring to the various parts by numerals, 1 designates the front of the bucket; and 2 the bottom thereof. On the lower side of the bottom are secured two pairs of angle irons 3 which extend from the front to the rear thereof and are bent upwardly at their rear ends to form the arms 4 by means of

which the bottom is hinged to the bucket, as shown at 5 in Fig. 2. The horizontal members 6 of each pair of angle-irons extend inwardly toward each other, as shown clearly in Fig. 1; and the forward ends of these angle-irons project in front of the bucket a short distance, as shown at 7 in Fig. 2, these projecting ends forming stops which are engaged by suitable holding and locking devices connected to the front of the bucket as hereinafter described.

To hold the bottom in its closed position two pairs of crossed holding and locking levers 8 are pivoted to the front of the bucket, one pair directly over each pair of stops 7 as shown clearly in Fig. 1. Each locking lever is formed with a portion 9 below its pivot, which portion is formed with the locking dog 10 at its lower end adapted to engage under the horizontal portion of a stop 7 to lock the bottom closed. The locking levers are each formed with the upwardly extending arms 11 which are formed at their upper ends with the upwardly and outwardly curved slots 12. In each of said slots is arranged an operating roller 13 carried by a short shaft 14 journaled in the side bars 15 of a cross-frame 16. The shafts 14 of each pair of locking levers are connected together by means of said cross-frame. It will, therefore, be seen that the upper ends of each pair of locking levers is held between the side bars of a cross-frame so that they are maintained in proper alignment with each other and the rollers 13 are maintained a fixed distance from each other at all times.

To the ends of each cross-frame are secured the lower ends of depending links 17. The upper ends of these links are connected to crank-arms 18 secured to a horizontal shaft 19 mounted in suitable bearings on the front of the bucket. The ends of the shaft 19 are connected together by means of the depending bail 20, said bail being weighted, as shown at 21 in Fig. 1, to more quickly move the locking levers into their locked positions when released, as will be more fully hereinafter described. It will be readily seen that by lifting the bail the frames 16 will be moved upwardly and the rollers 13 will cause the upper ends of the locking levers to swing inwardly or toward each other. The curved slots are formed in these levers in order to secure the required

amount of inward movement with a short vertical movement of the cross-frame 16.

To retain the locking levers in their released position a retaining pawl 22 is pivoted to one locking lever of each pair of levers, said retaining pawls being each formed with a notch 23 adapted to receive and fit over a pin 24 on the opposite locking lever of each pair. When the retaining pawl is in engagement with the pin on the opposite lever the said locking lever will be held out of operative position until the pawl has been released from the pin. To accomplish this release automatically a vertically movable release-bar 25 is mounted on the face of the bucket adjacent each retaining pawl. The lower end of each of these release bars is adapted to be engaged by one of the projecting stops 7 so that when the bottom is swung upwardly into closed position the release bars will be engaged by the adjoining stops 7 and will be forced upwardly, their upper ends engaging the lower sides of the retaining pawls and lifting them sufficiently to release them from the retaining pins 24.

The operation of the device will be readily understood from the foregoing, but it may be briefly set forth as follows:—Assuming the bottom to be locked in position as indicated in Fig. 1:—to release said bottom the bail 20 is swung upwardly thereby rotating the shaft 19 and pulling upwardly on the links 17. The links 17 carry upwardly with them the cross-frames 16, and the rollers 13 moving upwardly in the slots of the operating levers draw the upper ends of the levers of each pair toward each other. This movement of the operating levers will withdraw the dogs 10 from the stops 7 and will release the bucket bottom which is then free to drop and to swing backwardly on its hinges. When the bail has been moved upwardly far enough to release the bottom from the dogs 10 the notches 23 in the retaining dogs will receive the retaining pins 24, thereby securing the locking levers in their unlocked position and holding the bail in its upward position. When it is desired to release the locking levers so that they may again engage the stop 7 the release-bars 25 must be moved upwardly to release the retaining dogs 22. This may be accomplished by any suitable means, but I prefer to operate said bars by closing the bottom of the bucket and for that reason the release bars are so arranged that they will be engaged by the forwardly extending stops 7 which project beyond the front edge of the bottom. When the retaining dogs are released the weighted bail drops down and forces the cross-frames downwardly over the upper edges of the locking levers, the rollers 13 separate said levers and cause the locking dogs 10 to swing outwardly under the stops

7, the weight 21 on the bail assisting in this operation.

It will be readily seen that after the bottom has been released and the locking levers secured in their release position it will simply be necessary to lower the bucket to the ground in order to swing the bottom up to its closed position thereby forcing the releasing bars upwardly to release the locking levers. The lower ends of the locking levers will be protected by the vertical members of the angle-irons 3 when the bucket is lowered to the ground for the purpose of closing it.

It will be readily understood that I may employ only one set of locking levers and dogs where the size of the bucket and the character of the work to be performed permit.

It will also be understood that the operating mechanism, except the bail, may be entirely inclosed if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A dump bucket comprising a movable bottom, a locking lever pivoted on the bucket, means at the lower end of said lever to retain the bottom in its closed position, a movable operating device carried by the bucket and connected to the locking lever to swing said lever to its release position upon moving the operating device in one direction, and to swing said lever into its locking position upon moving the operating device in the opposite direction, means for retaining the lever in its released position.

2. A dump bucket comprising the sides of the bucket, a movable bottom therefor, a pair of locking levers pivoted to the bucket, means at the lower ends of said levers to retain the bottom in its closed position, a movable operating device carried by the bucket, means connecting said movable device to the locking levers to swing said levers to their release position upon moving the operating device in one direction and to swing said levers into their locked position upon moving the operating device in the opposite direction, and means for retaining the locking levers in their released position.

3. A dump bucket comprising the sides of the bucket, a movable bottom therefor, a pair of locking levers pivoted to the bucket, means at the lower ends of said levers to retain the bottom in its closed position, a movable operating device carried by the bucket, means connecting said movable device to the locking levers to swing said levers to their release position upon moving the operating device in one direction and to swing said levers into their locked position upon moving the operating device in the opposite direction, means for retaining the locking levers in their released position, and an

automatic lever-releasing device adapted to be operated by the bottom when said bottom is swung to its closed position.

4. A dump bucket formed of sides, a bottom hinged thereto, a pair of locking levers pivoted thereon, a pair of stops carried by the bottom and adapted to be engaged by the lower ends of the locking levers, the upper ends of the locking levers being formed with outwardly and upwardly curved slots, a rigid device carrying rollers operating in said slots, a rotatable shaft above the locking levers, and depending links connected to said shaft and to the rigid device.

5. A dump bucket formed of sides, a bottom hinged thereto, a pair of downwardly extending crossed locking levers formed with locking dogs at their lower ends, stops carried by the bottom at its front edge and adapted to be engaged by the locking dogs on the levers, the upper ends of said levers being formed with upwardly diverging slots, a pair of rollers in said slots, a rigid device near the upper ends of the levers and carrying said rollers, a rock shaft secured to the bucket above the locking levers, crank-arms connected to said shaft and depending links connecting said crank arms with the ends of the rigid device carrying the rollers.

6. A dump bucket formed of sides, a bottom hinged thereto, a pair of downwardly extending crossed locking levers formed with locking dogs at their lower ends, stops carried by the bottom at its front edge and adapted to be engaged by the locking dogs on the levers, the upper ends of said levers being formed with upwardly diverging slots, a pair of rollers in said slots, a rigid device near the upper end of the levers and carrying said rollers, a rock shaft secured to the bucket above the locking levers, crank-arms connected to said shaft, depending links connecting said crank-arms with the ends of the rigid device carrying the rollers, and a retaining pawl mounted on one of said levers and adapted to engage the other lever to lock said levers in their release position when the cross-frame is raised.

7. A dump bucket formed of sides, a bottom hinged thereto, a pair of downwardly extending crossed locking levers formed with locking dogs at their lower ends, stops carried by the bottom at its front edge and adapted to be engaged by the locking dogs on the levers, the upper ends of said levers being formed with upwardly diverging slots, a pair of rollers in said slots, a rigid device near the upper ends of the levers and carrying said rollers, a rock shaft secured to the bucket above the locking levers, crank-arms connected to said shaft, depending links connecting said crank-arms with the ends of the rigid device carrying the rollers, a retaining pawl mounted on one of said levers and adapted to engage the other lever to

lock said levers in their release position when the cross-frame is raised, and a release-bar adapted to engage the retaining pawl and the bottom of the bucket to lift said pawl when the bottom is brought to its closed position. 70

8. A dump bucket formed of sides, a bottom hinged thereto, a pair of downwardly extending crossed locking levers formed with locking dogs at their lower ends, stops engaged by the locking dogs on the levers, the upper ends of said levers being formed with upwardly diverging slots, a pair of rollers in said slots, a rigid device near the upper ends of the levers and carrying said rollers, a rock shaft secured to the bucket above the locking levers, crank-arms connected to said shaft, depending links connecting said crank-arms with the ends of the rigid device carrying the rollers, a retaining pawl mounted on one of said levers and adapted to engage the other lever to lock said levers in their release position when the cross-frame is raised, a release-bar adapted to engage the retaining pawl and the bottom of the bucket to lift said pawl when the bottom is brought to its closed position, and a depending operating bail connected to the ends of the rock-shaft and automatically returning the levers to their locked position when the retaining pawl is released. 85 90 95

9. A dump bucket comprising a movable bottom, a locking lever pivoted on the bucket, means at the lower end of said lever to retain the bottom in its closed position, a movable operating device carried by the bucket and connected to the locking lever to swing said lever to its release position upon moving the operating device in one direction, and to swing said lever into its locking position upon moving the operating device in the opposite direction, means for retaining the lever in its released position, and means operated by the bottom when it is moved to its closed position, to release the locking lever. 100 105 110

10. A dump bucket comprising the sides of the bucket, a movable bottom therefor, a pair of locking levers, means for pivoting said levers on the bucket, locking dogs on the lower ends of said levers, and extending in opposite directions, the levers above their pivots extending in opposite directions, and on the opposite sides of their pivots from the locking dogs, means pivoted on the bucket and adapted to move the upper ends of the levers in one direction to release the locking dogs, and in the opposite direction to cause said locking dogs to engage the bottom, and means for locking said levers to hold them in their released position. 115 120 125

11. A dump bucket comprising the sides of the bucket, a movable bottom therefor, a pair of locking levers, means for pivoting said levers on the bucket, locking dogs on the lower ends of said levers, and extending 130

in opposite directions, the levers above their pivots extending in opposite directions, and on the opposite sides of their pivots from the locking dogs, means pivoted on the
5 bucket and adapted to move the upper ends of the levers in one direction to release the locking dogs, and in the opposite direction to cause said locking dogs to engage the bottom, means for locking said levers to
10 hold them in their released position, and means for releasing the locking levers when the bottom is moved to its closed position.

12. A dump bucket comprising a movable bottom, a pair of locking levers, means for
15 pivoting said levers on the bucket, locking dogs on the lower ends of said levers, said levers extending above their pivots, means

pivoted on the bucket, and adapted to move the upper ends of the levers in one direction to release the dogs, and in the opposite direc- 20
tion to cause said dogs to engage the bottom to lock it in its closed position, means for locking said lever to hold it in its released position, and means for releasing the said
25 lever when the bottom is moved to its closed position.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 20th day of February 1909.

ROBERT N. SCHALKENBACH.

Witnesses:

EMMA H. H. KAUFMANN,
WM. R. DAVIS.