

No. 610,690.

Patented Sept. 13, 1898.

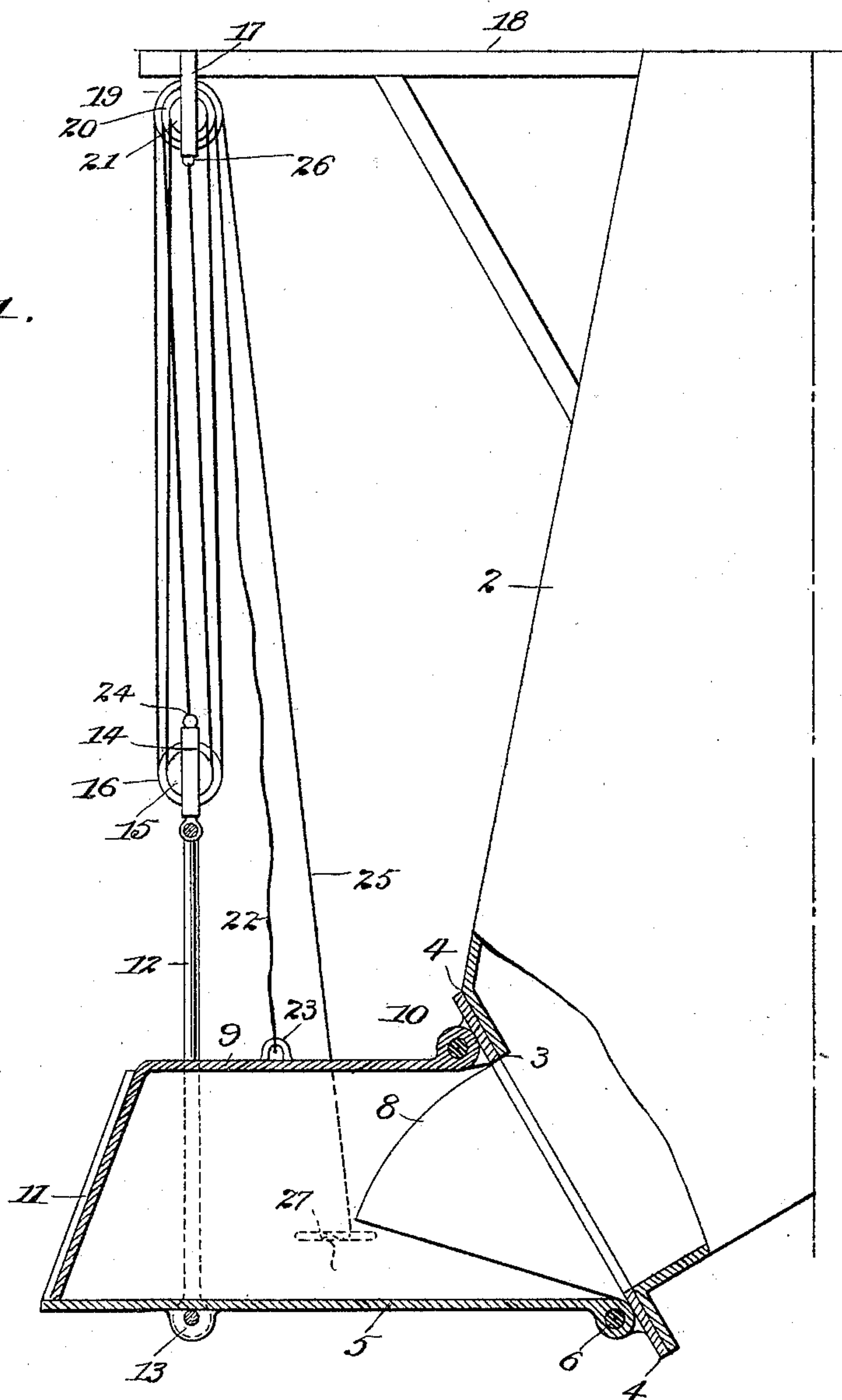
M. RYDER.
DUMPING SPOUT.

(Application filed Dec. 17, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Paul L. Ober
Samuel M. Chasmit

INVENTOR

Malcolm Ryder

BY

Powder & Powder

ATTORNEYS.

No. 610,690.

Patented Sept. 13, 1898.

M. RYDER.
DUMPING SPOUT.

(Application filed Dec. 17, 1897.)

(No Model.)

2 Sheets—Sheet 2.

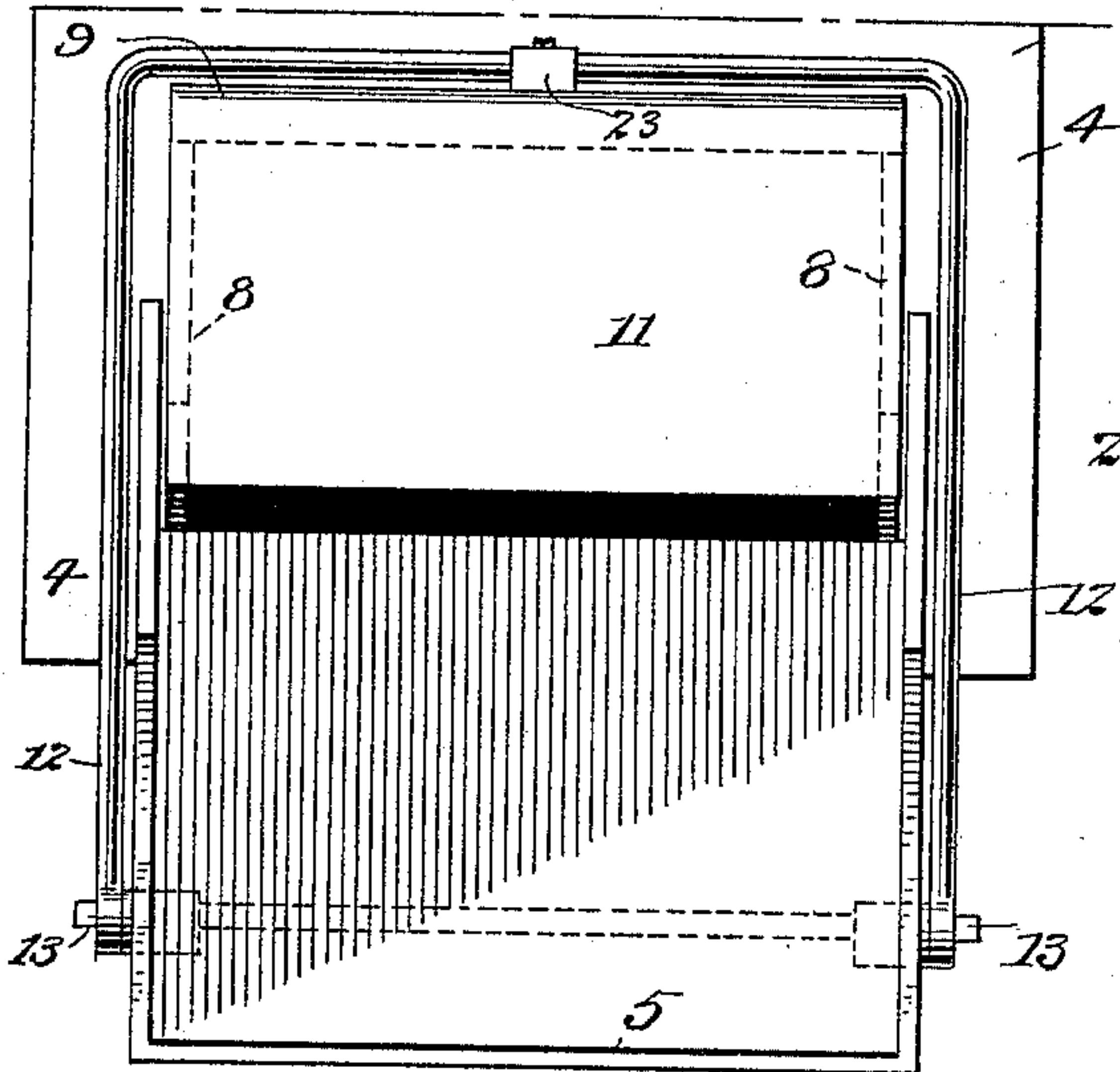


Fig. 3.

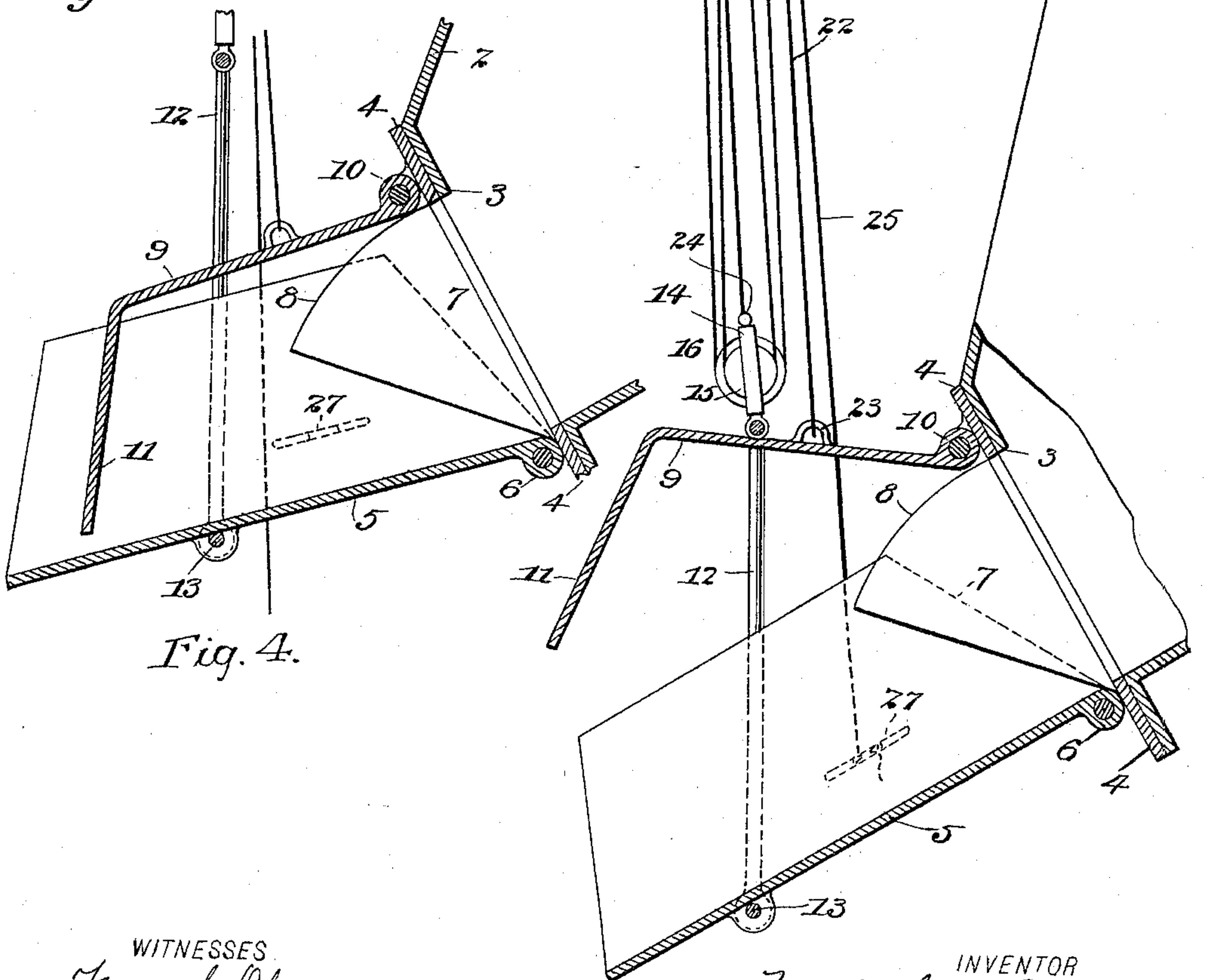


Fig. 4.

WITNESSES

Frank S. Ober,
Samuel M. Shumet.

INVENTOR

Malcolm Ryder.

BY

Powder & Powder.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

MALCOLM RYDER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
CHARLES S. RYDER, OF SAME PLACE.

DUMPING-SPOUT.

SPECIFICATION forming part of Letters Patent No. 610,690, dated September 13, 1898.

Application filed December 17, 1897. Serial No. 662,272. (No model.)

To all whom it may concern:

Be it known that I, MALCOLM RYDER, a citizen of the United States, residing in New York, (Pelham Manor,) county of Westchester, and State of New York, have invented certain new and useful Improvements in Dumping-Spouts, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a spout adapted to dump material from a bin or like receptacle into a vessel such as a car or cart.

The principal object of my invention is to insure the rapid cutting off of the discharge of material from the spout when the flow thereof is to be stopped, and, further, to prevent the waste of material which necessarily occurs with the use of many known forms of dumping-spouts when the same are closed to stop the discharge of material.

To these ends my invention consists in the various novel and peculiar arrangements and combinations of the several parts of the device, all as hereinafter fully described, and then pointed out in the claims.

I have illustrated a type of my invention in the accompanying drawings, wherein—

Figure 1 is a side view of my improved apparatus with the spout shown as closed and a portion of the bin shown in section, taken on a plane lengthwise of the spout and centrally thereof. This view shows the spout as swung into its uppermost position and closed. Fig. 2 is a similar view to Fig. 1, but with the spout open and the parts of the spout, as well as the pulley and cables, in different positions. Fig. 3 is a front view of the spout in open position. Fig. 4 is a sectional view of the spout with the parts thereof shown in the intermediate position between the open and closed positions and at the time when the end of the upper part is about to make contact with the lower part or has just moved out of contact therewith, according to whether the spout is being closed or opened.

Referring to the accompanying drawings, in which like numbers of reference designate

like parts throughout, 2 is an ordinary bin or receptacle in which the material—such as broken rock, coal, or the like—is placed.

3 is an opening in the bin, through which the contents thereof are discharged. Around the opening is secured the bed-piece 4 of the discharge-spout, and which piece consists of a rectangularly-shaped frame made, preferably, of metal. The opening 3 in the bin is formed, preferably, in the bottom of the bin or a portion thereof that is inclined downwardly and inwardly in order to cause the contents of the bin to flow freely through the opening into the spout.

5 is the spout, which is hinged at 6 at its inner end to a fixed point on the bed-plate 4, so that it swings about a horizontal axis below the opening 3. The spout in the present instance is formed with a flat bottom and straight vertical sides which at their inner ends are cut off obliquely, as indicated at 7, at such an angle that when the oblique edge 7 meets the bed-plate 4 as the spout is swung upwardly the same is brought to rest in a practically horizontal position, as shown in Fig. 1. From each side of the opening in the bed-plate 4 there projects outwardly a wing 8, each of which lies within the adjacent side of the spout with sufficient clearance between the two parts to permit the spout to be swung freely on its hinge. These wings serve to direct the flow of material from the bin into the spout as the latter is lowered and at the same time prevent the material from escaping from the side at the inner end of the spout, as would be the case in the absence of the wings, owing to the inner end of the sides being cut away obliquely, as will be understood from Figs. 2 and 4.

The spout is provided with a lid 9, which is hinged at its inner end at 10 to the bed-plate 4, so as to swing about a fixed point on a horizontal axis above the discharge-opening through which the material is supplied to the spout. The lid, likewise the spout, the bed-plate, and its wings, are formed of suitable metal. The outer end 11 of the lid 9 is bent transversely on itself, so as to form an obtuse angle, with the body of the lid upon the interior thereof. The purpose of having the

lid so bent is to cause it to enter the spout when the two are swung together in the closing movement at an angle, while at the same time the end of the lid and the end of the spout approach each other and the end of the lid and the bottom of the spout come together, with the result that in the closing movement of the spout and lid the inclined end of the latter moves downwardly through the material flowing through the spout with a relative outward movement, whereby it is made to pass readily through the material by a comparatively rapid movement until its end is brought in contact with the bottom of the spout to completely shut off the flow of said material. These relative movements will be understood by comparison of Figs. 2, 4, and 1 in the order named. In Fig. 2 the lid and spout are shown as moved away from each other to what is the extreme limit of such opening movement of the parts, and the spout is discharging the material therefrom. In order to shut off the supply of material and close the spout, the two parts are simultaneously swung together—that is, the spout is swung upwardly and the lid is lowered—so that they are finally brought together in the position shown in Fig. 1. In this closing movement as the spout is gradually swung upwardly the lid is lowered and is swung down below the horizontal position, as shown in Fig. 4, which figure shows the parts approaching each other just before the time when the edge of the lid makes contact with the bottom of the spout, and as such contact is made before the two parts are brought upwardly into horizontal position the continued upward movement of the spout causes the lid to work its way down through the material and then to slide along on the bottom of the spout toward its outer end, and in so doing the lid serves to push from the end of the spout all material in advance of the lid. When, therefore, the spout is finally brought to rest in closed position, its outer end, beyond the end of the lid, will be free from any material. It will be noted that in the closing movement as the inclined end of the lid enters the spout it does so not vertically, but at an angle. At the same time there is a relative movement between the parts, in which movement the end of the lid advances through the spout toward its end, and it is such peculiar movements that enables the lid to rapidly move through the flowing material and close finally upon the spout. In this respect the apparatus is particularly efficient, as it is evident that the end of the lid in closing being given a peculiar outward movement the passage of the material through the spout tends somewhat to carry the lid downwardly into closed position on the spout when once the lid has been entered in the moving mass of material.

The opening and closing of the spout is controlled by means of the following mechanism:

12 is a bail or swinging metallic frame which is pivoted at 13 across the bottom of the spout, near its outer end, and extends up along the outer sides of the same, thence upwardly over the lid, the back of which engages the upper stretch of the bail when it is open to its full limit. To the center of the upper part of the bail is swiveled a pulley 14, provided with two sheaves 15 and 16. At a suitable distance above the pulley on the bail there is a second pulley 17, which is attached to a fixed bracket 18, shown as attached upon the side of the bin. The upper pulley 17 is provided with three sheaves 19, 20, and 21, respectively.

A cable or flexible connection 22 is secured by one end to the back of the lid at 23 and passes thence upwardly over the sheave 20 of the upper pulley down to the tail-block 24 of the lower pulley on the bail. This cable 22 constitutes a connection between the spout and the lid indirectly through the bail, and its length determines the position of the spout relative to the horizontal when finally closed. For example, if in the construction shown this connection 22 should be shortened the spout when finally closed would be drawn upwardly somewhat beyond the horizontal position shown in Fig. 1. On the other hand, should the connection 22 be lengthened the spout would be slightly lowered at its outer end and would not stand in a horizontal position. (Shown in Fig. 1.)

The cable 25 for operating the spout has its fixed end attached at 26 to the tail-block of the upper pulley 17, and it passes thence downwardly around the sheave 15 of the pulley on the bail, upwardly around the sheave 21 of the upper pulley, thence downwardly again around the other sheave 16 of the pulley on the bail and upwardly over the sheave 19 of the upper pulley and downwardly to a suitable point from where it can be manipulated by the operator. I have shown the free end of the operating-cable 25 as being made fast to a fastening device 27 on the side of the spout when the spout is in its open or closed position; but of course it may be made fast to a fixed point outside of the spout. Of course the number of sheaves of the pulleys may be varied as desired, as the relative numbers used in no wise affects the principles of the invention herein.

It will now be understood from the foregoing description that to lower the spout and dump material therefrom the operator releases the cable 25, whereupon the spout descends by gravity from the position shown in Fig. 1 to that shown in Fig. 2, an intermediate position of the parts between the extreme limits of movement being shown in Fig. 4. At the same time that the weight of the spout itself, together with the material therein, causes it to descend it also swings the lid upwardly by virtue of the connecting-cable 22, which is attached between these two parts. The spout is left in this open position until it has dumped the desired amount of material,

when the operator pulls upon the cable 25 and quickly raises the spout, which, carrying up the bail with it, elevates the lower pulley and slackens the connection 22, thereby permitting the lid to descend and to continue its descent until it has worked its way down through the flowing material and closed on the spout. The continued drawing upon the cable 25 then serves to carry up still farther the spout and the lid, which has closed thereon.

I wish to be understood as not limiting my invention to the specific construction herein shown, as various modifications may be made therein without departing from the spirit of the invention.

My improved form of dumping-spout may be used for handling coal, crushed rock, sand, and any materials of a like nature, and in each instance it will be found to quickly and effectively cut off the flow of material at the desired time. By virtue of the spout tilting downwardly below the horizontal position when dumping material such material can thereby be delivered accurately into the vessel which may be temporarily placed under it in filling the same.

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

1. The combination of a spout, and a hinged lid closing within the spout at an angle thereto and traveling along the same toward its delivery end in closing.

2. The combination of a spout and a lid each hinged independently of the other, means for swinging the spout and its lid away from each other to open the spout and discharge the material and then swinging them together to close the spout, the said lid being adapted in closing the spout to enter the spout at an angle thereto and move along the same toward its delivery end at the same time approaching the bottom thereof for cutting off the discharge of material.

3. The combination of a spout and a lid each hinged independently of the other, means for swinging the spout and its lid away from each other to open the spout and discharge the material and then swinging them together to close the spout, and a flexible connection secured between the spout and its lid, said connection passing over a guide between its points of connection with said spout and lid.

4. The combination of a hinged spout, a hinged lid therefor bent downwardly at one end so as to enter within the spout and close it, means for swinging the spout and its lid away from each other to open the spout and then swinging in together to close it, the end of said lid being adapted to enter the spout at a point a considerable distance within the discharge end thereof and to move outwardly through the spout along the bottom thereof, substantially as and for the purpose set forth.

5. The combination of a spout and a lid each hinged independently of the other, connec-

tions between the spout and its lid, an operating-cable attached by one end indirectly to said spout and passing thence over one or more pulleys, whereby when the cable is drawn upon the spout and its lid may be swung together and upon releasing the cable the said parts may be swung away from each other.

6. The combination of a spout and a lid each hinged independently of the other, connections between the spout and its lid, a bail or frame swung to said spout and extending upwardly across the back of the lid and adapted to be engaged by the lid to limit the distance the lid and spout may be swung away from each other, and an operating-cable attached to said bail and passing thence over one or more pulleys, whereby when the cable is drawn upon the spout and its lid may be swung together and upon releasing the cable the said parts may be swung away from each other.

7. The combination of a spout and a lid each hinged independently of the other, connections between the spout and its lid, a bail or frame swung to said spout and extending upwardly across the back of the lid and adapted to be engaged by the lid to limit the distance the lid and spout may be swung away from each other.

8. The combination of a spout and a lid each hinged independently of the other, a flexible connection attached to said lid and passing over a guide and connected by its other end to said spout, a bail or frame swung to said spout and extending upwardly across the back of the lid and adapted to be engaged by the lid to limit the distance the lid and spout may be swung away from each other, and an operating-cable attached to said bail and passing thence over one or more pulleys, whereby when the cable is drawn upon the spout and its lid may be swung together and upon releasing the cable the said parts may be swung away from each other.

9. The combination of a spout and a lid each hinged independently of the other, the said lid being adapted to enter the spout when the two are swung together at a point within a considerable distance from the discharge end of said spout at the same time moving outwardly, the relative movement of the two parts causing their ends to approach each other, a bail attached to the spout extending upwardly across the back of the lid, a flexible connection attached between said lid and spout and passing over a guide, a pulley attached to the upper part of said bail, a second pulley attached to a fixed point above said spout, an operating-cable passing about said pulleys, whereby when the cable is drawn upon the spout and its lid may be swung together and upon releasing the cable the said parts may be swung away from each other.

10. The combination of a receptacle provided with a discharge-opening, a dumping-

spout hinged at its inner end to a fixed point
below said opening, a hinged lid for the spout,
means for swinging the spout and its lid away
from each other to open the spout and bring-
5 ing them together to close it, and a wing pro-
jecting from each side of the discharge-open-
ing outwardly lying within the spout to pre-
vent the material discharged through the
opening from escaping at the side of the

spout, substantially as and for the purpose is
set forth.

In testimony whereof I have hereunto set
my hand, this 8th day of December, 1897, in
presence of the two subscribing witnesses.

MALCOLM RYDER.

Witnesses:

A. M. HAYES,
WILLIS FOWLER.