

(No Model.)

2 Sheets—Sheet 1.

F. H. RICHARDS.

BAGGING APPARATUS FOR WEIGHING MACHINES.

No. 559,211.

Patented Apr. 28, 1896.

Fig. 1.

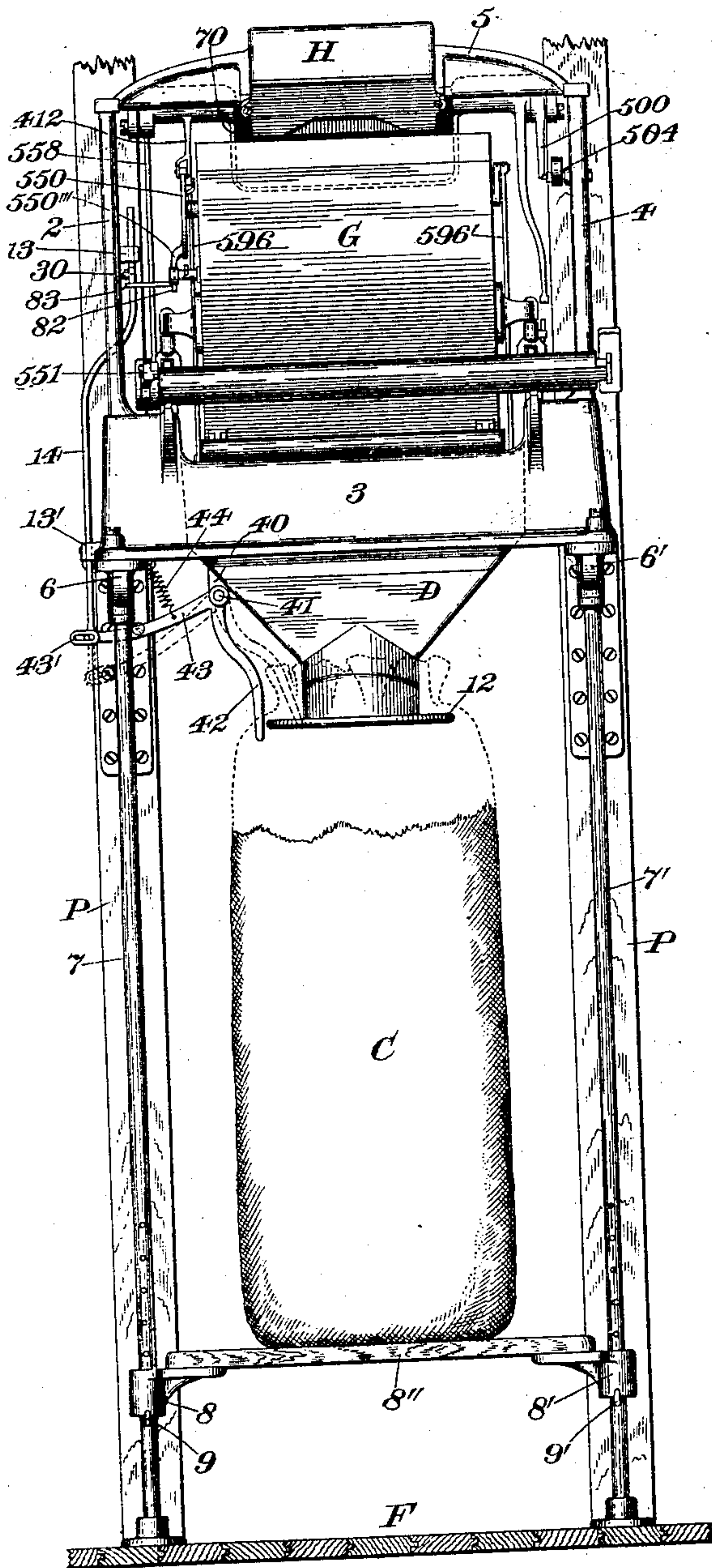
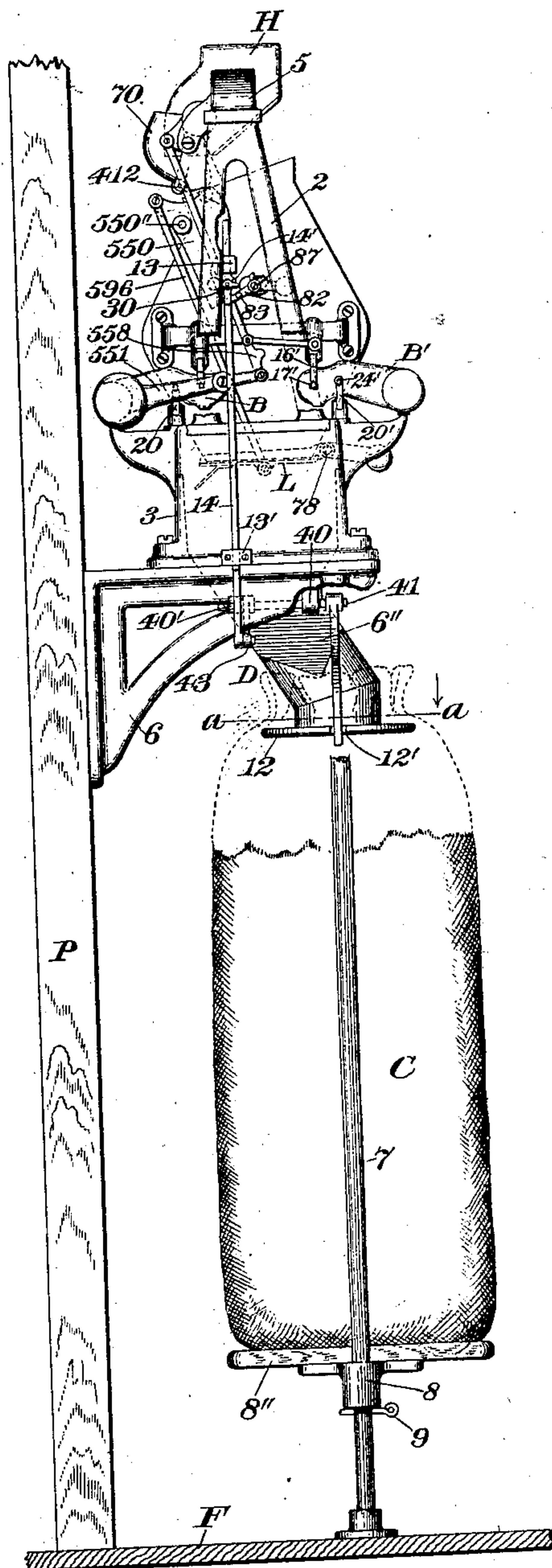


Fig. 2.



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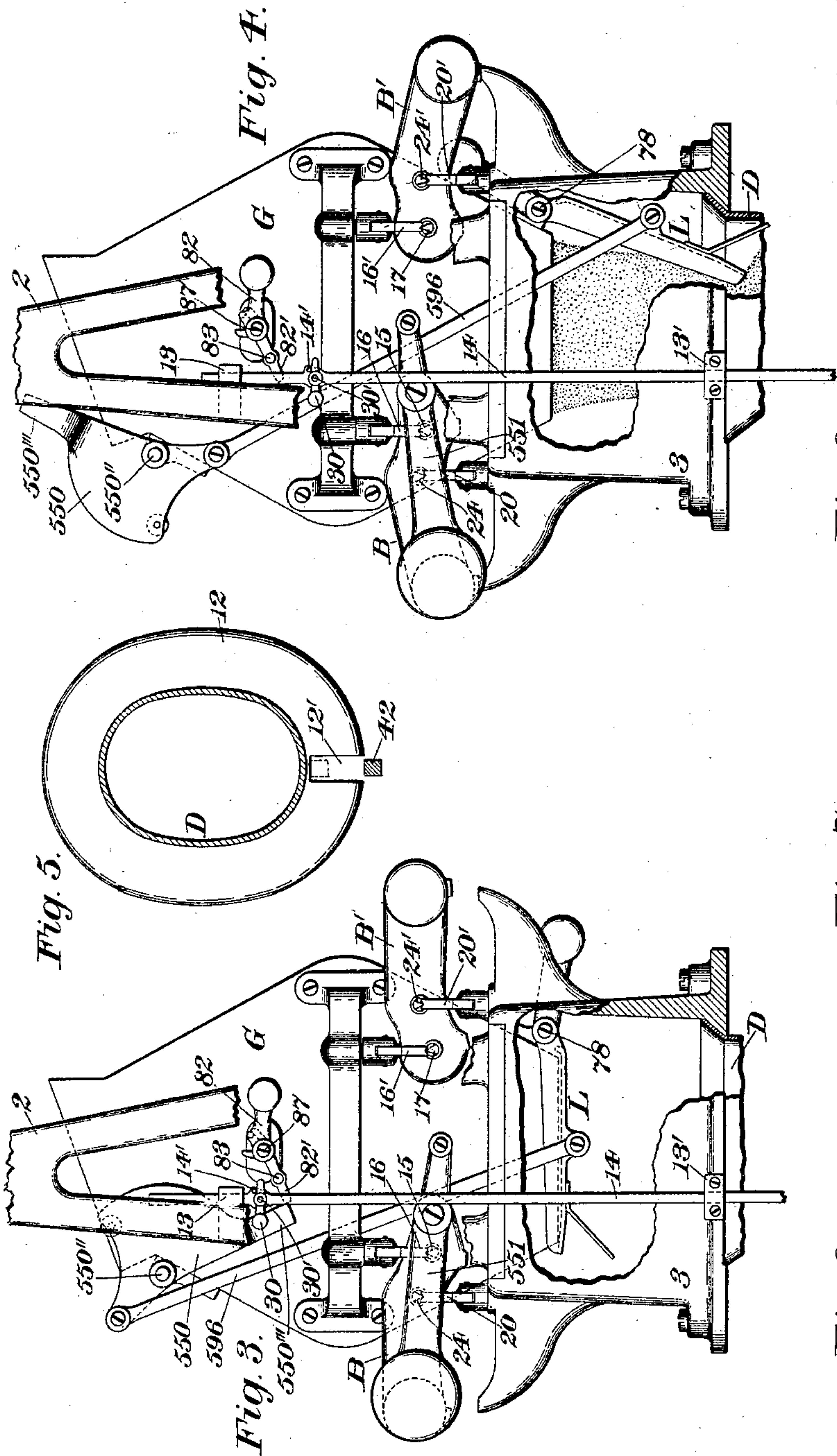


Fig. 5.

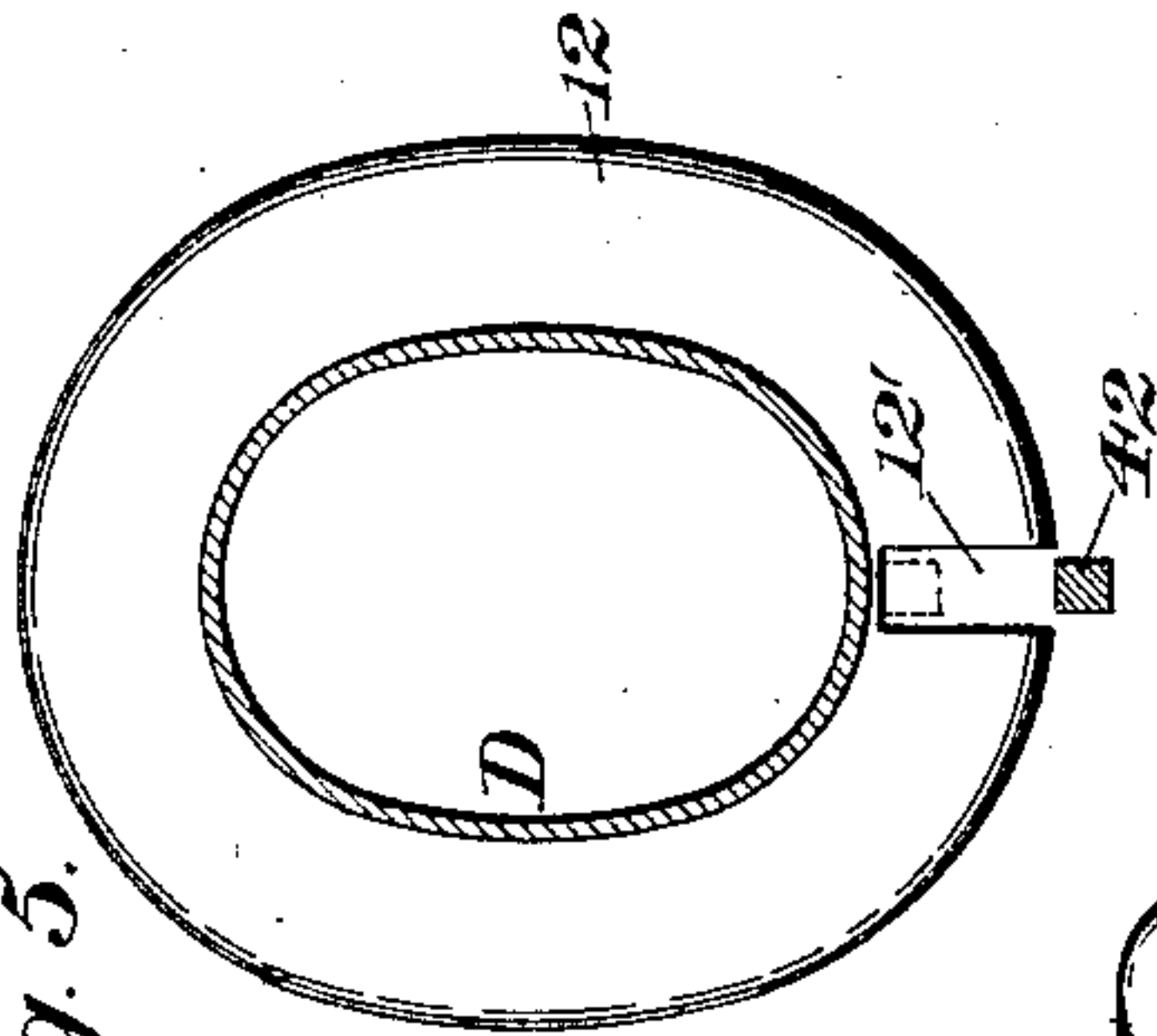


Fig. 9.

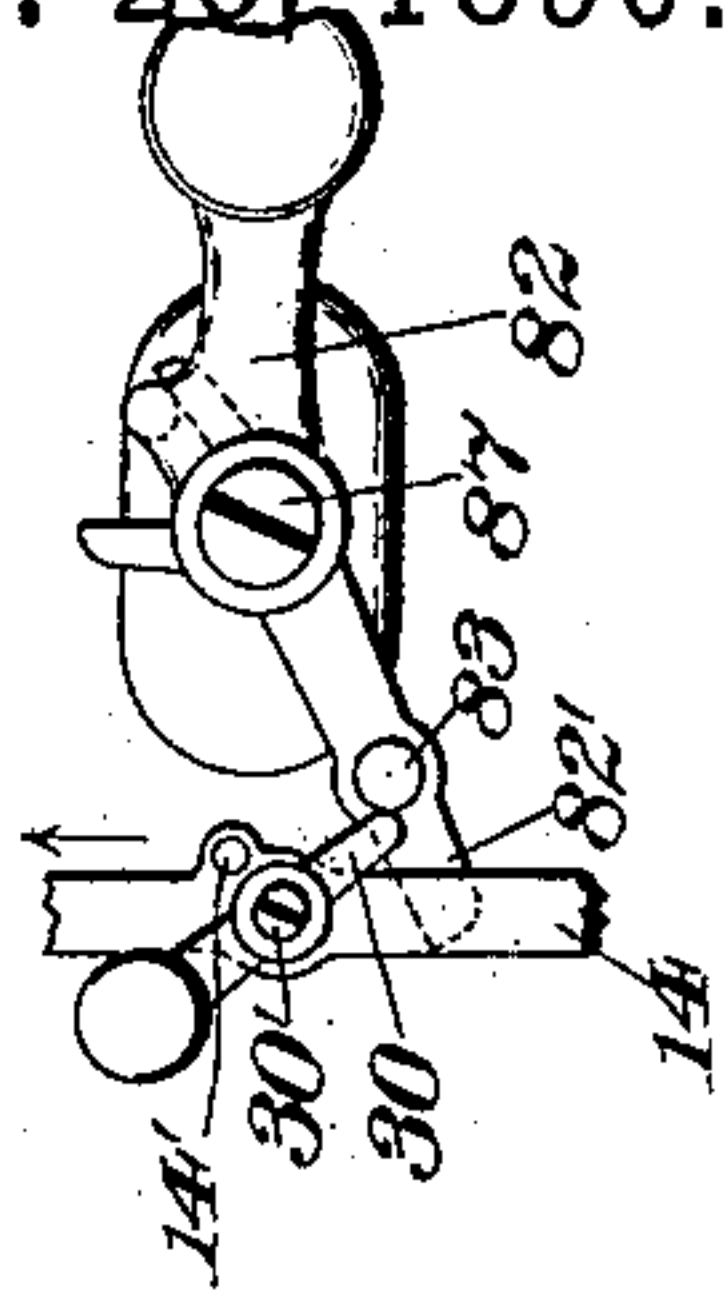


Fig. 8.

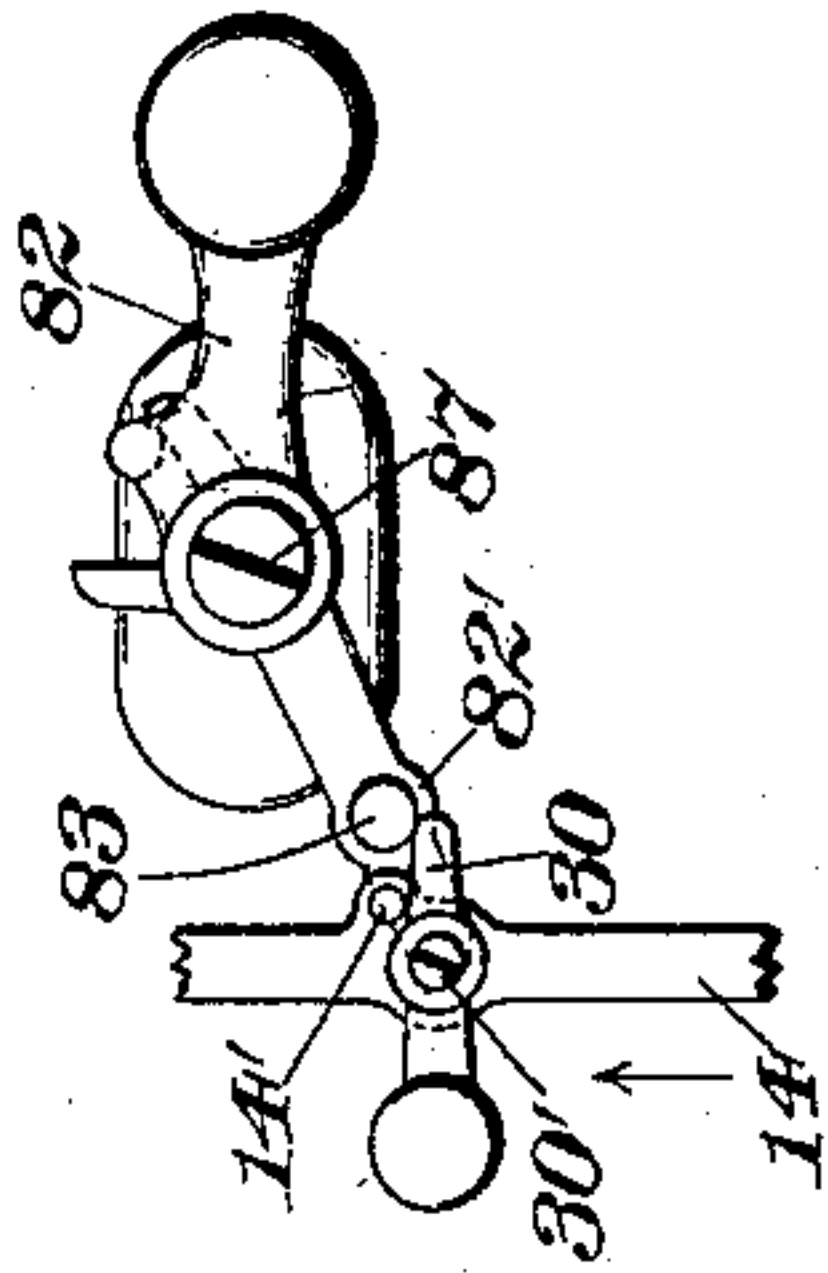


Fig. 7.

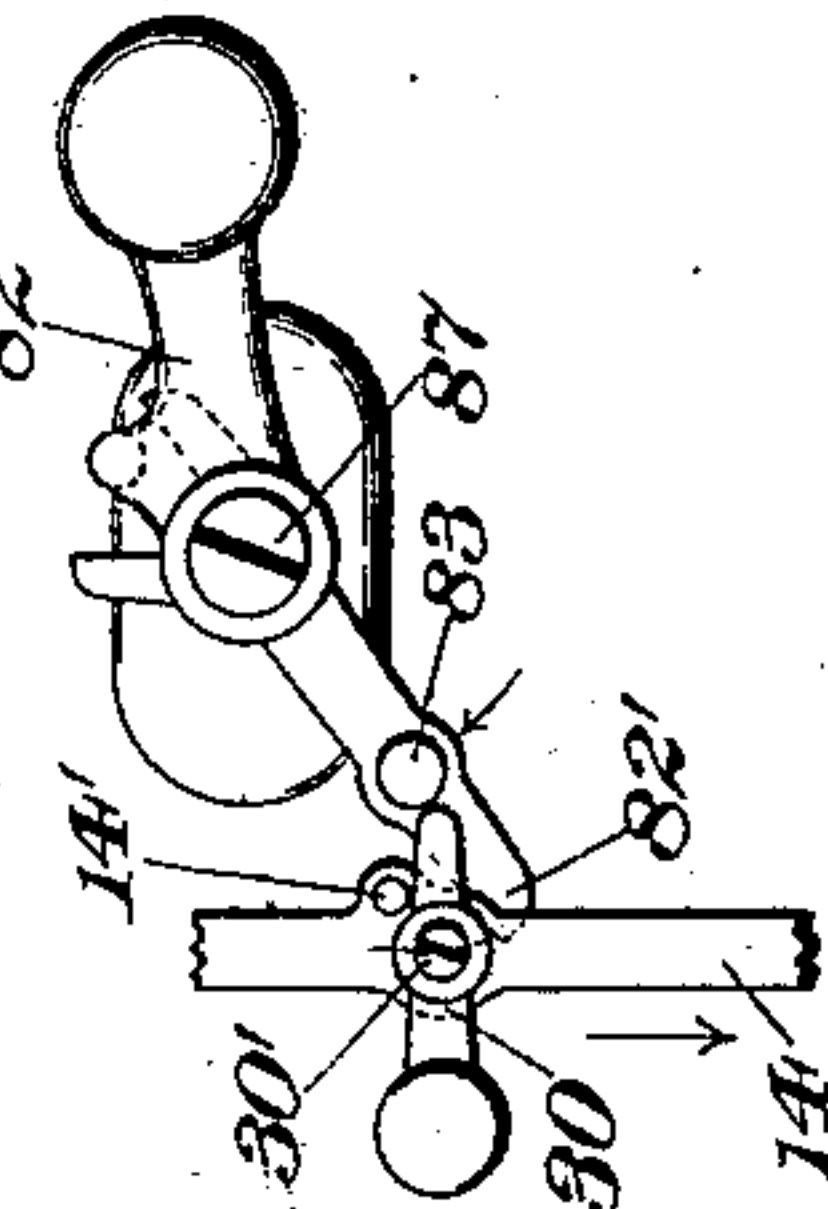
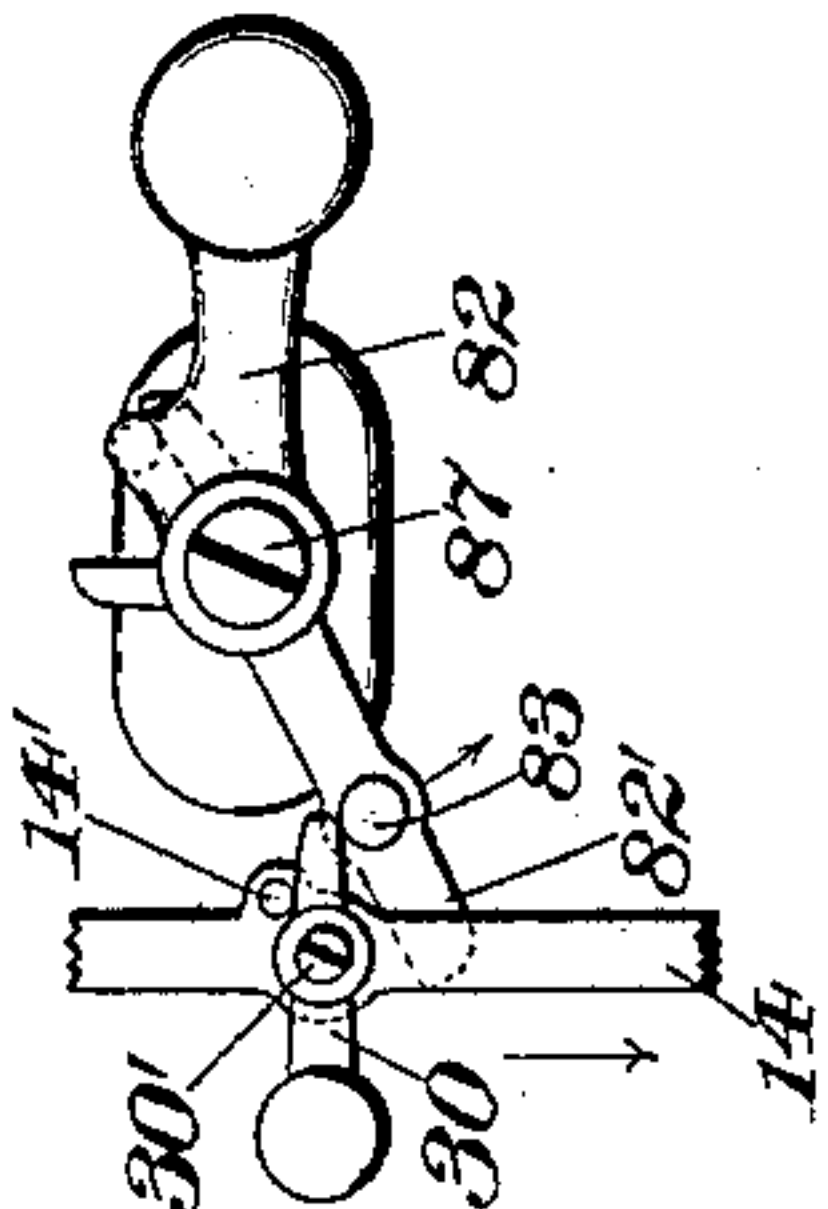


Fig. 6.



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# UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

## BAGGING APPARATUS FOR WEIGHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 559,211, dated April 28, 1896.

Application filed July 20, 1895. Serial No. 556,601. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Bagging Apparatus for Weighing-Machines, of which the following is a specification.

This invention relates to bagging apparatus, the object being to provide load-discharging mechanism coöperatively connected with a shiftable member of the bucket mechanism of a weighing-machine, the shiftable member controlling the discharge of the bucket-load and the load-discharging mechanism being normally idle but operable at will for releasing the shiftable member of the bucket mechanism to discharge the contents of the bucket into a bag or other receptacle and subsequent to the completion of the bucket-load.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation of a bagging apparatus constructed in accordance with the present invention, showing in full lines load-discharging mechanism in the normally idle position thereof and also showing by dotted lines the position assumed by the load-discharging mechanism when this has released the shiftable member of the bucket mechanism for discharging the bucket-load. Fig. 2 is an end elevation of the apparatus as seen from the left in Fig. 1, showing the valve of the weighing-machine open and the load-discharging mechanism in the normally idle position thereof. Fig. 3 is a left-hand end elevation, on an enlarged scale, of portions of the weighing-machine or mechanism illustrated in Figs. 1 and 2, showing the load-discharging mechanism in the normally idle position thereof. Fig. 4 is a similar view showing the load-discharging mechanism as having released the shiftable member of the bucket mechanism and the bucket discharging the load. Fig. 5 is a cross-sectional view taken in line *aa*, Fig. 2, and looking in the direction of the arrow, this view illustrating the bag holding and spreading flange. Figs. 6, 7, 8, and 9 are detail views showing a portion of the load-discharging mechanism and illustrating also the step-by-step operation of an actuator prior and subsequent to

the release of the shiftable member of the bucket mechanism.

Similar characters designate like parts in all the figures of the drawings.

In connection with a weighing machine or mechanism and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the load, and a bag-support adapted for supporting a bag which receives the material discharged by the bucket, normally idle load-discharging mechanism is employed, and this mechanism is coöperatively disposed relatively to the shiftable member of the bucket mechanism, and is also operable for releasing the shiftable member of the bucket mechanism at a period subsequent to the completion of the bucket-load, whereby the bucket-load may be discharged into the bag.

For convenience in illustrating the nature of the invention there is shown in the drawings a weighing machine or mechanism substantially similar in all material respects to the improved weighing-machine described and claimed in Letters Patent No. 548,839, granted to me October 29, 1895, and that machine will be described briefly, but with sufficient particularity to clearly demonstrate the operation of the bagging apparatus.

The framing of a partition or wall is shown at P, having secured thereto by suitable holding means a pair of brackets 6 and 6', which are adapted for supporting the weighing machine or mechanism which weighs the predetermined bucket-load, and discharges the same into the bag at a period subsequent to the completion of the bucket-load.

The base 3 of the weighing-machine is shown supported by the brackets 6 and 6', and is preferably made fast thereto. The base 3 is shown supporting a pair of side frames or members 2 and 4, respectively, which are illustrated as connected by a top plate or beam 5, which latter is shown carrying a suitable supply chute or spout H, adapted for receiving the material to be weighed for directing the same in a stream to the bucket of the weighing-machine.

The bucket (designated in a general way by G) is of the well-known "single-chambered" type, and is shown suspended with its receiv-



ing end or mouth adjacent to the discharge-opening in the supply chute or spout.

The bucket G is illustrated carrying a pair of V-shaped bearings 16 and 16', which are shown resting on a pair of pivots or knife edges 15 and 17, carried by the oppositely-disposed counterweighted scale-beams B and B' of the beam mechanism.

The scale-beams B and B', in turn, are shown provided with a pair of knife edges 24 and 24', which are illustrated resting on or supported by the V-shaped bearings 20 and 20', carried by the base 3 of the weighing-machine.

The closer (designated in a general way by L) is shown constituting the shiftable member of the bucket mechanism, and is illustrated pivoted at 78 to the bucket G. The closer is also shown as supported by means of a pair of rods 596 and 596', pivoted, respectively, to the closer and to crank-arms or crank portions, which are operatively connected with a rock-shaft 550'', and which latter is shown suitably journaled near the upper edge of the bucket G.

The valve for controlling the supply-stream is shown at 70, and is substantially similar to the improved valve described and claimed in Letters Patent No. 535,727, granted to me March 12, 1895. Suitable mechanism will be employed for actuating the valve to open and close the same.

The valve-closing mechanism shown is substantially similar to that described and claimed in Letters Patent No. 548,843, granted to me October 29, 1895. The valve 70 is illustrated as provided with an actuating-cam 500, depending from and oscillatory with the valve. This cam has a cam-face, which is adapted for receiving the force transmitted by a counterweighted valve-closing actuator 504, shown pivoted to the side frame 4 of the framework of the weighing-machine.

For actuating the valve to open the same, the valve 70 is illustrated provided with a loosely-suspended downwardly-extending rod 558. This rod constitutes, alternately, a stop for retarding the closing movement of the valve and an actuator for transmitting to the valve the valve-opening thrust of a valve-opening actuator. The valve-opening actuator is shown at 551 and is in the nature of a supplemental counterweighted beam pivoted to the scale-beam B. It will be obvious that on the descent of the scale-beam B this valve-opening actuator or supplemental beam will have a descending movement synchronous with the beam mechanism and in descending limits or retards the closing movement of the valve. On the return movement of said supplemental beam 551 to the normal position thereof said beam transmits to the valve the valve-opening thrust necessary for opening the valve.

A pair of stops are illustrated operative respectively with the valve and with the closer or shiftable member for reciprocally limiting the closing movement of the valve

and the shifting movement of the shiftable member of the bucket mechanism. The stop for the valve is shown at 412 and that for the closer or shiftable member at 550.

The stop 550 is shown constituting a rocker and a part of the means for limiting the movement of the shiftable member, which controls the discharge of the load, and is also shown held in its normal position by means of a latch 82, shown pivoted to the bucket G at 87.

The latch 82 is illustrated provided with a detent 82', in position and adapted for engaging a cooperating detent 550''' of the stop or rocker 550, and when these detents are in engagement, as shown in Figs. 1 and 3, the shiftable member will be held against shifting movement.

It will be obvious that on the disengagement of the two detents 550''' and 82', respectively, of the closer and the latch the rocker will oscillate, thereby permitting a release of the closer which constitutes the shiftable member of the bucket mechanism. (See Fig. 4.)

The latch 82 is shown provided with a laterally-projecting pin 83, shown carried thereby at a point between its pivot and the detent thereof, and it will be evident that any downward pressure on this arm will carry the latch downwardly, thereby releasing the two described detents. For returning the latch to its normal holding position this will be counterweighted, and suitable stops will also be employed for limiting the movements of the latch, so that this will be maintained in an operative position at all times.

In connection with the latch which holds the shiftable member against movement a suitable actuator or load-discharging mechanism will be employed for effecting the release of the shiftable member of the bucket mechanism by engaging the arm 83 of the latch. This operation trips the latch and disengages the latch and rocker-detents, which will permit a shifting movement of the shiftable member of the bucket mechanism, whereby the bucket-load may be discharged into a bag or other suitable receptacle. The actuator or load-discharging mechanism is cooperatively disposed relatively to the latch which holds the shiftable member against movement, and is operable at will for tripping the latch. Hence it will be evident that the actuator or load-discharging mechanism is normally idle and that the contents of the bucket may be discharged when desired into a bag by an attendant. This absolute and perfect control of the discharge of the bucket by the operator is an important feature of the apparatus.

The weighing operation of the weighing-machine may proceed unhindered and uninterrupted while a bag is filling with the material discharged by the bucket. In the interim which ensues between the discharge of a predetermined bucket-load and the comple-



tion of a succeeding bucket-load the operator may shake and pack the contents of the bag to any extent without interfering with the weighing operation or load-discharging mechanism, and in this interval the filled bag may also be removed and its mouth securely tied while another bag may be positioned for receiving the succeeding bucket-load.

The base 3 of the weighing machine is illustrated as hollow or chambered, and as carrying a discharge-chute D, into which the material is discharged by the bucket. The discharge-chute is shown inclined at 6" for the purpose of breaking the force of the descending mass discharged by the bucket and is also adapted for directing the material into the bag.

There is shown resting on the floor F a pair of standards or rods 7 and 7', which extend upwardly and serve as a means for supporting the outer ends of the two brackets, which, as hereinbefore stated, support the weighing-machine. These standards or rods are shown provided with a pair of sliding brackets 8 and 8', which are adapted for sliding movement thereon. These brackets 8 and 8' are shown constituting the means for supporting a platform 8'', which is intended for supporting the bag or other receptacle which is to receive the material discharged by the bucket. These two brackets, as stated, have a sliding movement, so that the bag-support or bag-supporting platform may be adjusted to any desired height. For maintaining said brackets in an adjusted position the rods 7 and 7' are shown provided with a series of holes adapted to receive a pair of pins 9 and 9'.

The discharge-chute D is shown terminating in a bag-holding and bag-mouth-distending flange 12, and this flange is illustrated provided with a recess or slot 12', the purpose of which will be hereinafter described.

The side frame 2 of the framework of the weighing-machine is shown provided with a guide 13, and the base 3 is shown similarly equipped, the guide for the latter being designated by 13'. These guides are adapted for receiving, for sliding movement therein, a long connecting or actuating rod, which is shown, constituting a part of the load-discharging mechanism, and this rod is shown at 14.

The connecting-rod 14 is illustrated at 30, provided with an actuator, and this actuator has for its function the tripping of the latch 82, which holds the shiftable member of the bucket mechanism against movement by engagement with the laterally-projecting arm 83 of the latch. This actuator has an effective movement into engagement with the laterally-projecting arm 83 of the latch and a return ineffective movement—that is to say, on the descent of the connecting-rod which carries the actuator the latter will be effective for tripping the latch, and on the return movement of the rod to its normal position the actuator will be ineffective and will not

interfere with the return movement of the latch, or if the latter is in its normal holding position for holding the shiftable member against movement the latch will not be disturbed. Hence it will be evident that the actuator is in the nature of a by-pass actuator, having effective and ineffective periods. The by-pass actuator is shown pivoted at 30' to the actuating-rod 14 for oscillatory movement and counterweighted at the rear of its pivot. The upward movement of the by-pass actuator forward of its pivot is shown limited by a stop 14', carried by the rod 14. It will be obvious that when a downward pull is exerted on the rod 14 the actuator 30 will be carried therewith and into engagement with the arm 83 of the latch 82, and by a continued pull on said rod 14 the latch will be tripped for releasing the shiftable member of the bucket mechanism. The actuator is shown in Fig. 6 in engagement with the arm 83 of the latch, and in Fig. 7 as having tripped said latch for releasing the shiftable member of the bucket mechanism. On the ascent of the rod 14, as shown by Fig. 8, the force of the arm 83 of the latch will oscillate the by-pass actuator to permit a return of the rod to its uppermost normally-idle position.

In Fig. 8 the arm 83 is shown in engagement with the by-pass actuator on the return movement, and in Fig. 9 the arm 83 is shown having tripped the by-pass actuator, which permits a further return movement of the rod. When the by-pass actuator on its return movement has passed the arm 83 of the latch, said actuator will be caused by the counterweight thereof to resume its normal or effective position. As shown, the by-pass actuator is independent of the weighing mechanism.

Means operable by hand or by the power of the tightening-bag, after the latter has been placed in position for receiving the bucket-load, will be employed for effecting a downward movement of the rod 14, and hence an effective or downward movement of the actuator 30 into engagement with the latch.

The discharge-chute D is shown provided with suitable bearings, such as 40 and 40', which are adapted to receive a rock-shaft 41. This rock-shaft is operatively connected with the load-discharging mechanism and is shown provided with an operating-lever 42, fast to the rock-shaft. This rock-shaft is further shown provided with another lever or connecting-link 43, operable therewith and connecting with the connecting or actuating rod 14 of the load-discharging mechanism. It will be obvious that a pull exerted on the lever 42 will rock the rock-shaft 41, and the rock-shaft, in turn, will be effective for pulling the actuating-rod 14 downwardly, through the connecting-link 43, which operation, through these connections, will bring the actuator 30 into operative engagement with the latch for releasing the shiftable member of the bucket mechanism.



The connecting-link 43 will be provided with a spring 44 for returning the rod 14, and hence the actuator, to its normal position; and it will be evident from this that the load-discharging mechanism or actuator is reactive. For permitting the limited movement of the lever 42, to guard against premature or accidental discharge which might occur before the bag was placed in position for receiving the bucket-load, the connecting-link is shown provided with an elongated eye 43', which takes over a headed pin or other device at the lower extremity of the rod 14.

The lever 42 is operable either by hand or by the stress of the tightening-mouth of the bag after this has been placed in position for receiving the discharged bucket-load. The fabric of the bag will be grasped by the operator at a point near the mouth of the bag and approximately opposite the lever 42, and by the action of tightening the bag-mouth the fabric of the bag will actuate the lever 42, which rocks the rock-shaft 41, and through the described connections the actuator will be rendered effective for tripping the latch 82.

The bag-holding and bag-mouth-distending flange 12, it will be remembered, has been hereinbefore described as provided with a recess or slot, and this recess or slot is adapted to receive the lever 42 when this has been actuated for rocking the shaft 41 to release the bucket-discharge member through the connections described, thereby permitting an extended movement of the lever for effecting a release of the shiftable member of the bucket mechanism.

It will be evident from the preceding description that in connection with a weighing-machine having a shiftable member for discharging the load and with a bag-spout leading from said machine a normally idle actuator for said shiftable member will be provided, and that an operating-arm operatively connected with said actuator and located adjacent to the bag-spout and in position for operation by the bag when this is placed on said spout will be also provided, whereby when the weighing-machine is loaded the load will be discharged into the bag immediately on placing the bag in position, and whereby when the machine is loading said actuator will be thrown into its effective position by replacing the bag and the load be thereby discharged immediately on the completion of the same. It will be also evident that said operating-arm has its effective movement toward the bag-spout and is closable toward said spout by the bag, whereby the placing of the bag in position immediately discharges the bucket-load into said bag.

The operation of the bagging apparatus, briefly described, is as follows: On reference to Figs. 1 and 3 it will be assumed that the bucket of the weighing mechanism there shown has received the predetermined load, is at the poised position, and a bag C is being made ready to receive the completed bucket-

load. The connecting-rod 14 and the actuator are shown in Fig. 3 occupying the normal idle position thereof and the same position by the full lines in Fig. 1. The attendant may rest the bag on the bag-support and grasp the bag C by and distend its mouth, placing this over the bag-holding and bag-mouth-distending flange 12 of the discharge-chute D. As the bag-mouth is placed over the bag-holding flange 12 it will naturally be brought into contact with the operating-lever 42 of the load-discharging mechanism; but, as hereinbefore stated, this lever will have a limited ineffective movement to guard against accidental or premature discharge of the bucket before the bag is positioned for receiving the load. When the bag has been placed in position, the operator will grasp the bag-mouth at a point approximately opposite the lever 42, and the mouth will be drawn tightly from this point. The tension or stress of the bag, after this is in its proper position, will be applied at a point above the bag-holding flange 12, and when such tension or stress is exerted by the fabric of the bag above the bag-holding flange 12 on the lever 42 this will be drawn inwardly. This operation rocks the rock-shaft 41 in its bearings, which, in turn, draws the connecting-link 43 downwardly, and through the latter a downward pull is exerted on the long connecting-rod 14. When the connecting-rod 14 is pulled downwardly from the normally idle position thereof, Fig. 2, the actuator will be carried into operative engagement with the arm 83 of the latch 82, which operation is illustrated in Fig. 6, the actuator 30 being there shown in engagement with the arm 83. On the further downward movement of the connecting-rod carrying the actuator 30 the latch will be tripped by the actuator, and immediately on the release of the latch the rocker 550 will also be released, which, in turn, will release the shiftable member of the bucket mechanism, whereby the bucket-load may be discharged into the receiving-bag. As soon as the latch is released by the actuator it is permitted to return to its normal position, whereby the detent thereof will be in a position for engagement by the rocker-detent on the return movement of the rocker. (See Fig. 2.) As soon as the actuator has released the latch 82 the lever 42 will be released and the actuator will be returned to the normally idle position thereof through the agency of the spring 44. The bucket will discharge its load into the discharge-chute D, and by this the material is directed or conveyed into the receiving-bag C. While the material is flowing into the bag the attendant may shake and pack the contents of the bag to any extent without interfering in the slightest extent with either the weighing mechanism or the load-discharging mechanism, and in the interim which occurs between the discharge of the bucket-load and the completion of the succeeding bucket-load the attendant may remove and tie the mouth



of the bag and have a second bag in position for receiving the succeeding load, and when the latter is completed the foregoing operation will be repeated.

5 The bagging apparatus has been described in connection with the improved weighing-machine described and claimed in Letters Patent No. 548,840, granted to me October 29, 1895. It will be obvious, however, that other  
10 types of weighing-machines may be used as well; and it will also be understood that the invention is not limited to the form of weighing mechanism shown.

Having thus described my invention, I  
15 claim—

1. In an apparatus of the class specified, the combination with a weighing mechanism, and with the bucket mechanism thereof having two members, one of which is shiftable  
20 relatively to the other for discharging the load; of a latch normally holding said shiftable member against movement; and an actuator in position to have an effective movement for releasing said latch and thereby the  
25 shiftable member of the bucket mechanism, said actuator also having a return, ineffective movement to thereby permit the return of the latch to the normal position thereof without interference, substantially as specified.

30 2. In an apparatus of the class specified, the combination with a weighing mechanism, and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the  
35 load; of a latch normally holding said shiftable member against movement; and a normally idle, reactive actuator in position to have an effective movement for releasing said latch, whereby the shiftable member of the  
40 bucket mechanism will also be released for discharging the bucket-load, substantially as described.

3. In an apparatus of the class specified, the combination with a weighing mechanism,  
45 and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the bucket-load; of a latch normally holding said shiftable member against movement; a rod;  
50 a counterweighted actuator pivotally supported on said rod for movement therewith and having successive effective and ineffective movements, and having the effective movements thereof on one stroke of the rod  
55 for releasing the latch and thereby the shiftable member of the bucket mechanism, and having the ineffective movement on the return stroke of said rod, during which movement said actuator will permit said latch to  
60 return to the normal position thereof without interference, substantially as specified.

4. In an apparatus of the class specified, the combination with a weighing-machine having a shiftable member for discharging  
65 the load, and with a bag-spout leading from said machine, of a normally idle actuator for said shiftable member; and an operating-arm

operatively connected with said actuator and located adjacent to the bag when this is placed on said spout, whereby when the weighing-  
70 machine is loaded the load will be discharged in the bag immediately on placing the bag in position, and whereby, when the machine is loading said actuator will be thrown into its effective position by the placing of the bag  
75 and the load be thereby discharged immediately on the completion of the same, substantially as specified.

5. In an apparatus of the class specified, the combination with a weighing-machine  
80 having a shiftable member for discharging the load, and with a bag-spout leading from said machine, of a normally idle actuator for said shiftable member; and an operating-arm having an effective movement toward the bag-  
85 spout, and closable toward said spout, by the bag, whereby the placing of the bag in position immediately discharges the bucket-load into said bag, substantially as specified.

6. In an apparatus of the class specified,  
90 the combination with a weighing mechanism, and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the load; of a latch normally holding said shift-  
95 able member against movement; and a normally idle actuator in position to have an effective movement for releasing said latch and thereby the shiftable member of the bucket mechanism; and means for returning the ac-  
100 tuator to the normal position thereof, during which movement said actuator will be ineffective to thereby permit the latch to resume the normal position thereof without interference, substantially as specified. 105

7. In an apparatus of the class specified, the combination with a weighing mechanism, and with the bucket mechanism thereof hav-  
110 ing two members, one of which is shiftable relatively to the other for discharging the load; of a latch normally holding said shiftable member against movement; a normally idle actuator in position to have an effective movement for releasing said latch and thereby  
115 the shiftable member of the bucket mechanism; means for returning said actuator to the normally idle position thereof; and an inclined discharge-chute located adjacent to the bucket to thereby receive and break the force  
120 of the load discharged by the bucket and to direct the same to a bag, substantially as specified.

8. In an apparatus of the class specified, the combination with a weighing mechanism, and with the bucket mechanism thereof hav-  
125 ing two members, one of which is shiftable relatively to the other for discharging the load; of a latch for normally holding said shiftable member against movement; a normally idle actuator having a movement into  
130 engagement with the latch to trip the same, to thereby release the shiftable member of the bucket mechanism; a bag-support in position and adapted for supporting a bag to re-



ceive the material discharged by the bucket; a discharge-chute located adjacent to the bucket, and adapted for receiving the material, and having a bag-holding flange; and a  
 5 lever operatively connected with the actuator, and operable by the tension of the fabric of the bag, as the mouth thereof is drawn taut over the bag-holding flange, whereby when  
 10 said lever is operated, the actuator may be actuated for tripping the latch to thereby release the shiftable member of the bucket mechanism, substantially as specified.

9. In an apparatus of the class specified, the combination with a weighing mechanism,  
 15 and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the load; of a latch normally holding said shiftable member against movement; an actuator a  
 20 bag-support in position and adapted for supporting a bag; a discharge-chute located adjacent to the bucket and adapted for receiving the material discharged by the bucket and directing the same into the bag, and hav-  
 25 ing a bag-holding flange provided with a recess; a lever operatively connected with the actuator, and operable by the tension of the fabric of the bag after the mouth thereof is stretched over the bag-holding flange, where-  
 30 by said lever will be effective for operating the actuator for tripping the latch, to thereby release the shiftable member of the bucket mechanism, substantially as specified.

10. In an apparatus of the class specified,  
 35 the combination with a weighing mechanism and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the load; of a latch normally holding said shiftable  
 40 member against movement; a connecting-rod having an actuator and having said rod normally idle; a rock-shaft mounted in bearings and operatively connected with said connect-  
 45 ing-rod; a lever also operatively connected with said rock-shaft, and operable for actu-

ating said connecting-rod and thereby the actuator for tripping the latch, whereby the shiftable member will be released; and a bag-support in position and adapted for support-  
 50 ing a bag to receive the material discharged, substantially as specified.

11. In an apparatus of the class specified, the combination with a weighing mechanism and with the bucket mechanism thereof hav-  
 55 ing two members, one of which is shiftable relatively to the other for discharging the bucket-load; of a latch normally holding said shiftable member against movement; a normally idle connecting-rod having an actuator; a  
 60 rock-shaft operatively connected with said connecting-rod; a bag-support in position and adapted for supporting a bag to receive the material discharged by the bucket; a lever  
 65 operatively connected with the rock-shaft, and operable for actuating said connecting-rod, and thereby the actuator for tripping the latch, whereby the shiftable member of the  
 70 bucket mechanism will be released for discharging the contents of the bucket into the bag; and means for returning said connect-  
 ing-rod to the normally idle position thereof, substantially as specified.

12. In an apparatus of the class specified, the combination with a weighing mechanism,  
 75 and with the bucket mechanism thereof having two members, one of which is shiftable relatively to the other for discharging the load; of a latch normally holding said shiftable member against movement; and a normally  
 80 idle actuator supported independently of the weighing mechanism, and having an effective movement into engagement with the latch for tripping the same to release the shiftable member of the bucket mechanism, substantially as specified.

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Witnesses:

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