

H. L. WHITMAN,

BALING PRESS.

APPLICATION FILED FEB. 25, 1910.

Patented Aug. 16, 1910.

4 SHEETS—SHEET 1.

967,594.

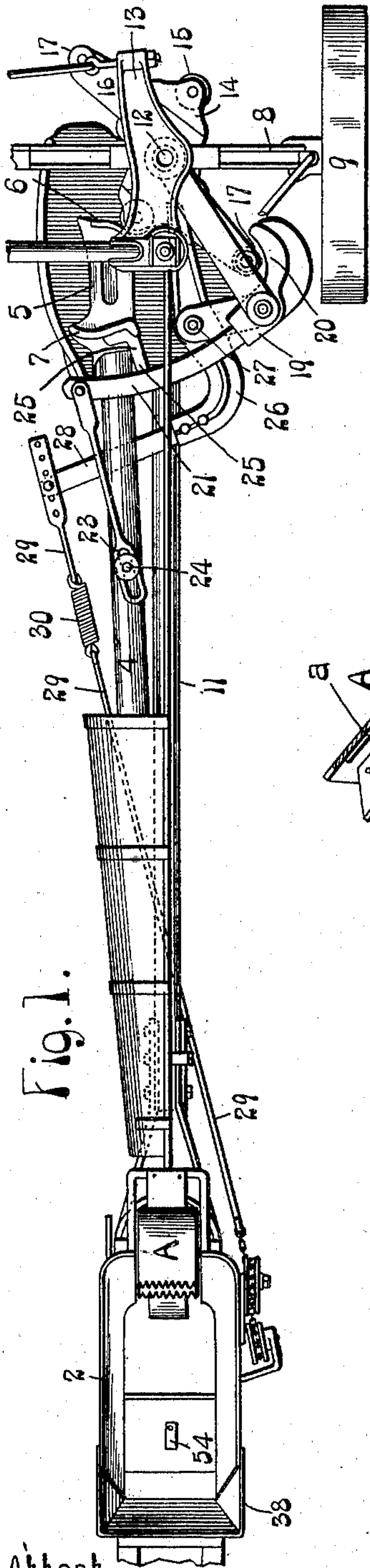


Fig. I.

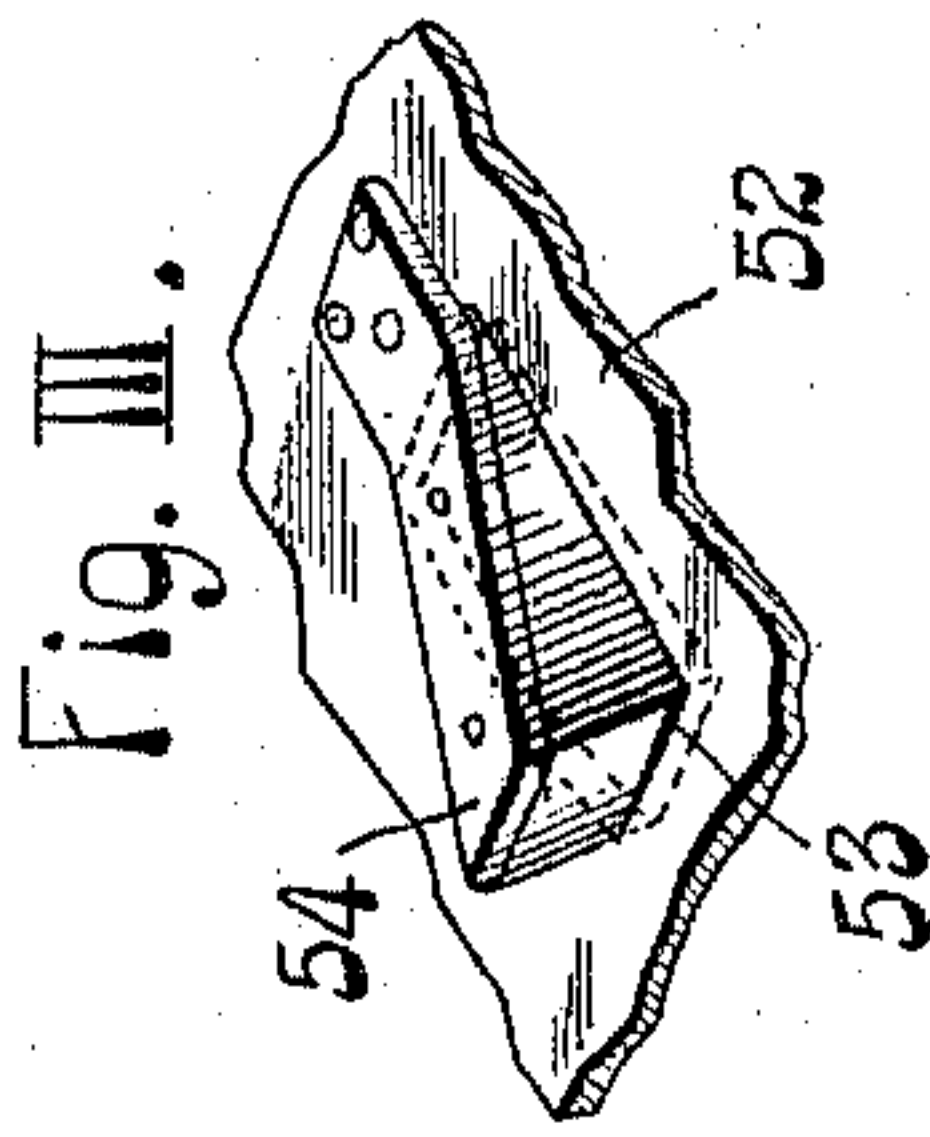


Fig. III.

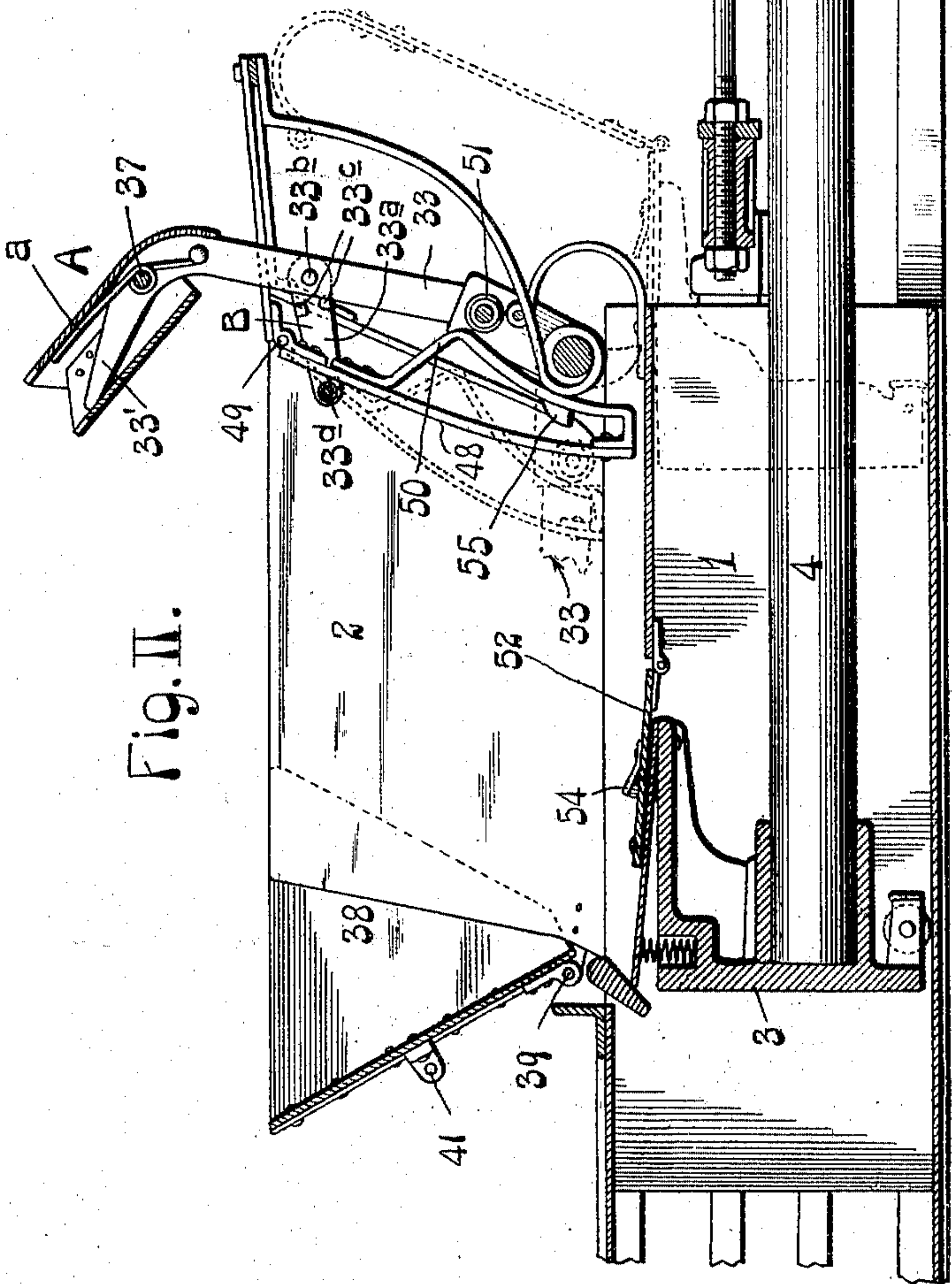


Fig. II.

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C. M. Cawley  
E. B. Cawley

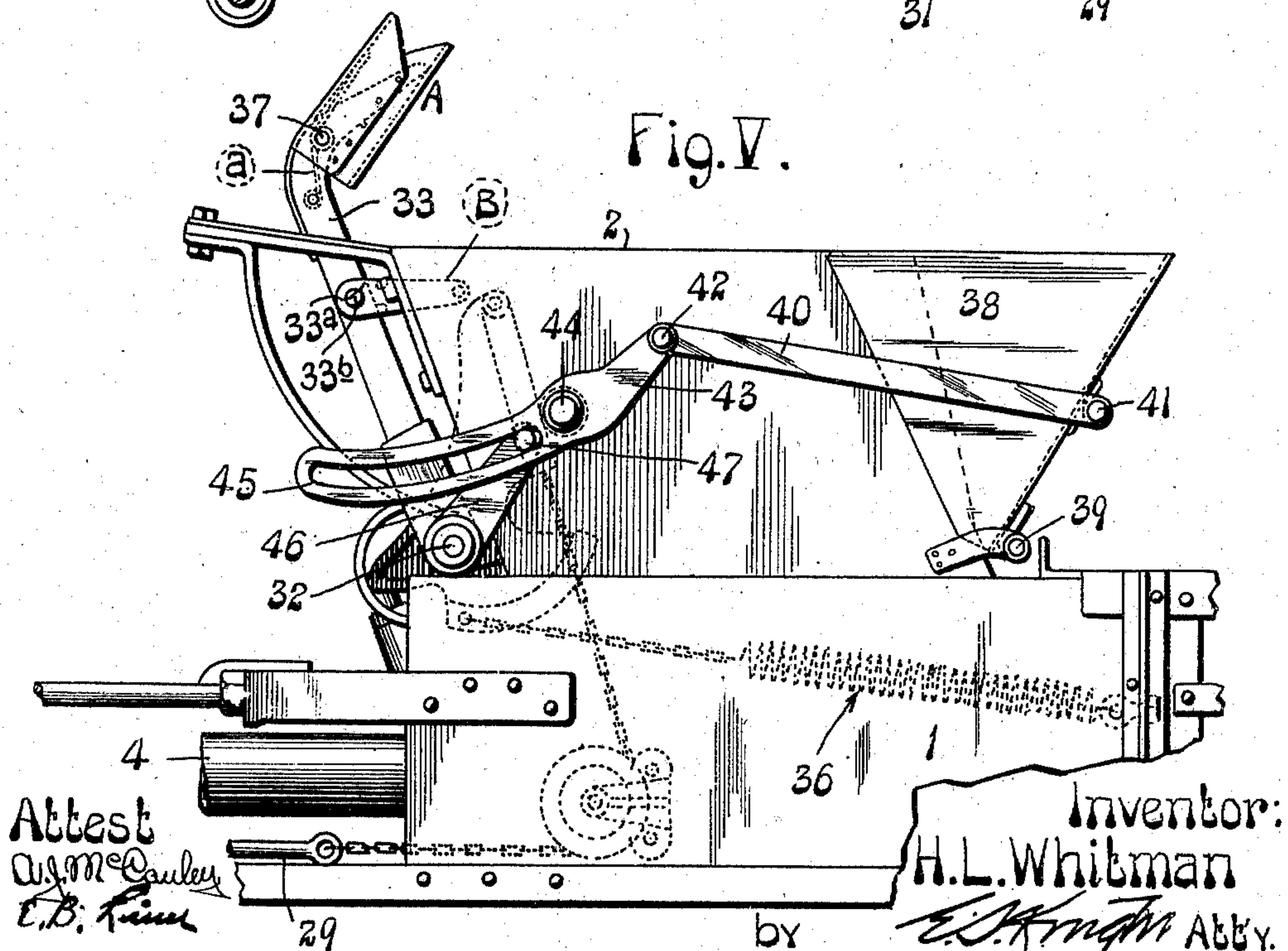
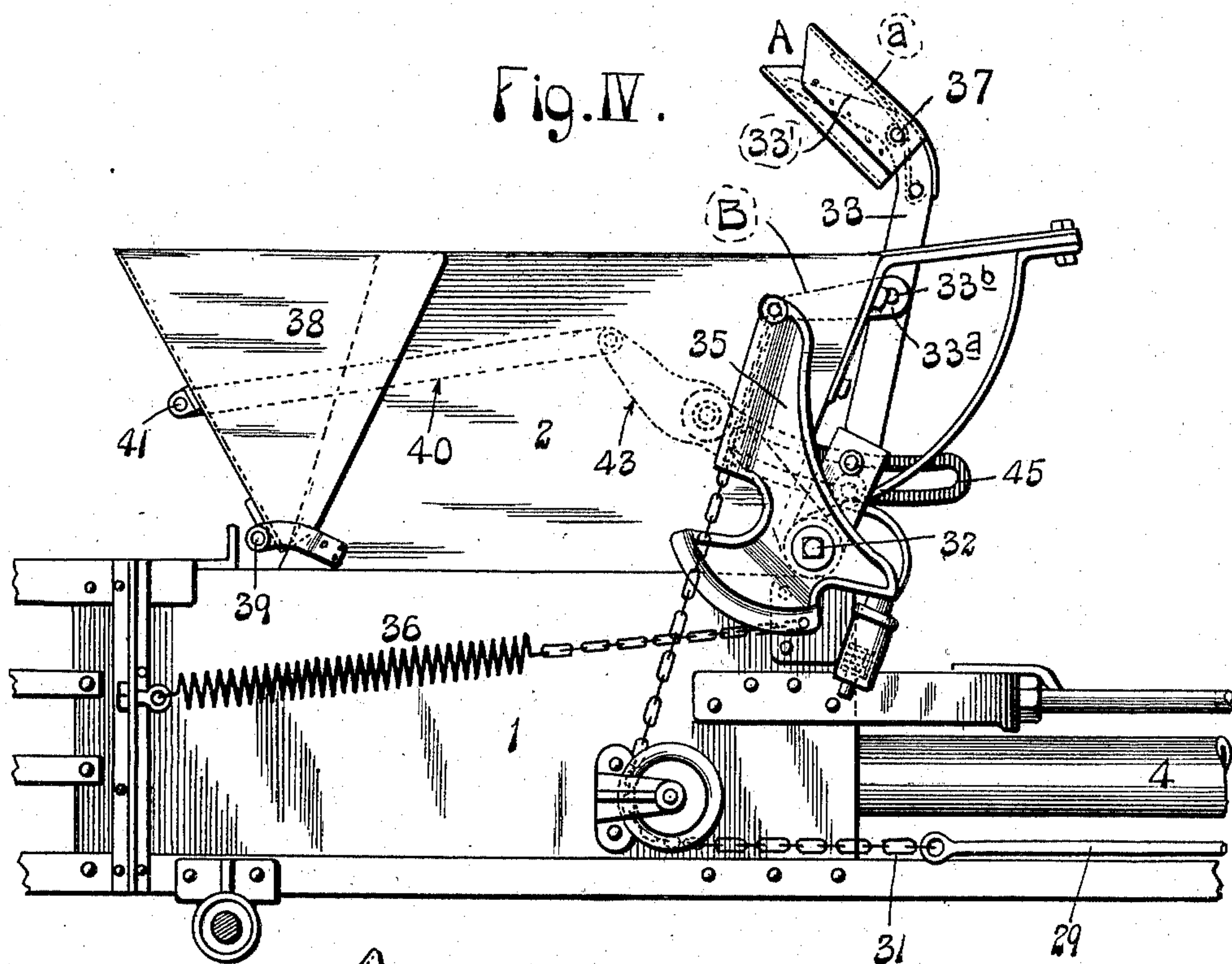
Inventor:  
H. L. Whitman  
by *[Signature]* Atty.

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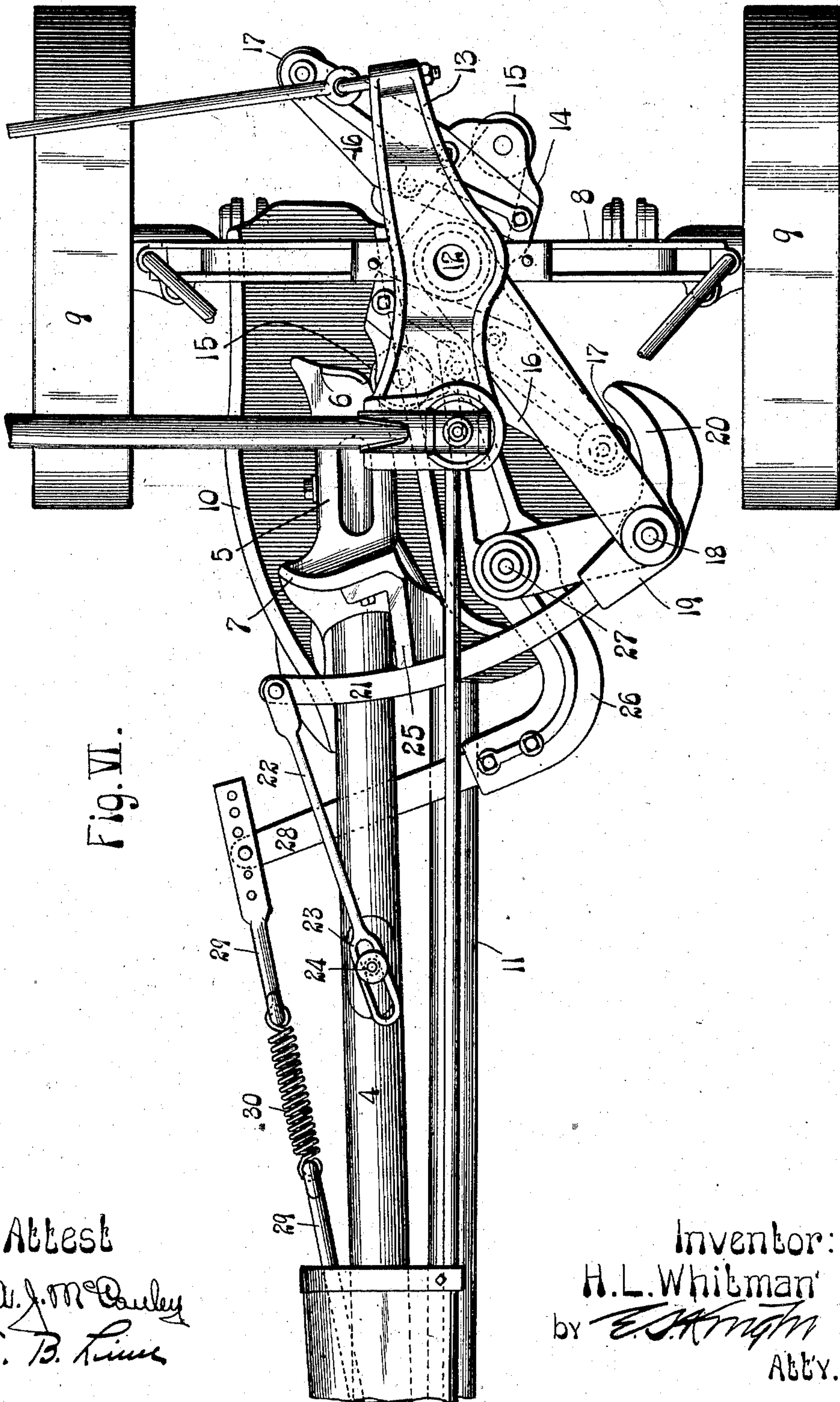


Fig. VI.

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4 SHEETS—SHEET 4.

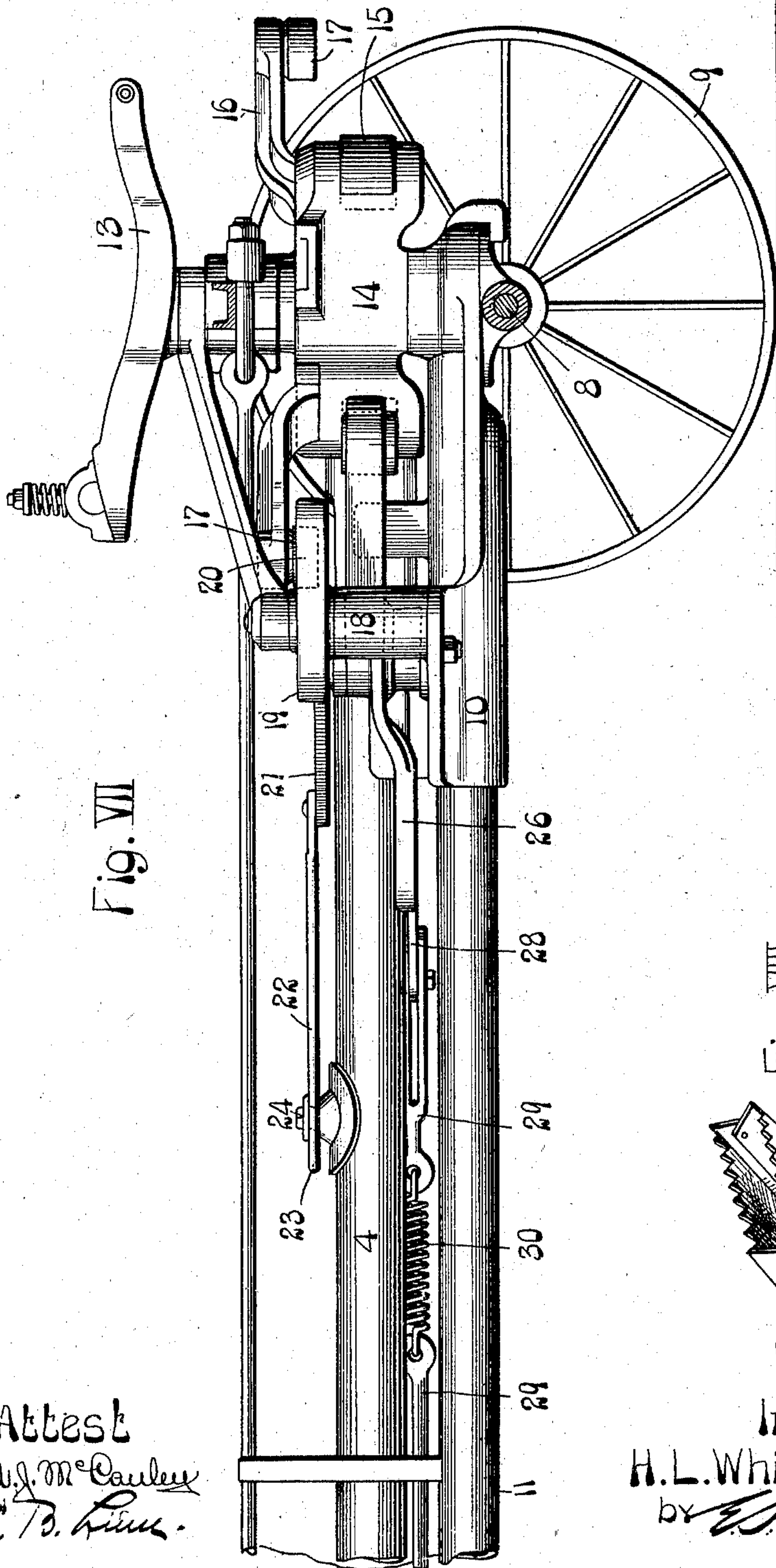


Fig. VII

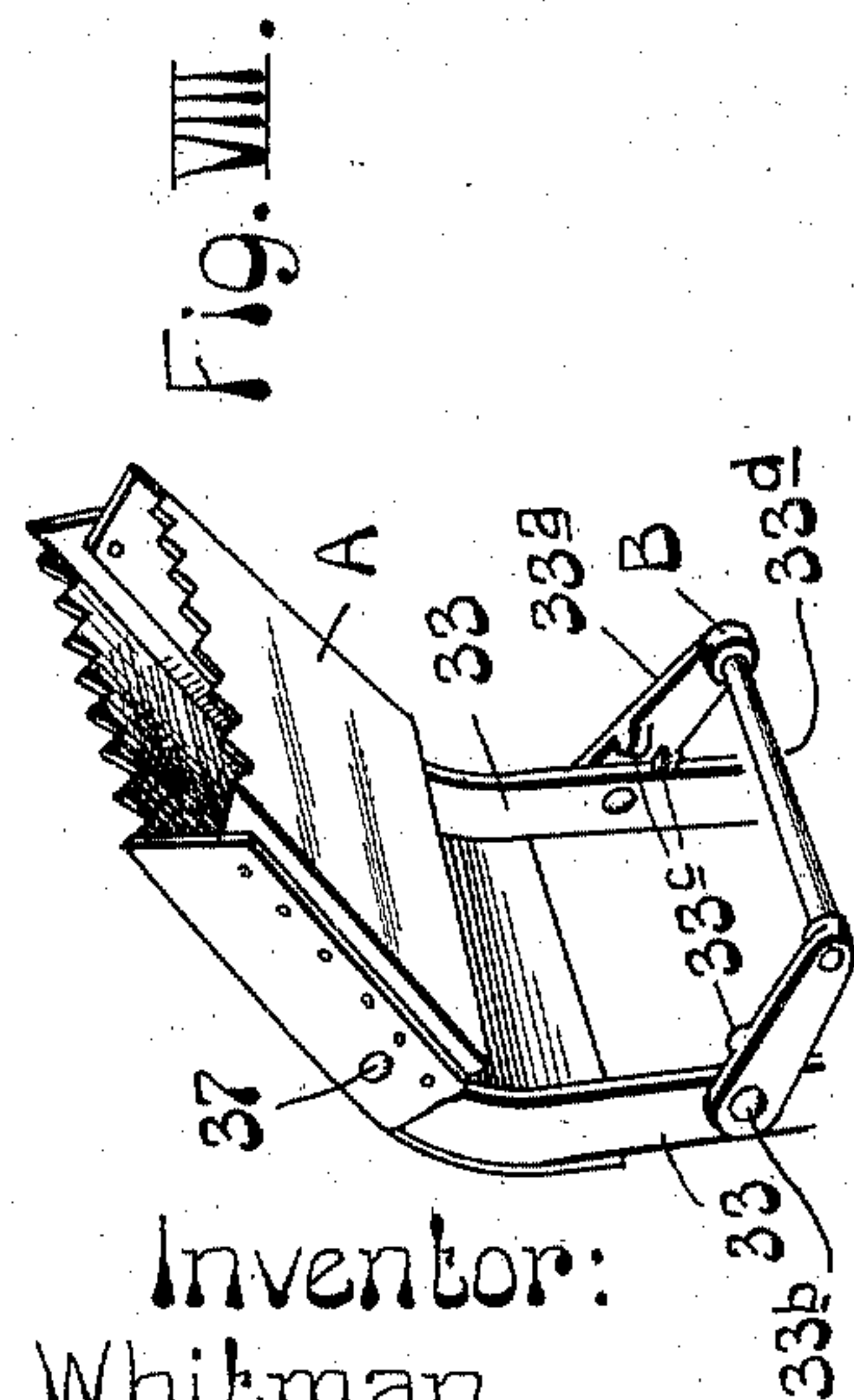


Fig. VIII.

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# UNITED STATES PATENT OFFICE.

HENRY L. WHITMAN, OF ST. LOUIS, MISSOURI.

BALING-PRESS.

967,594.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed February 25, 1910. Serial No. 545,830.

*To all whom it may concern:*

Be it known that I, HENRY L. WHITMAN, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates in part to the power mechanism of a baling press with means provided therein whereby the plunger and pitman may be restricted after pressing a charge of material being baled and the feeder may be operated by the same power mechanism as that by which the plunger is operated.

The invention also relates to certain features of novelty in the feeding mechanism, the press hopper, and means by which the feeder may be elevated through the medium of the plunger in the event of necessity for action of this description.

Figure I is a top or plan view of a baling press containing my improvements. Fig. II is an enlarged vertical longitudinal section through the baling box and the hopper above it. Fig. III is an enlarged perspective view of the device coöperable with the plunger, and by which the feeder may be elevated. Fig. IV is an enlarged side elevation of the baling box, the hopper above it, and the feeding mechanism. Fig. V is an enlarged view, similar to Fig. IV, looking at the opposite side of the press. Fig. VI is an enlarged top or plan view of the press at the power end. Fig. VII is a side elevation of the parts shown in Fig. V, with one of the ground wheels omitted. Fig. VIII is an enlarged perspective view of the feeder head.

In the accompanying drawings:—1 designates the baling box of my press, which is surmounted by a feed hopper 2 that is open at the end farthest removed from the feeder that operates in the hopper and by which the charges of material to be baled are delivered into the baling box.

3 designates the plunger that is operable in the baling box and which is carried by a pitman 4 that has a head 5 located at its rear end and adapted to be engaged by the power mechanism of the press.

At the rear or power end of the press is an axle 8 that is supported by ground wheels 9 and which in turn serves as a support for members to be hereinafter more particularly mentioned, as well as for a supporting plate 10 on which the pitman head 5 is adapted to ride. The baling box and the axle 8 are connected by a reach 11.

12 designates a sweep shaft supported in a vertical position above the axle 8 and to the upper end of which is secured a sweep head 13 adapted to be operated in the usual manner. I desire to here draw attention to the fact that the sweep head 13 in my baling press is utilized solely for the purpose of imparting rotation to the sweep head shaft 12 instead of having any other function, such as that of imparting movement to other members of the power mechanism. This is highly desirable for the reason that the sweep head is sometimes loosely arranged upon its shaft, or becomes loose thereon due to wear, and where there is any such looseness there is resultant wobbling or untrue operation of the sweep head in a circular path that prevents its acting satisfactorily to operate movable parts that are located aside from the sweep head shaft.

14 designates a power head fixed to the sweep head shaft to operate therewith, and in which is mounted anti-friction rollers 15. The power head also carries a pair of arms 16 that in turn carry anti-friction rollers 17. In the operation of the press, the rollers 17 act, by engagement with a flange or lip 7 projecting upwardly from the pitman 5 to impart initial forward movement to the pitman 4, after which the rollers 15, by engagement with the rear end of the pitman or plunger head act to complete the forward movement of the pitman and the plunger. The arms 16 and their anti-friction rollers have a dual function, and their utility, in addition to the one just stated, will hereinafter appear.

18 designates a post surmounting the plate 10 that is supported by the axle 8 and which is reduced at its upper end to provide a journal.

19 is a lever journaled to the post 18 and provided with a cam arm 20 adapted to be engaged by the anti-friction rollers 17 of the arms 16. The lever 19 also has an arm 21 that extends over the pitman 4 and to



which is pivotally connected a pull rod 22. At the forward end of the pull rod 22 is a slotted head 23 that is loosely fitted to a headed pin 24 that is carried by the pitman 4, this slot and pin connection between the pull rod 22 and the pitman providing a loose connection between the pull rod and the pitman in order that they may, at certain times, operate freely with respect to each other and without liability of breakage of the connection between these members. During the forward movement of the pitman 4 and the plunger to which it is connected in the act of compressing a charge of material being baled in the baling chamber of my press, the pitman is actuated by the members hereinbefore mentioned and the pin 24 moves forwardly in the slotted head 23 of the pull rod 22 until it reaches the forward end of said head, after which it acts to so move the lever 19 as to carry its cam arm 20 into a position to be engaged by one of the anti-friction rollers 17 which is later to be brought into action against said cam arm for service in actuating the lever 19 and the pull rod 22 to retract the pitman and plunger. In order that the lever 19 may act to retract the pitman and plunger with greater efficiency during the initial period of retraction of the pitman and plunger and with less expenditure of power than would be the case if the retracting action was secured through the medium of the pull rod 22 only, I provide upon the pitman or its head 5 an abutment 25, (see Figs. I and VI). This abutment is so positioned as to be engaged by the lever arm 21, in order that said lever arm, when moved rearwardly, may act thereagainst for the purpose of retracting the pitman during the initial period of its return stroke, and it will be readily apparent that, inasmuch as the abutment is located closer to the fulcrum of the lever 19, said lever is enabled to exert greater power for the retraction of the pitman and plunger when the arm 21 is acting against the abutment than is derived later when the pull rod 22 is brought into action for the retraction of the pitman. I, therefore, by the construction stated, apply a maximum of power for the retraction of the pitman and plunger at the time when it is most needed; namely, at the beginning of the return stroke, and, by the use of the pull rod 22 which is connected to the lever arm 21, at its end which has the greatest travel, I provide for the pitman and plunger being retracted with a rapid movement during the remainder of the return stroke, following the initial movement.

The power mechanism of my press includes in addition to the mechanism hereinbefore described means for actuating the feeder of the press and which comprises a lever 26 that is journaled to a vertical shaft 27 surmounting the supporting plate 10 and

which has a rear arm that is adapted to be engaged by the anti-friction rollers 15 carried by the power head 14. The shaft 27 has a forward arm 28 that extends transversely of the pitman 4 and to which is pivoted a pull rod 29 in which is located a spring 30 to afford resiliency therein. The pull rod 29 leads to a point in proximity to the baling box 1 and has attached to it a chain 31, by which the feeder that is operable to carry charges of material to be baled into said baling box is operated, as will presently appear.

32 designates a rock shaft suitably supported by the baling box 1 and to which is fixed the feeder of the press, comprising an arm 33 having a finger 33' extending at an angle relative to the body of the arm and a head A. The rock shaft also has fixed to it a lever 35 to which the chain 31 attached to the pull rod 29 is connected at one point, in order that the shaft may be rotated to operate the feeder in a downward course in the hopper 2 above the baling box to carry charges of material to be baled into the baling chamber. Return of the feeder after it has performed its office of carrying a charge of material into the baling box is accomplished by a retracting spring 36 having connection at one end to a fixed part of the press and having its other end connected to the lever 35 at a point aside from that at which the chain 31 is connected to said lever and so located as to provide for the retracting spring being placed under tension when the feeder is lowered.

I now wish to direct particular attention to the feeder head used in my press. This feeder head is pivoted to the feeder arms 33 at 37, and is free to partake of a limited degree of movement with respect to the fingers 33' of the feeder arms which extend at approximately right angles relative to the bodies of said arms, and are confined within the feeder head. The feeder head is normally maintained in an outwardly projected position relative to the fingers. The object in so mounting the feeder head is to provide for the feeder head extending forwardly and outwardly relative to the feeder arms 33 more nearly toward a point in alinement with the feeder arms, so that as the feeder descends in the hopper of the baling press, the feeder head will move in an arc of a circle extending to a greater distance from the axis on which the feeder turns than such feeders usually do, and whereby the feeder is permitted to operate with a more extensive sweep than ordinarily.

A further object in this construction is to provide for the feeder head acting to carry the material into the baling box with more of a backward movement than is ordinarily occasioned in the operation of the feeders of baling presses, this backward movement



being considered as one toward the plunger of the press. This backward movement of the material is occasioned by reason of the fact that, as the feeder head descends in the hopper toward the baling chamber, its outer face, by riding against the material with which it comes in contact, causes the feeder head to be swung inwardly against the action of the spring *a* and, as this movement is toward the plunger, or the rear end of the baling chamber, the material being carried by the feeder is conducted toward said plunger. The material is, therefore, much more effectively carried into the baling chamber to be acted upon by the plunger as it moves forwardly to perform its office.

Another feature of improvement in the feeder of my press lies in the use of an auxiliary feeder head B carried by the feeder arms 33 and located back of the feeder head A. This auxiliary head comprises a pair of arms 33<sup>a</sup> pivoted to the feeder arms at 33<sup>b</sup>, and provided with stop lugs 33<sup>c</sup>, which act to limit the degree of swinging movement of said arm. It also comprises a cross rod 33<sup>d</sup> that connects the free ends of the forwardly extending arms 33<sup>a</sup>. As the feeder of the press descends to perform its office, the auxiliary feeder B acts upon the material in the hopper of the press back of the main feeder A to depress such material more effectually into the baling chamber than it would be if acted upon only by the main feeder. The auxiliary feeder is pivoted to the arms of the feeder in order that it may descend in a straight line in entering the baling chamber, but at the same time be susceptible of a forward swinging movement to adjust itself toward a forward position, as pressure is imparted to the material being baled by the advancing plunger of the press.

As previously mentioned herein, the hopper 2 is open at one end. At this end of the hopper is located a movable closure 38 comprising an end wall and side walls that span the side walls of the hopper proper. The closure member is pivotally supported at 39 and is adapted to move inwardly from an outward position to render the hopper a contractible one in order that, after the material to be baled has been placed in the hopper preceding the descent of the feeder, the interior area of the hopper may be lessened and the material be more efficiently delivered through the decreased area of the hopper into the baling box. To provide for the contraction of the hopper being automatic so that the contraction takes place just before the feeder descends to perform its office, I furnish means for operating the closure member 38 that is coöperable with the feeder. This means comprises a connecting rod 40 pivoted at 41 to the closure member and pivoted at 42 to one

arm of the lever 43 that is pivotally supported at 44. The other arm of the lever 44 contains a slot 45.

46 is a crank arm fixed to the rock shaft 32 that carries the feeder and which is provided with a stud 47 that is operable in the slot 45. It will be readily understood that when rotation is imparted to the rock shaft 32 to lower the feeder, movement in an arc of a circle is imparted to the stud 47 and that this stud, by traveling in the slot 45, so actuates the lever 43 as to cause it to exert a pull upon the connecting rod 40 whereby the closure member 38 is swung toward the slot proper with the result of lessening the area therein, in order that the feeder may depress the entire charge of material that has been introduced into the hopper, even though this charge may be greater than that ordinarily placed in baling press hoppers and which must necessarily be regulated in the absence of an adjustable slot member, according to the amount of material the feeder is susceptible of acting upon.

Contraction of the charge of material introduced into the hopper of the press is further provided for by a presser plate 48, (see Fig. II), which is pivotally supported at 49 and is pendent with the rear end of the hopper adjacent to the feeder. This presser plate is provided with a cam 50 that is adapted to be engaged by a stud or roller 51 carried by the arm of the feeder and through the medium of which the presser plate is moved from the position shown in full lines to the position shown in dotted lines Fig. II when the feeder is lowered to carry the charge of material into the baling box.

It sometimes happens in the use of a baling press that the feeder actuating mechanism becomes broken or impaired and, as a consequence, the feeder head is permitted to remain in a lowered position after it has performed its office and is, therefore, in the path of travel of the plunger of the press to be damaged thereby during the forward stroke of the plunger. To avoid an occurrence of this kind, I provide means whereby the feeder may be elevated through the medium of the plunger during the forward stroke of the last named member.

52 is a plate surmounting the plunger 3 and carried thereby. This plate is provided with an aperture 53 and mounted thereon, at the location of said aperture, is a spring tongue 54, the free end of which normally extends upwardly above the plane of the plate and is adapted to be lowered into the aperture therein.

55 is a lug carried by the hub on the rock shaft 32 that carries the feeder arm 33, or by the rock shaft itself, so that it is coöperable with said shaft and is adapted to move into a vertical position beneath the



axis of the rock shaft, as indicated in dotted lines Fig. II, in the path of travel of the spring tongue 54 during reciprocation of the press plunger. It will be apparent that in the event of the feeder of the press remaining in the lowered position indicated in dotted lines Fig. II upon the forward movement of the plunger, the spring tongue 54 will, by engagement with the lug 55, act to elevate the feeder before the plunger reaches the feeder head and that consequently said feeder head will be removed from the path of travel of the plunger, and injury thereto be prevented.

It sometimes happens that the feeder operating mechanism of a baling press of the type to which my present invention relates is improperly adjusted in setting up the press preparatory to its use and, as a consequence, the movement of the feeder is improperly timed relative to the operation of the plunger, with the result that the feeder is lowered at a time that will cause the member 54 to engage the arm 55 while the plunger is being retracted and, if the member 54 were a rigid one, there would be a liability of breakage of either the member 54, the member 55, or some weaker part of the press influenced by such engagement. For this reason I make the member 54 a resilient one in order that it may pass beneath the arm 55, if said arm is in the path of movement of the member 54 during the receding stroke of the plunger, it being apparent that in such event the member 54 will readily yield downwardly and injury such as that mentioned will be avoided.

I claim:—

1. In a baling press, a baling box, a plunger, a pitman, power mechanism for imparting a forward stroke to said pitman and plunger, a lever actuated by said power mechanism and bearing directly against said pitman for partial retraction thereof, and a loose connection between said lever and pitman for completing the retraction of the pitman and plunger.

2. In a baling press, a baling box, a plunger, a pitman, power mechanism for imparting a forward stroke to said pitman and plunger, a lever actuated by said power mechanism and bearing directly against said pitman for partial retraction thereof, and a pull rod connected to said lever and having loose connection with said pitman whereby the retraction of the pitman and plunger is completed.

3. In a baling press, a baling box, a hopper surmounting said baling box and having an open end, a movable closure for the open end of said hopper providing a three-sided extension of the hopper, a feeder operable in said hopper, and means whereby said closure is automatically operated to diminish the interior area of said hopper.

4. In a baling press, a baling box, a hopper surmounting said baling box and having an open end, a movable closure for the open end of the hopper having sides straddling the hopper walls, a feeder operable in said hopper, and means operable by said feeder whereby said closure is moved to contract said hopper.

5. In a baling press, a baling box, a hopper surmounting said baling box and having an open end, a movable closure for the open end of the hopper, a presser member at the end of the hopper opposite that at which said closure is located, and a feeder operable in said hopper and by which said closure and presser member are operated to contract the interior of said hopper.

6. In a baling press, a baling box, a hopper surmounting said baling box and having an open end, a movable closure for the open end of the hopper, a rock shaft, a feeder carried by said rock shaft and operable in said hopper, a crank arm on said rock shaft, a pull rod connected to said closure, and a lever pivoted to said pull rod and having slot and stud connection with said crank arm, providing for the operation of said lever to move said closure relative to the hopper.

7. In a baling press, a baling box, and a feeder for delivering material to said baling box, the feeder comprising an arm and a head yieldably connected thereto, said arm having a finger extending at an angle relative to the body of the arm for controlling the movement of said head.

8. In a baling press, a baling box and a feeder for delivering material to said box, the feeder comprising an arm and a head pivoted to said arm, said arm having a finger extending at an angle relative to the body of the arm for controlling the movement of said head.

9. In a baling press, a baling box, and a feeder for delivering material to said box, the feeder comprising an arm and a spring controlled head pivoted to said arm, said arm having a finger extending at an angle relative to the body of the arm controlling the movement of said head.

10. In a baling press, a baling box, a plunger operable in said baling box, a feeder, and a spring tongue carried by said plunger and adapted to engage said feeder to move it to an elevated position.

11. In a baling press, a baling box, a plunger operable in said baling box, a pivotally mounted feeder, means movable around the axis of said feeder toward the path of travel of said plunger, and a spring tongue carried by said plunger adapted to engage said last named means to move the feeder to an elevated position.

12. In a baling press, a baling box, a plunger operable in said baling box, a pivotally



mounted feeder, an arm movable around the axis of said feeder toward the path of travel of said plunger, and a spring tongue carried by said plunger adapted to engage said last  
5 named arm to move the feeder to an elevated position.

In testimony whereof, I have hereunto

affixed my signature, this 19th day of February 1910.

HENRY L. WHITMAN.

In the presence of—

E. B. LINN,

A. J. McCAULEY.