

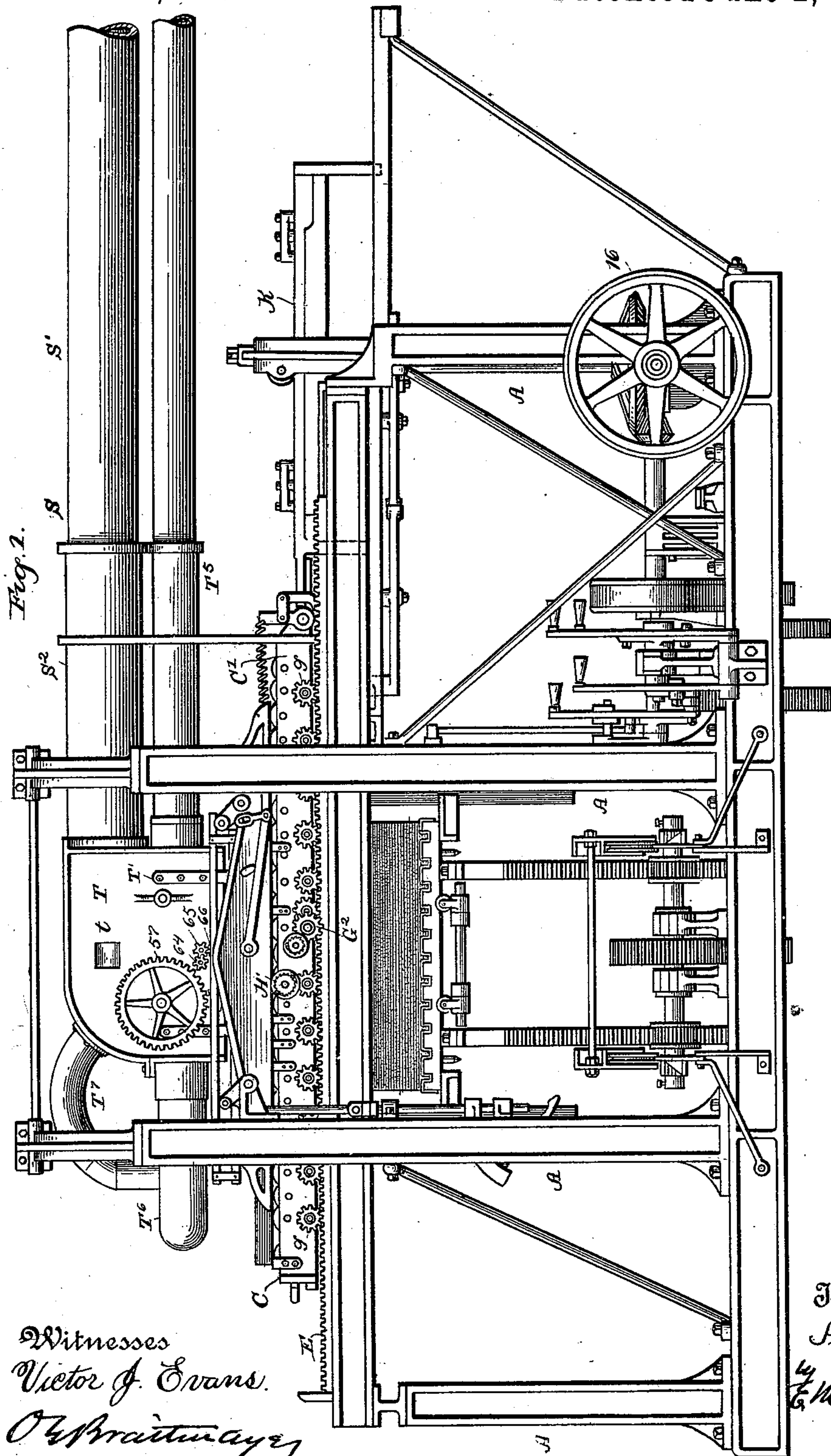
(No Model.)

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A. S. GOOCH.  
CONDENSER.

No. 561,221.

Patented June 2, 1896.



(No Model.)

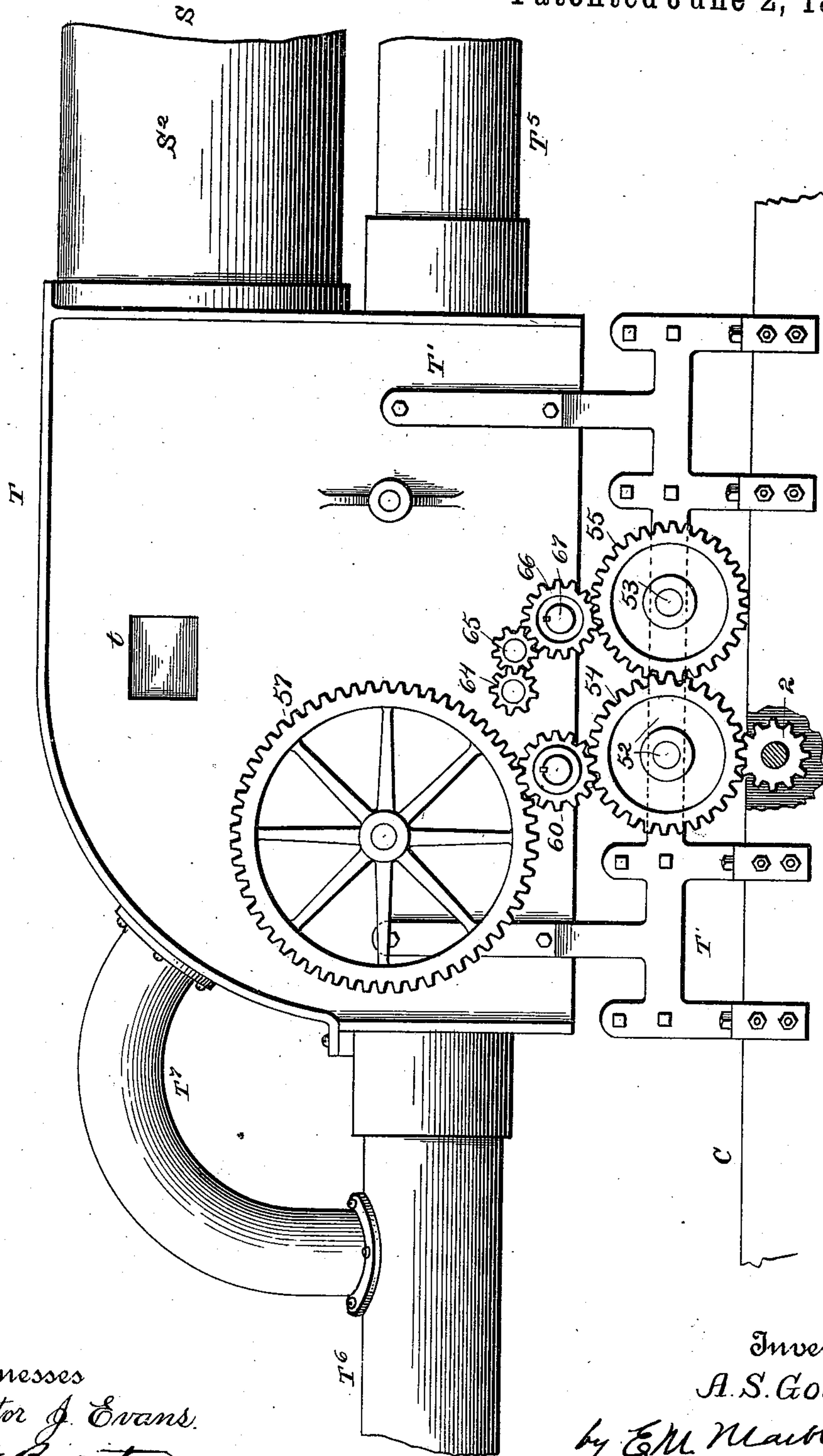
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Fig. 2.



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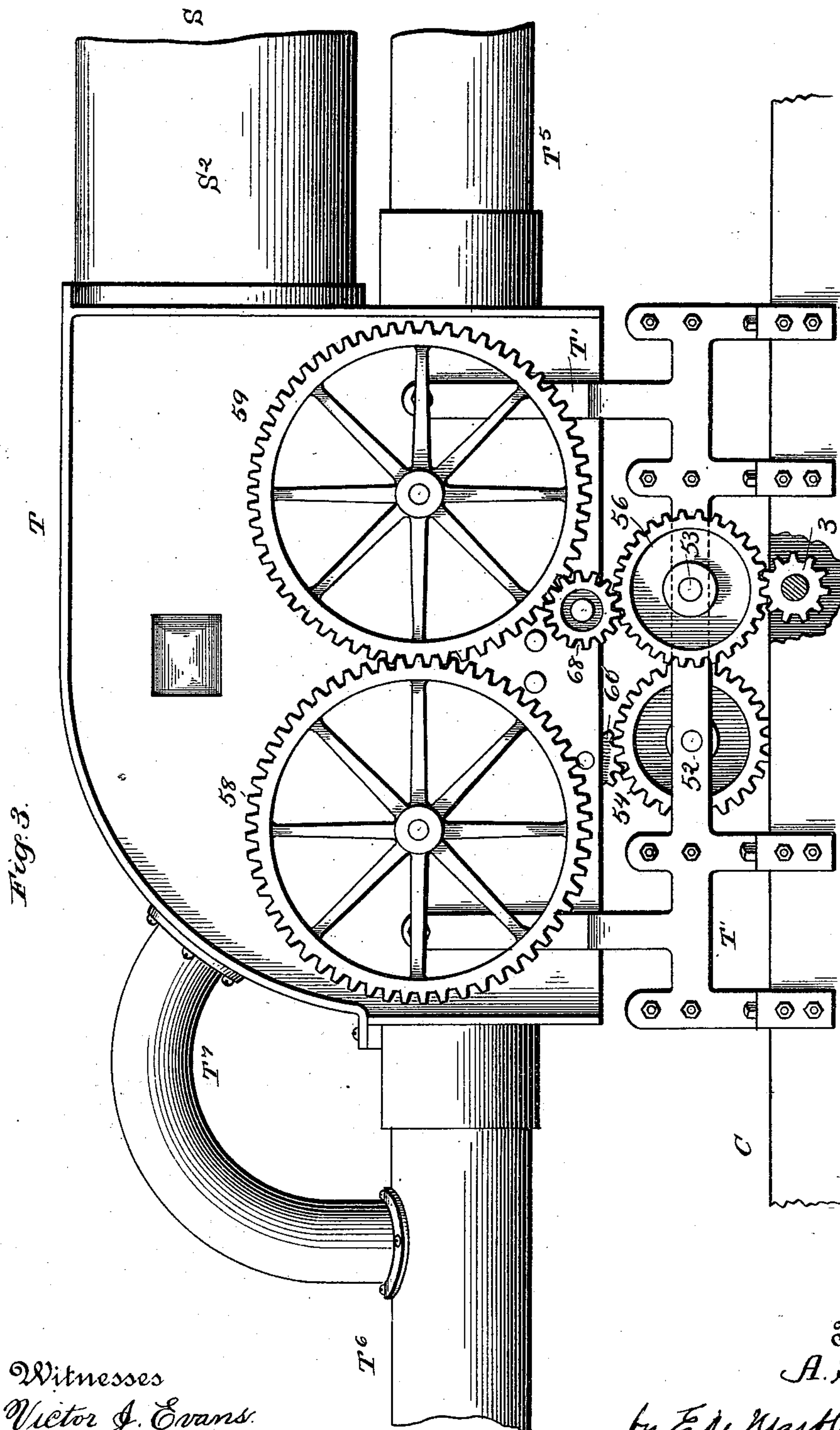
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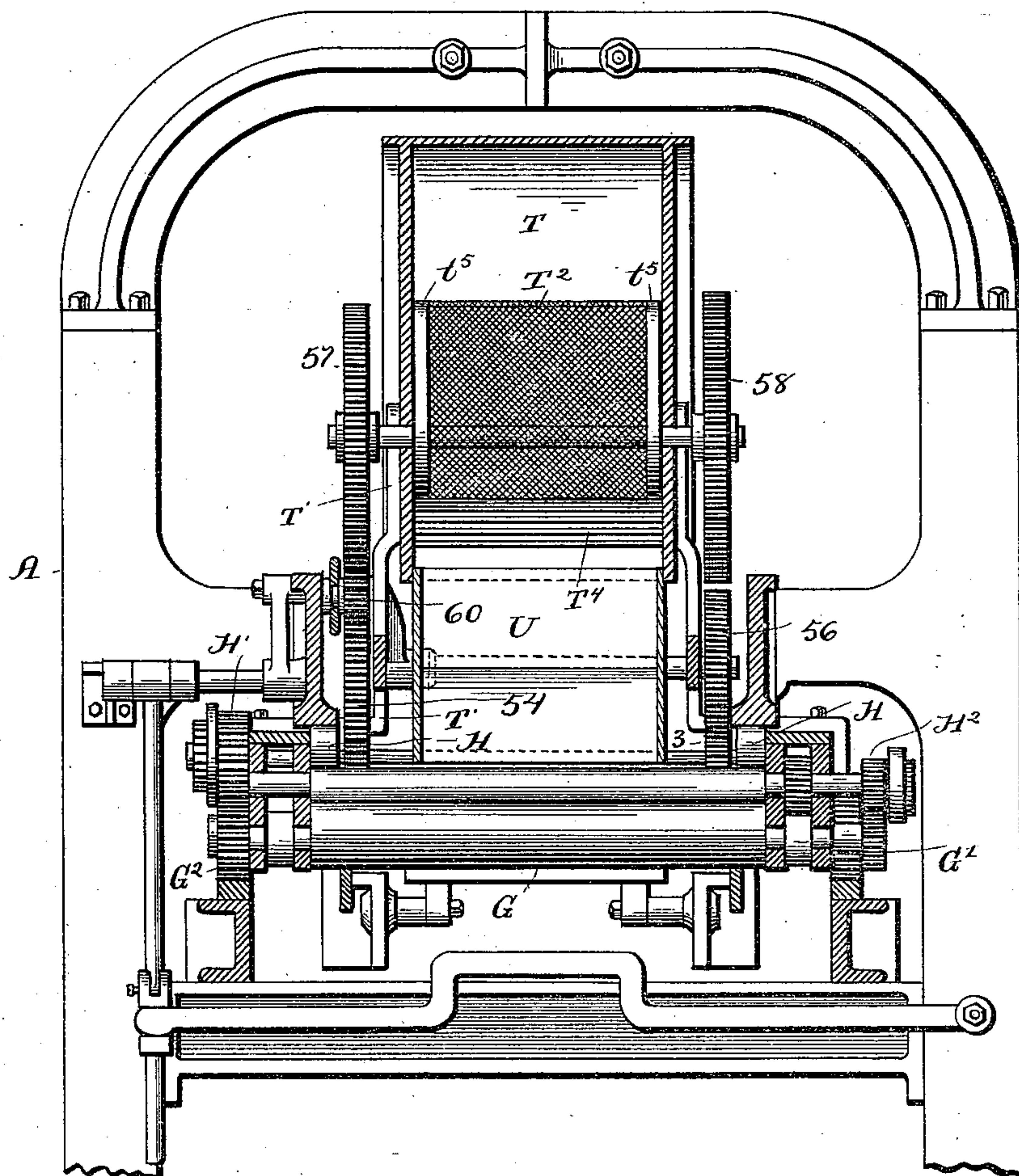
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Fig. 4.



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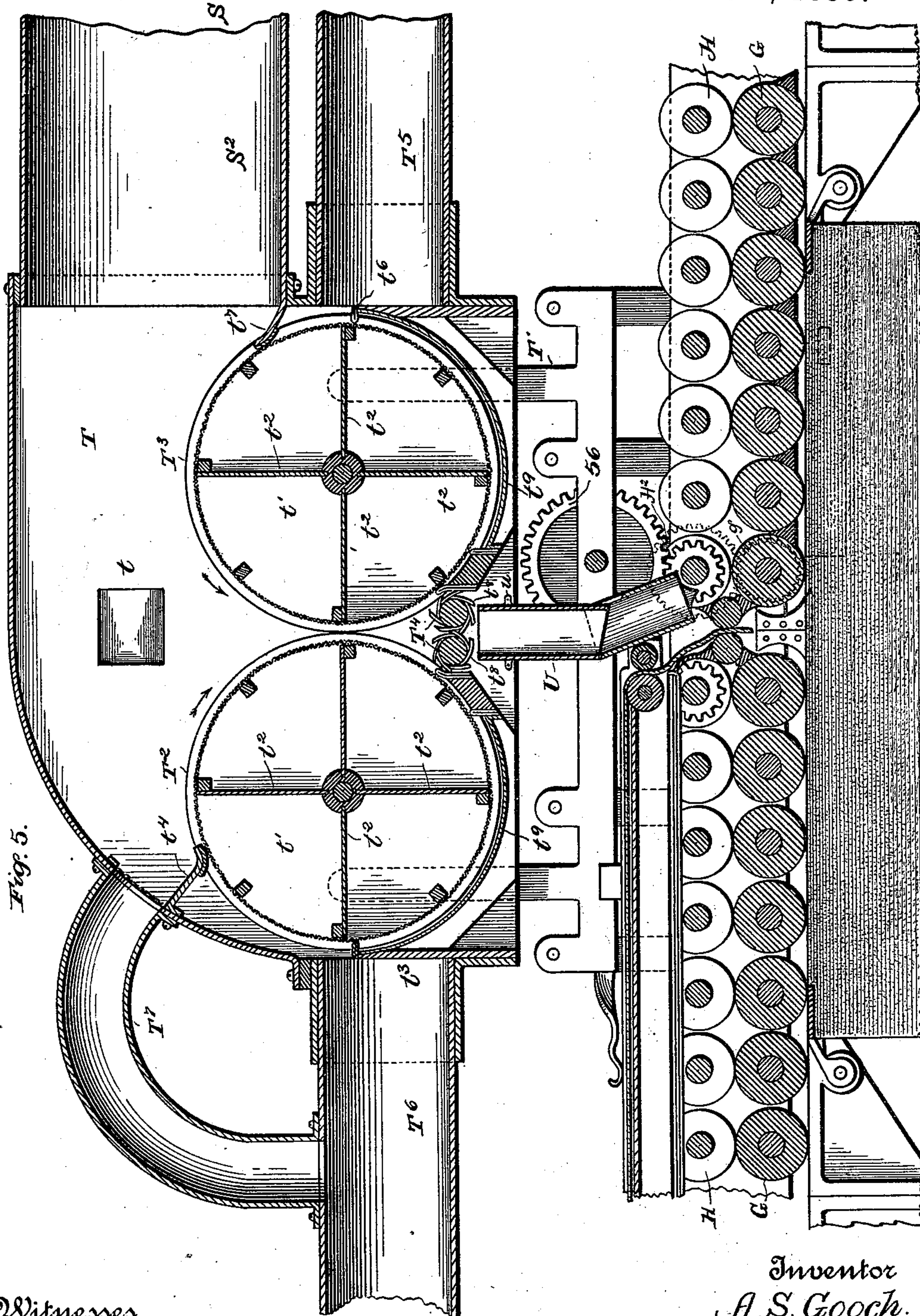
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# UNITED STATES PATENT OFFICE.

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## CONDENSER.

SPECIFICATION forming part of Letters Patent No. 561,221, dated June 2, 1896.

Application filed February 6, 1896. Serial No. 578,297. (No model.)

*To all whom it may concern:*

Be it known that I, ALPHONSO S. GOOCH, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Condensers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in machines for treating lint-cotton, and particularly to that class thereof known as "condensers;" and it consists in the improved condenser and a novel method for supplying the same with cotton, which will be hereinafter fully described, and particularly pointed out in the claims.

My condenser is designed to be used in connection with a cotton-press of the type described and illustrated in the application of Lewis B. McDonald for improvements in presses for baling cotton and other fibrous materials, filed December 30, 1895, Serial No. 573,797.

The objects of my invention are, first, to provide a condenser simple and compact in construction and easily built and operated, which will be suitable for use in connection with a cotton-press in which the pressure-transmitting surface or carriage reciprocates during its operation, and which, to work to full capacity, must receive cotton from two or more gins, and, second, to provide suitable means for supplying a condenser, mounted upon a reciprocating carriage, with cotton from a fixed point of supply.

In order to feed cotton to my condenser from more than one gin at a time, it is absolutely essential that an exhaust-air current be used to bring the cotton from the source of supply to the condenser-cylinder. A driving air-current could not be satisfactorily used in view of the working conditions which pertain to the operation of the gins.

I have further found it necessary, since the condenser must form a part of the machine and be rigidly held thereto in a fixed relation to the feeder-rolls, to provide means for connecting the source of lint supply with the con-

denser in a novel manner in order to secure a uniform feed.

In a condenser which is to be used with an exhaust-air current it is of essential importance that the portion of the condenser which is to be exposed to the action of the air-current be guarded and defined to exact limits, so that removal of the bat from the condenser-cylinder by the batter-rolls will be permitted, and so that no cotton will be carried out of the range of the influence of the condenser-cylinder. To accomplish this, it has been found necessary to close the ends of the condenser-cylinder and to cut up or divide the interior of the condenser-cylinder into segments, which are so arranged that the air-exhaust opening can never suck through into the space in which the batter-rolls operate, leathers placed against the cylinder-surfaces being used in addition to prevent circumferential air suction. It has been further found necessary, in order to obtain a uniform bat and a uniform strength of operative air-current, to make use of two condenser-cylinders instead of one, as in the ordinary construction, the two cylinders being actuated so as to move centrally or with their contiguous surfaces moving in the same direction, and to make use of multiple air-exhaust openings. By the conjoint action of these two means I am enabled to obtain a uniform bat and a uniformly-produced bat. With a condenser of this type it is not convenient or advisable to bring such a quantity of lint-cotton as is required to supply my condenser directly from the source of supply to the condenser. Lint-cotton, before it has been passed through a condenser, is filled with fine dust, and it would be inadvisable to throw the entire cleaning operation upon this condenser. I aim, therefore, to pass the cotton as it comes from the gin over a preliminary condenser before feeding it to the press-condenser. I do not use a batter-roll in connection with a preliminary condenser, but allow the air-current to blow the cotton from the surface of the same. The condenser which I have invented performs the function of forming the bat rather than that of forming the bat and cleaning the cotton.



To supply my condenser with cotton from a fixed point of supply, I connect it with such sources of supply, whether a gin or a picker and cleaner, by a telescopic tube, the two sections of which are connected by an air-tight joint and the moving section of which is long enough to permit the necessary movement of the reciprocating carriage.

My invention is fully described in the drawings which accompany and form a part of this application, in which the same reference letters and numerals refer to the same or corresponding parts, and in which—

Figure 1 is a side elevation of my condenser in position upon the press for which it is specially designed. Fig. 2 is an enlarged side view showing the operative mechanism. Fig. 3 is an enlarged view of the opposite side of the condenser from that shown in Fig. 2, the power-transmission gears being shown. Fig. 4 is a cross-section of the condenser. Fig. 5 is a transverse section of my condenser.

Referring to the drawings, A represents the machine-frame.

C represents the reciprocating carriage upon which the condenser is mounted.

K represents the reciprocator by the action of which the required movement is imparted to the said carriage, the power to operate the reciprocator being derived from the power-pulley 16.

The first problem to be solved in feeding cotton from a stationary point of supply to a reciprocating condenser is to arrange for a uniform feed during the varied conditions of the travel. This has been done by connecting the press-condenser to the source of supply by a telescopic supply-pipe S, one section, S', of which is connected to the framework of the dirt-removing condenser and the other section, S<sup>2</sup>, of which is connected to the press-condenser at one end of the same, above the condenser-cylinders. The moving section S<sup>2</sup> is made long enough to permit the necessary travel of the pressure-rolls and yet maintain an air-tight joint.

The condenser as a whole is represented in the drawings by the letter T. It is supported upon a frame T' in the center of the reciprocating carriage C, being held in position by suitable supports.

The frame of the condenser is made with solid ends, as shown. Windows *t* are cut in the side, so that the operation of the condenser can be constantly inspected.

The condenser-cylinders T<sup>2</sup> and T<sup>3</sup> are journaled parallel to each other, with their peripheries separated by only a sufficient distance to permit the passage of a bat of the desired size. The heads of the cylinders are closed by head-pieces *t'* and the inner surfaces of the cylinder are divided into quadrants *t''*, this being done to control the cylinder-surface, to which the exhaust-air current has access.

The exhaust-air openings T<sup>5</sup> and T<sup>6</sup> are

placed near the bottom of the condenser-frame on either side of the same. The portions of the condenser-cylinders upon which the air-currents which are drawn into the same operate are not, however, the same, for otherwise the points of cut-off of the two cylinders would occur at the same time, and the operation of the condenser would lack uniformity.

The surface upon which the exhaust-opening T<sup>6</sup> operates is defined by the upper and lower cut-off provided therefor, the lower cut-off being the leathered plate *t*<sup>3</sup> and the upper cut-off the leathered plate *t*<sup>4</sup>. Side leathers *t*<sup>5</sup> at both sides of both condenser-cylinders (see Fig. 4) still further tend to control the direction of the exhaust-air current, and the bottom of the condenser is closed by the plates *t*<sup>9</sup>.

The points of the cut-off of the condenser-cylinder upon which the exhaust-opening T<sup>5</sup> operates are shifted relatively to that in the other cylinder, so that the cut-off of the two cylinders will not take place at the same moment, the result of this being that the exhaust-air current is as uniform as is possible to attain throughout the operation of the condenser. The points of cut-off upon this condenser-cylinder are found at *t*<sup>6</sup> and *t*<sup>7</sup>, leathered plates being used, as before.

The cotton which is drawn to the condenser-surface through the supply-pipe S tends to fall first upon the surface of the condenser-cylinder nearest the opening and forms upon the same a bat of uniform thickness. The cotton in the upper portion of the supply-pipe is, however, drawn over the surface of the other condenser-cylinder, especially when the cut-off of the first cylinder occurs, and is laid upon this condenser-surface in a uniform bat, the bats being taken off of the condenser-surface into the flume U. In order to make the action of the two condenser-cylinders uniform, I also provide the exhaust-opening T<sup>7</sup>, the mouth of which is guarded by a strip of wire-netting, as shown. The joint action of these various exhaust-air currents unites to cause the formation of a bat of uniform thickness, and while the cotton may gather in masses across the mouth of the exhaust-opening T<sup>7</sup> this cotton will all be drawn down by the condenser-cylinder T<sup>2</sup>, as it continues its revolution, owing to the adhesion of the cotton, and formed into a bat, as before described.

The batter-rolls T<sup>4</sup> are provided with leather strips *t*<sup>8</sup>, which fly outwardly as the rolls rotate by the force of the centrifugal action, and effectually prevent any air-current coming in contact with the cotton as it is taken from the condenser-cylinders by the batter-rolls and delivered in the flume U. These batter-rolls are further actuated so as to rotate at a slightly-greater speed than the condenser-cylinder in order that clogging of the bat may be prevented. The leather strips, besides performing the function above indi-



cated, serve as positive means for removing the cotton from the surface of the condenser-rolls.

The method of actuating the condenser is as follows: The so-called "pressure-rolls" G (see Fig. 4) are provided on their outer ends with pinions  $g$ , which mesh with the teeth of the rack E, and are constantly rotated, though in alternating directions, throughout the movement of the reciprocating carriage C. Upon the upper surface of the rolls G rest so-called "antifriction-rolls" H, the central rolls of which are provided with pinions  $H'$  and  $H^2$ , which mesh with the corresponding pinions  $g$  of the pressure-rolls. The pinions  $H'$  and  $H^2$  are only connected to the spindles on which they are mounted by a ratchet connection, so that the spindles are only driven by the pinions when the pinions are moving in one direction and may move independently of the same when the pinions are moving in the opposite direction—that is to say, that the pinions  $H'$  and  $H^2$ , which must have, by reason of their connection with the pinion of the pressure-rolls, an intermittently-reversed motion, impart power to the spindles of the antifriction-rolls only when moving in one direction and leave the antifriction-rolls to have any desired direction of rotation when they are moving in the opposite direction. As there are two sets of pinions thus connected, and as the driving actuation of the same occurs alternately, it will be seen that it only requires the proper choice of the sides of the machine on which to place the pinions  $H'$  and  $H^2$  to give the spindles of the antifriction-rolls a definite constant direction of rotation, provided they be connected by a system of gearing. The rotative impulse imparted by each of the driving-pinions is central or toward the feed-opening. As one of the driving-pinions is constantly acting to rotate one of the spindles of the antifriction-rolls centrally during half of the movement and has no rotative tendency upon the roll during the other half of the movement, and as the two driving-pinions act alternately, it will be seen that the spindles are driven in a constant direction of rotation, while the direction of rotation of the actuating-pinions is regularly reversing. Such being the case it is possible to actuate the condenser so that the cylinders thereof will move centrally or in such directions as to feed the cotton downward into the press, whatever the direction of travel of the pressure-rolls and carriage carrying the same.

In the frame  $T'$ , I form journals for the shafts 52 and 53. These shafts extend across the frame. Upon shaft 52 on one side of the same I mount a gear-wheel 54, which is arranged to mesh with the pinion 2 upon that one of the central antifriction-roll spindles on which the pinion  $G'$  is mounted. Upon the shaft 53 is mounted gear-wheel 55, which is arranged to mesh with gear-wheel 54, and also on the opposite side of the press the

gear-wheel 56, which is arranged to mesh with the pinion 3, operated through the actuating tendency of the pinion  $G^2$ . When now the pinion  $G'$  is the driving-pinion, it acts through the pinion 2 to move the gear-wheel 54 centrally, and through the meshing of the same with the gear-wheel 55 also to move the gear-wheel 56 centrally, and thereby cause the spindles upon which the pinions 3 and  $H^2$  are mounted to move with a clicking sound oppositely to the direction of the rotation of pinion  $H^2$ . When the pinion  $G^2$  is the driving-pinion, it acts to turn the gear-wheel 56 in the same direction in which it was caused to rotate by the meshing of the gear-wheels 54 and 55 and thus to cause the gear-wheels 54 and 55 to move in the same direction of rotation which they had before. In other words, the gear-wheel 54, which is the power-gear in operating the condenser-cylinders, is given a central direction of rotation, whatever the direction of the movement of the reciprocating carriage.

Upon the spindle of the condenser-cylinder  $T^2$  is mounted on one side the gear-wheel 57 and on the other side the gear-wheel 58. The gear-wheel 59 is mounted upon the spindle of the other condenser-cylinder  $T^3$  and meshes with the gear-wheel 58. In this manner the central rotation of both of the condenser-cylinders is effected by simply rotating the gear-wheel 57.

To operate the condenser-cylinders, it is also necessary to operate the batter-rolls  $T^4$ . It is further necessary, in order to secure the best results, to rotate these rolls so that their peripheral speed will be slightly less than that of the feed-rolls. This I accomplish by placing on the spindles which bear the batter-rolls gear-wheels 64 and 65, which mesh with one another. The gear-wheels are driven by the pinion 66, mounted upon the shaft 67, and itself actuated through the pinion 68, on the other end of the shaft 67, by the gear-wheel 56. In this manner any actuation of the condenser-cylinders results in a corresponding movement of the batter-rolls, and the size of the gears and pinions has been so chosen that these rolls rotate with the desired peripheral speed.

To the lugs  $u$ , formed on the lower portion of the condenser-frame  $T$ , central of the same, I attach the feeder-flume  $U$ , which is pivoted, as shown, near its center, and is adapted to convey the cotton from the batter-rolls to the feed-rolls by which the cotton is conveyed directly to the baling operation.

While the condenser which I have thus described is specially designed for use in connection with a cotton-press, it may be used in any manner that condensers are ordinarily employed, and I do not restrict myself to its use in connection with a cotton-press.

The mechanism for operating the condenser-cylinders which I have described is not my invention, but is the invention of Lewis B. McDonald, and is described and



claimed in his application for Letters Patent for improvements in presses for baling cotton and other fibrous materials filed December 30, 1895, Serial No. 573,797.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a reciprocating carriage, and means for operating the same, of a condenser mounted on said carriage, a  
10 stationary source of cotton supply, a telescoping supply-pipe connecting said condenser with said source of supply, and means for producing an air-current within said supply-pipe, whereby cotton will be fed to the con-  
15 denser throughout the reciprocatory movement of the same, substantially as described.

2. The combination with a reciprocating carriage, and means for operating the same, of a condenser mounted on said carriage, a  
20 stationary source of cotton supply, a telescoping pipe connecting said condenser with said source of supply, a telescoping pipe extending from said condenser to a suitable point of discharge, and means for producing an ex-  
25 haust-air current in said discharge-pipe, whereby cotton will be fed to the condenser throughout the reciprocatory movement of the same, substantially as described.

3. In a condenser, the combination with a  
30 condenser-cylinder having closed ends, and having its interior divided by partitions into a plurality of divisions, and a casing therefor having inlet and outlet openings, of a suitable connection between said condenser and  
35 a source of cotton supply, means for producing an exhaust-air current therein, and means for removing the bat of cotton from the condenser-cylinder, substantially as described.

4. In a condenser, the combination with a  
40 condenser-cylinder having closed ends and a casing therefor having air inlet and outlet openings, and an outlet for the bat of cotton, said air inlet and outlet openings lying in vertical line one above the other, of a suitable con-  
45 nection between said condenser and a source of cotton supply, means for producing an exhaust-air current therein, means for preventing direct passage of air from said inlet to said outlet opening, and means for removing  
50 the bat of cotton from the condenser-cylinder, substantially as described.

5. In a condenser, the combination with a condenser-cylinder having closed ends, and partitions dividing its interior into a plurality  
55 of divisions, and a casing therefor having inlet and outlet openings, of a suitable connection between said condenser and a source of cotton supply, means for producing an exhaust-air current therein, leathers between  
60 said cylinder and said casing to control the portion of said cylinder exposed to the exhaust-air current, and batter-rolls operating in connection with said cylinder, substantially as described.

6. In a condenser, the combination with a  
65 casing, two condenser-cylinders having closed ends, and having their interiors divided by partitions into a plurality of divisions, mounted therein, the peripheries of said cylinders being separated by the thickness of the bat  
70 to be produced, batter-rolls operating in connection therewith, and means for causing said condenser-cylinders and batter-rolls to rotate centrally, of an inlet-opening in said casing, a suitable connection between the same and  
75 a source of cotton supply, means for producing an exhaust-air current therein, separate air-discharge openings for the respective cylinders, a discharge-opening for the bat of cotton, and means for controlling the portion of  
80 the surface of the condenser-cylinders exposed to the air-current, substantially as described.

7. In a condenser, the combination with a  
85 casing, two condenser-cylinders having closed ends, and having their interiors divided by partitions into a plurality of divisions, mounted therein, the peripheries of said cylinders being separated by the thickness of the bat  
90 to be produced, batter-rolls operating in connection therewith, and means for causing said condenser-cylinder and batter-rolls to rotate centrally, of an inlet-opening in said casing, a suitable connection between the same and  
95 a source of cotton supply, means for producing an exhaust-air current therein, separate air-discharge openings for the respective cylinders, a discharge-opening for the bat of cotton, and leathered plates for controlling the  
100 portion of the surface of the condenser-cylinders exposed to the air-current, substantially as described.

8. In a condenser, the combination with a casing, two condenser-cylinders having closed  
105 ends, and having their interiors divided by partitions into a plurality of divisions, mounted therein, the peripheries of said cylinders being separated by the thickness of the bat to be produced, batter-rolls operating in con-  
110 nection therewith, and means for causing said condenser-cylinders and batter-rolls to rotate centrally, of an inlet-opening in said casing, a suitable connection between the same and  
115 a source of cotton supply, means for producing an exhaust-air current therein, discharge-openings for the respective cylinders, a guarded air-exhaust opening opposite the inlet-opening, a discharge-opening for the bat of cotton, and means for controlling the portion  
120 of the condenser-cylinders exposed to the air-current, substantially as described.

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

ALPHONSO S. GOOCH.

Witnesses:

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C. B. MYERS.