

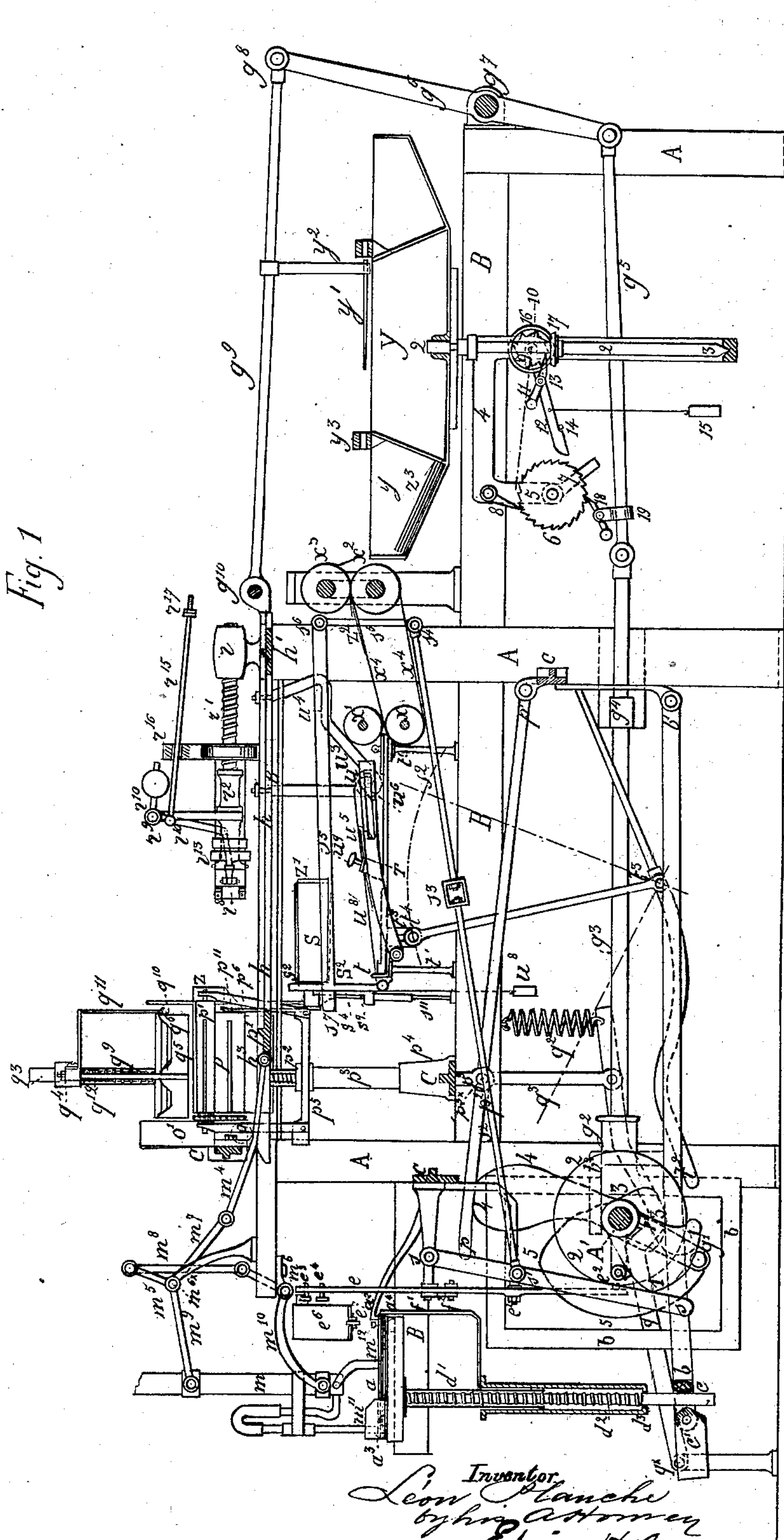
(No Model.)

8 Sheets—Sheet 1.

L. PLANCHE.
Paper Bag Machine.

No. 239,543.

Patented March 29, 1881.



Witnesses.
Thomas E. Birch.
J. H. Haynes

Inventor.
Leon Planche
by his Attorneys
Edwin H. Brown

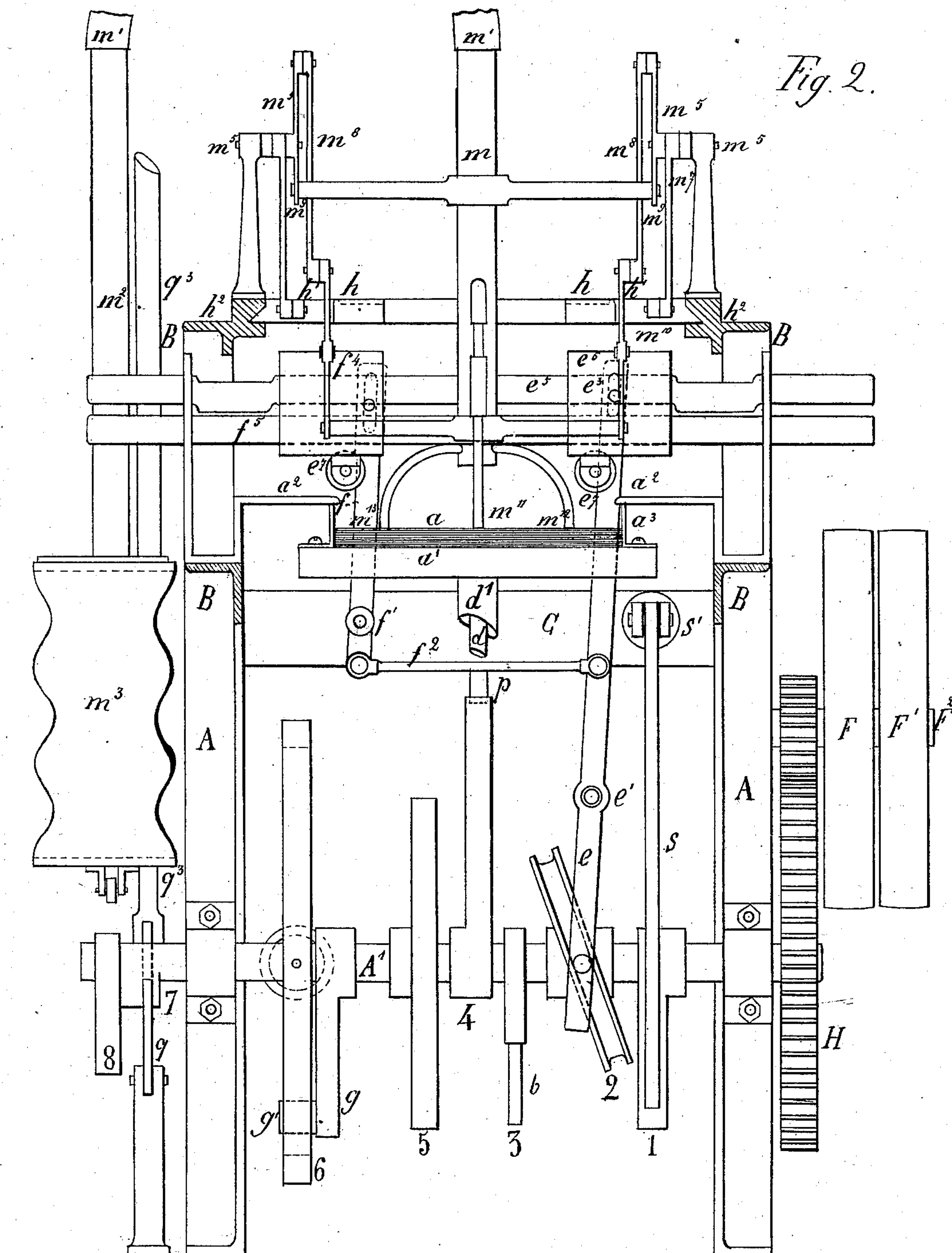
(No Model.)

8 Sheets—Sheet 2.

L. PLANCHE.
Paper Bag Machine.

No. 239,543.

Patented March 29, 1881.



Witnesses.
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(No Model.)

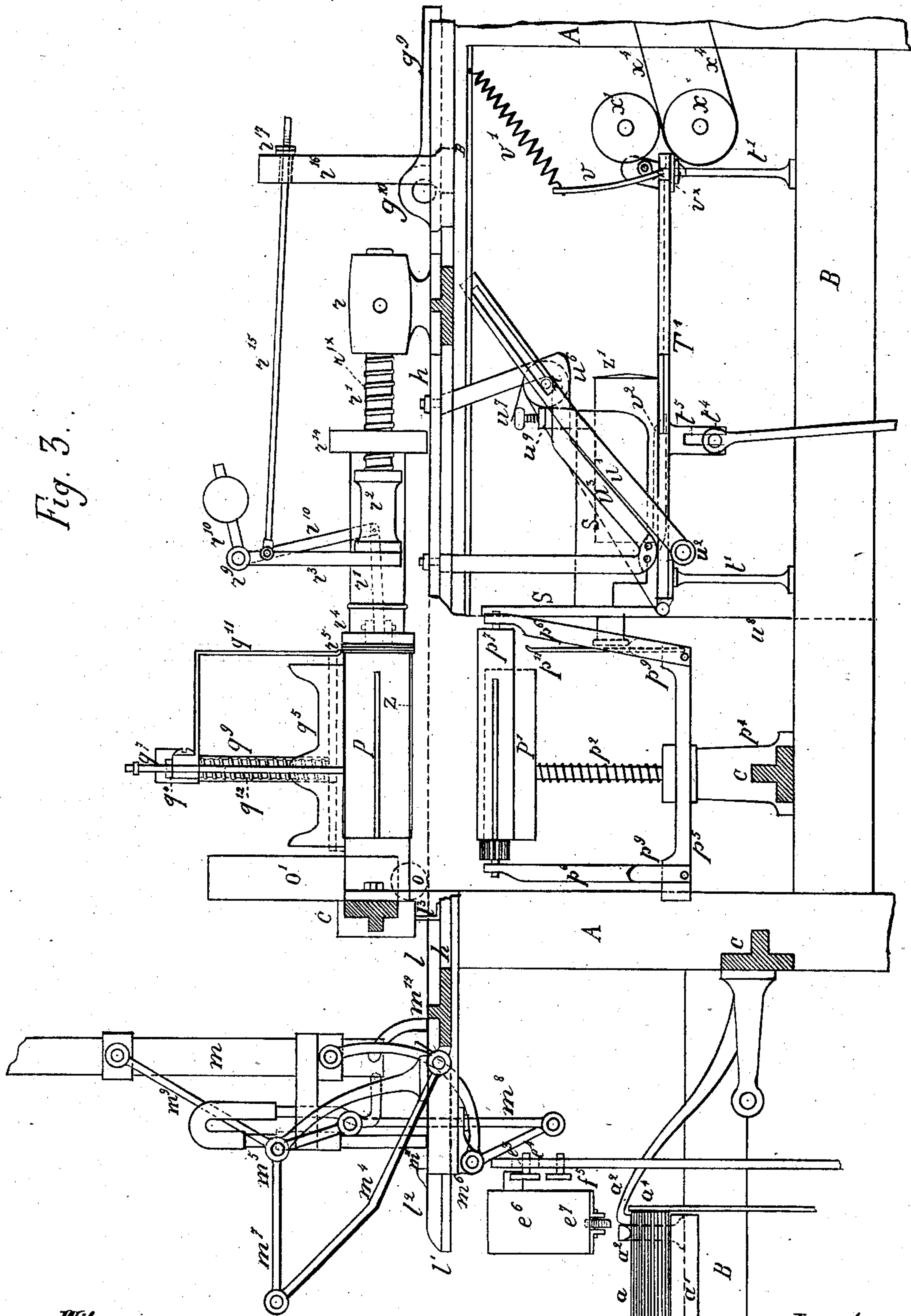
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L. PLANCHE.
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Patented March 29, 1881.

Fig. 3.



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Thomas E. Birch.
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(No Model.)

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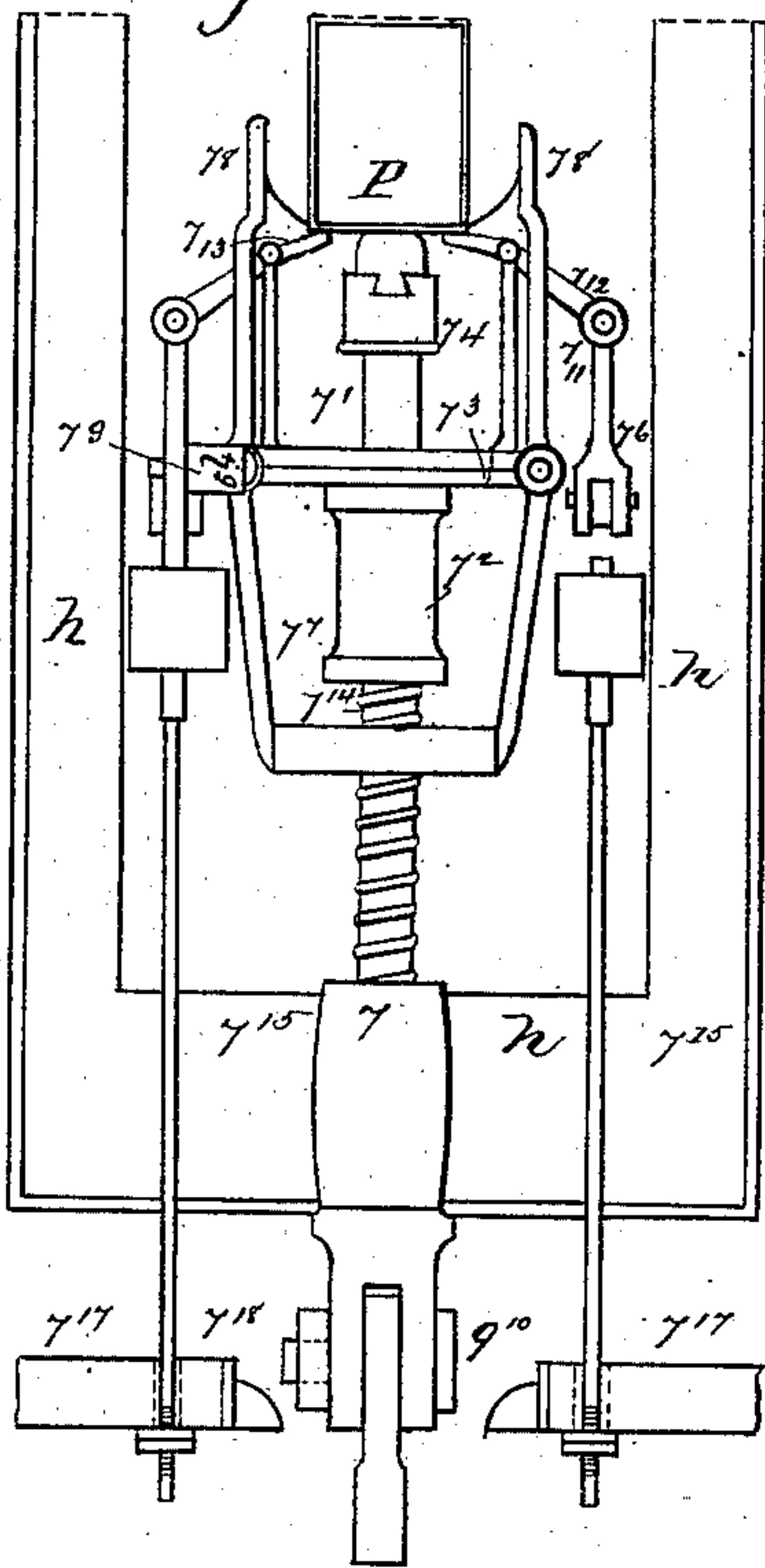
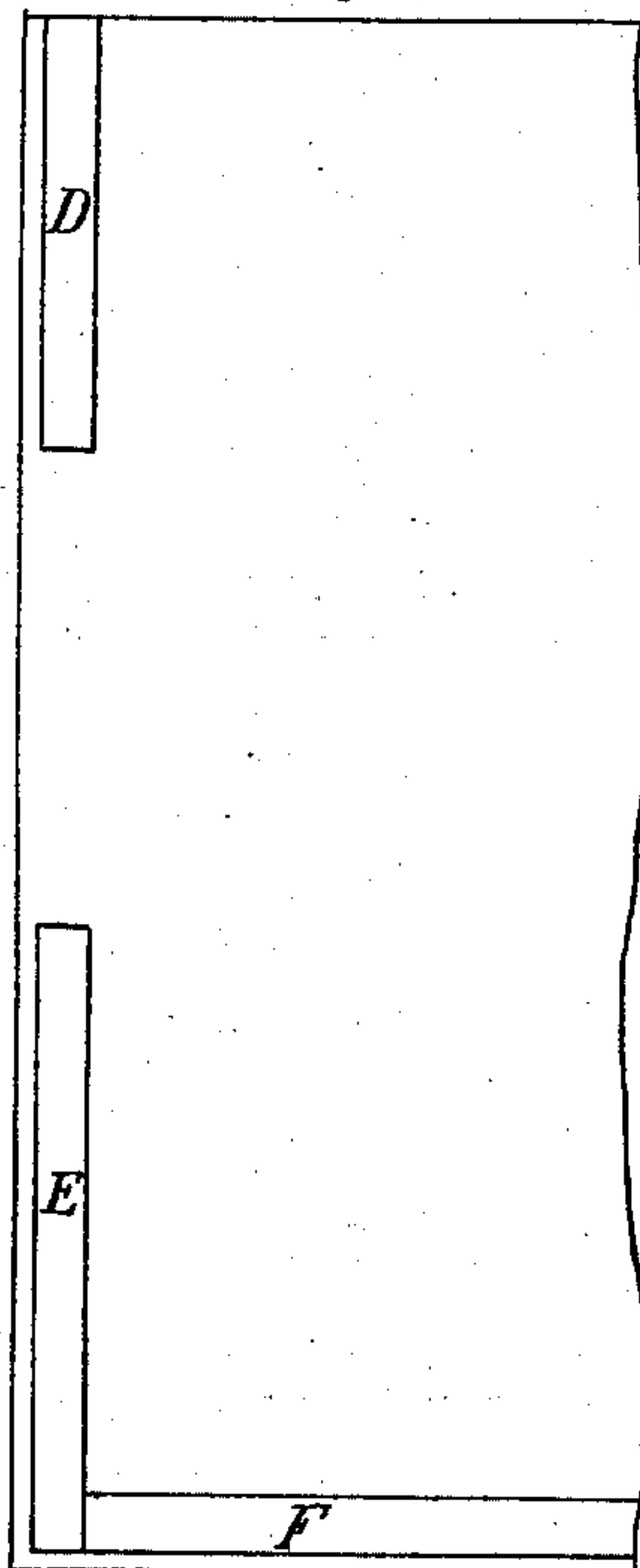


Fig. 6



Witnesses.
Thomas E. Birch.
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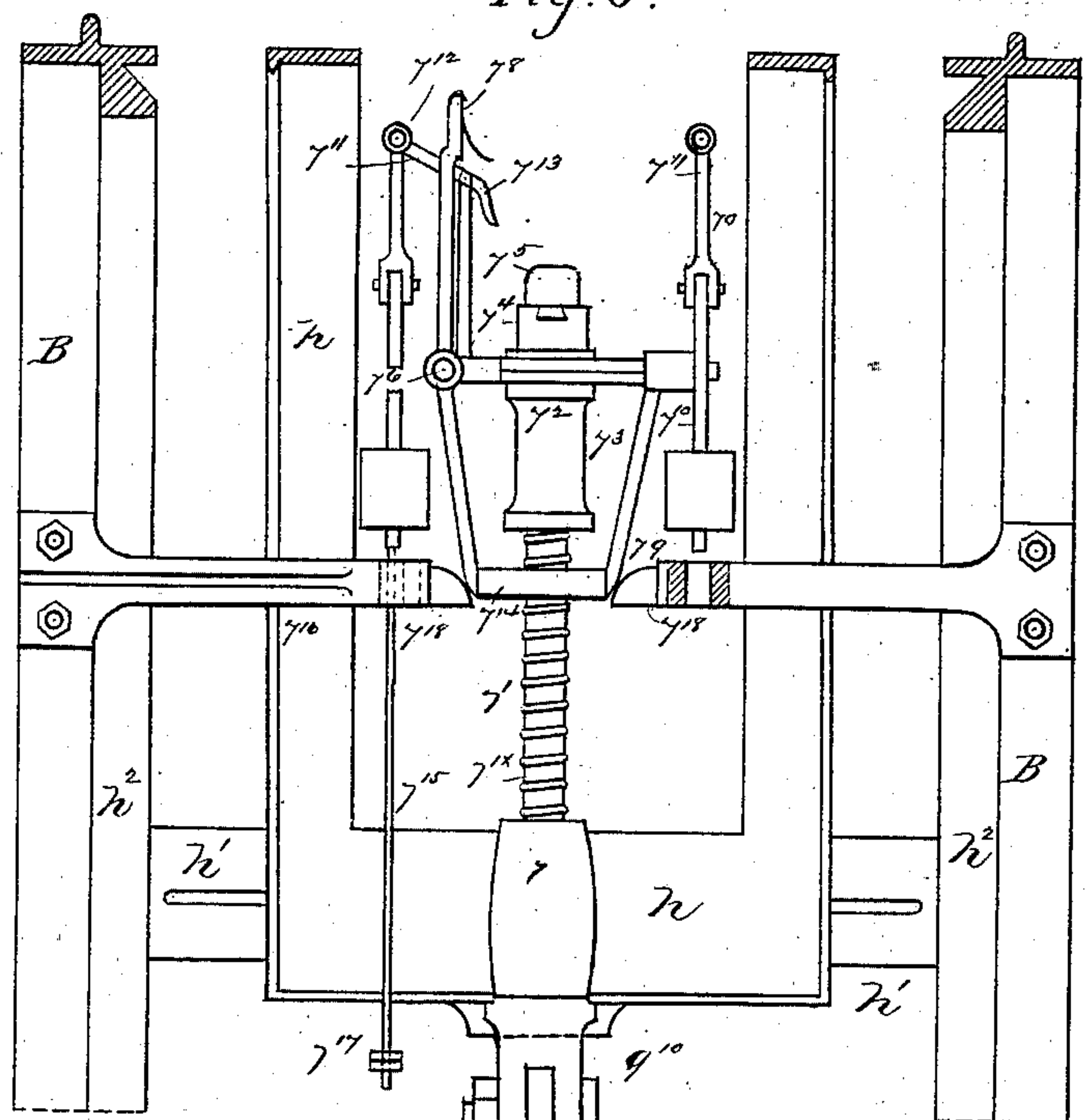
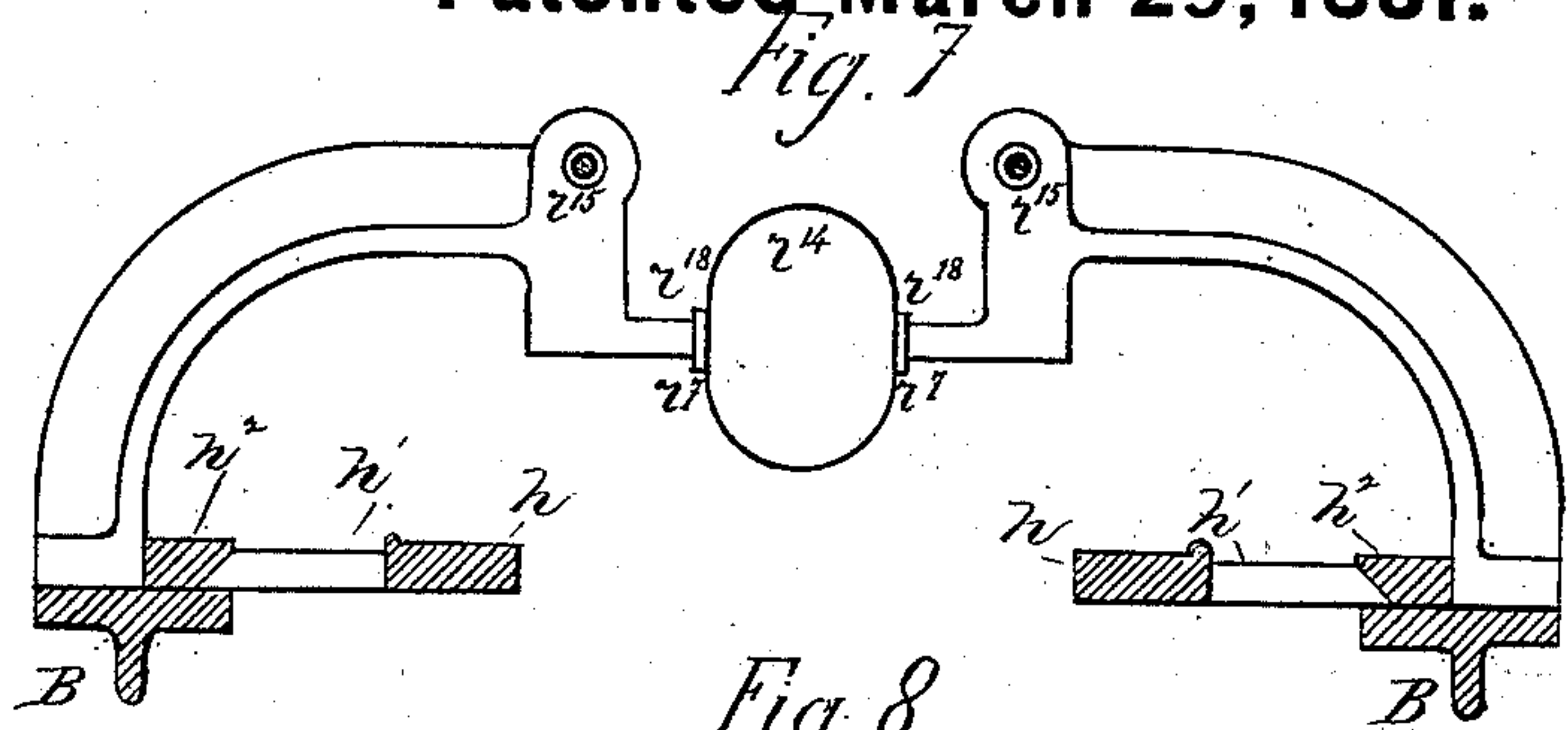


Fig. 5.

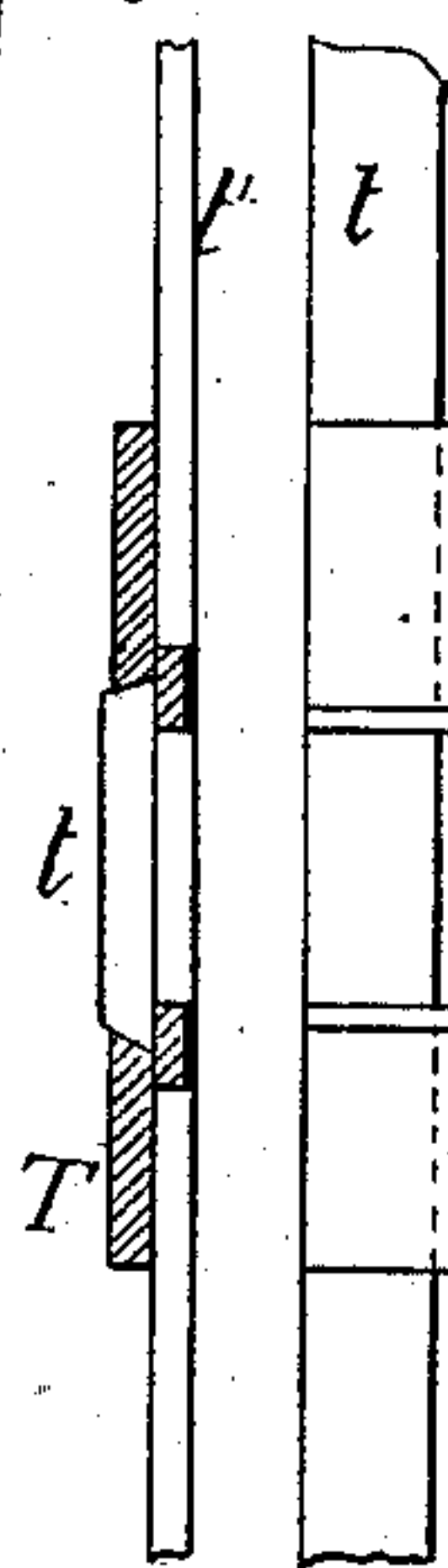


Fig. 4

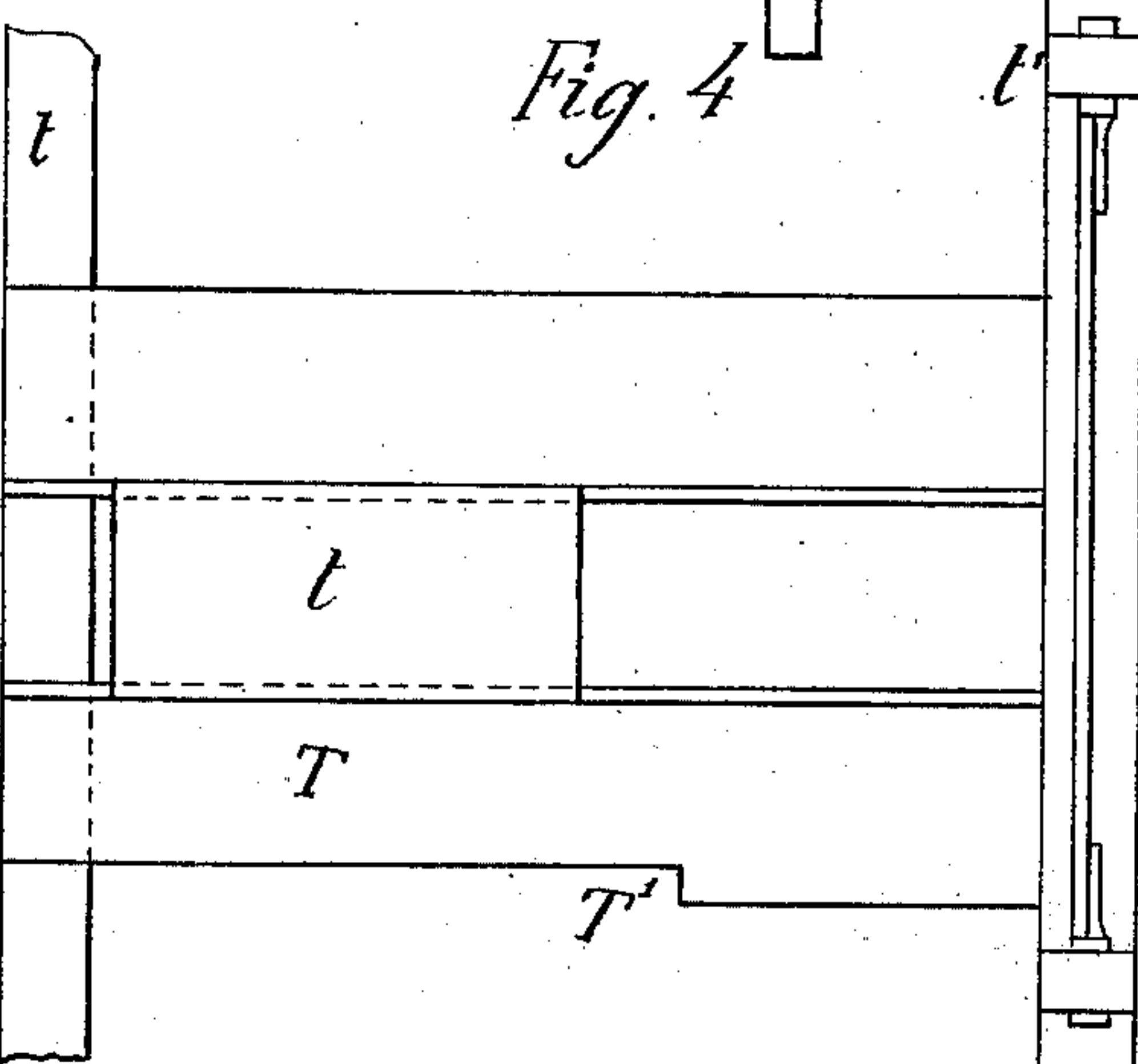
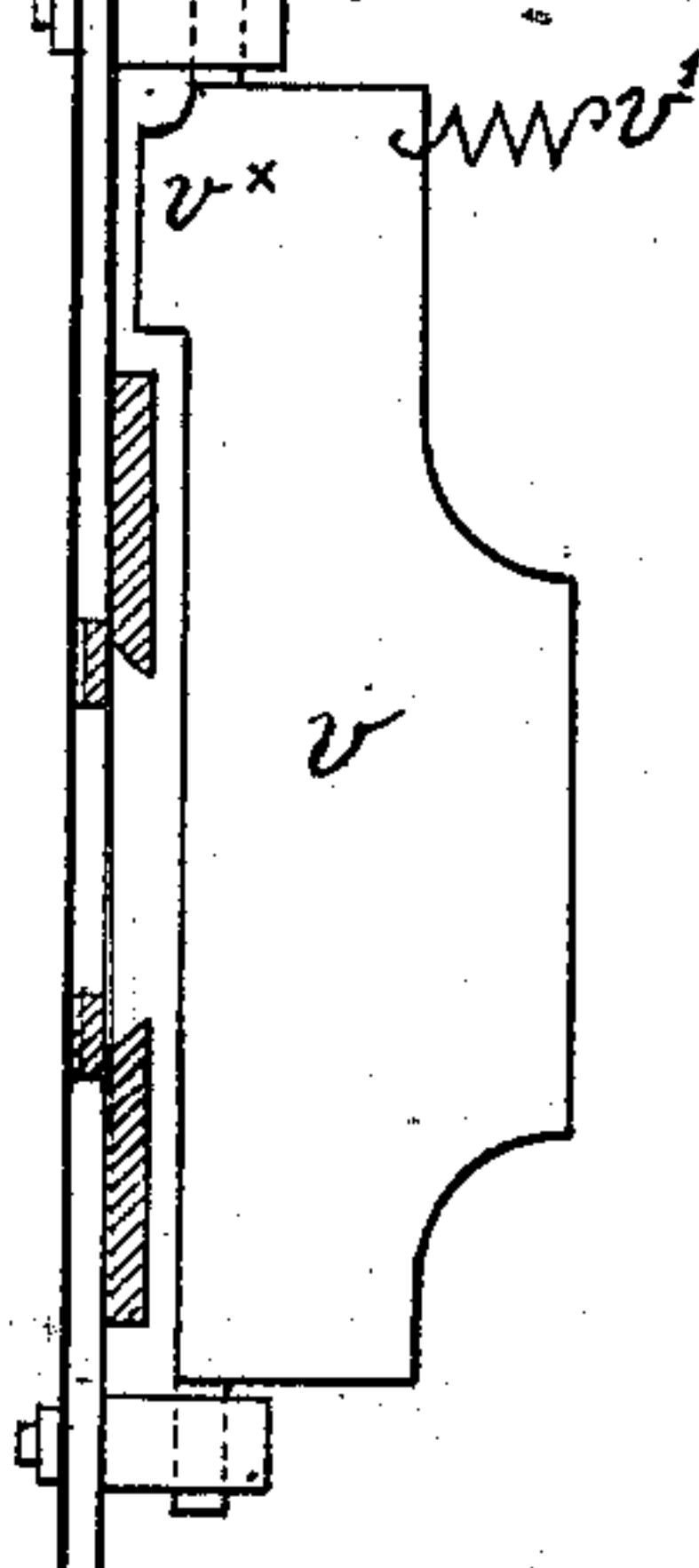


Fig. 5.



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(No Model.)

8 Sheets—Sheet 5.

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Fig. 10.

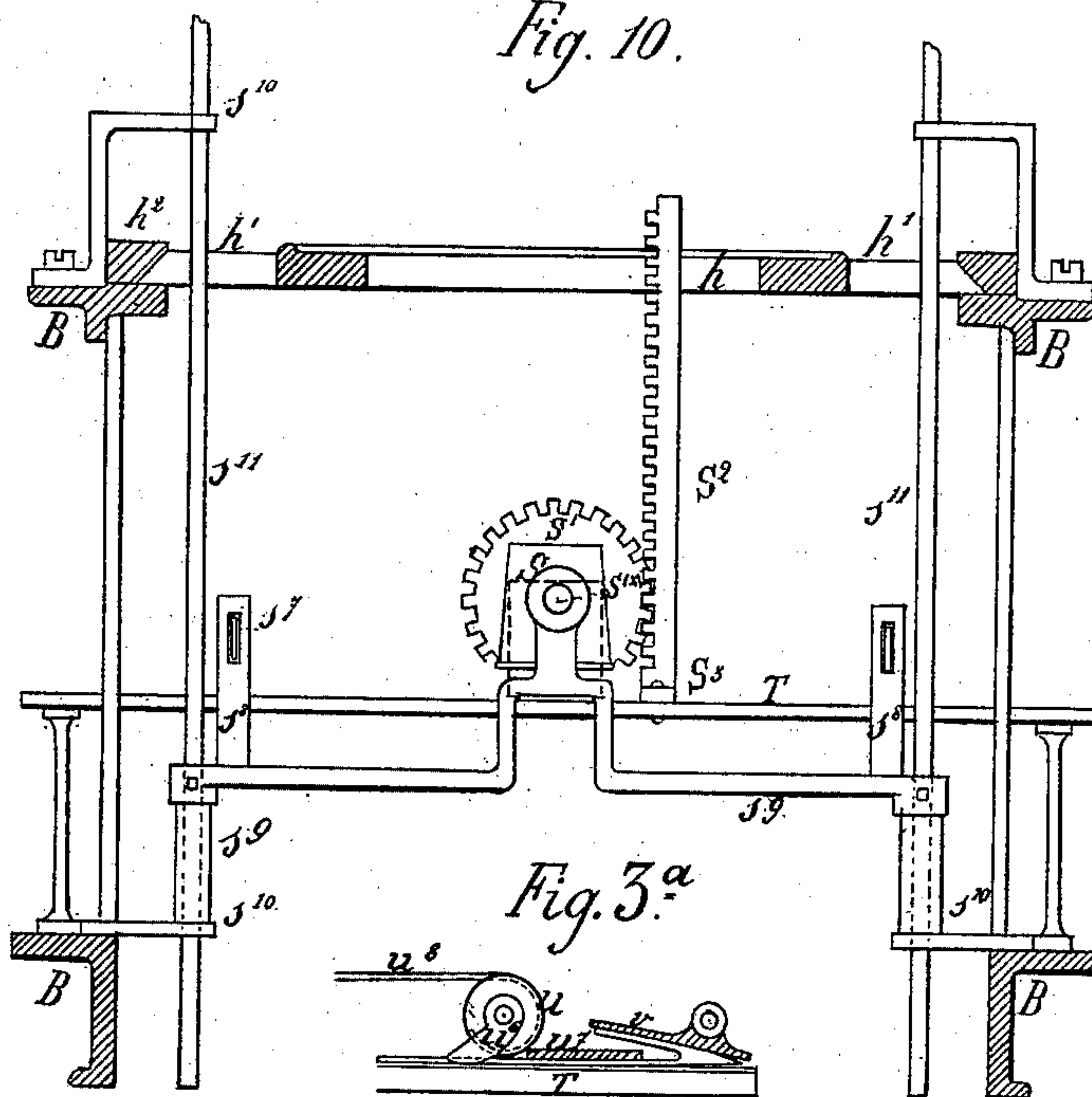


Fig. 3.^a

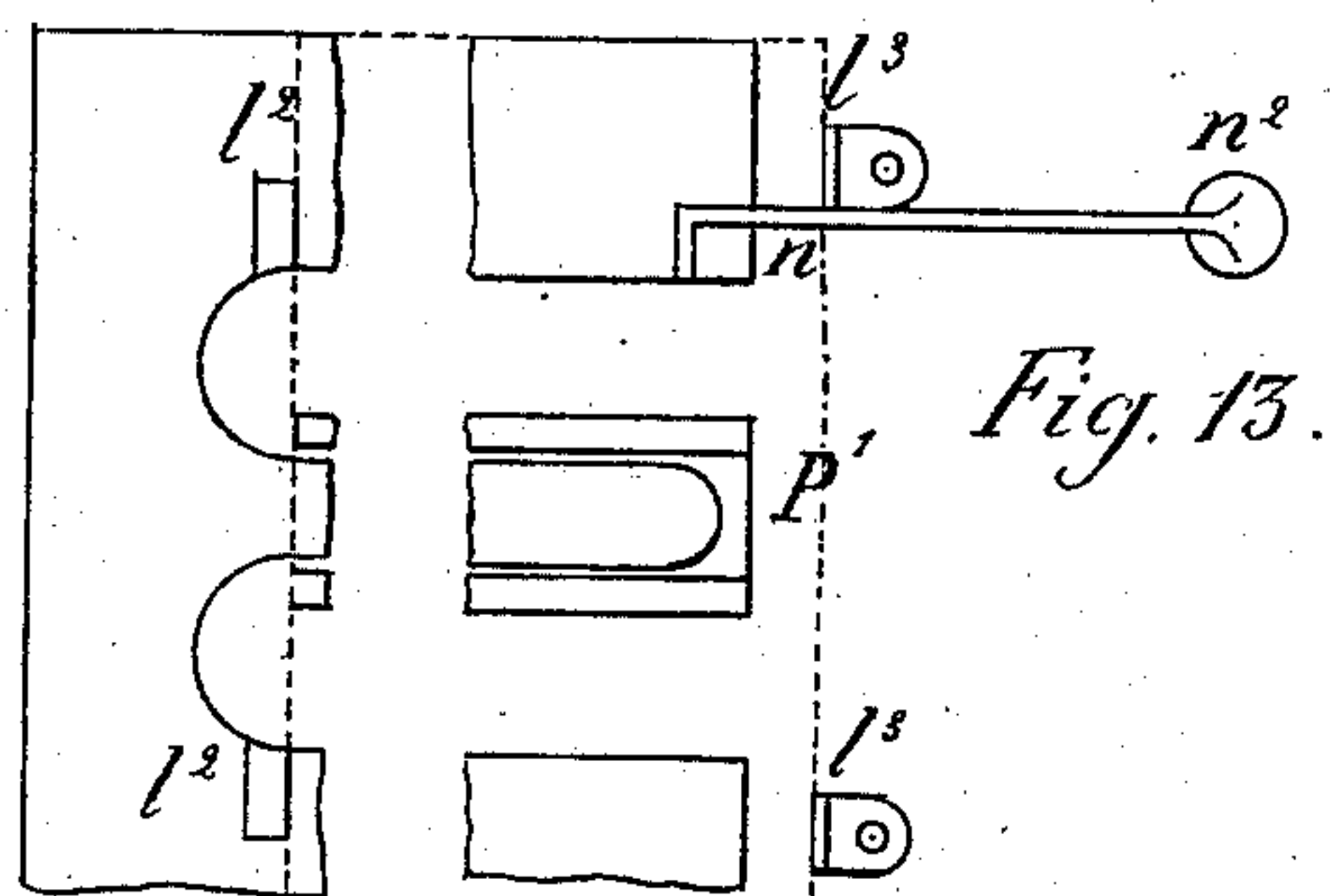
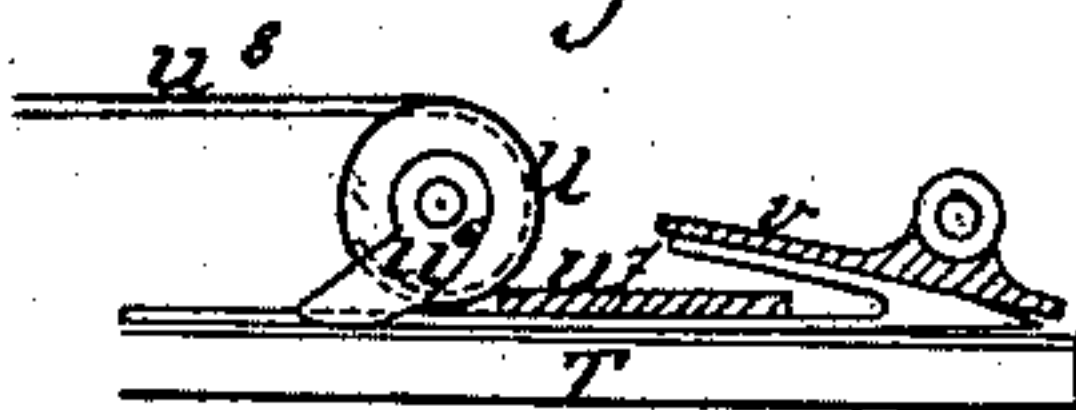


Fig. 13.

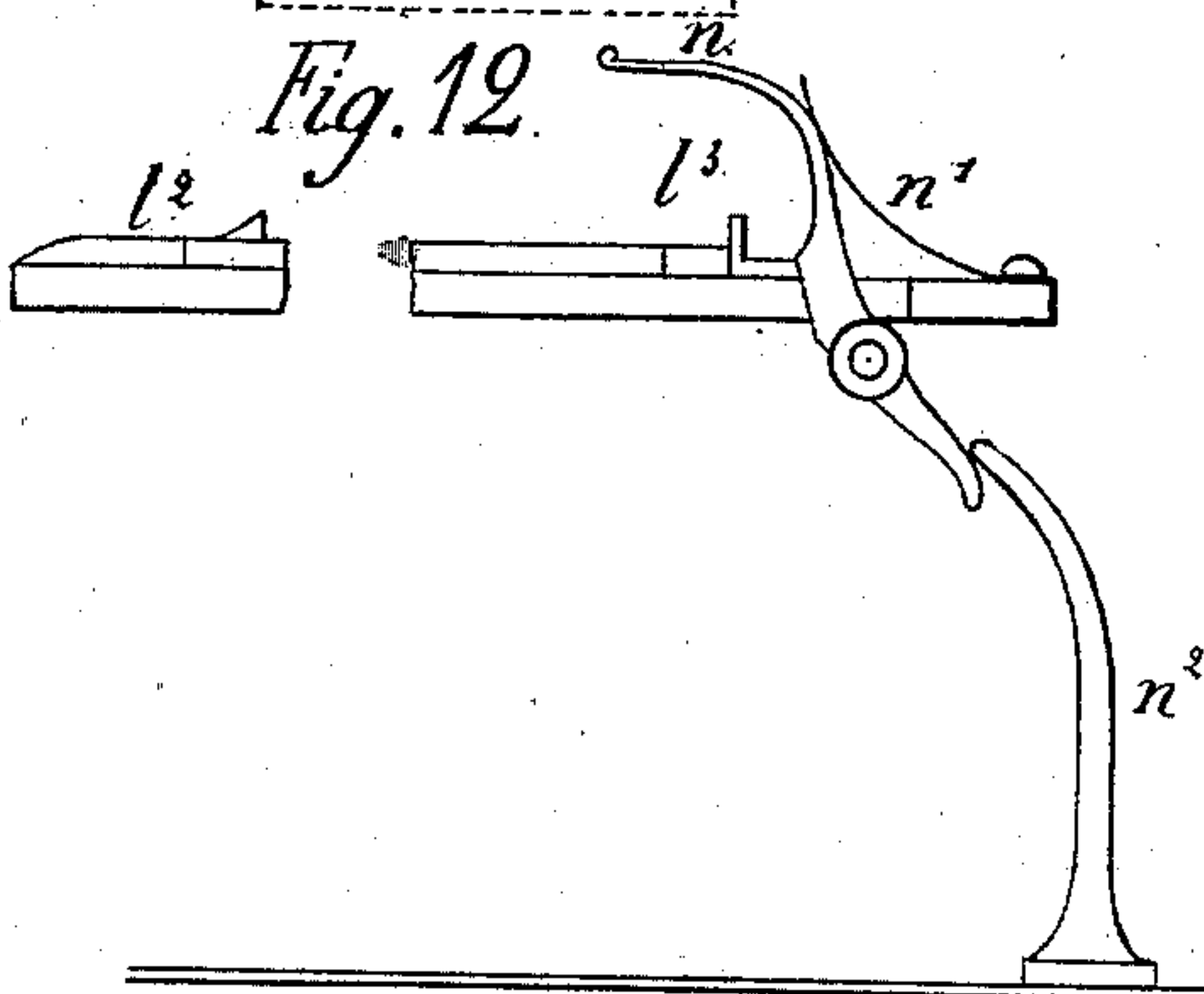


Fig. 12.

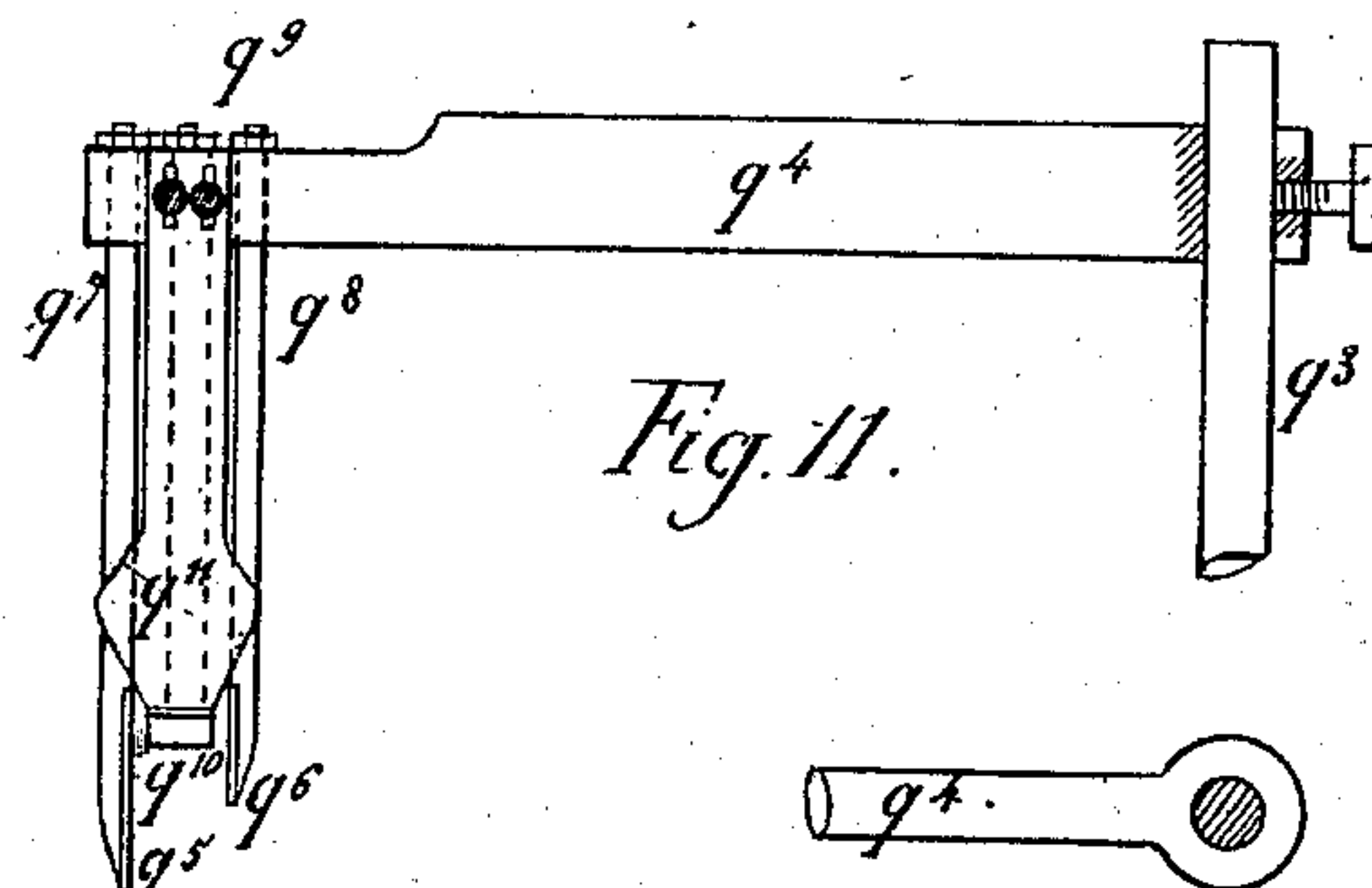
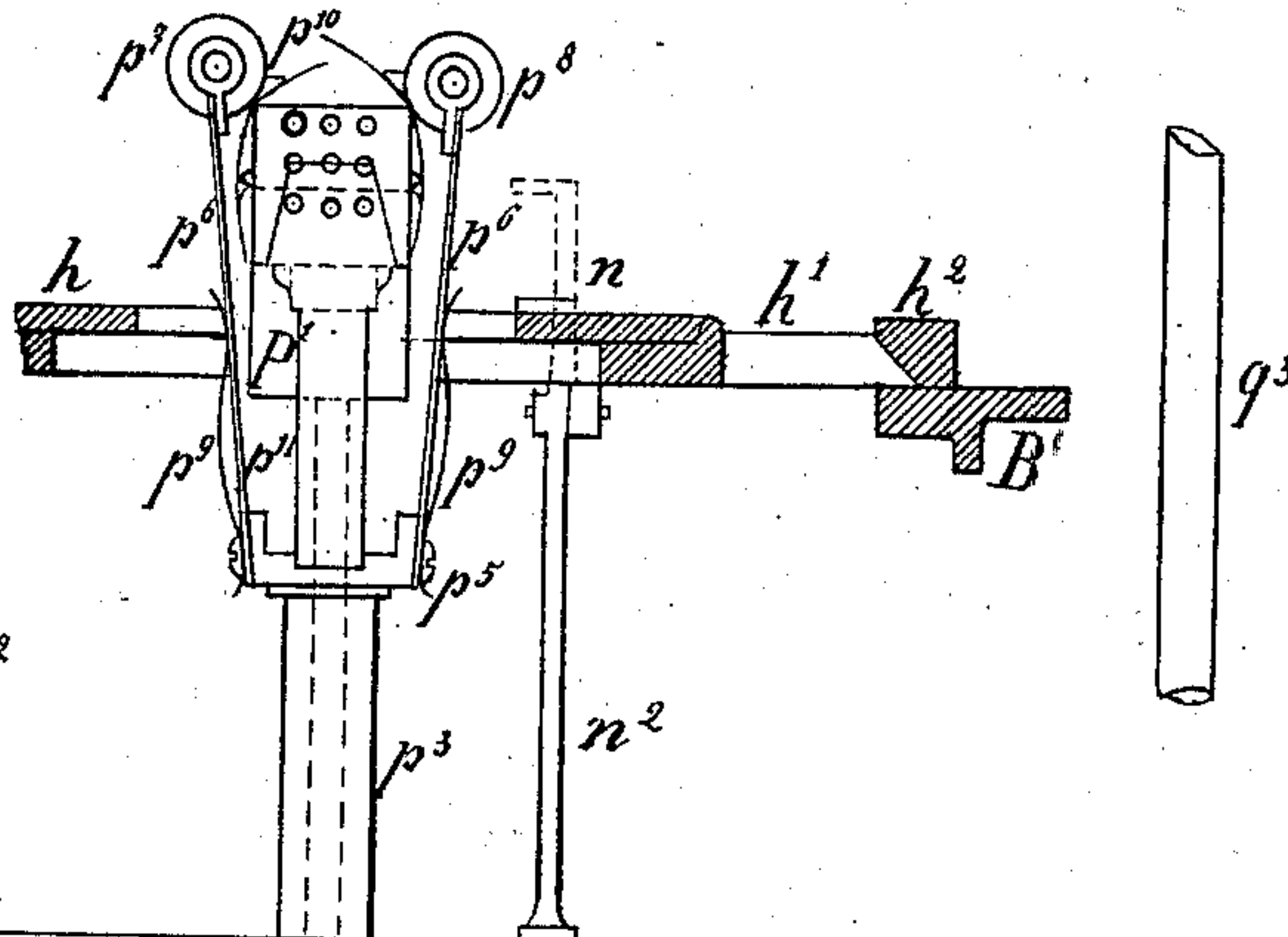


Fig. 11.



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(No Model.)

8 Sheets—Sheet 6.

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Fig. 1.^A

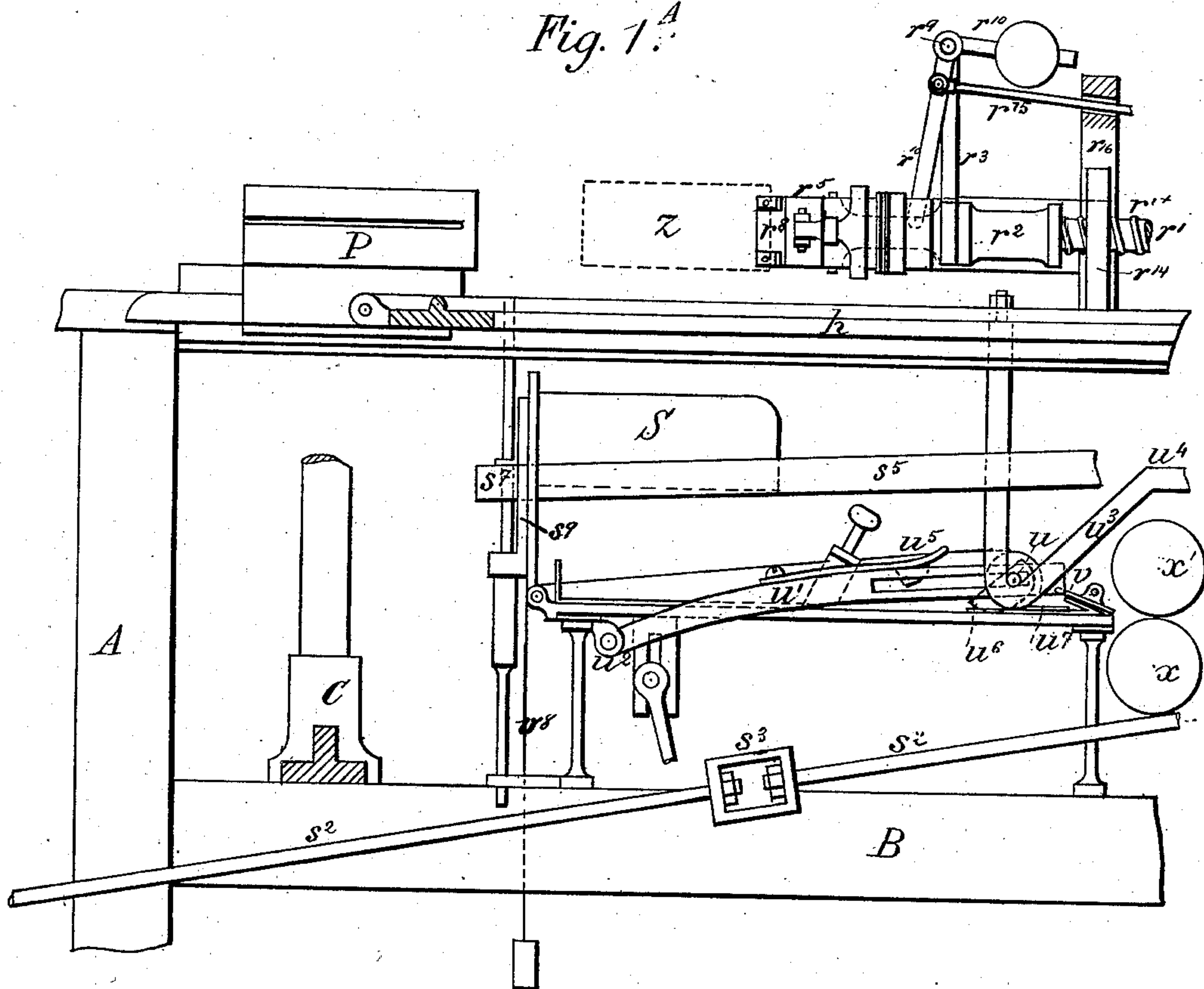
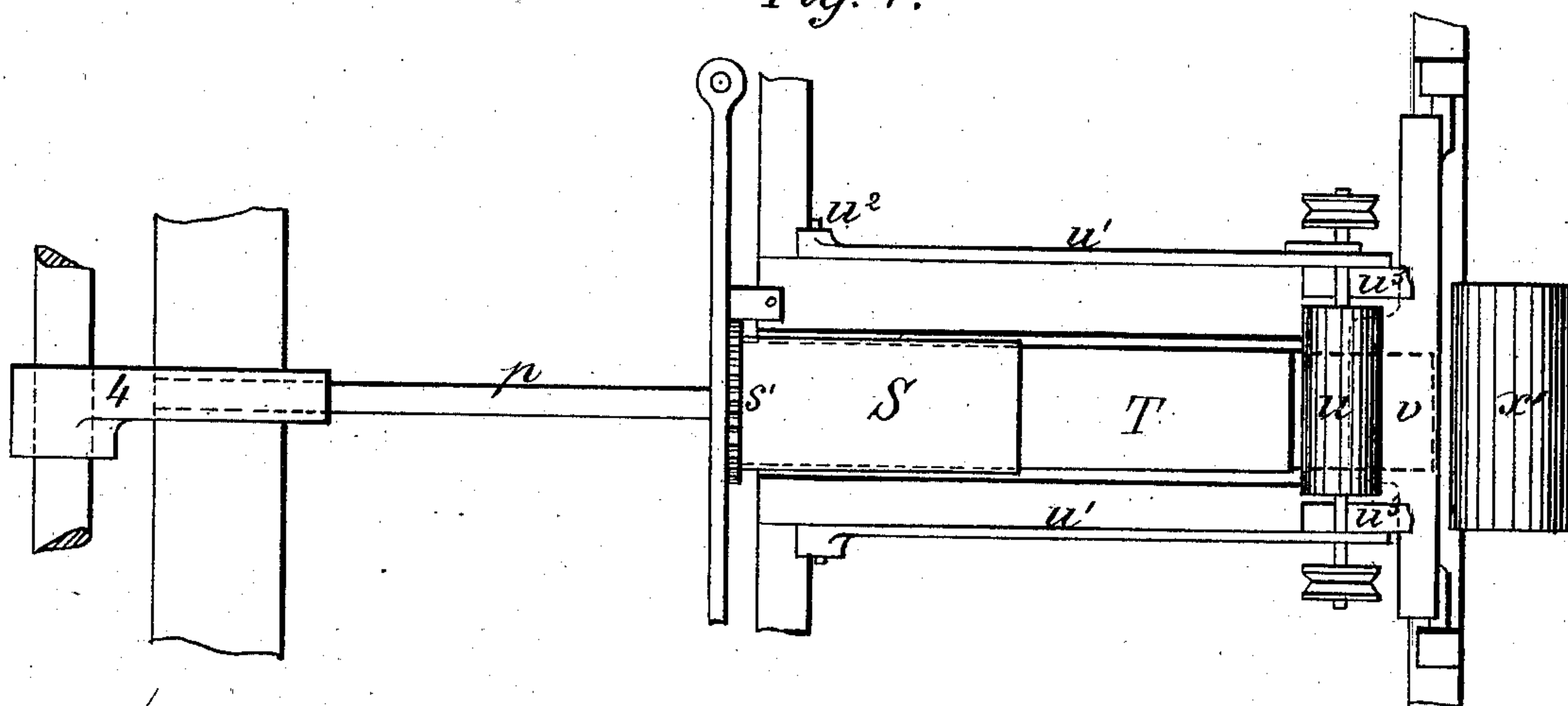


Fig. 1.^B



Witnesses.

Chandler Hall
Fred^r Haynes.

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(No Model.)

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L. PLANCHE.
Paper Bag Machine.

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Fig. 3^A

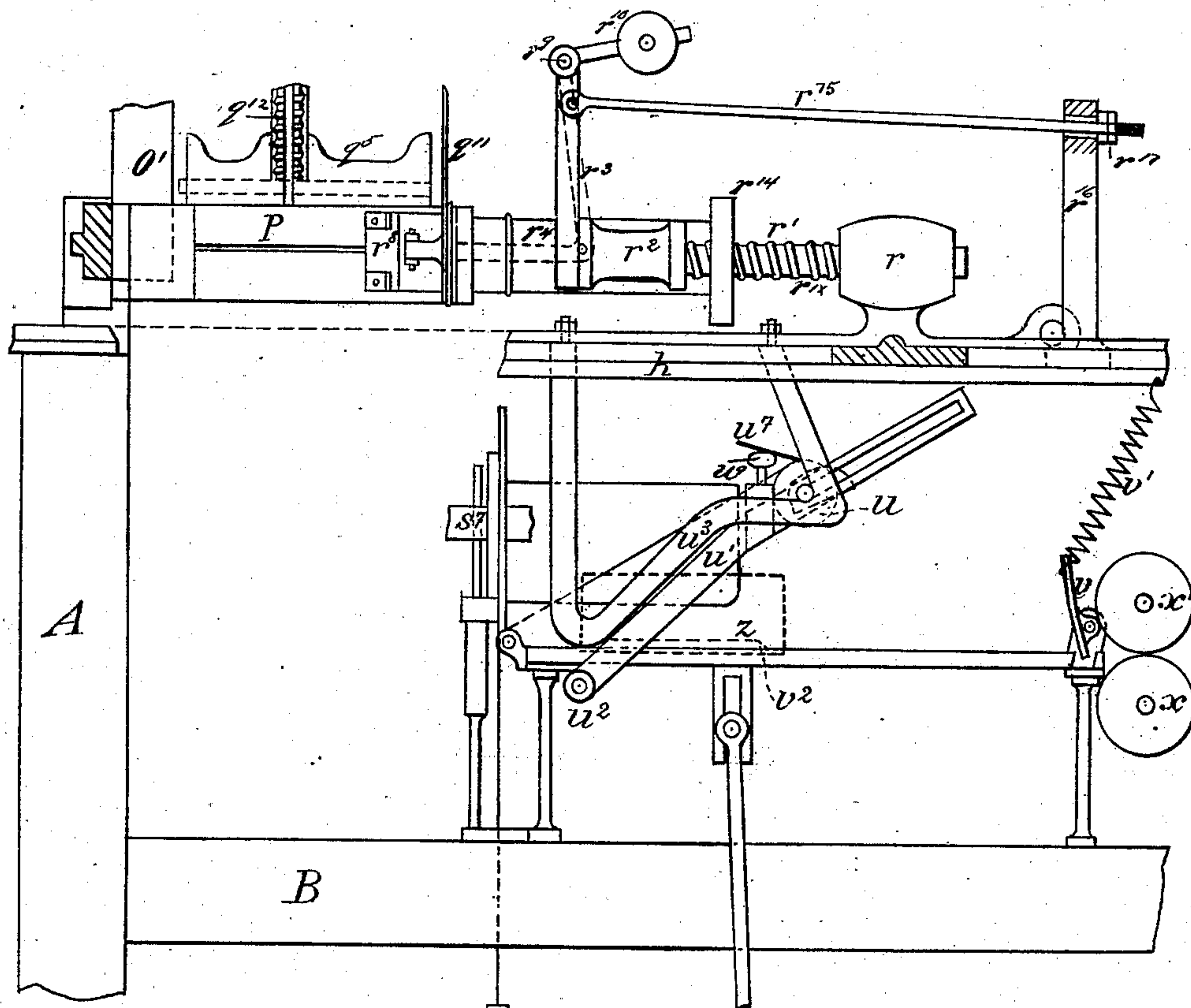
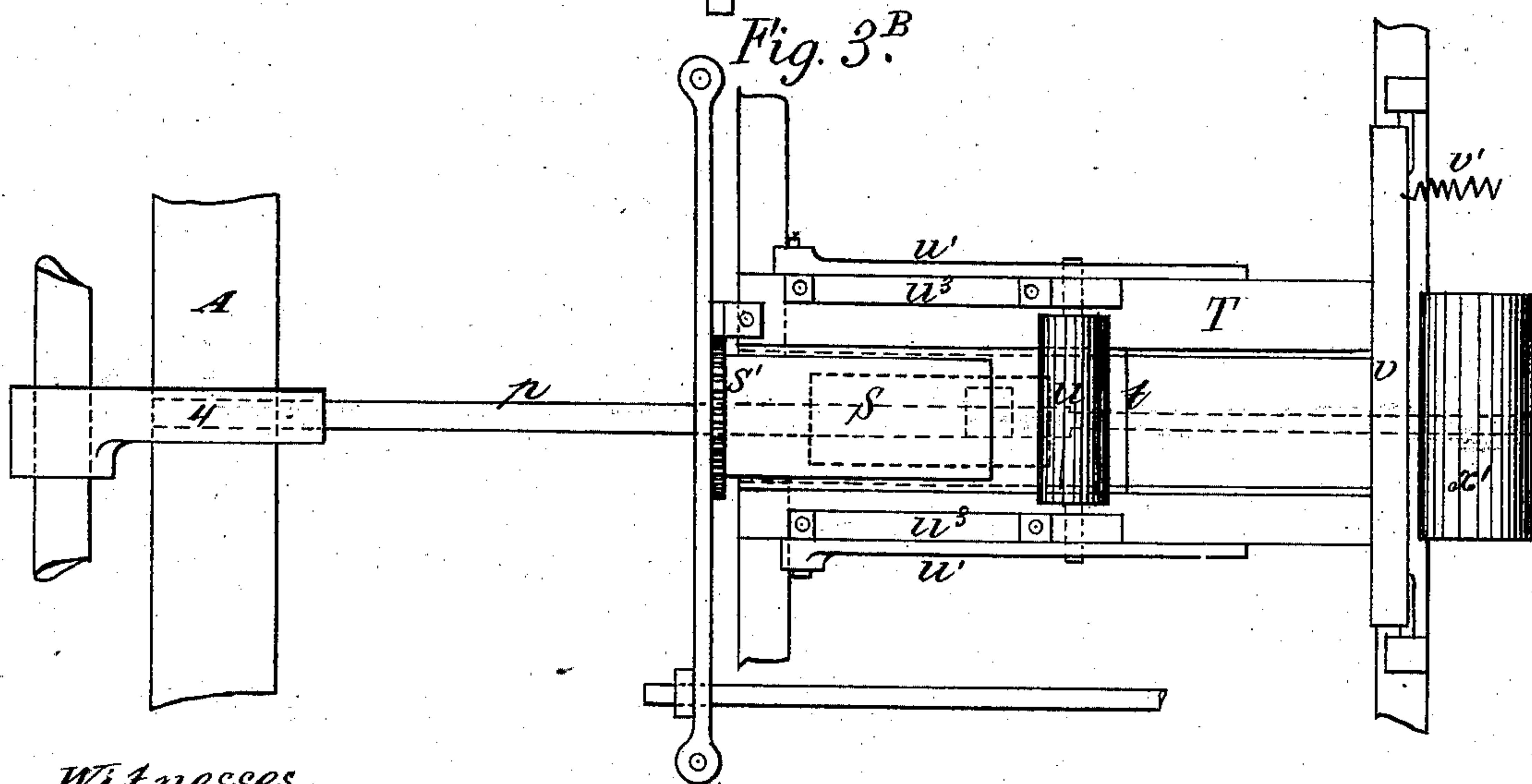


Fig. 3.^B



Witnesses.

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West Haynes

Inventor:

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Edmond H. Brown

(No Model.)

8 Sheets—Sheet 8.

L. PLANCHE.
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No. 239,543.

Patented March 29, 1881.

Fig. A

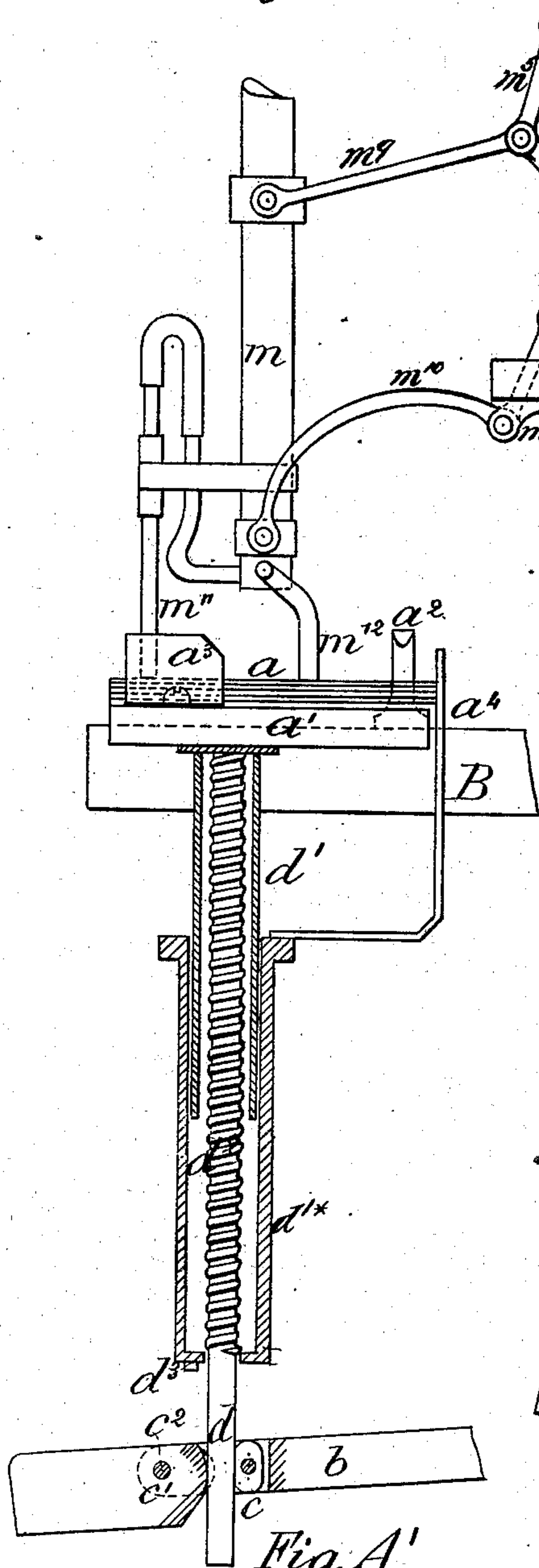
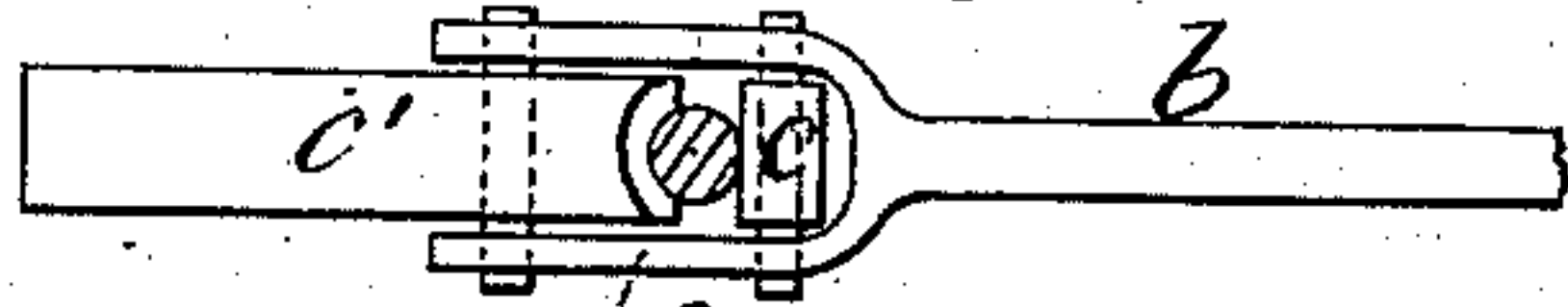


Fig. A'



Witnesses
Chas. Hall
Geo. Hayes

Fig. B

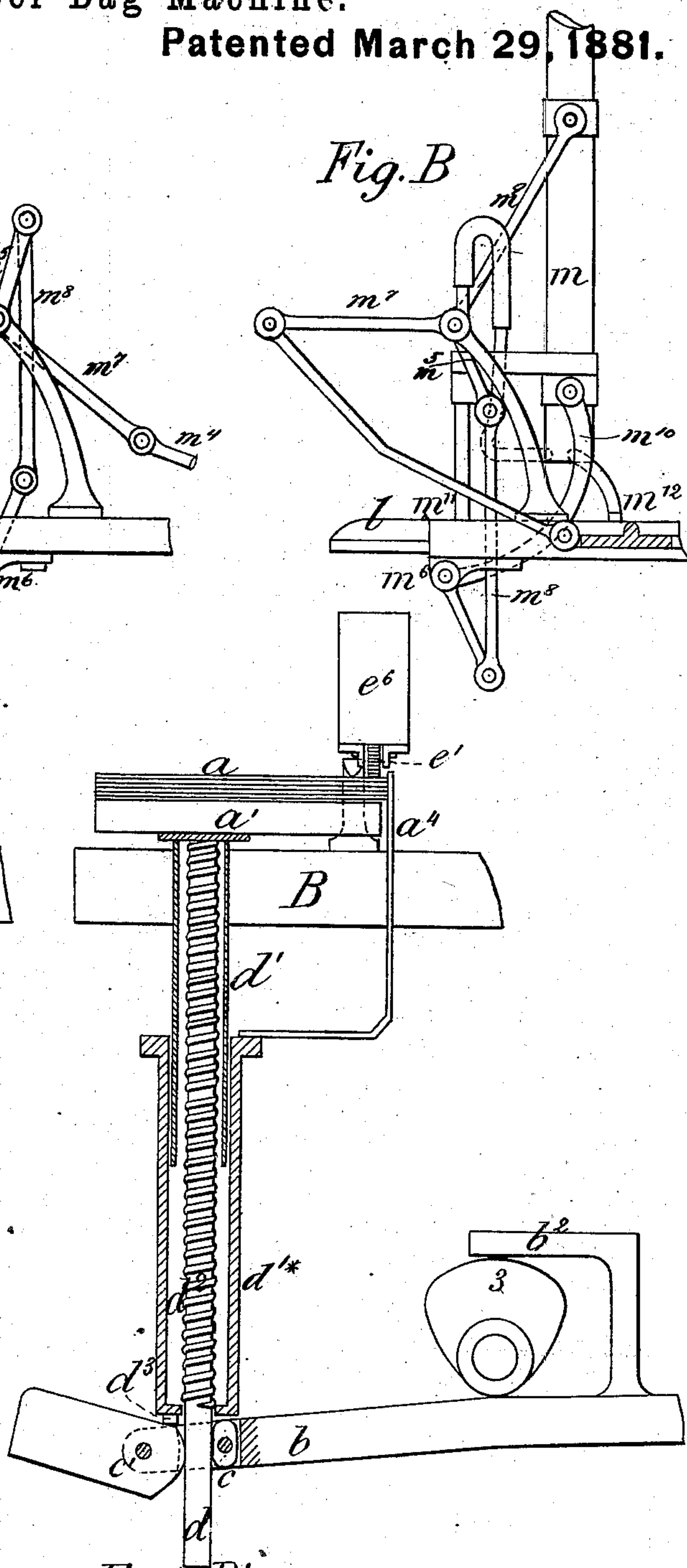
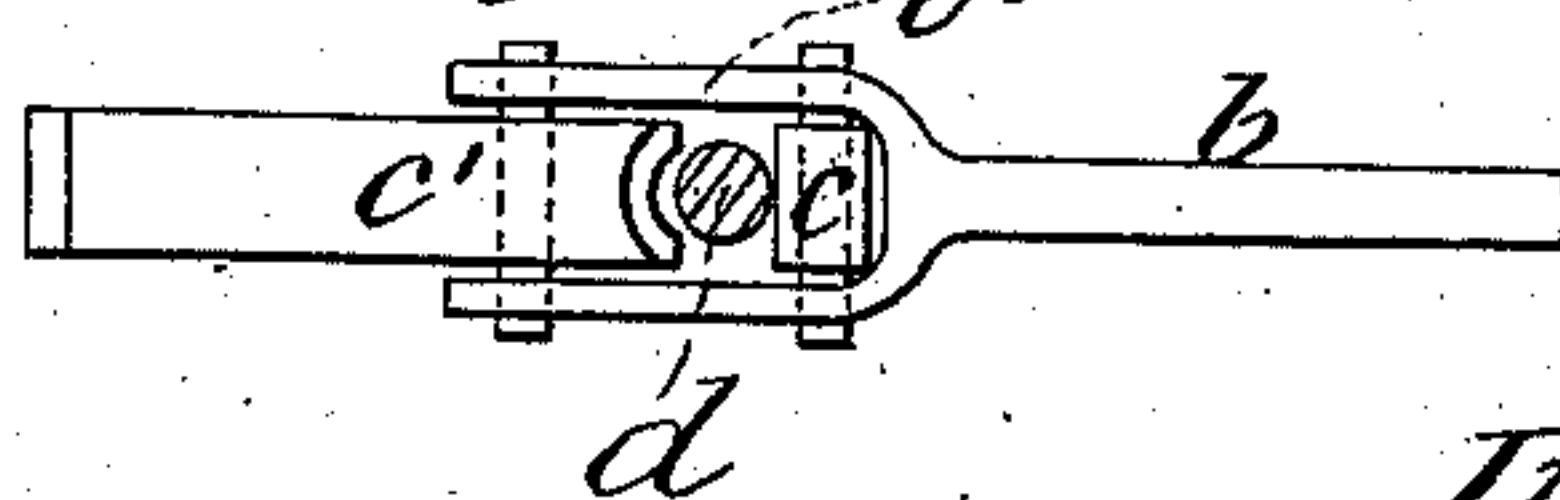


Fig. B'



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UNITED STATES PATENT OFFICE.

LÉON PLANCHE, OF SALINS, FRANCE.

PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 239,543, dated March 29, 1881.

Application filed June 14, 1880. (No model.) Patented in France July 15, 1879, in Belgium July 29, 1879, in England July 25, 1879, in Austria August 5 1879, and in Germany August 15, 1879.

To all whom it may concern:

Be it known that I, LÉON PLANCHE, of Salins, France, have invented Improvements in the Machinery to Manufacture the Paper Bags having a Square Bottom, of which the following is a specification.

This invention consists in a novel arrangement of machinery whereby paper bags may be manufactured, folded, and made up into packets for the market in one continuous operation.

The class of paper bags which it is intended to manufacture is that formed with a square end, such as used by grocers and dry-goods men.

The paper to form the bag, having been cut into blanks of the required size, is placed on a rising and falling table. Vertical motion is given to this table by means of a cam on the main shaft of the machine acting upon a lever which is connected with a rod pendent from the under side of the table. This table is provided with means for holding down the paper blanks while certain portions thereof which are to form the closed end of the bag receive a supply of adhesive substance from a pair of reservoirs placed above the table and mounted on the ends of rock-levers which are actuated by a grooved cam on the cam-shaft. The paper blank thus prepared is taken up by a pneumatic holder and placed upon a second table, which is moved forward to receive it. This table, which is open in the center and forms one end of a rectangular frame, is connected, through an arrangement of levers, with the pneumatic holder, and by its forward motion effects the movement of the latter with the paper blank. The second table, bearing the paper blank, is then drawn back to its original position, during which operation the paper receives along the edge of one side a supply of adhesive material from a third reservoir fixed in any suitable manner above the table. The reciprocating motion of the table and frame is caused by a rock-lever connected in any suitable manner with the frame and with a special cam on the main shaft. The paper blank is by this time brought under a horizontal rectangular metal block former or mold with square ends fixed above the table; and below this block, and coincident there-

with, is a plunger, which is caused to rise by the action of a cam on the main shaft through the opening in the table and raise the blank and hold it against the under side of the mold. In connection with the plunger is a pair of rollers, which, rising with the plunger, press the paper against the vertical sides of the mold. These rollers are each provided with a feather or tappet, and are so arranged that as they arrive at the top of the mold the feathers or tappets shall bend inward first one side and then the other of the paper which projects above the top of the mold. A finger also rises with the rollers, and, pressing up one end of the blank against the end of the mold, forms the first fold in the bottom of the bag. Following the action of the pressing-rolls, a presser-bar descends and completes the folding over of the blank and the joining of the folds to form the top side of the bag. Connected with this presser-bar is a second finger, which, as it descends, forms the second fold in the bottom of the bag.

It now only remains to complete the bottom of the bag by folding the remaining two sides. This is effected by an arrangement of presser-block and fingers or tappets carried by the rectangular frame above mentioned, and advancing with this latter. These fingers or tappets, are so arranged that they shall fold down, one after the other, the two remaining sides, to complete the bottom of the bag. The presser-block then presses on these parts, which, by reason of the adhesive substance with which they were supplied at an earlier stage, firmly adhere together. The manufacture of the bag being now completed, it is drawn off the mold by a pair of spring-clips connected with the presser-block, and is allowed to drop into a box previous to its being deposited on a table below, where it is to be rolled flat for convenience of packing. This box is carried in end bearings, and can be rotated on its axis by means of a rack and pinion, so as to place the bag on the table below, with the joint of the paper downward. This motion of the box is caused by the rising and falling of a bell-crank lever to which the rack is connected, the motion of the bell-crank lever being regulated by a cam on the main shaft.

The compressing mechanism consists of a

roller carried in bearings in an inclined bracket pendent from the rectangular frame, the amount of horizontal rolling motion being regulated by a slot in the end of a lever pivoted to the main frame of the machine. The bag is compressed from the mouth toward the bottom, and the bottom is folded down by a folding blade or plate mounted in a suitable bearing and actuated by a tail-piece connected with the pendent bracket. The bag thus flattened is passed between squeezing-rollers, and is discharged therefrom into a receptacle consisting of a circular box divided into any desired number of compartments to hold any desired number of bags, and mounted on a vertical axis, to which intermittent rotary motion is communicated by means of a pawl and ratchet-wheel actuated in any convenient manner from the main shaft. This arrangement of machinery admits of four bags being in the course of manufacture at one time.

In the accompanying drawings, Figure 1 is a longitudinal section of the whole of the machine for making paper bags, showing the movements of the various parts. Fig. 2 is an end view upon a larger scale. Fig. 3 is a longitudinal section of a portion of the machine, showing parts thereof in a second position upon a larger scale than Fig. 1. Figs. 4, 5, and 5^a show detached views of parts of the machine; and Fig. 6 represents a portion of a sheet of paper for forming the bag, showing the gummed portions; and Figs. 7 to 13 are detached views of the various parts of the apparatus, to be more fully described hereinafter. Figs. A, A', B, B' are detail views upon a larger scale than Fig. 1, illustrating the action of the pneumatic holder and the devices for elevating the paper-carrying table; and Fig. 1^A, 1^B, 3^A, 3^B are detail views upon a larger scale than Fig. 1, illustrating the devices for removing the bags from the former and flattening and delivering them into the compartments of a circular rotary box or receptacle.

In the different figures the same letters of reference refer to corresponding parts.

The various parts of the machine are mounted on a frame composed of standards A, longitudinal pieces B, and transverse pieces C, all securely connected together in any convenient manner.

In describing the various movements and the working parts it will be most convenient to take them in the order in which the manufacture of the various parts of the bag is carried on.

The paper is first cut into sheets of the dimension required, and the sheets are laid in a pile, *a*, on the table *a'*, which is provided with side guides, *a*³ *a*³, and a stop, *a*⁴, to maintain them in place. The table *a'* is capable of receiving a vertical motion, which raises the paper to or withdraws it from stops *a*² *a*² fixed on the frame of the machine, and the top sheet of the paper is taken up when the table is lowered by a pneumatic apparatus, to be herein-

after described. The table *a'* is carried on the end of a rod, *d*, which is surrounded by a spring, *d*², and inclosed in a tube, *d'*, which slides in the tube *d'*^{*}, which is fixed to the frame in any convenient manner. The lower end of the rod *d* projects from the tube *d'*^{*} and enters a fork, *b*³, in the end of a lever, *b*, where it is gripped between the piece *c* and counterweighted piece *c'*, both pivoted in the fork. The lever *b* is pivoted to the frame at *b'*, and it is provided with a hook, *b*², which rests on a cam, 3, by which the lever *b* is raised and lowered. When the pile of paper is placed on the table *a'* the table is depressed until the tube *d'* touches the bottom of the tube *d'*^{*} and the spring *d*² is compressed. The table is maintained in this position by the gripping-pieces *c* *c'* on the lever *b* holding down the rod *d*. As the cam 3 rotates it raises the lever *b*, and with it the rod *d*, which is firmly held by the pieces *c* *c'* until the piece *c'* comes in contact with the head of the adjustable screw *d*³, when the gripe of the piece *c'* on the rod *d* is released, and the table continues to rise by the action of the spring until the top sheet of the pile is pressed against the stops *a*². The lowering of the table is effected by the dropping of the lever *b*, which allows the gripping-pieces *c'* to again take hold of the rod *d* and draw it down. When the table is in the raised position the application of gum or other adhesive substance to portions of the sheet of paper takes place. The adhesive material is contained in two reservoirs, *e*⁶ and *f*⁴, mounted respectively on sliding bars *e*⁵ and *f*⁵, each reservoir being provided with a roller, *e*⁷, to transfer the adhesive material to the paper. A to-and-fro motion is communicated to the bars *e*⁵ and *f*⁵ by a series of levers actuated by a grooved cam, 2, mounted on the driving-shaft A'. A rock-lever, *e*, pivoted at *e'* to the main frame, is provided at its lower end with a bowl, *e*², which takes into the groove of the cam 2. The upper end of the lever has a slot, into which takes a stud, *e*⁴, fixed to the bar *e*⁵. A second rock-lever, *f*, pivoted at *f'*, is connected at its lower end with the lever *e* by the rod *f*², and at its upper end is provided with a slot to receive a stud fixed to the bar *f*⁵. (See Fig. 2.) By this arrangement the reservoirs will be moved in opposite directions, and will, by means of the rollers *e*⁷, supply the adhesive material to the paper on the parts marked D and E, Fig. 6. The paper is now taken up by the pneumatic apparatus, and is placed on a movable table, *l*, which is open in the center and is brought forward to receive it. This table is carried on one end of a rectangular frame bolted to the cross-pieces *h'*, which slide in guides *h*² in the main frame. The forward movement of the frame and table is effected in the following manner: A crank, *g*, terminating in a bowl, *g'*, works in a vertical rectangular frame, *b*, which is provided with a socket, *g*². Into this socket screws a rod, *g*³, which is supported in a guide, *g*⁴, and is connected by a rod, *g*⁵, to a rock-lever, *g*⁶, pivoted

at g^7 to the main frame. The head g^8 of this rock-lever is connected by the rod g^9 to the frame h at g^{10} .

The pneumatic apparatus consists of a tube, 5 m , connected by means of an india-rubber tube, m' , with an exhaustor, m^3 , which is operated by a cam, 8, on the main shaft A' . The tube m is provided with three mouths, m^{11} , m^{12} , and m^{13} , to take up the sheet of paper, and it is 10 raised so as to bring the paper onto the movable table l , (where the paper is to be placed between guides l^2 l^3 , see Figs. 3, 12, and 13,) by an arrangement of levers consisting of a three-armed lever, m^5 m^7 m^9 , and a bell-crank 15 lever, m^{10} , mounted on the axle m^6 m^{6*} , which have their bearings in bracket-arms on the main frame. These levers are coupled together by the link-rod m^8 , and are connected by the link-rod m^4 to the sliding frame h at h^3 .

20 The use of tubes can be limited to the rising of the sheet of paper, and the course of the movable table prolonged under the sheet, which will be placed without any movement of the pneumatic apparatus.

25 The paper is held down on the table during the return movement of the frame h by a finger, n , pivoted to the frame, and pressed against the paper by a spring, n' . This finger is raised at the proper time by striking 30 against a fixed stop, n^2 . (See Fig. 12.) During this backward movement of the frame the paper receives on its side F (see Fig. 6) some adhesive material from the toothed roller o of a reservoir, o' , containing such material, and secured to the traverse C in any convenient manner, so as to allow of vertical motion 35 being imparted to it to raise the roller off the paper. The sheet of paper on the table l is at the same time brought under a horizontal rectangular or other suitably-shaped metal mold former or block P , of the size of the bag to be made. This block, the ends of which 40 are square, is fixed to the main frame of the machine, and is pierced with holes. On two of its vertical sides a triangular-shaped rib, intended to mark a fold on either side of the paper, is provided. A block or plate mounted on the upper end of a rod, surrounded by a helical spring, p^2 , and inclosed in a hollow rod, 45 p^3 , mounted in the socket-guide p^4 , is caused to rise, as hereinafter to be explained, through the opening in the table l , against the under side of the mold P , and thus hold the sheet of paper firmly against the mold, the plate or block being maintained in position by the 50 spring p^2 . The hollow rod p^3 passes through the socket-guide p^4 , and is connected at p^{2*} to a lever, p , which is pivoted at p' to the frame. The lever p rests on and receives vertical motion from a cam, 4, mounted on the main shaft 60 A' . The hollow rod p^3 (see Fig. 11) carries at its upper end a cross-head, p^5 , to which are attached, by rivets or screws, flat springs p^6 , which carry the bearings for the axle of two 65 rollers, p^7 and p^8 . These rollers have each a rib or feather thereon, and are so arranged that as they rise by the action of the cam 4 on

the lever p they are caused to push up and press the paper against the vertical sides of the mold P . The axles of these rollers carry 70 small pinions, which gear with a rack suitably placed for the purpose, and by which rotary motion is communicated to the rollers as they rise and fall. The rollers having by this time arrived at the top of the mold P , the ribs 75 or feathers thereon come into play and bend inward first the plain side and then the gummed side of the paper projecting above the top of the mold, as seen best at Fig. 11. At the same time a fixed vertical blade or finger, 80 p^{11} , (see Fig. 1,) secured in front of the cross-head p^5 , is raised and presses up one end of the blank against the end of the mold, and thus forms the first fold in the bottom of the bag. 85

Following the action of the pressing-rollers p^7 p^8 is that of a top presser, which completes the folding down of the blank and the joining of the gummed folds to form the top side of the bag. This top presser is composed of 90 several parts, which are mounted on a projecting arm, q^4 , adjustably affixed to a vertical rod, q^3 , (see Figs. 1, 2, and 11,) suitably connected with a lever, q . This lever q is pivoted at q' to the upper end of a vertical stand- 95 ard, q^* , and is maintained in contact with a cam, 7, on the main shaft A' by a spring, q^2 , or analogous device. As this cam 7 rotates, the lever will be depressed, and downward motion will thus be communicated to the top presser. 100 The parts which compose this presser are, first, a horizontal blade or plate, q^5 , which presses down one—say the left—side of the paper; secondly, a horizontal blade or plate, q^6 , to 105 press down the other or right side of the paper on the top of the left side; thirdly, a block covered with india-rubber, q^{10} , which presses on the two folded sides and holds them together sufficiently long for the adhesive substance on the right side to set; and, fourthly, a vertical fin- 110 ger, q^{11} , fixed to the projecting arm q^4 , which forms the second fold in the bottom of the bag. The blades or plates q^5 and q^6 are fixed to square rods q^7 and q^8 , which are capable of sliding vertically in the projecting arm q^4 , and 115 are prevented from dropping from the projecting arm by nuts screwed onto their heads. The rod q^7 is somewhat longer than the rod q^8 , in order that the two blades q^5 and q^6 shall come into action consecutively. The block 120 q^{10} is mounted on a rod, q^9 , which is also capable of sliding vertically in the projecting-arm q^4 , and is provided, like the rods, with a screw-nut. The rod q^9 is surrounded by a coiled spring, q^{12} , (see Fig. 1,) which is compressed 125 when the block rests onto the top of the bag, and bears with a certain amount of pressure on the folded-over sides of the bag. The continued movement of the cam 4 will cause the lever p to descend and allow the pressing-roll 130 ers p^7 p^8 , with their accessories, to descend by their own weight into the position shown at Fig. 3. The cam 7 will raise the arm q^4 , and with it the finger q^{11} , preparatory to the com-

pletion of the bottom of the bag by a special apparatus, while the horizontal blades q^5 and q^6 and the block q^{10} are allowed to remain in contact for a short time with the paper, the first by reason of their own weight and the second by reason of the spring q^{12} .

The apparatus for completing the bottom of the bag is arranged in a horizontal plane, and is carried by the movable frame h , the movement of which it follows. In Figs. 1, 7, and 8 this apparatus is shown in its extreme rear position—viz., in repose—and in Figs. 3 and 9 it is represented in its forward position and completing the bag. It is composed of a supporting-socket, r , formed on the back of the movable frame h . This socket is intended to receive one end of a rod or bar, r' , which is secured therein by a pin or in any other convenient manner. This rod or bar r' carries a helical spring, r'^* , coiled around it, a socket-head, r^2 , supporting a cross-frame, r^3 , and at its outer end a square block, r^4 , to which is fitted a block of india-rubber, r^5 . The cross-frame r^3 carries at either end a vertical rod, on which are mounted the rock-levers r^7 r^7 and bell-crank levers r^{10} r^{10} . The rock-levers r^7 are pivoted at the point r^6 r^6 , and are provided at their outer ends with springs r^8 . The inner ends of these rock-levers r^7 are connected to and carry between them a light flat spring, r^{14} , which is bent into a circular form, the ends being connected together. The bell-crank levers r^{10} , which have one arm counterweighted, rock on centers r^9 r^9 , and are connected by rods r^{11} to rocking fingers r^{13} pivoted to brackets projecting horizontally from the cross-frame r^3 . These levers r^{10} are also connected to long rods r^{15} , which pass through openings in the curved brackets r^{16} . These rods r^{15} are threaded at their ends to receive nuts r^{17} , which, on striking against the brackets r^{16} as the frame h advances, cause the levers r^{10} to be pulled back, and thus rock the fingers r^{13} on their fulcrum-pins and cause them to fold in the two sides of the bag previous to the arrival of the india-rubber block r^5 , which presses them firmly together until the adhesive material with which the edges of the paper are coated is set. The apparatus, as it retires, draws the completed bag (by the two springs r^8 , see Fig. 9, which take hold of it near the bottom fold) off the mold P , and holds it over a box, S , Fig. 1, which is open at the top and rear end. At this moment the inner ends of the rock-levers r^7 strike against tappets r^{18} r^{18} fixed to the curved brackets r^{16} r^{16} , and are thereby forced inward, compressing the circular spring into the oval form, (see Fig. 7,) and the outer ends of these levers are thus opened and the bag is released from the springs r^8 r^8 and allowed to fall into the box S , which is raised to receive it. The bag may be held in the box in any suitable manner while the box S is being inverted, in order to deposit the bag with its gummed side downward on a small movable table, t , underneath. The box S is carried by a pinion, S' , which is mounted on a stud-axle, S'^* , and, projecting from the

movable frame s^9 , gears into a toothed rack, S^2 , fixed at S^3 to a table, T . The frame s^9 is mounted on the rods s^{11} , and is capable of being slid vertically in the guides s^{10} fixed to the frame B . Upon vertical motion being communicated to the frame s^9 through a series of levers from a cam, 1, Figs. 1 and 2, on the main shaft A' , the pinion S' , carrying the box S , will be caused to rotate on its axis first in one direction and then in the other, according to the direction in which the frame s^9 is moving, by reason of the pinion S' gearing into the fixed rack S^2 . The cam 1, during its motion, rocks a lever, s , which is pivoted at s' to the main frame, and connected by an adjustable rod, s^2 , to the short pendent arm of a three-linked rock-lever, s^5 , mounted on the rock-shafts s^6 . The longer arms of this lever s^5 take into slots s^7 in the pieces s^8 , Figs. 1 and 10, which form part of the frame s^9 , and thus the rocking of the lever s^5 on its axis will raise and lower the frame s^9 . The table t , on which the bag is now placed, is mounted on and slides in guides in a fixed table, T , (see Fig. 4,) carried by the pillars t' t' . Reciprocatory motion is communicated to this table t by means of a bell-crank lever, t^2 , pivoted at t^3 , and worked by a cam, 5, on the main shaft A' , the end of the lever opposite to the cam taking into a slotted bracket, t^5 , pendent from the table t . While on the table the bag is to be rolled flat for convenience of packing. This is effected by a roller, u , carrying a fixed blade, u^7 , and mounted in slots in a pair of levers, $u' u'$, pivoted at u^2 u^2 to the fixed table T . As the bag, however, is to be flattened from its mouth toward the bottom, the roller u , being in rear of the bag, must first be raised to allow the bag to pass under it to bring it into the proper position for the flattening operation: This movement is effected in the following manner: The axle of the roller projects beyond the slots in the levers $u' u'$ onto a pair of brackets bolted to and pendent from the frame h , with which they move, and having inclined parts u^3 and horizontal parts u^4 . As the brackets are moved forward the roller will move with them, so as to bring the blade u^7 attached thereto against the adjustable stops u^9 on the levers u' . The rotation of the roller is caused by a cord and weight, u^7 . When the axle of the roller (having passed the spring-catch u^5) arrives at the ends of the slots in the levers u' , the continued forward movement of the brackets will cause it to rise up the inclined planes u^3 , and to move along the horizontal parts u^4 into the position shown at Fig. 3. At this point the roller is allowed a moment of repose, during which time the bag is carried to the end of the fixed table T , so that the mouth of the bag shall correspond to a vertical line drawn through the axle of roller u , Fig. 3. The return movement of the frame h , with which the brackets are connected, will now commence. During this movement the roller u , being held by the spring-catch u^5 , will descend the incline u^3 and flatten the mouth of the bag. The axle having arrived at the

bottom of the incline u^3 , the continued backward movement of the brackets will cause a cam, u^6 , keyed on the axle of the roller, to strike against a shoulder, T' , (see Fig. 4,) on the fixed frame T . The action of this cam will raise the catch u^5 and rotate the roller so as to bring the blade u^7 flat onto the bag, (see Fig. 3^a, Sheet II,) and at the same time wind up the cord u^8 . The bottom of the bag is now folded down by a vertical blade or plate folder, v , provided with centers, on which it turns, and actuated by a tail-piece, v^2 , fixed to and following the movement of the pendent brackets, (see Fig. 3,) and which strikes against a projecting piece, v^* , on one side of the blade or plate. The plate v is drawn back into a vertical position by a spring, v' , or other equivalent device. The roller u , continuing its backward movement, will, by means of the blade u^7 , push the flattened bag between two pressing-cylinders, $x x'$, from which it passes onto an endless apron, x^4 , to a second pair of pressing-cylinders, $x^2 x^3$, which are adjustable in their bearings, and to which any required pressure can be given. On passing from these cylinders the bag is received upon a horizontal plate, y' , which is brought forward to receive it. This plate y' is fixed to a pendent arm, y^2 , mounted on the rod g^5 , and in its forward movement passes through a slot in the cross-piece y^3 , against which the bag, at the commencement of the return motion of the platform, strikes, and the plate being drawn from under the bag, it is allowed to drop flat into one of the compartments of a receiver, Y . The receiver Y consists of a large circular or polygonal shaped box, of any suitable material, divided by radial partitions into any desired number of compartments, to receive the bags, as above explained. Each compartment is intended to receive a certain number of—say twenty-five—bags. The receiver Y is mounted in any convenient manner on the upper end of a vertical shaft, 2, carried in bearings 3 in a bracket-frame, 4. Upon an axle, 5, carried by the frame 4, is mounted a ratchet-wheel, 6, of twenty-five teeth, and a finger, 7, a fixed pawl, 8, being provided to prevent any back movements of the ratchet-wheel 6. Keyed upon an axle, 9, carried in suitable bearings in the frame 4, is a ratchet-wheel, 10, of ten teeth, and to a lever, 12, mounted loosely on the same axle, is pivoted at 13 a counterweighted pawl, 11. This lever 12 is kept down in its normal position on a bar or stop, 14, by a weight, 15. On the axle 9 is keyed also a bevel-wheel, 16, which gears into a similar wheel keyed on the vertical shaft 2.

A counterweighted pawl, 18, in gear with the ratchet-wheel 6, and carried by a collar, 19, fixed and moving with the rod g^5 , communicates movement to the counting apparatus as follows, viz: Every backward motion of the rod g^5 will move the ratchet-wheel 6 one tooth, and once in every rotation of the ratchet-wheel the finger 7 comes into contact with the

lever or arm 14, which is gradually raised into the dotted position, Fig. 1. At this point the lever escapes from the finger 7 and is caused to fall to its normal position by the weight 15, bringing with it the pawl 13, which, acting on one of the teeth of the ratchet-wheel 10, moves the latter on one tooth. The bevel-wheel 16, being keyed on the axle 9 with the ratchet-wheel 6, is caused to partially rotate, and it communicates like motion, through the bevel-wheel 17, keyed on the vertical shaft 2, to the receiver Y , which is thus caused to rotate such part of a circle as to bring an empty compartment opposite the cylinders $x^2 x^3$. One bag is completed and delivered from these cylinders at every backward stroke of the rod g^5 . Now, as every stroke of this rod moves the ratchet-wheel forward one tooth, and as one rotation of the ratchet-wheel must be made before any movement of the receiver can take place, it will be evident that the number of teeth on the ratchet-wheel 6 will determine the number of bags which shall be allowed to fall into any one compartment, y , of the receiver Y , and this number multiplied by the number of the compartments will give the total number of the bags made in the machine during one rotation of the receiver Y .

The pile of bags taken from each compartment may be tied up separately, and thus packets of any desired number (according to the number of teeth of the ratchet-wheel 6) can be made up.

The number of bags at one time in course of manufacture is four. Thus, one, z , is being folded round the mold P ; a second, z' , is in the box S ; a third, z^2 , is on the endless tapes x^4 , and a fourth, z^3 , is in the receiver Y , and at the same time a sheet of paper is being supplied with adhesive material on the table a' .

This machine is intended to make the bags all of one size and from sheets of paper previously cut to the required dimensions; but by changing certain of the parts bags of a larger size can be made. The paper may also be supplied from a roll suitably placed, and the requisite amount to form a bag may be cut off automatically.

It will be evident that the various arrangements of levers for communicating motion from the cams on the main shaft A' to the various parts can be considerably varied.

Having now described the nature of my invention and explained the manner of carrying the same into effect, I wish it to be understood that I claim—

1. The combination, in a machine for making paper bags, of a table, upon which a pile of blanks for forming bags is placed, two reservoirs for adhesive substance, arranged above said table and mounted upon horizontal guides or ways, and mechanism, substantially as described, for simultaneously moving said reservoirs toward and from each other.

2. The combination, with the pneumatic holder m , having mouths m^{11} m^{12} m^{13} , of the three-arm lever m^5 m^7 m^9 , bell-crank lever m^{10} ,

link m^8 , and actuating-rod m^4 , whereby said holder may be moved, substantially as specified.

3. The combination, in a machine for making paper bags, of a former, a reciprocating table for carrying the paper blanks under said former, a cross-head movable vertically below said former and carrying rollers which, by the upward movement of the cross-head, are raised upon each side of said former, and a rib or feather upon each roller, which, by the turning of said roller, serves to press the paper down upon the top of the former, substantially as specified.

4. The combination, with the former P, of the vertically-moving cross-head p^5 , spring arms or fingers p^6 , the rollers p^7 p^8 , supported by said fingers, and each having a rib or feather, and the finger p^{11} , substantially as specified.

5. The combination, with the former P, of the top presser, composed of the arm q^4 , the blades q^5 q^6 , the block q^{10} , and rods supporting said blades and block and adapted to move vertically in said arm q^4 , substantially as specified.

6. The combination, with the former P, of the bottom folder and presser, composed of levers r^7 , springs r^8 r^{14} , the fixed catches r^{18} , the fingers r^{13} , the rubber block r^5 , and actuating-rod r' and spring r'^* , all substantially as specified.

7. The combination, with the former P and table t , of mechanism, substantially as described, for drawing a bag off said former, and the open-top box S, into which the bag is dropped, and which has a rotary motion imparted to it to deposit the bag on said table t .

8. The combination of the reciprocating frame h , the reciprocating table t , the roller u , supported in the slotted levers u' and having a fixed blade, u^7 , the brackets u^3 upon said frame h , and the pivoted folder v , all substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 8th day of May, 1880.

LÉON PLANCHE. [L. S.]

Witnesses:

G. BARDIN,
GEO. H. SCIDMORE.