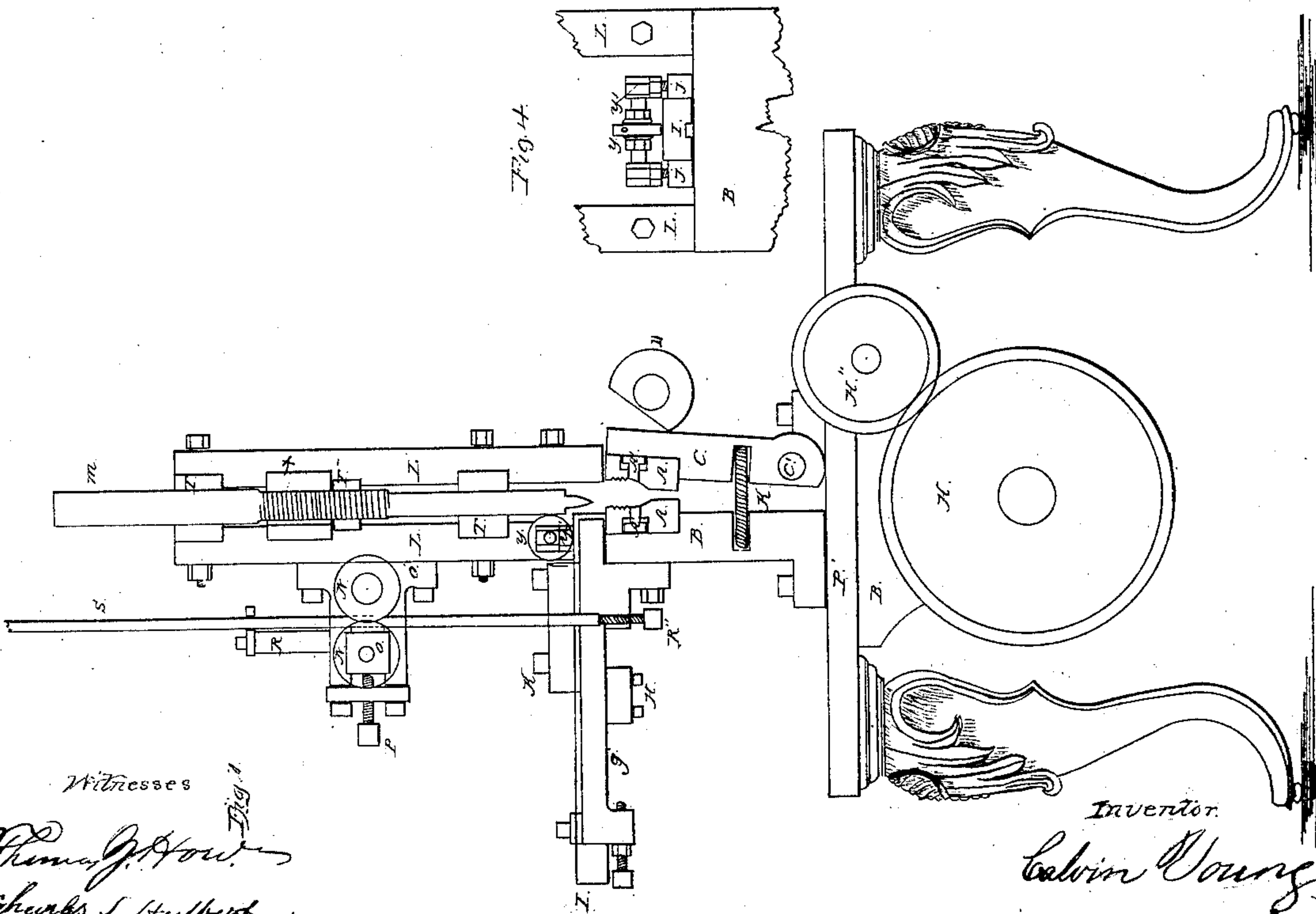
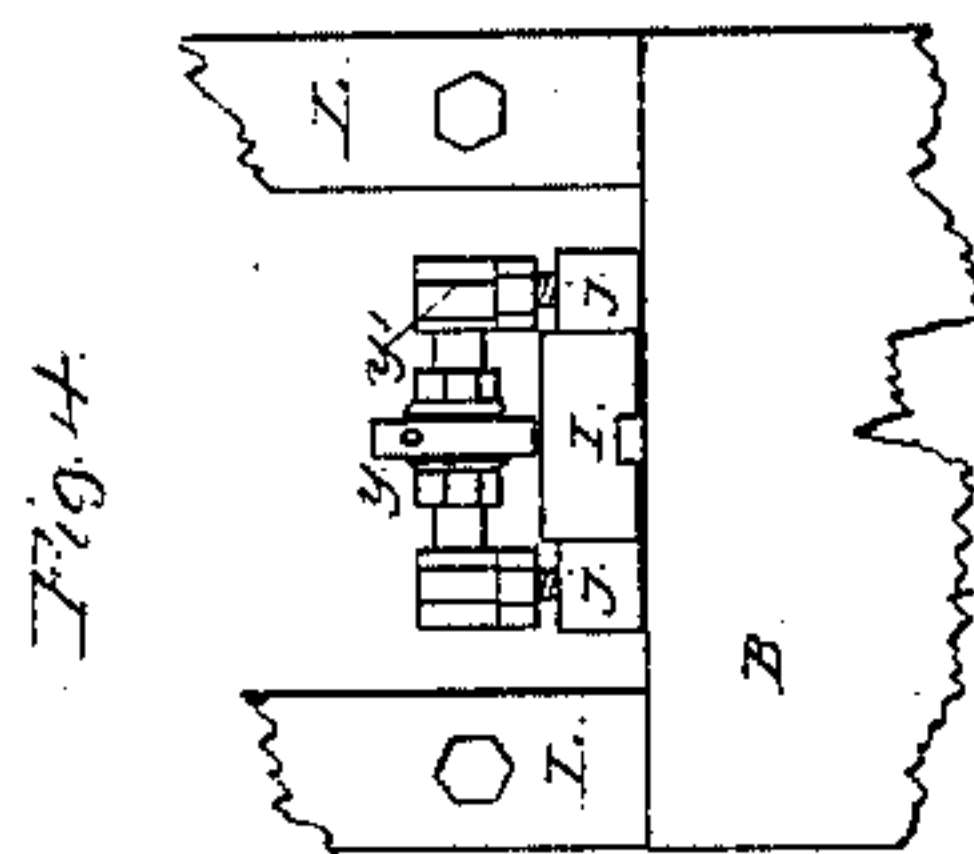
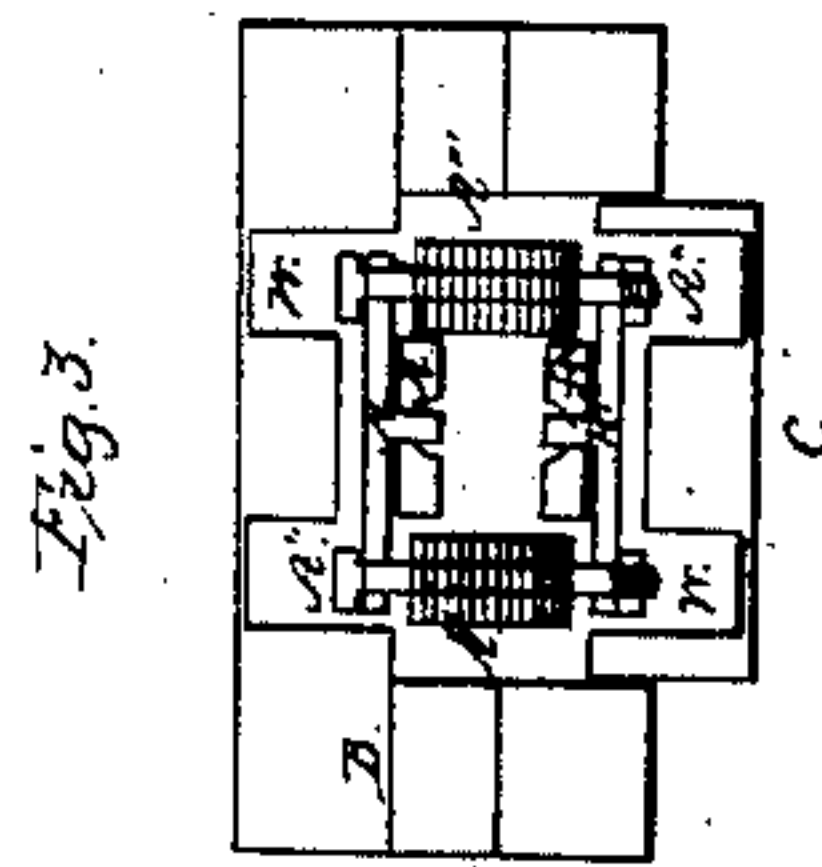
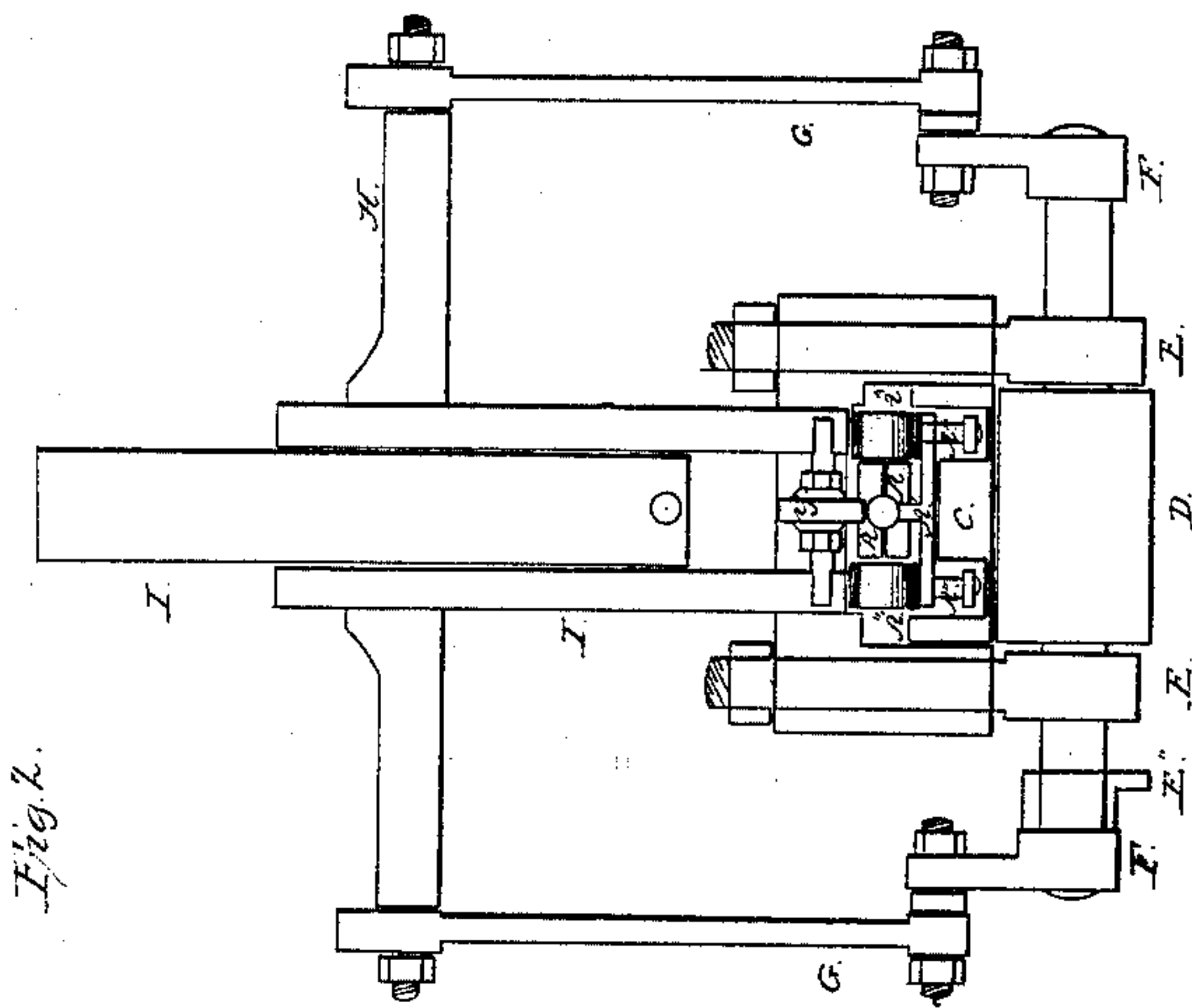
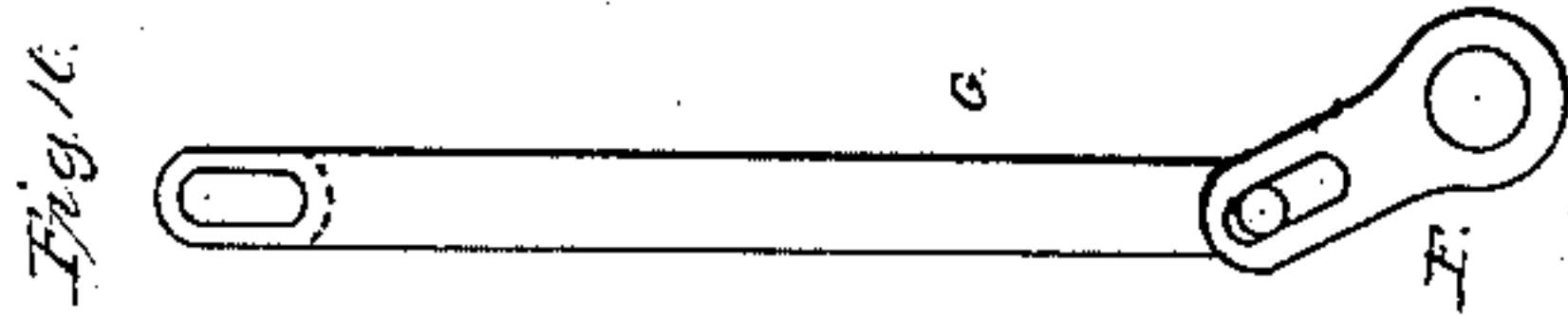


C. Young,
Bullet Machine.

N^o 2,463.

Patented Sep. 7, 1858.



Witnesses

Thomas J. Howland
Charles S. Hulbert.

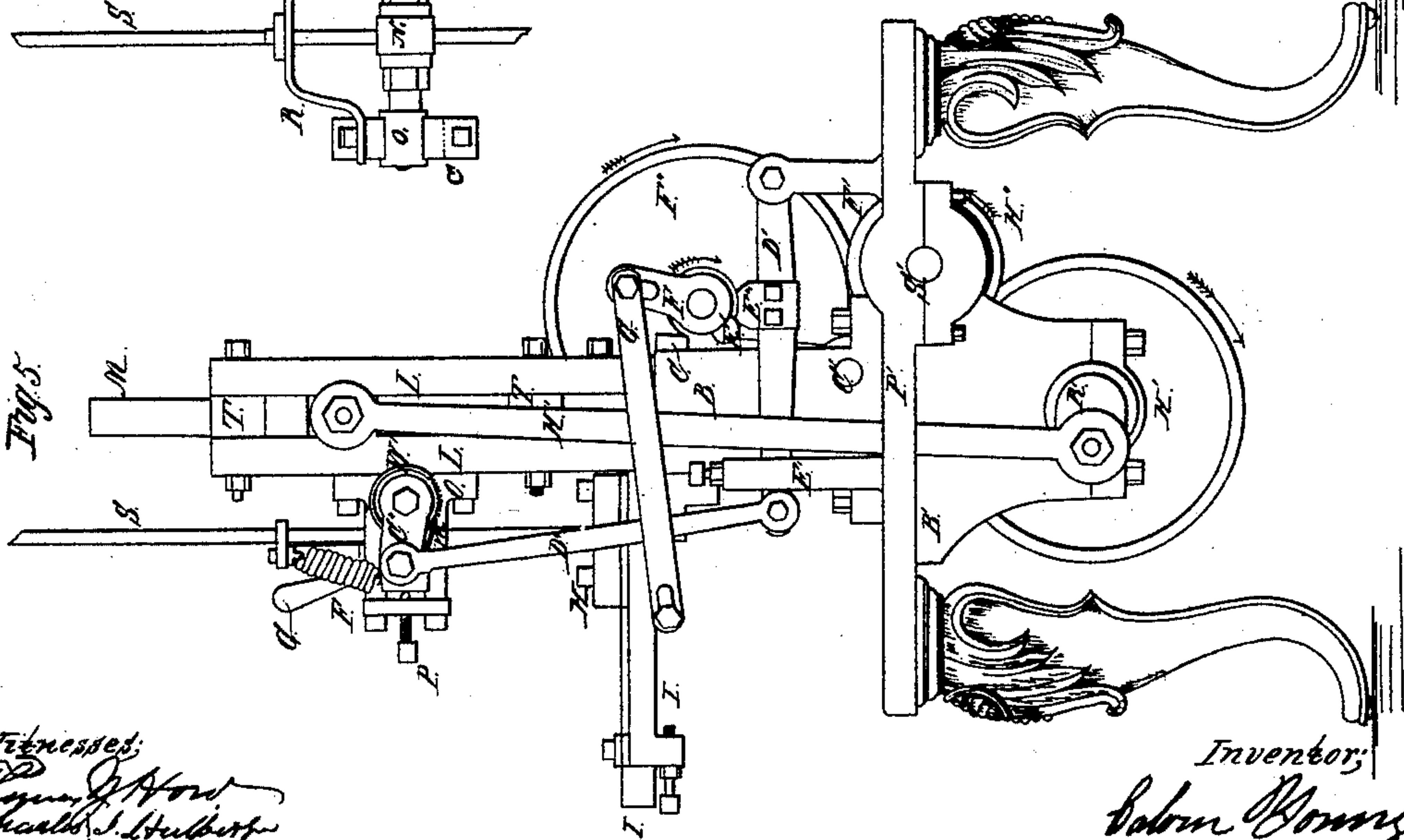
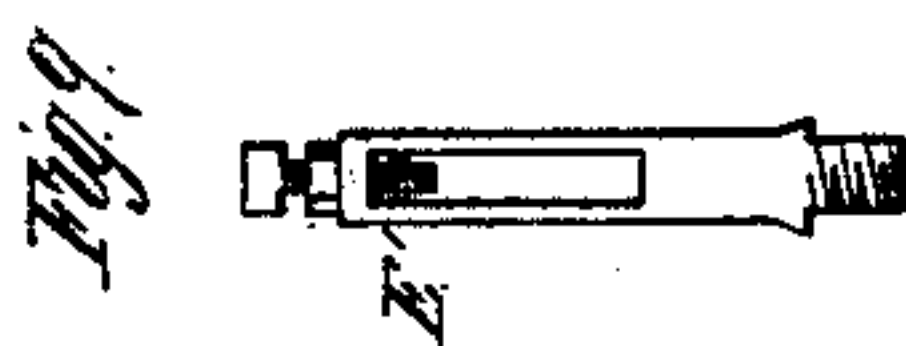
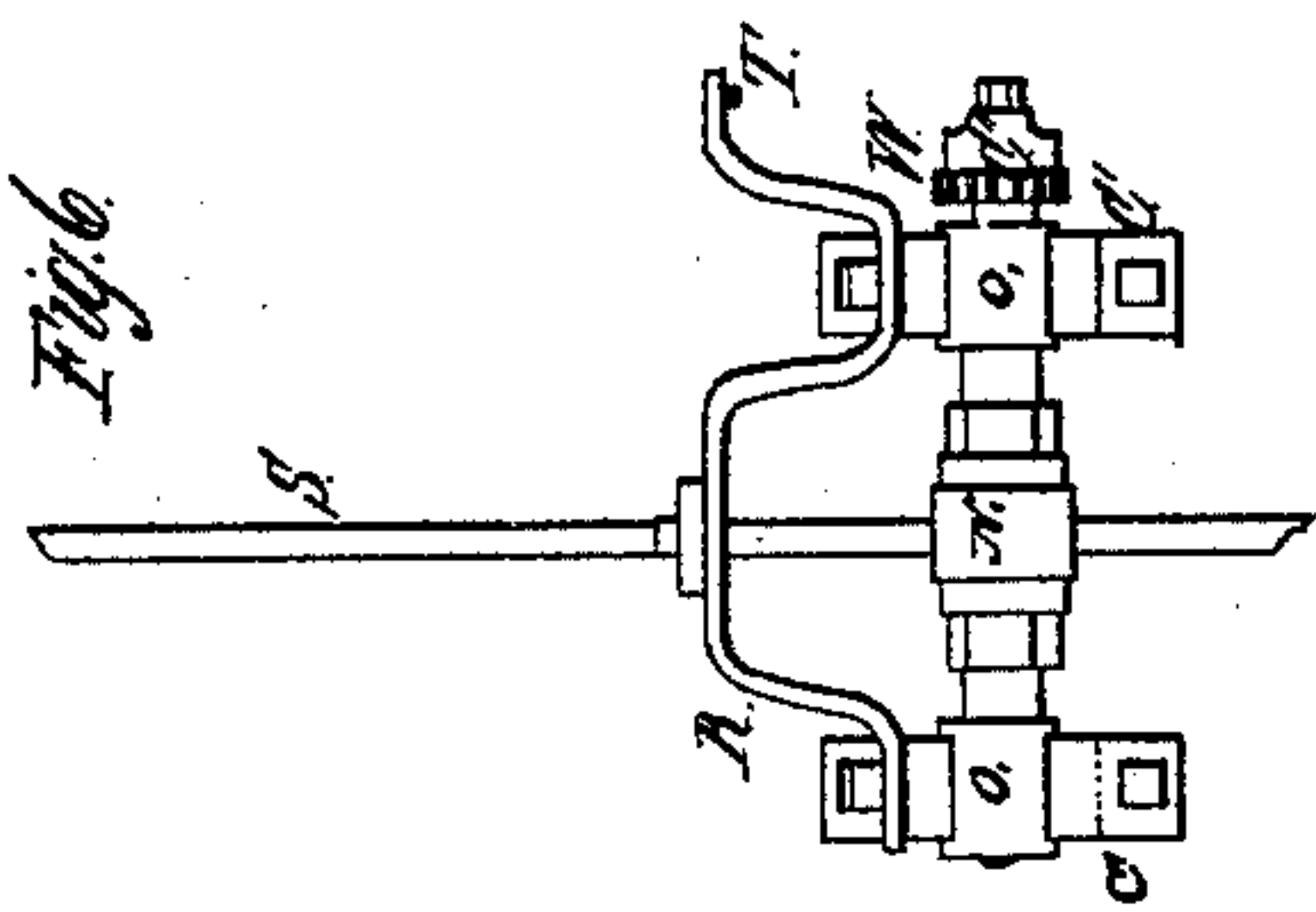
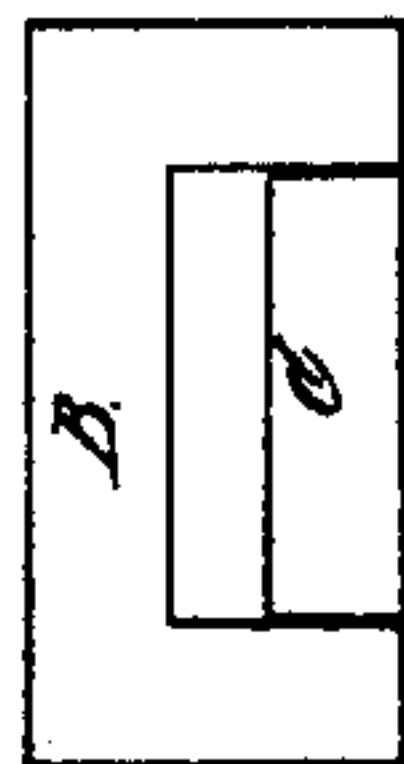
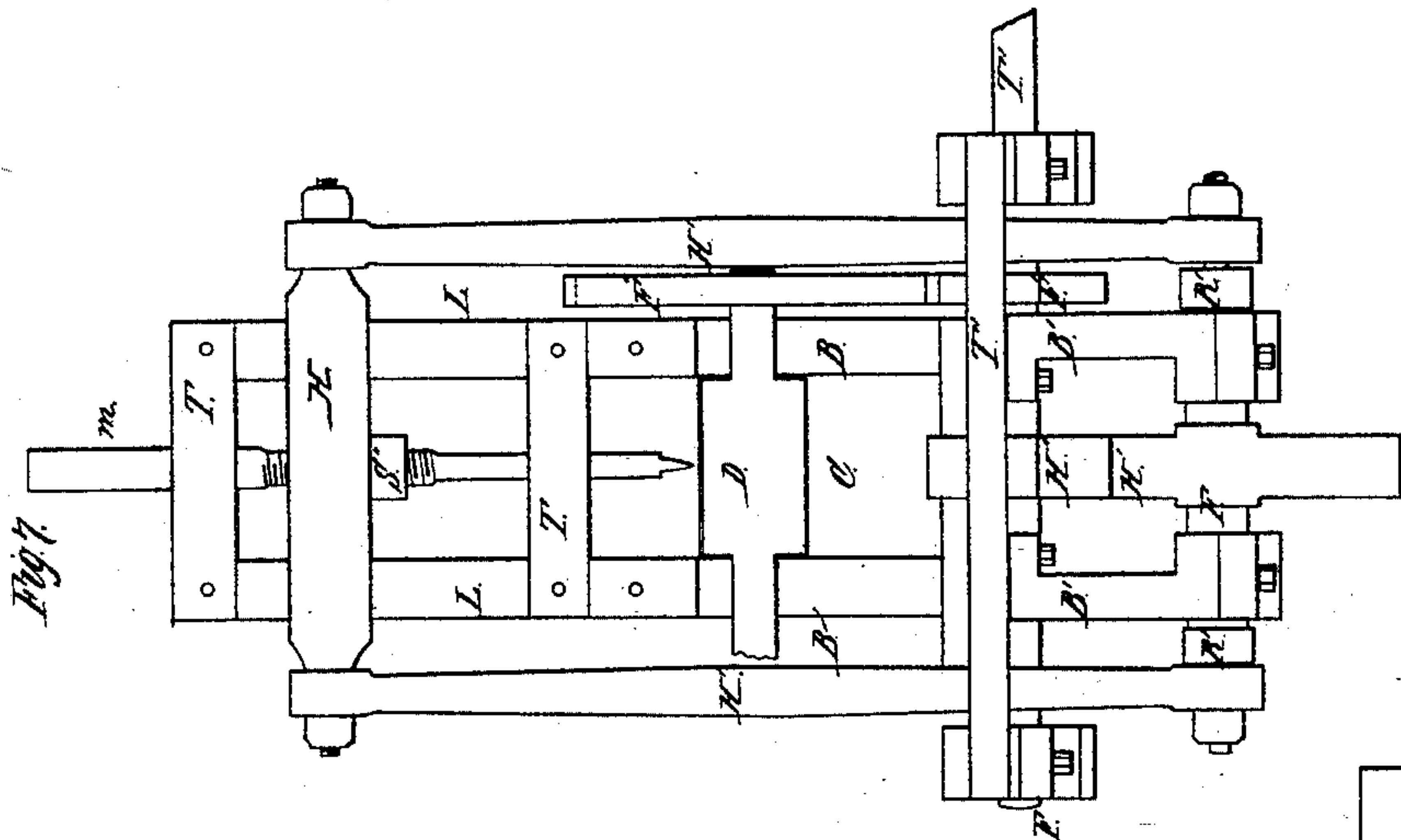
Inventor.

Calvin Young

C. YOUNG.
BULLET MACHINE.

No. 21,463.

Patented Sept. 7, 1858.



Witnessed:
Phyrrus J. Wood
Charles S. Hubbard

Inventor,
Calvin Young

UNITED STATES PATENT OFFICE.

CALVIN YOUNG, OF AUBURN, NEW YORK.

BULLET-MACHINE.

Specification of Letters Patent No. 21,463, dated September 7, 1858.

To all whom it may concern:

Be it known that I, CALVIN YOUNG, of the city of Auburn, county of Cayuga, and State of New York, have invented a new and useful Machine for Making Bullets from Cold Lead by Pressure; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, numbered from No. 1 to No. 10, inclusive.

The general construction of this machine is as follows: 1st, as shown by drawings Nos. 1, 5, and 7, P' represents the main bed or foundation upon which stands the main trunk B, into which, at the top, the dies A, A are set as shown in Figure No. 1. Attached to the main trunk B are four uprights Z Z, connected together by two cross bars T, T, through which the punch bar M moves, and by which it is guided. Motion is communicated to the punch bar M by means of a traveling beam H through which M passes, and is adjusted to its proper height by means of a screw thread cut upon it, and is held in its place by a set nut S'' as shown in Figs. Nos. 1 and 7. Power is communicated to H by two connecting rods H' H' as shown in Figs. Nos. 5 and 7, which take hold of it at each end outside of the uprights Z Z between which it moves, and by which it is kept in its place and guided aright. Connecting rods H' H' pass through the bed plate P' and take hold of cranks R' R' upon each end of shaft F' which is driven by gear wheel H', which is driven by pinion H'' upon shaft S', to which power is applied by means of cranks or otherwise.

The main body or trunk B is made in two parts B and C as shown on Figs. 1 and 8. B is the fixed part, being bolted to the main bed or foundation P'. C is a working piece, being fitted between two flanges, and connected to them by pin C', upon which it freely turns and is closed into its proper place by the cam D, see Figs. 1, 2, and 7, which cam is driven by pinion F' upon shaft S'. The movable piece C is thrown back or open by the spring K'. See Fig. No. 1.

The dies, a, a, for forming the bullet, are fitted and firmly fixed; the one half into the permanent part B and the other half into the movable part C, by which they are closed and opened. The dies a a have each a lateral

punch A' fitted into and through them, the outer end of the punches A' fitted permanently into cross bars, which are fitted freely into a groove cut in the back of each of the dies. The groove is of sufficient depth to allow the cross bars to move freely a short distance toward the face of the dies, which carries the inner end of the punches A' A' beyond the inner surface of the dies. See Figs. Nos. 1, 2, and 3. The cross bars project at each end beyond the side of the dies sufficient to receive cross connecting bolts A'' A'', which are of the proper length to allow the dies to open sufficiently for the bullet to drop between them at their lower extremities. See Fig. 3. The connecting bolts are fitted loosely through the cross bars, so that they may slide freely and allow the dies to close and open to their proper distance. Upon those cross connecting bolts between the cross bars there are fitted collars or rubber A''', see Figs. 2 and 3, which act upon the inside of the cross bars at the point where the cross connecting bolts pass through them, which force the cross bars back to their proper place when the dies are closed, and thus convey the lateral punches a' a' back to their places, so that the inner ends are even with the inner surface of the dies, and thus help form a small portion of the bullet's surface.

The punches and their appurtenances last above described are for the purpose of removing the bullet from the dies after it is formed.

At the top and upon the back of the main trunk B the parallel ways J, as shown by Figs. Nos. 1, 2, and 4, are attached, between which the slide I is fitted and moved freely lengthwise by the cross arm H, at each end of which the connecting rods G G take hold as shown by Fig. No. 2, which at the other end take hold of one driven by crank F. Upon the end of the axle of the cam D which have their bearings in the eye bolts E, E that pass through the main trunk B and are nuted at the back side as shown by Figs. Nos. 2 and 5, the cranks F F are slotted at their outer ends to facilitate the adjusting of the length of the run of slide I. The connecting rods G G are slotted at one end so that the slide I remains at rest for a short space of time at each end of its run. Over the top of slide I cap K' is fitted and bolted to the ways J through which there is an orifice suitable to admit the lead wire S,

which passing through K enters a corresponding orifice in I, as shown in Figs. 1 and 2, and passes through I until it rests upon a gage screw R'', by which the length of lead, level with plate K, is regulated. The slide I in moving forward passes its orifice under the elastic roll Y, which is drawn by the bearings at Y' so as to press snugly upon slide I as it moves along under it, as shown by Fig. No. 4. Slide I has a groove cut in its lower side lengthwise, corresponding to its orifice and the gage screw R'' so as to admit of the screw being raised to its proper place without interfering with the movement of the slide I.

The last above described part is for the purpose of gaging, cutting, and depositing the lead into the dies.

Directly over the above mentioned part there are two rolls N N as shown in Figs. Nos. 1, 5, and 6, which have their bearings in frame O'. The outer roll has its bearings in the movable boxes O which are forced inward by set screws P, by which means the rolls are forced together. The rolls are formed, in part, of rubber, by which means the surface of the rolls are rendered sufficiently elastic to prevent their marring the lead wire, as it passes between them. The lead is guided to and between the rolls by passing through a guide fastened at arch R which is fastened upon frames O'.

Motion is given to the rolls by arm C'' as shown by Figs. 5 and 6, which is fitted upon the outer end of the shaft of the inside roll, and is fitted so as to turn freely around the shaft. Inside of the arm C'' is a toothed wheel W' which is fixed fast upon the shaft. This wheel is acted upon by means of hand M' which is connected to the arm C'' and is held in contact with the teeth of the wheel by means of a spring, so that the motion of the arm downward turns the wheel W' and rolls N, N. The arm C'' is raised back to its place by means of spiral spring I' as shown by Fig. No. 5 which is attached, the one end to the arm, and the other to the outer end of the arch piece R at T' see Fig. 6.

While the arm is moving upward or back to its place, the spring hand M' is drawn backward over the teeth on wheel W' which allows the rolls to remain at rest during that part of the movement of the arm. The arm is drawn forward or down by the connecting rod D'' which connects arm C'' to lever D' which is acted upon by cam E'' which is fixed upon one of the outer arms of cam D, and inside of crank F, as shown by Figs. 2 and 5. The direction of the cam is indicated by the arrow (Fig. 5) and acts upon incline and arc E''' which is fast to lever I', and forces it downward in slotted guide E' as shown in Figs. 5, and 9, at the top of which there is a regulating screw by which the amount of motion of lever D' is regulated,

which also governs the distance of motion of arm C'' and rolls N N. The lever D' is raised back to its place by the spiral spring I'.

The last above described portion of the machine is denominated the feed works, and takes the lead S from a reel or coil where it may have been placed for that purpose.

The foregoing specification of the construction of the principal parts of the machine is given and the materials used for the same may be of cast iron, or wrought-iron, or any other suitable metal or composition.

The following is a description of the manner of operating the machine: Motion being given to shaft S' which carries gear pinions H'' and F', which give motion to wheels H' and F'', the direction of which is indicated by arrows. Wheel H' upon shaft F' turns the crank R', which work connecting rods X' and raise traveling beam X, which carries the punch M to its proper height to admit of slides I passing under it. While the punch is in the dies, the cranks R' R' are upon their lower center. The cam D has its flattened part a little past the lower center, and its fullest part holds the dies firmly together. The cranks F, F are upon their back center, parallel with connecting rods G G which carry slide I back to its proper place, so that the orifice in it near the front end is directly under the orifice in cap K in which the lead wire S remains, having been passed through its guide at the top of R and passed between the rolls N N and its end inserted in said orifice. At this point the cam E'' rests upon the incline E''', pinion F' turns wheel F'', which carries the crank F upward and the cam E'' over the incline, which forces the lever D' downward and turns the arm C'' a corresponding distance, carrying the wheel W' and the rolls N N which force the lead S down through the orifice of I upon the gage screw R''. During this motion of the feed works, the slide I which receives and cuts the lead, stands at rest by means of slots in the connecting rods G, G, where they take hold of the cross bar H. At this time, the feed works have completed their motion. The cam E'' remains in the arc E''' and holds the feed works still, and the lead in its place while at this time the connecting rods G, G have advanced sufficient to act upon arms H, by which means the slide I is forced forward and the portion of lead that is in it is sheared off, between the upper surface of I and the lower surface of K' which come in close contact so as to cut the lead smoothly. As the lead is being cut off cam E'' is passing out of arc E''', so the feed works may resume their proper position as hereinbefore described ready for the next action. The slide I continues to move forward, carrying in its orifice the piece of

lead cut off and passing under the elastic roll Y the lead is loosened in the orifice by the pressure of the roll upon it so as to drop its lower end upon the upper surface of B, which is parallel and even with the upper surface of the dies and is carried along in the orifice of I until it is brought directly over the opening of the dies into which it drops. Thus the lead is gaged, cut and deposited in the dies all with the same instrument. At this point of the operation the punch, which forms the cavity and butt of the bullet, and it attached to the lower end of punch bar M, is at its upper extremity of the run, the cranks R' R' being upon their upper centers and the cranks F F on their forward centers parallel with connecting rods G G. The slide I remains at rest at this point the same length of time that it does at the opposite end of its run, so that the punch passing down enters the end of it, into the orifice in slide I sufficient to remove or force down the lead, if it should not have fallen into the dies previously. At this instant the slide I starts back from under the punch, the front part of the orifice being cut away to admit of this movement, and moves back to its former position to receive another portion of lead. In the meantime the punch passes into the dies and presses the bullet into shape, the dies being closed by the cam D. As the punch recedes from the dies the cam D turns its flattened part toward the movable part of the trunk C into which the one half of the die is fitted, which allows C to open the dies, being forced back by the spring K and turning upon the pin C'. Thus the dies are opened without restriction until they are checked by the cross connecting bolts A'' which pass through the two cross bars in the back of the dies which carry the lateral punches A' A', and which motion

draws the cross bars forward in the slots, which projects the punches A' A' through and out of each half die, so that the bullet must be removed from either part of the die, to which it may adhere. The bullet when thus removed falls down through the lower extremity of the dies into a conducting tube in which it passes through P' into the portion of the conductor that is curved so as to pass the bullet around the wheel H' and thence into a receiver arranged for that purpose.

What I claim as my invention and desire to secure by Letters Patent—

1. The application of elastic rolls for the purpose of feeding lead wire into the machine, substantially as described in annexed drawings and specification.

2. The application of the arrangement or device for gaging, cutting and depositing the lead into the dies by the same instrument; and the manner of constructing and operating this portion of the machine, substantially as described in annexed drawings and specification.

3. The application of the arrangement or device of lateral punches for removing the bullet from the dies substantially as described in annexed drawings and specification.

The above is a full description of improvements in the mode of constructing machines for the manufacture of bullets from cold lead by pressure in respect to which a caveat was filed, by said CALVIN YOUNG, in the month of April 1857 in the secret archives of the Patent Office.

CALVIN YOUNG.

Witnesses:

THOMAS Z. HOW,
CHARLES I. HULBERT.