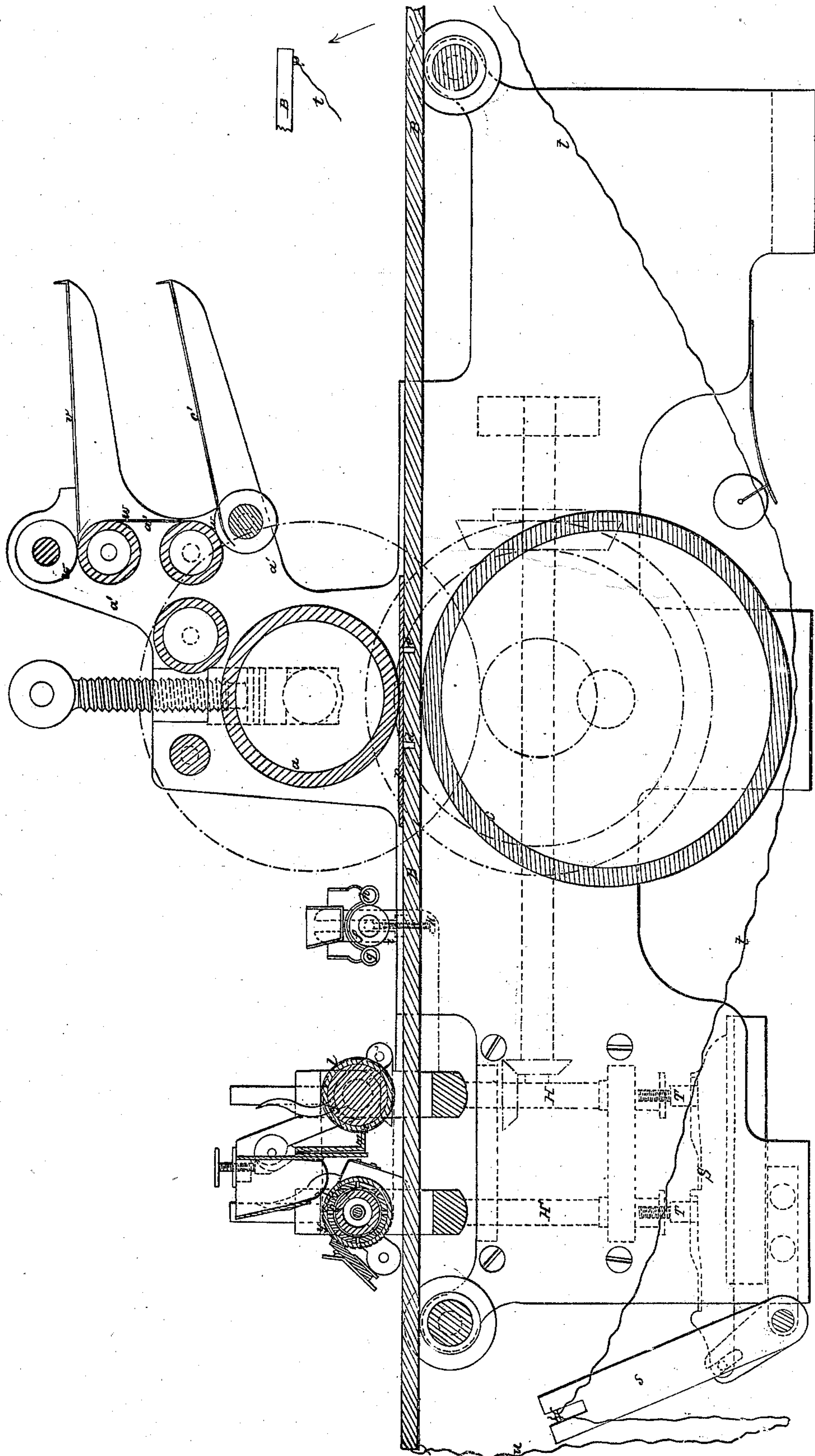
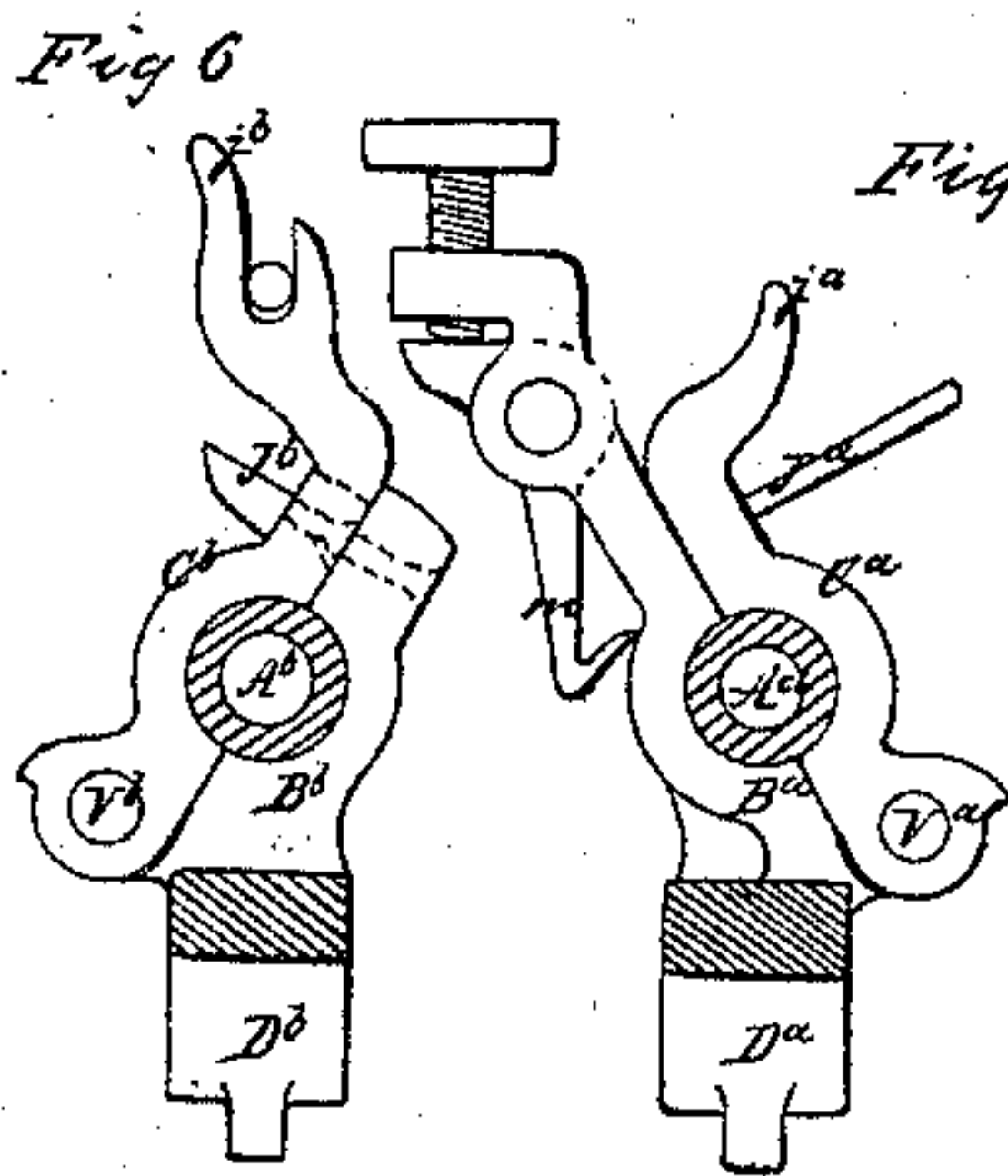
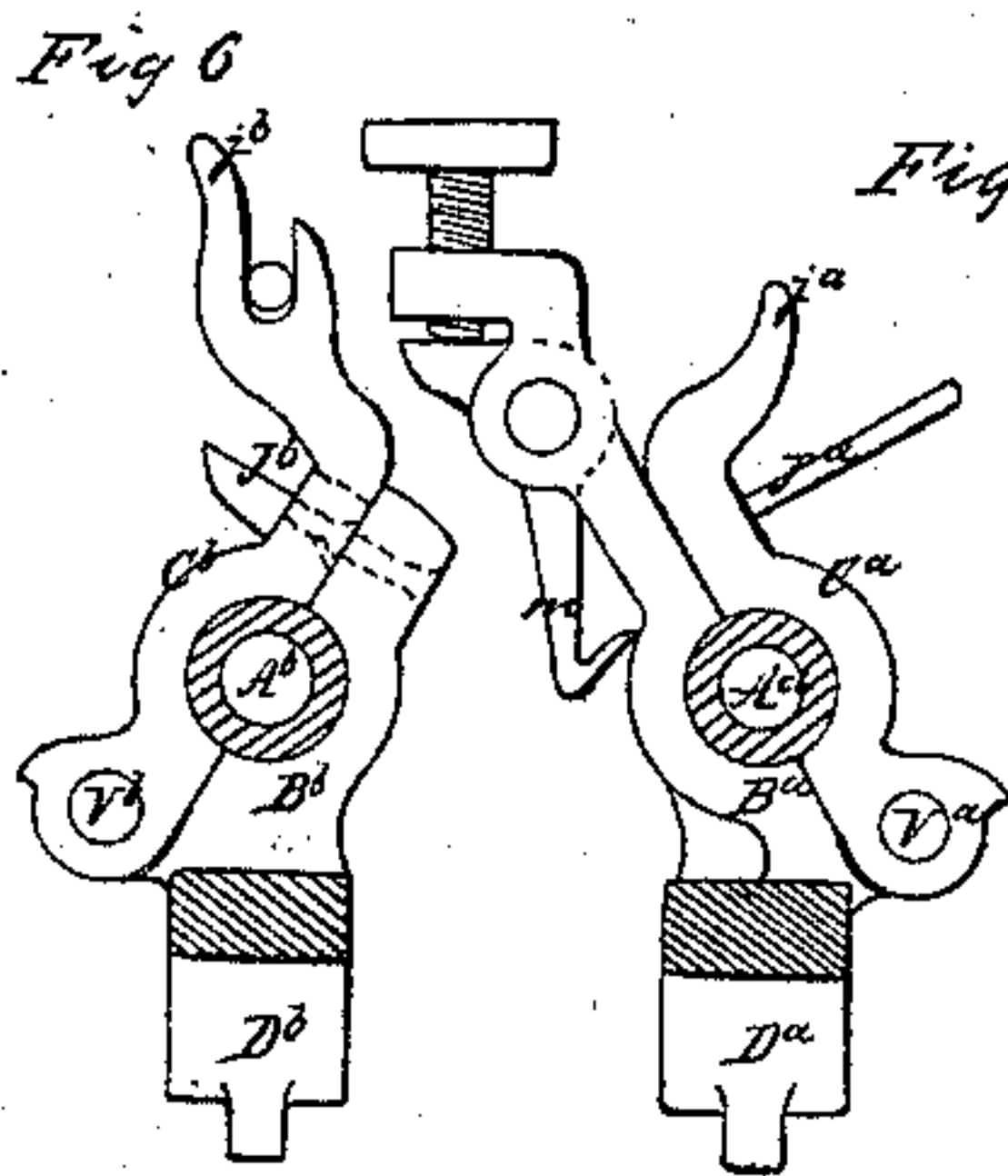
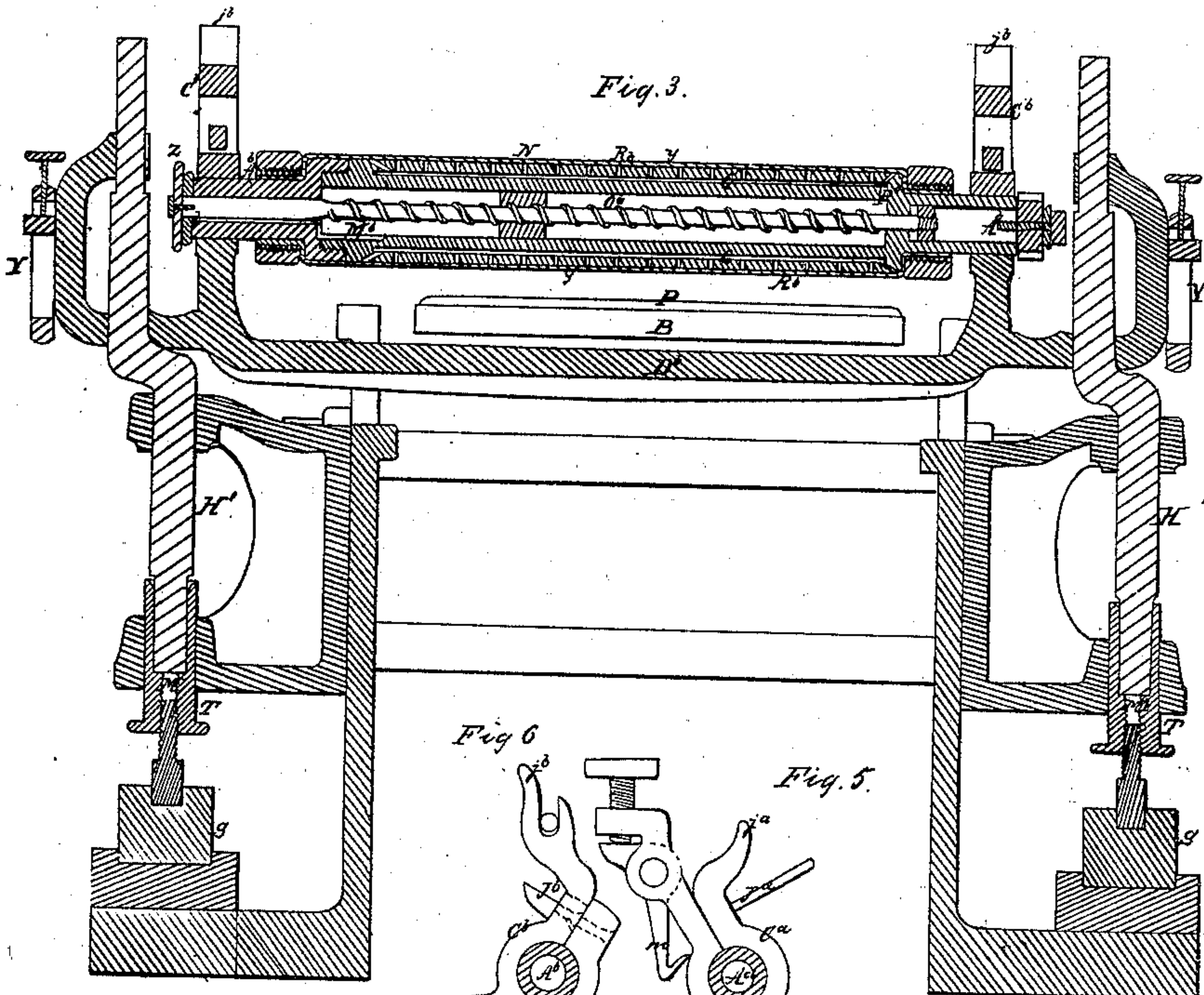
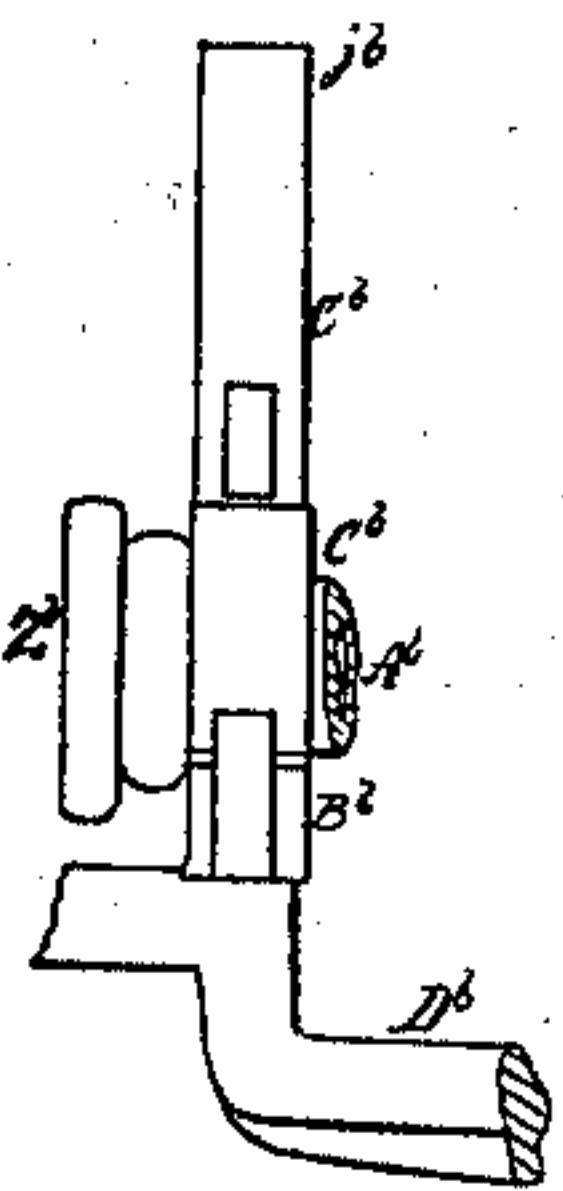
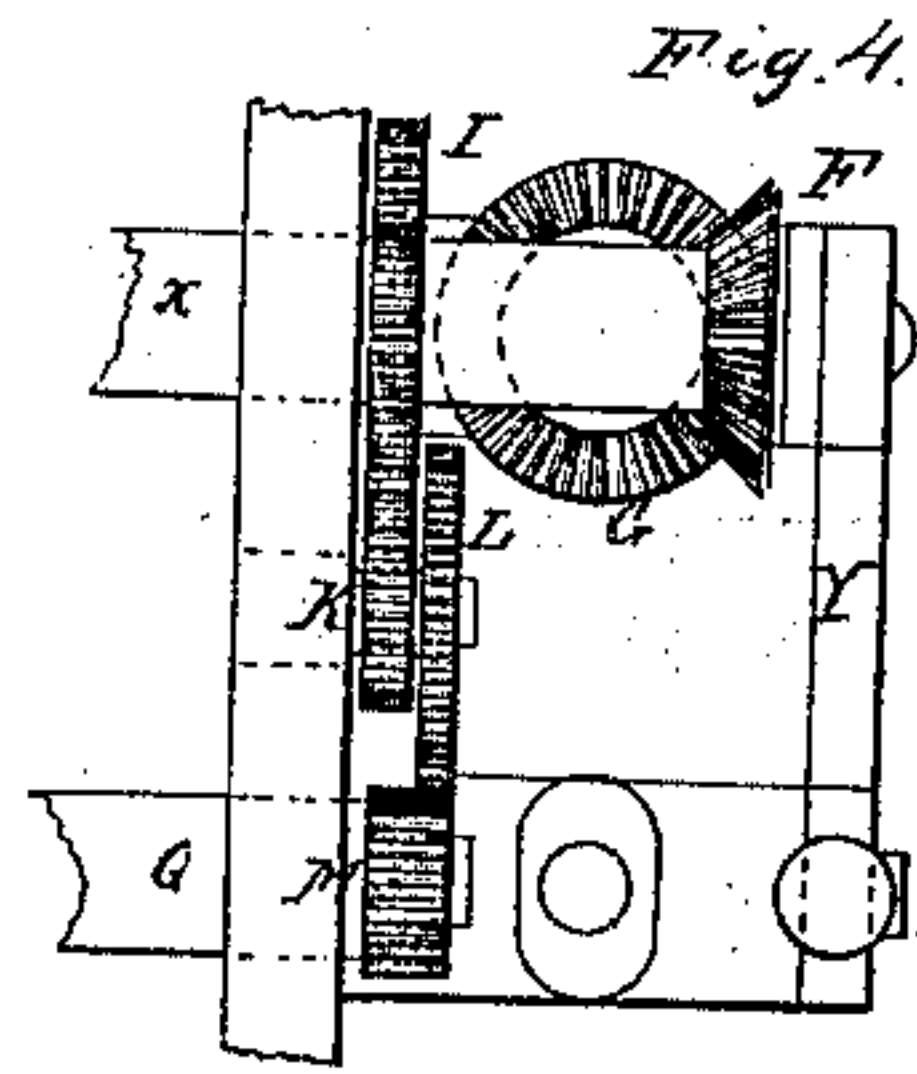
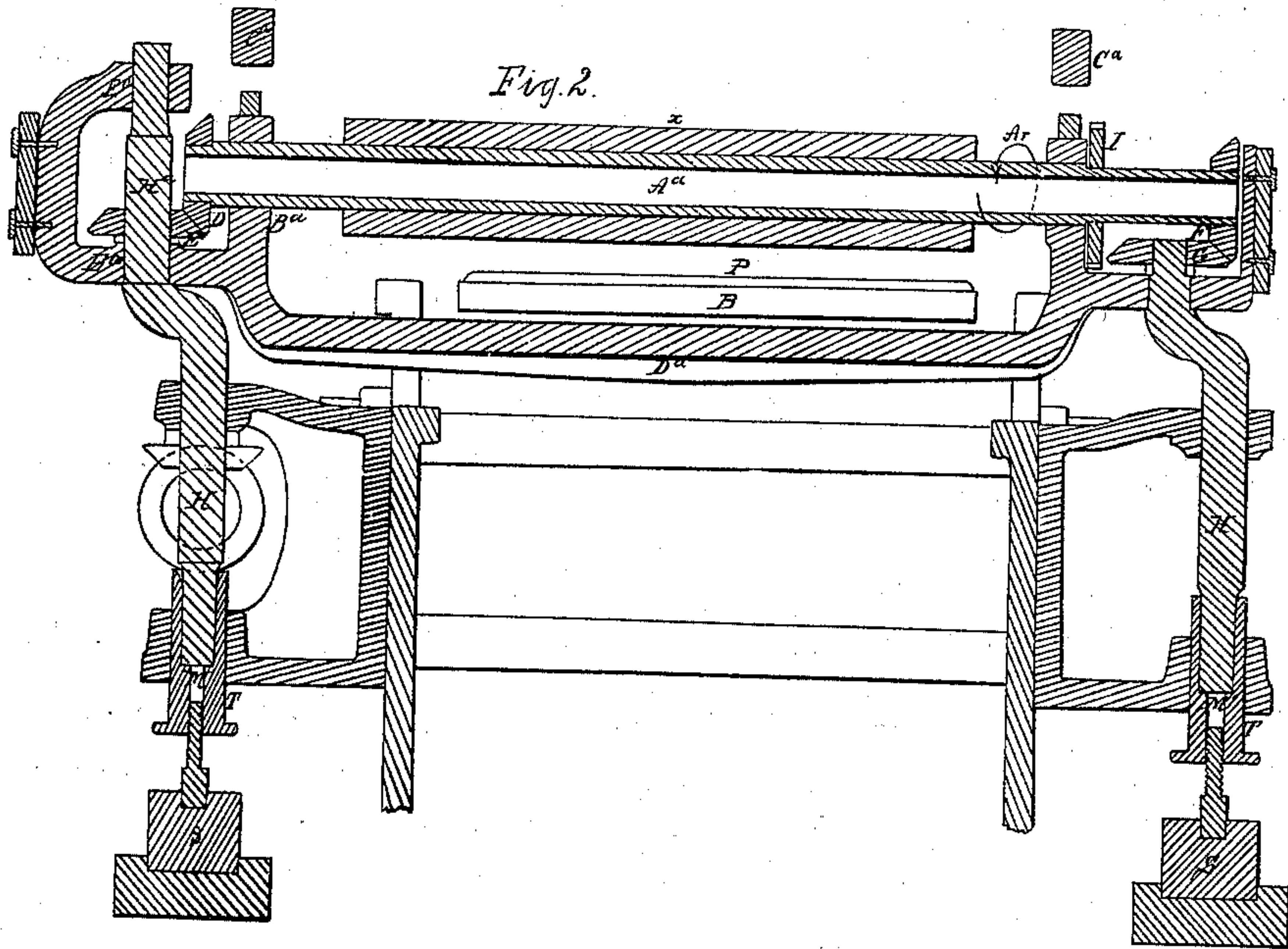


M.C. Gritzner. Sheet 2 Sheets.
Printing Press.
N^o 17036. Patented Aug. 14. 1857.



M.C. Gritzner: Sheet 2, Sheet 5.
Printing Press.
No. 17036. Patented Apr. 14. 1857.



UNITED STATES PATENT OFFICE.

M. C. GRITZNER, OF WASHINGTON, DISTRICT OF COLUMBIA.

ENGRAVED-PLATE-PRINTING PRESS.

Specification of Letters Patent No. 17,036, dated April 14, 1857.

To all whom it may concern:

Be it known that I, MAX C. GRITZNER, of Washington, District of Columbia, have invented certain new and useful Improvements in Printing-Presses; and I hereby declare that the following is a true and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1, represents a longitudinal vertical section through the center of the machine, Fig. 2, a vertical section through the first wiping roller, Fig. 3, a vertical section through the second wiping roller, Fig. 4 a top view of the gearing connecting the two rollers, and Figs. 5, and 6, detached side views of the roller bearings.

The nature of my improvement consists in the construction and general arrangement of printing presses which will ink and wipe a plate from which impressions are to be taken, feed the paper, take the impression and carry the printed sheet off, by means of mechanical devices attached to the press, thus dispensing with handwork to such an extent that the whole operation of inking, wiping and printing can be performed with great rapidity.

The press shown in the accompanying drawings, is provided with two press cylinders *a*, *c*, and a reciprocating bed *B* like the usual copper plate printing press. An inking and wiping apparatus is attached to the press, one in front and the other in rear of the press cylinders. Both are alike and therefore only one of the two will be described hereafter. The drawings also exhibit only one of the two.

The plate *p* to be printed from, is secured to the bed by means of two pivots *d*, *e* soldered to the plate, which pivots fit into two holes in the surface of the bed. Said pivots must be soldered to all plates to be printed from, in such a way that the distance between the two pivots will always be exactly equal to the distance between the two holes in the bed. The plates can thus be very easily removed from the bed and others secured thereto. For this purpose a gage is employed in soldering which is provided with two holes, in size and in distance from each other, exactly corresponding to the two holes in the bed. Two pivots are filed out of a size just to fit the holes. They are then

stuck into the holes in the gage and attached to the plate by means of soft soldering. As soon as the solder becomes cold, the gage is removed, the pivots on the plate will then exactly fit the holes in the bed. As the plate (secured to the reciprocating bed as above described) issues from between the press cylinders, it arrives under and is operated upon by the inking apparatus which consists of an inking roller *f*, and two or more distributing rollers *g*, *h*. The inking apparatus is held within two vertical slotted arms *i* which extend from the wiping apparatus (hereafter to be described) and receive a vibrating motion from the latter. The set screws *k* at the lower part of the slots *i* serve to adjust the inking apparatus at the proper height in relation to the surface of the plates. As the plate issues from the inking apparatus, covered with ink, it arrives under and is operated upon by the wiping apparatus. The wiping apparatus consists of one, two or more rollers *Q*, *x*.

The drawings represent an apparatus arranged for two rollers, the first *x* for removing the bulk of the ink from the plate and the second *Q* for wiping it clean. The roller *x* is made of india rubber or other elastic material and is covered with oilsilk *l* or similar material which is very smooth and at the same time impervious to ink. The roller while revolving against the plate (in the manner hereafter to be described) and while at the same time resting upon the plate, removes the ink from the plate and carries it around until it (the ink) is scraped off by the scraper *m* which is in contact with the roller at *n*. This is the means to keep that part of the roller surface always clean which is to come into contact with the plate. Numerous experiments have proved oilsilk to be an excellent material for the purpose, while leather, india rubber and many other materials that have been tried, proved to be utterly impracticable. During a whole day's printing, the piece of oilsilk was not once changed, and yet the surface was always clean and smooth.

The second roller *Q* has the same motion as the first roller (hereafter to be described) only that it revolves faster around its own axis. It is made of a hollow cylinder covered with india rubber *Y*, and provided

with a piston N which can be screwed in or out by turning a screw head Z at one end of the roller shaft. The cylinder Q being filled with water or other fluid the piston N
 5 can be set so as to compress the fluid more or less and thus to exert more or less pressure upon the inside of the india rubber covering. The pressure can thus be regulated between the outer surface of the roller
 10 Q and the surface of the plate. The india rubber is covered with muslin or any other similar material, which may be constantly kept charged with whiting for the purpose of cleaning and polishing the plate upon the
 15 same principle as it is done by hand. For this purpose a box O is placed above the roller Q, provided with a sieve bottom *q*. The pulverized whiting which is placed within said box slowly drops through the
 20 sieve bottom upon the roller. The superfluous whiting is scraped off the roller by means of a scraper *r* before it comes into contact with the plate. The two rollers
 25 *x*, Q, are hung together by slotted arms Y, Y, which (although allowing of their vertical adjustment independent of each other) cause them to move together in a horizontal direction. The rollers while revolving around their axes and contrary to
 30 the motion of the plate to be wiped, have simultaneously another motion which can be determined by imparting to the axis of the roller or rollers any vibrating or rotatory motion in a plane parallel with the surface
 35 of the plate, provided the direction of that motion be not parallel with the direction of the motion of the plate. This compound motion of the cleaning surface in combination with the motion of the surface to be
 40 cleaned, produces the same effect as the motion of a printer's hand in wiping a plate, to wit it removes the ink from the plate without tearing the ink out of the engraved lines. It will be perceived that numerous devices
 45 may be employed for producing these motions. The device shown in the accompanying drawings, consists of four vertical crank axles H, H, H', H', upon which the two rollers are hung. These crank axles
 50 when revolving, impart to each point of the axis of each of the rollers a circular motion in a plane parallel with the surface of the plate. Instead of covering each roller with the above mentioned material, a band, made
 55 of that material may be passed around 2 or more rollers, to serve the same purpose.

I do not confine myself to circular or curvilinear motions of the rollers, as the same result may be obtained by giving the said
 60 roller axes a reciprocating or any other motion provided that it shall not be parallel with the direction of the motion of the plate. Proper gearing arranged between the crank axles and the rollers serves to turn the rollers
 65 around their own axes while moving as

above described. The parts of the gearing referred to are marked D, E, F, G, I, K, L, M.

As soon as the plate shall have passed the second roller, the wiping and inking apparatus are both simultaneously raised, by means of the cord or chain *u* attached to the front end of the bed, drawing the lever *s* and moving forward the rails S, S, upon which the boxes T, T, T, T of the crank
 70 axles rest, so as to bring the higher portions of said rails underneath the boxes. The plate in traveling backward will thus be prevented from coming into contact with either the wiping or inking apparatus. As
 75 soon as the plate shall have arrived at the end of its backward travel and again commences to move forward, the cord or chain *t* attached to the rear end of the bed will have drawn the lever *s* to its old position, so as to
 80 bring again the lower portions of the rails underneath the boxes of the crank axles. By this means the inking and wiping apparatus will be lowered to their first position ready to operate upon the plate as soon as it
 85 shall arrive.

The lengths of the cords or chains above mentioned have to be adjusted for the various lengths of plates to be printed from. As soon as the plate arrives between the
 90 press cylinders the paper which has previously been laid upon the table *v* and has been gripped and carried down between the bands *w* and the blanket *a'* will reach and pass through the press cylinders, in contact
 95 with the plate. The paper with the impression upon it, as it issues from between the press cylinders is carried up around the press cylinder *a* (it being still gripped between the bands and blanket) and is thus
 100 deposited upon the table *c'*.

Having now fully described my improvement, what I claim as my invention and desire to secure by Letters Patent is:

1. Covering the wiping rollers or their
 110 equivalents with oilcloth or oiled silk or any other material impervious to ink for the purpose of having a wiping surface from which ink can be constantly removed by a
 115 scraper or otherwise so as to keep it clean, in contradistinction to cloth, leather or similar materials which absorb ink.

2. I also claim in combination with a reciprocating bed plate carrying an engraved plate or its equivalent to be printed from,
 120 one, two or more wiping rollers revolving each upon its own axis when the said axis has a reciprocating rotating or any other motion in a plane parallel with the plane of the bed plate.
 125

3. I also claim passing a wiping band over two or more wiping rollers, when said rollers have the compound motion given to them in the manner herein described.

4. I also claim producing the proper de- 130

gree of pressure between the cleaning surface and the plate by means of a compressed gaseous or liquid fluid.

5 I also claim the manner herein specified of securing the plate to be printed from to the bed plate.

In testimony whereof I have signed my

name to this specification before the subscribing witnesses.

M. C. GRITZNER.

Witnesses:

A. POLLAK,
G. B. TOWLES.