

J. Morse.

Printing Press.

N^o 24357

Patented Jun. 7. 1859.

Fig. 1.

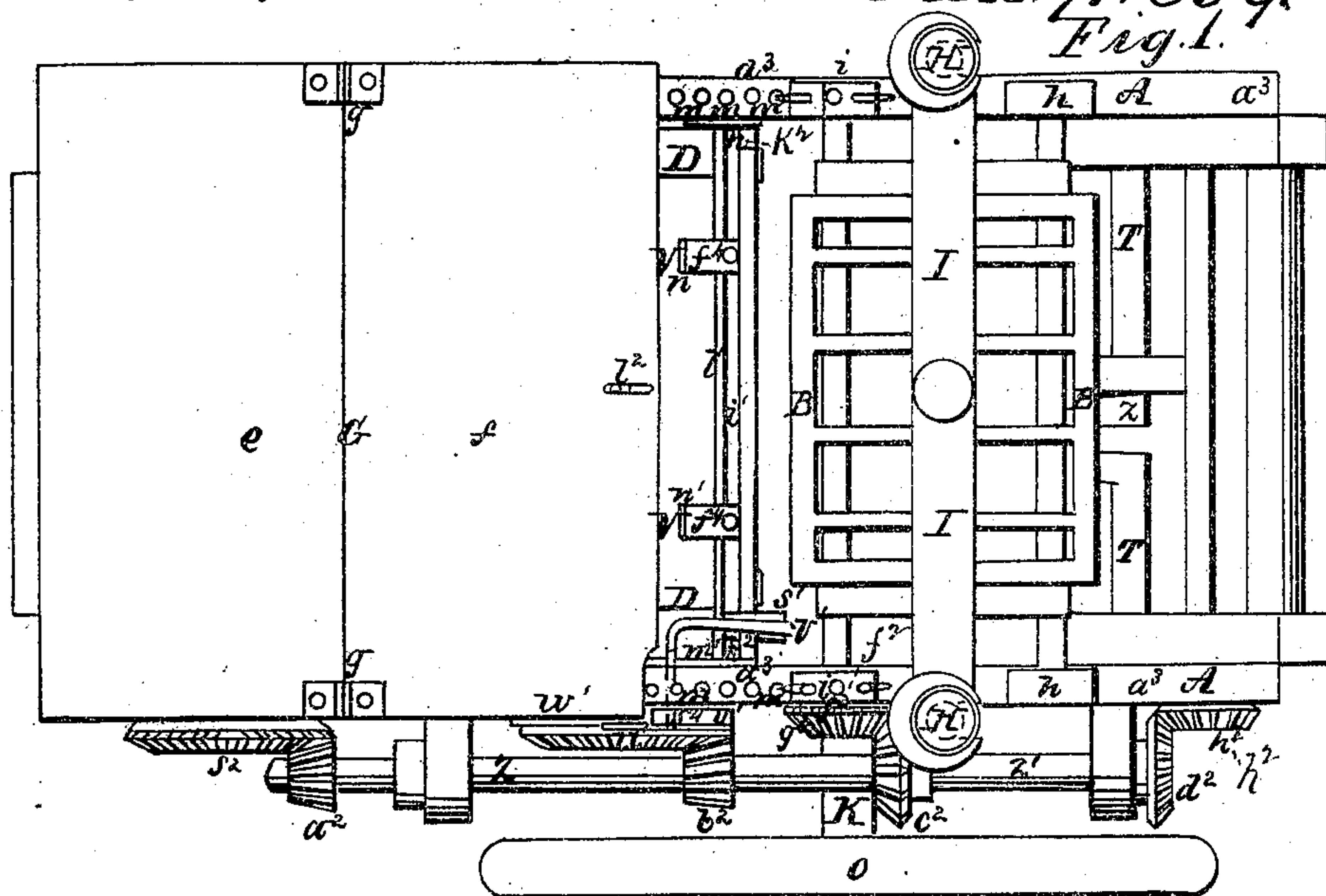
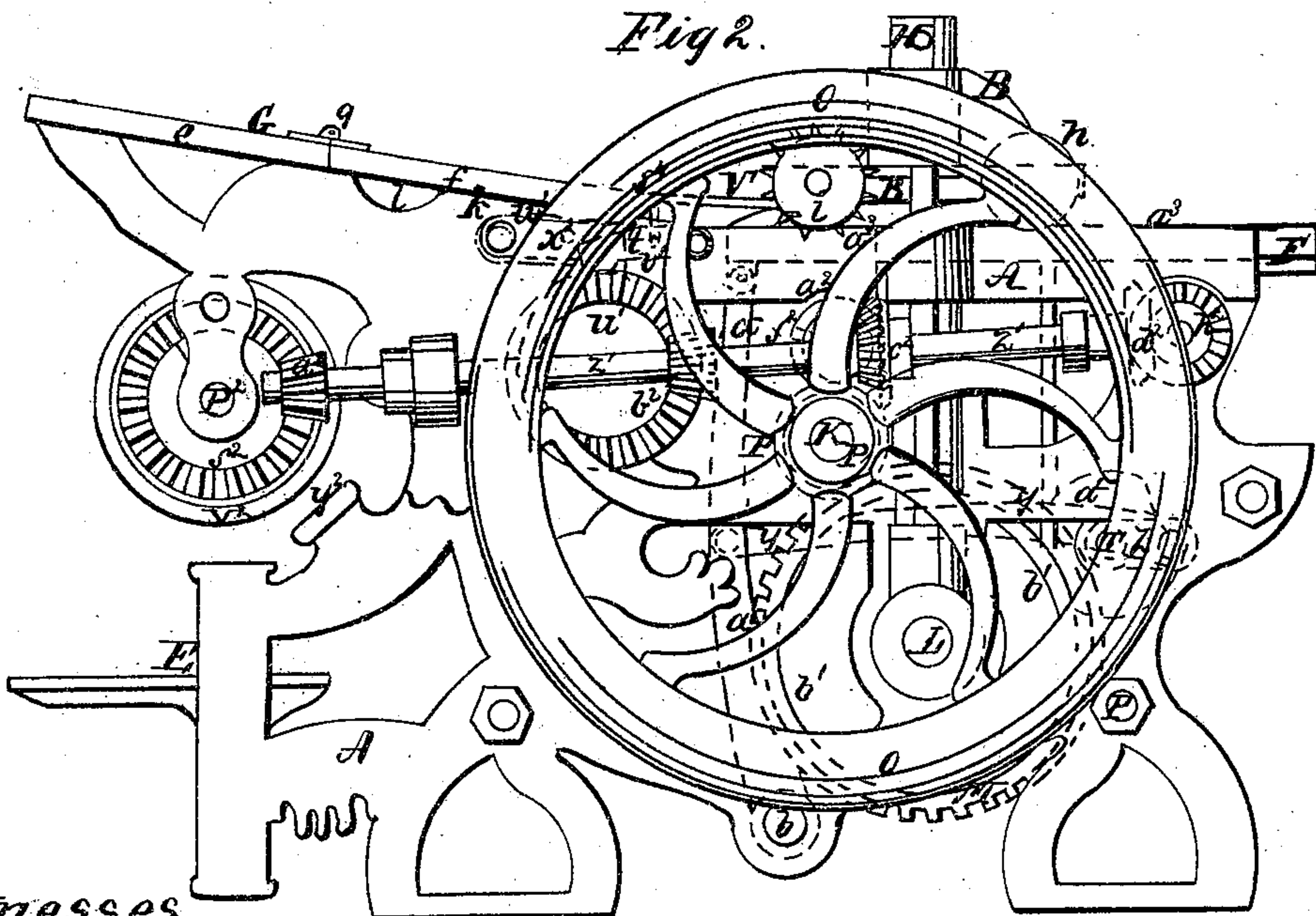


Fig. 2.



Witnesses

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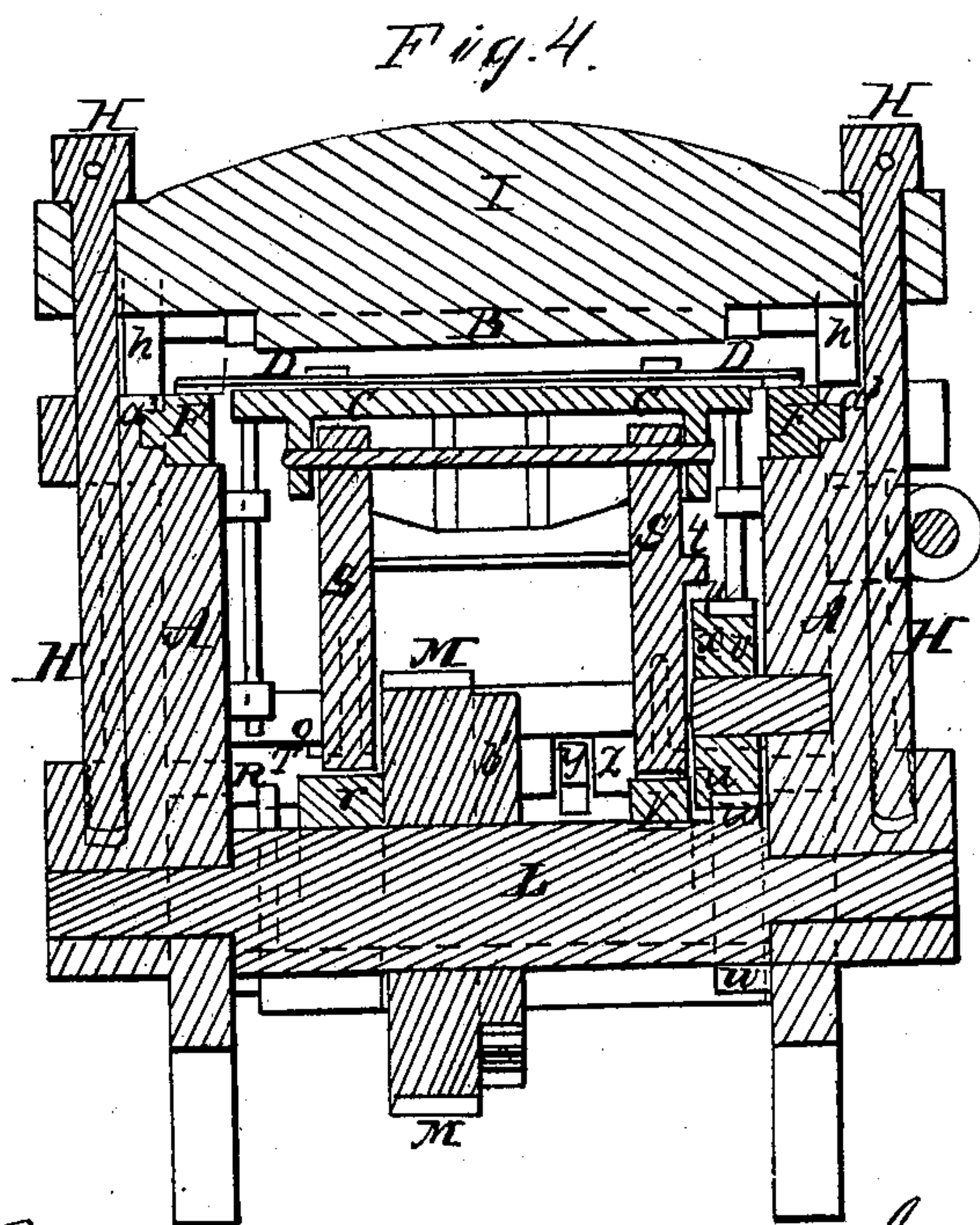
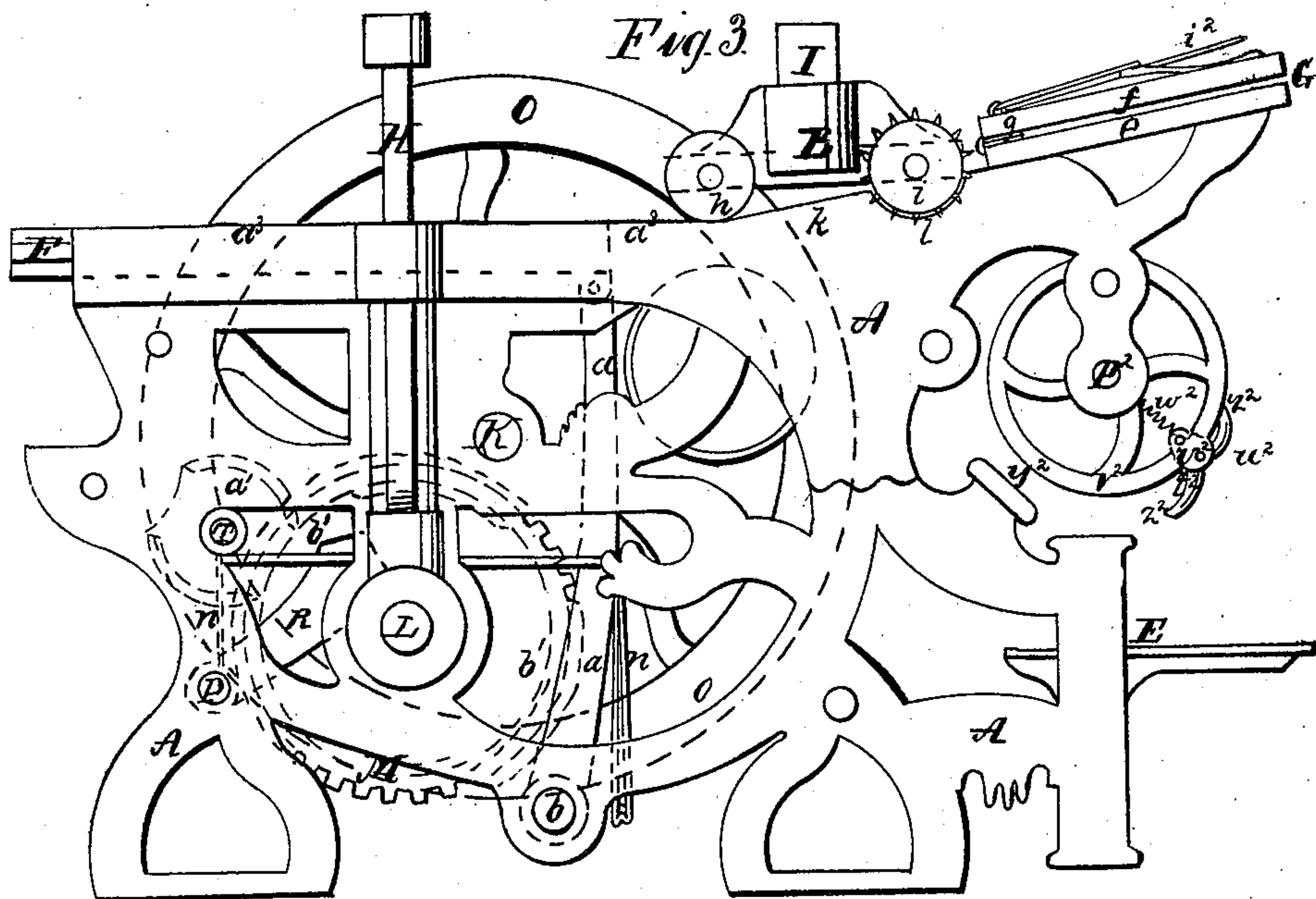
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Fig. 5.

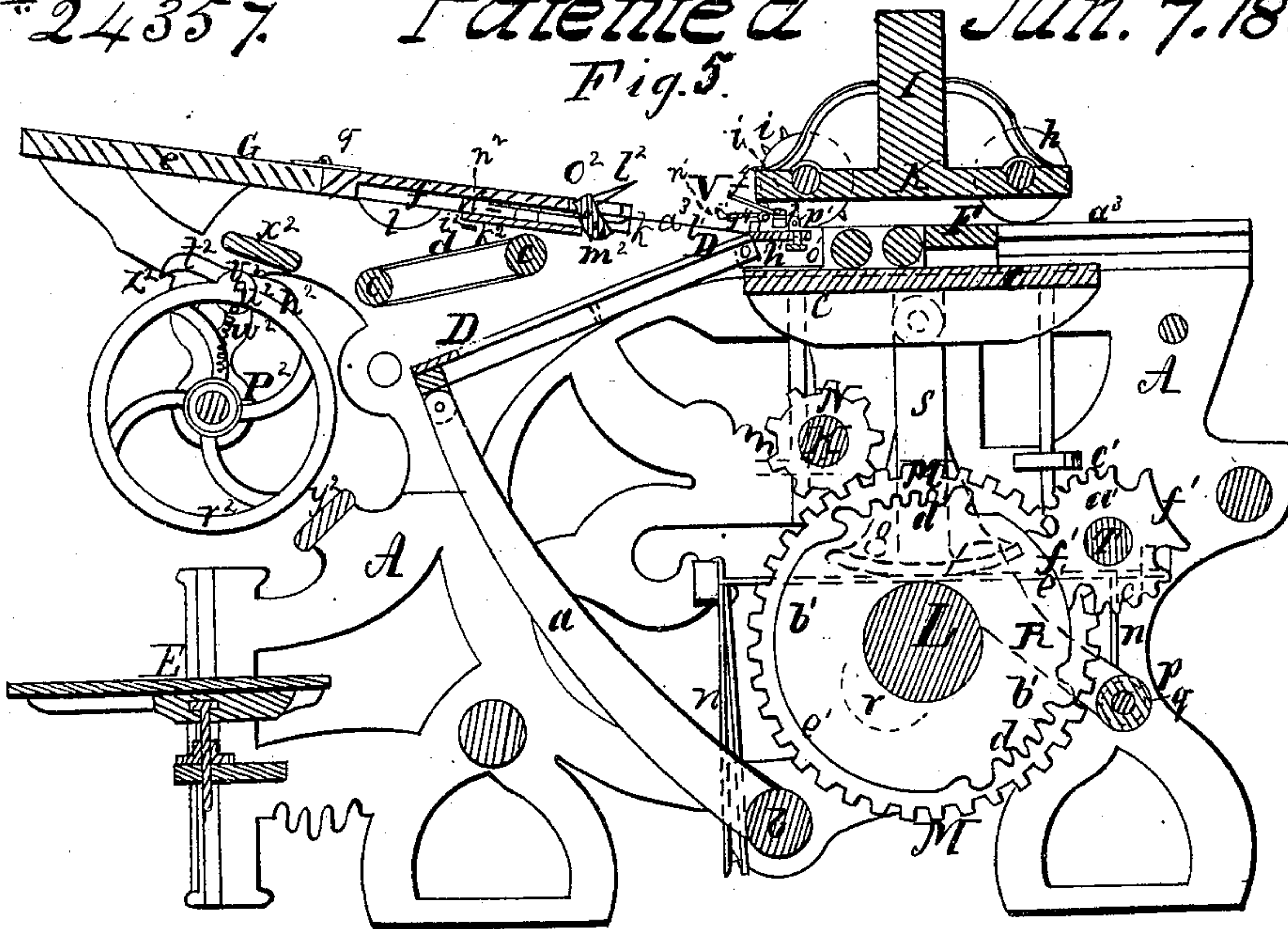
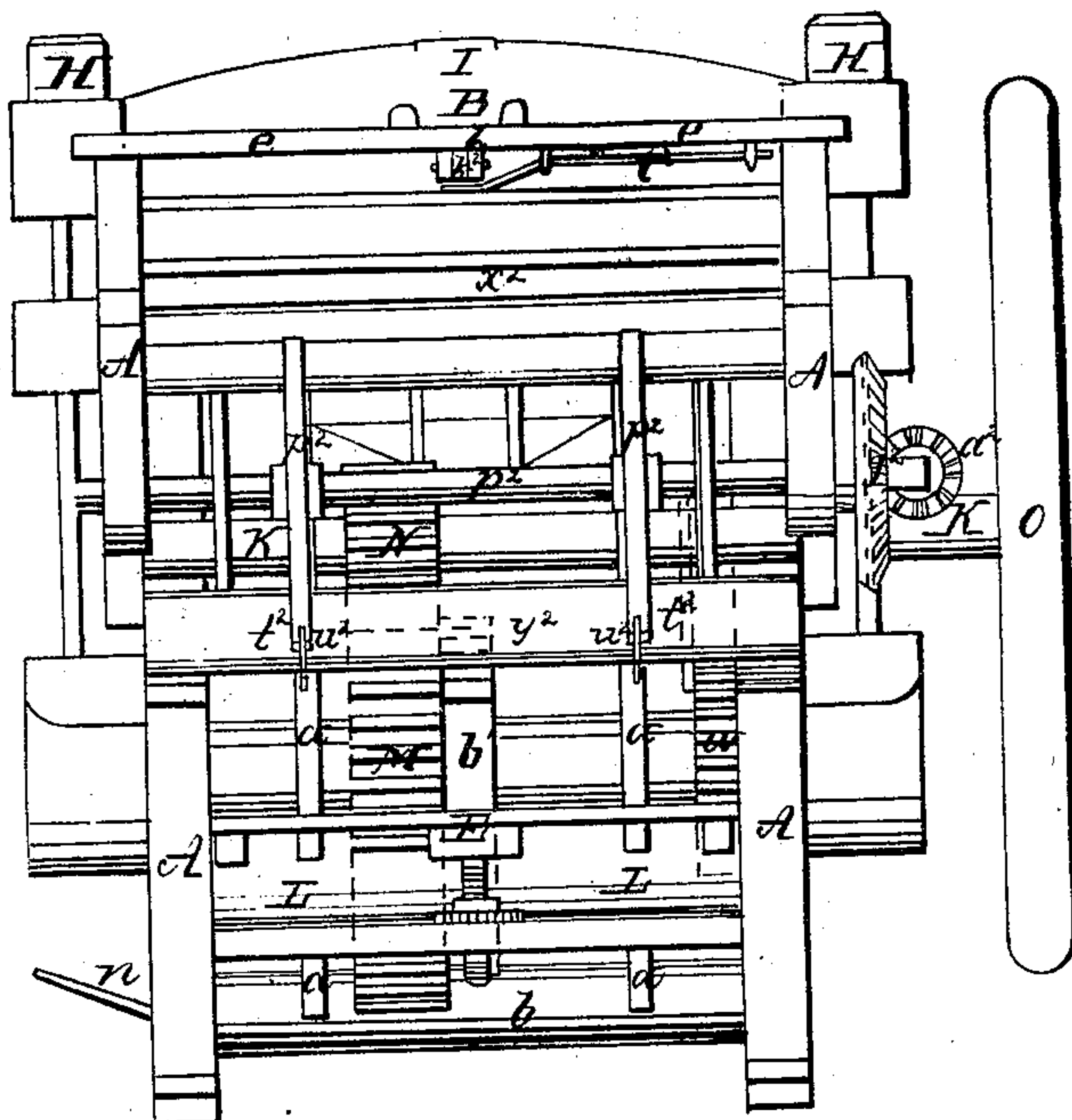


Fig. 6.



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Fig. 7.

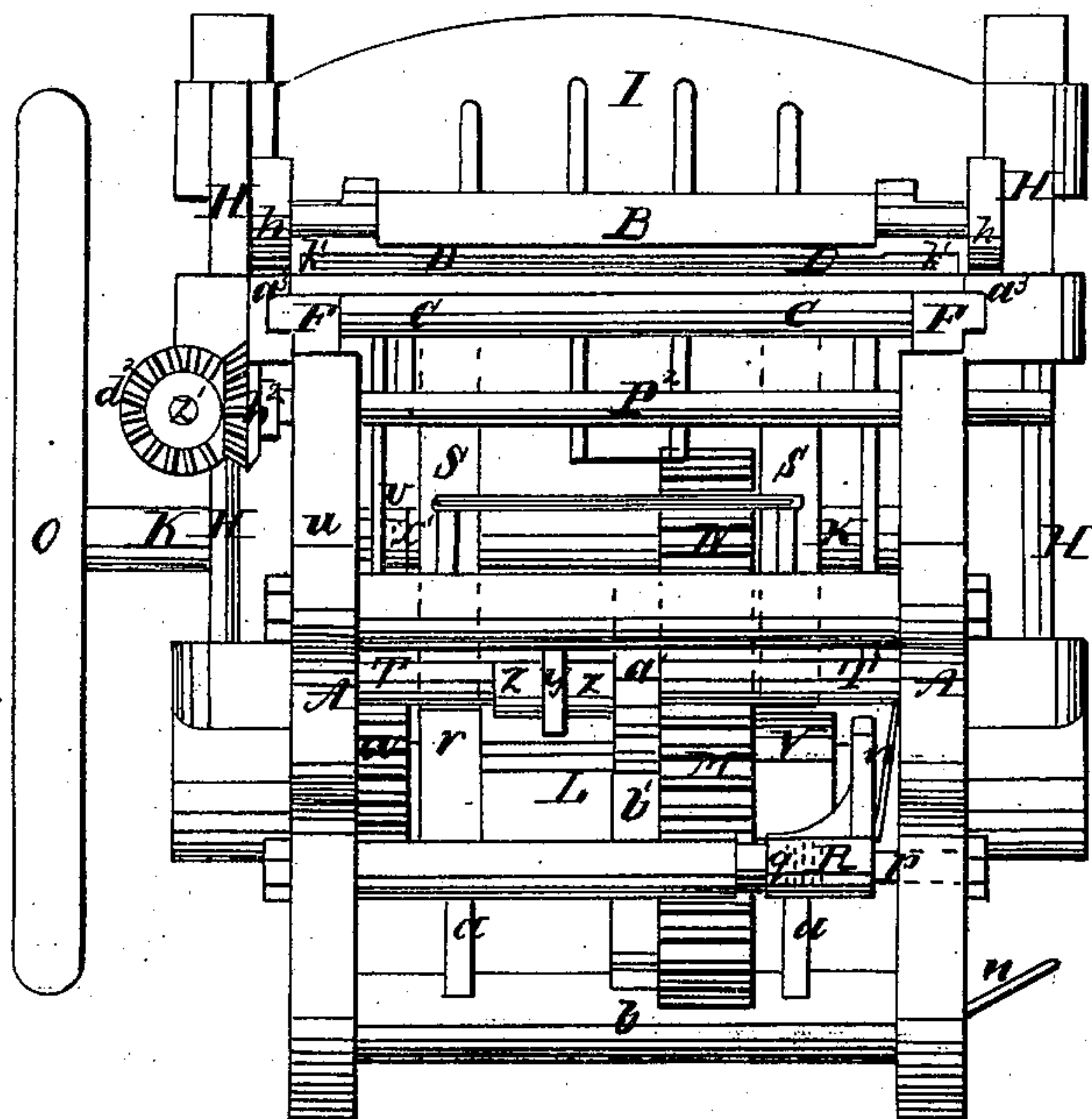
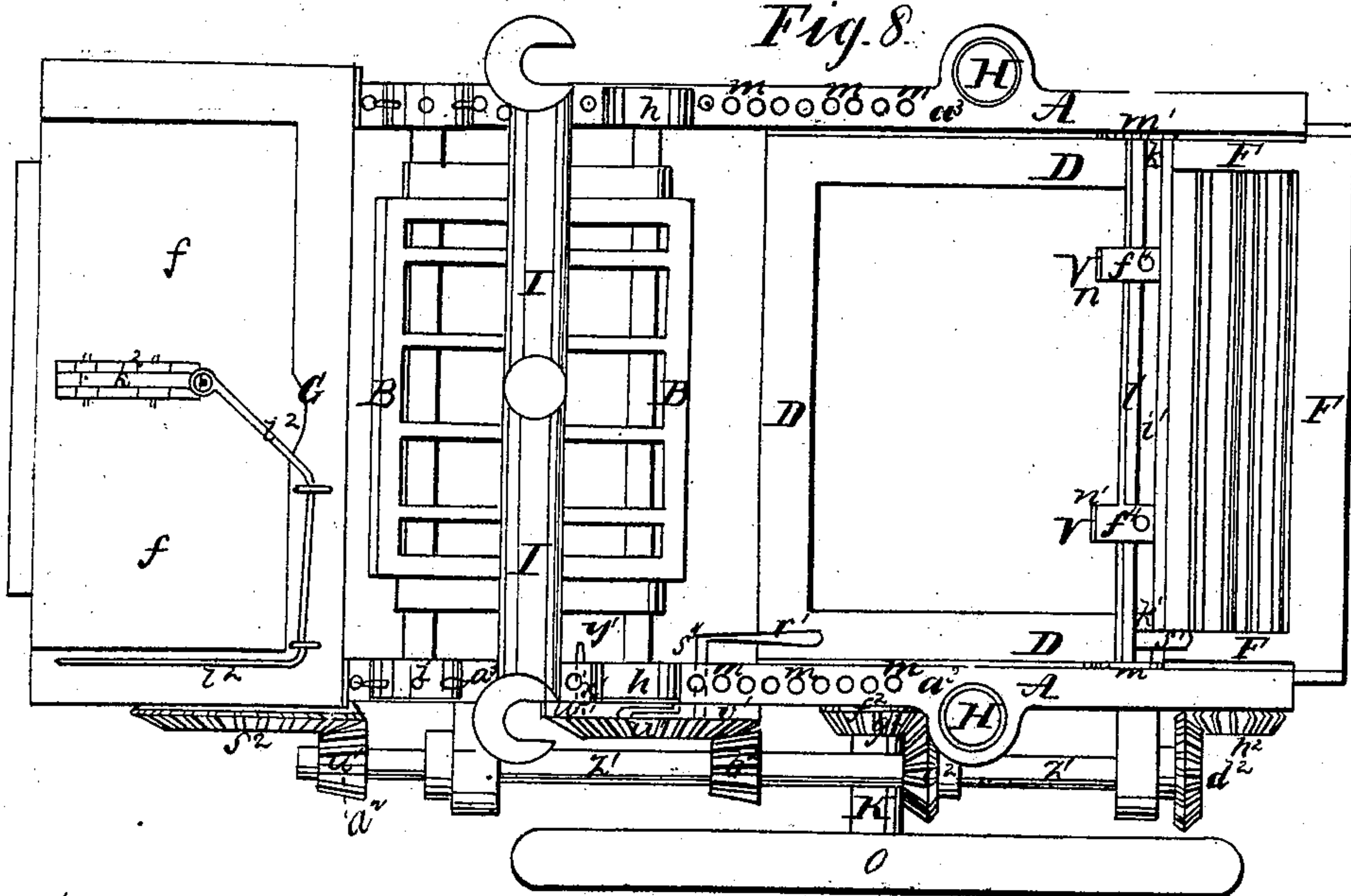


Fig. 8.



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Fig. 9.

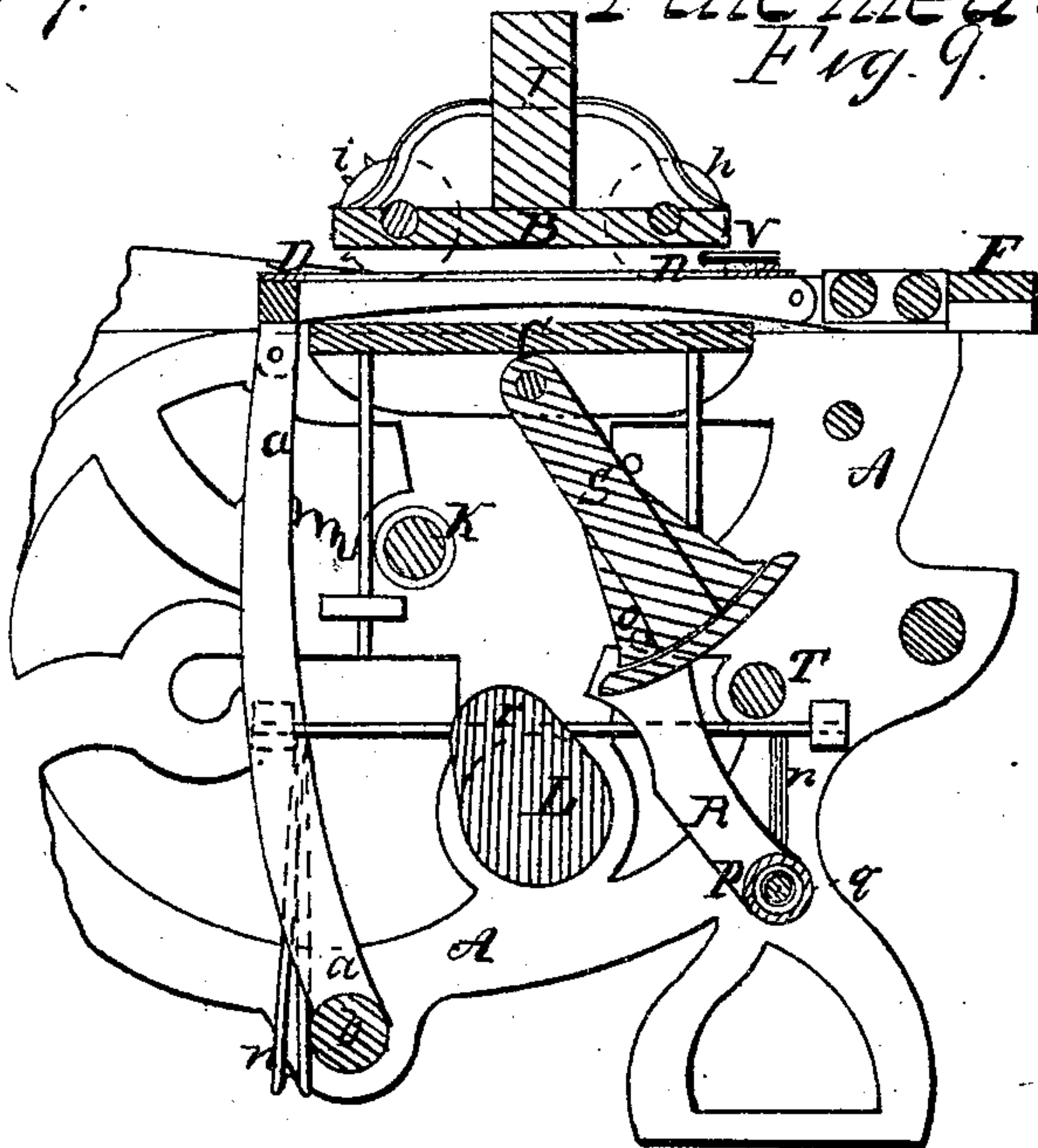


Fig. 10.

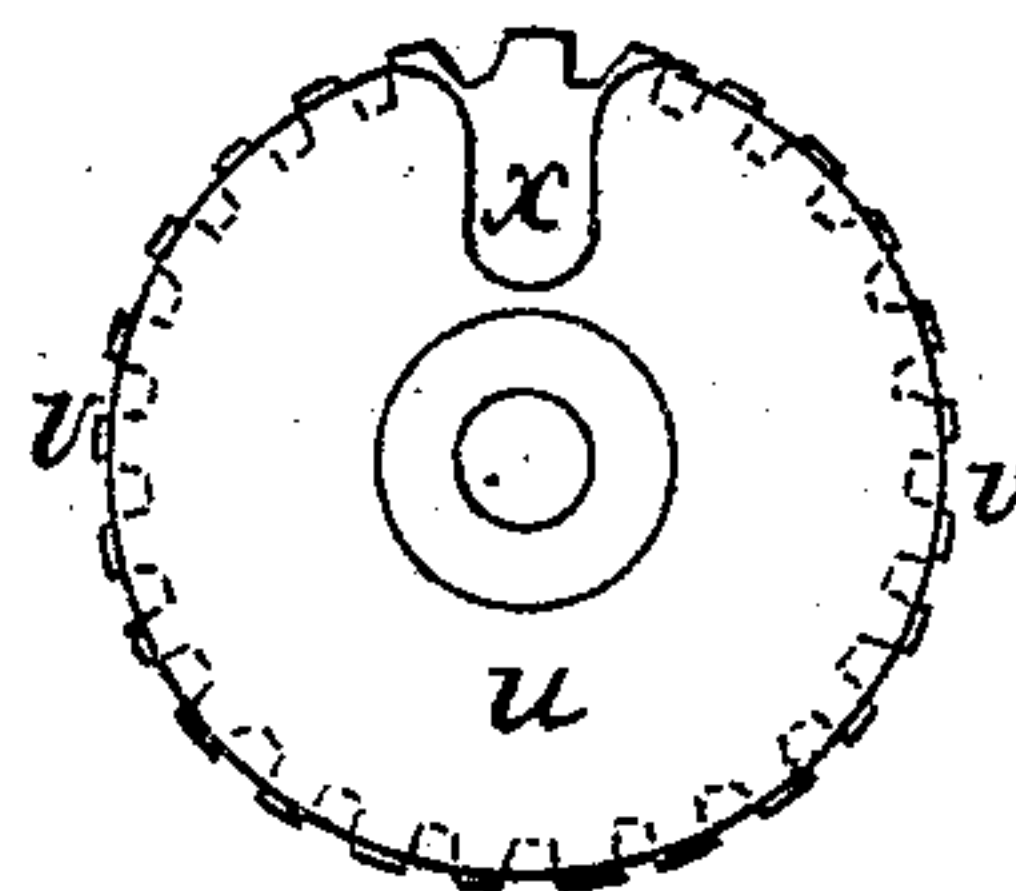


Fig. 11

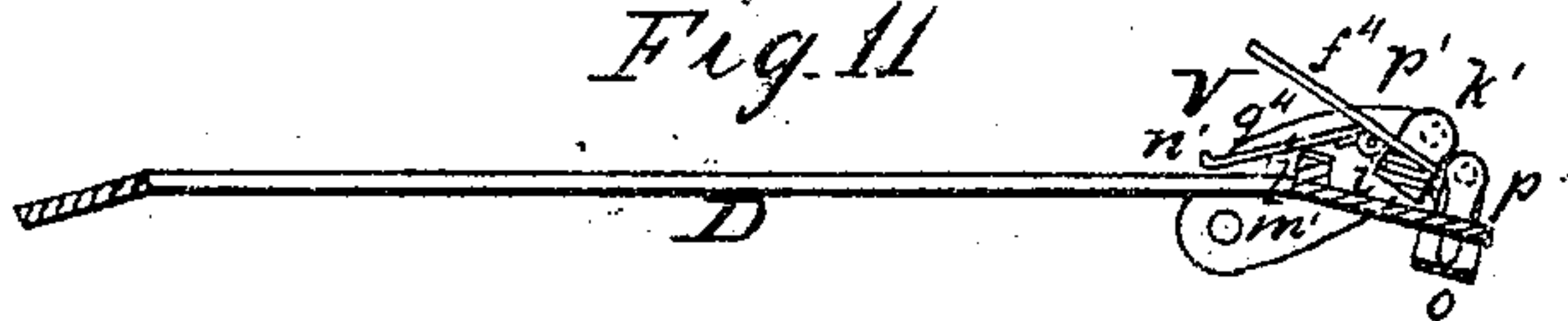


Fig. 12.

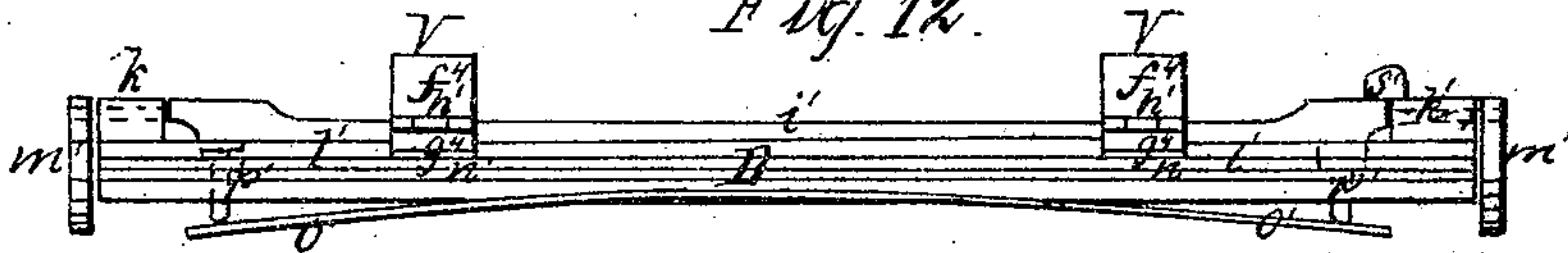
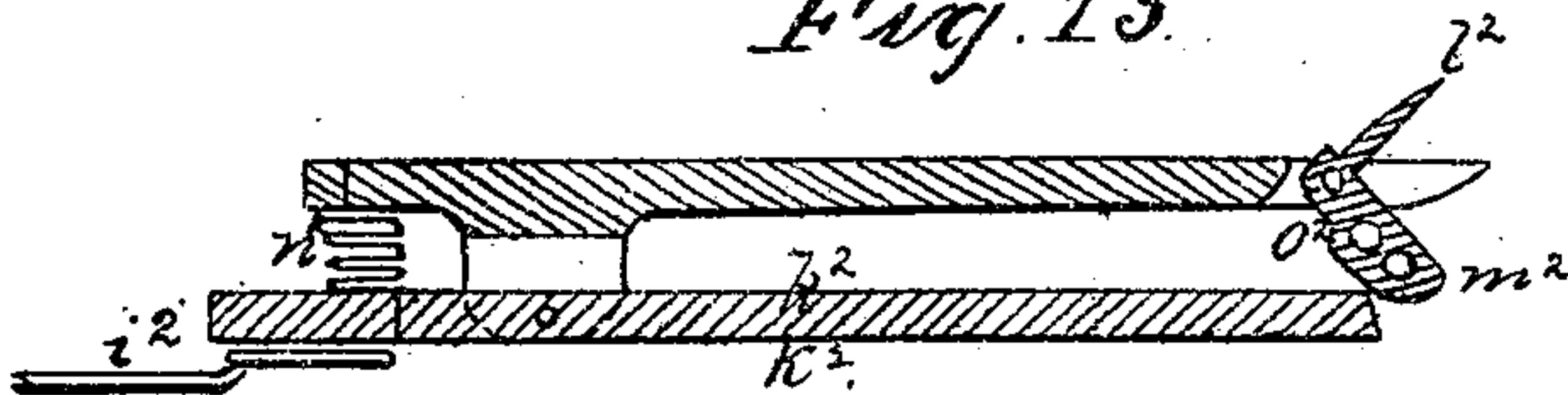


Fig. 13.



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UNITED STATES PATENT OFFICE.

J. MORSE, OF CANTON, MASSACHUSETTS, ASSIGNOR TO S. P. RUGGLES POWER PRESS MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

POWER PRINTING-PRESS.

Specification of Letters Patent No. 24,357, dated June 7, 1859.

To all whom it may concern:

Be it known that I, JEDEDIAH MORSE, of Canton, county of Norfolk, and State of Massachusetts, have invented an Improved
5 Power Printing-Press; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, is a top view of the said press;
10 Fig. 2, a front side elevation of it or an elevation of that side on which the fly-wheel is situated. Fig. 3, is an elevation of its opposite side. Fig. 4, a vertical and transverse section, such being taken through the platen
15 and bed. Fig. 5, is a longitudinal, central and vertical section. Fig. 6, is an elevation of that end at which the pile platform is situated, such being termed the rear end. Fig. 7, a front end elevation.

20 Such other figures as may be necessary to a correct delineation of my improvements will be hereinafter described.

The nature of my invention or improvements may be considered to consist in the
25 following—that is to say: In a peculiar construction of the platen rails or those on which the platen is supported while being moved from over the movable bed, the same consisting in constructing each of said rails
30 with an inclined chute or rise and a depression, the purpose of the chute being not only to steer the platen clear of the sheet discharging rollers, but to form a rest for the lower or movable portion of the inclined
35 feeding table; the depressions of the rails being to receive the rearmost wheels of the platen so as to hold the platen back or away from over the bed. Also, in an arrangement and combination of a slider with
40 the operating cam of, and the pin or stud projecting from one of the rocker toggles of the bed, the purpose of such slider being to prevent an impression being given by the bed. Also, in the peculiar device or
45 mechanism for gradually moving forward or to places the rocker toggles during falling of the bed. Also, in a combination of wheels, lever nippers, and devices for operating or opening and closing the said nip-
50 pers, the same being for receiving a printed sheet of paper from the carrying tapes, reversing it, and so delivering it upon the pile table—that the imprinted face of the said
55 sheet shall be upward, in order that the im-
print thereof may be easily examined.

Also, in a mode of constructing the nippers for receiving the sheet of paper and drawing it over the form of type. Also, in constructing the lower nipper with a raised lip on its front edge, the same being for elevat-
60 ing or bringing the paper up to the level of the type printing surface so as to enable the printing to be done close up to the nippers. Also, in a mode of applying and operating
65 each of the sheet points. Also, in a mode of operating the frisket carrier or carriage.

In the drawings above mentioned, A, exhibits the press frame; B, the platen; C, the movable bed; D, the frisket carriage; E, the pile platform; H, H, the arch rods,
70 and I, the arch bar, which supports the platen; K, is the driving shaft and L, the main cam shaft, the two being geared together by gears, M, and N, as shown in Fig. 5. The said driving shaft carries a fly
75 wheel, O, and a spur gear, P, which is shown in dotted lines in Fig. 2, such driving shaft when the machine is in operation being rotated by power applied to it in any proper manner. The frisket carriage D, is
80 a rectangular frame which is hinged to the inking roller frame F, at one side of it while its other side is supported by two arms *a, a*, extending upward from a rocker shaft *b*, arranged as shown in Figs. 2, 3, and
85 5. When this latter shaft is turned or partially revolved in its bearings, the frisket carriage will be caused to pass downward in an inclined direction underneath the carrying rollers of the endless tapes by which a
90 sheet of paper after having been printed is removed from the frisket, the lowermost pair of such carrying rollers and their tapes being shown at, *c, c*, and, *d*, in Fig. 5. The remainder of them are omitted, as they are
95 such as are in common use in other presses. In such figure (5,) the frisket carriage when underneath the carrying rollers, is represented. The inking roller carriage or frame F, should be supported within or by the
100 frame, A, so as to be capable of moving horizontally therein or in a plane parallel to that of the upper surface of the platen.

G, exhibits the inclined sheet receiving table, which is arranged on the top of the
105 frame, A, and with respect to the bed and platen as shown in the drawings. It is formed in two halves or parts, *e, f*, which are connected together by hinges, *g, g*, so that the inner part, *f*, may be turned or
110

folded over upon the outer part, *e*, such being for the purpose of enabling the platen, *B*, to be moved from over the bed or into position as shown in Fig. 8, which
 5 also exhibits the lower half or portion, *f*, of the table, *G*, as turned backward. The said platen is sustained by four wheels, *h*, *h*, *i*, *i*, two of which, viz, *i*, *i*, are furnished with radial points or teeth extending at equal
 10 distances apart from and around their peripheries as shown in the drawings. The supporting wheels of the platen rest and run on rails, *a*³, *a*³, each of which where it extends over the bed is horizontal or has its
 15 top surface parallel with that of the bed, but between the bed and the rear part, *e*, of the table *G*, each rail *a*³, is constructed with a rise or chute, *k*, and a depression or notch, *l*, arranged as shown in Fig. 2. Further-
 20 more, the top surface of each rail *a*³, is constructed with a series of holes or cavities *m*, *m*, *m*, arranged at equal distances asunder and for reception of the teeth of the wheels, *h*, *h*. The object of the said cavities and
 25 teeth are to maintain the platen parallel to the vertical plane of its arch rods, *H*, *H*, while being moved away from the same. Furthermore, each rail *a*³, is provided with a rise or chute *k*, for the purpose of en-
 30 abling the platen to run clear of the sheet carrying rollers while the said platen is being moved away from the bed. The notches or depressions, *t*, serve to receive the rearmost wheels, *i*, *i*, and thereby prevent
 35 the platen from being moved forward or toward the bed by the action of gravity.

The movable bed, *C*, is operated by means of pendulous toggles *S*, *S*, and cams, *r*, *r*. Fig. 9, representing a section taken through
 40 the bed, one of the toggles and its cam, the said cams being carried by the shaft, *L*. Such figure also exhibits the slider, *R*, and the mechanism for operating it, the slider also being shown in Fig. 7. By means of
 45 the foot treadle lever, *n*, arranged as shown in the drawings, the slider may be moved inward toward the adjacent toggle, *S*, from the side of which a pin or stud, *o*, projects. The slider, *R*, turns on a supporting rod or ful-
 50 crum, *p*, so that when moved toward and upon the cam, *r*, it (the slider) may be elevated by such cam. The slider and the pin, *o*, serve to estop the toggles and hold them
 55 out of action of the cams, *r*, *r*, when it may be desirable to throw off the impression, or in other words, to prevent the bed with the
 60 form of type from being raised upward. A spring, *q*, shown in dotted lines in Fig. 7, serves to move the slider, *R*, away from the toggle whenever the treadle lever, *n*, is re-
 65 lieved from the pressure of the pressman's foot.

As the toggles immediately after an im-
 65 pression has been given by them are some-
 times liable not to be properly carried for-

ward toward the front end of the machine there is applied to them a mechanism for bringing them forward gradually as well as for insuring their return to the proper
 70 positions for their cams to act upon them. To this end the front toggle is provided with a stud *t*, (see Figs. 4, and 7,) which is
 75 to operate in connection with a notched wheel *u*, arranged as shown in Figs. 4, and 7, and formed as exhibited in side view in
 Fig. 10. This notched wheel is affixed to the side of or makes part of a gear, *v*, which
 80 is arranged as shown in the said Figs. 4, and 7, and engages with a gear, *w*, carried by the shaft *L*. The notch *x* of the wheel
 85 *u*, during rotation of the wheel and while the toggles are moving forward receives the stud, *t*, and by its action not only insures the return of the toggles but brings them
 gradually into the right place for being
 90 acted upon by their cams.

The next part of my invention relates to the mechanism for operating the frisket carriage. A connecting bar or rod, *y*, is jointed
 90 to one of the arms, *a*, and also to a bell crank, *z*, fixed on a shaft, *T*, arranged as shown in the drawings. This shaft, *T*, carries a peculiar formed gear or pinion, *a'*,
 95 which is to operate in connection with another peculiar gear, *b'*, fixed upon the main cam shaft, *L*, (see Fig. 5,) the forms of such gears being exhibited in the said figures. These gears, *a'*, *b'* not only impart to the
 100 frisket carriage its back and forth movements, but also, intervals of rest, as it is necessary that the frisket carriage should be
 105 stationary while a sheet of paper is being printed as well as while the process of supplying a sheet to the frisket is being carried on. Each gear, *a'*, and, *b'*, is con-
 110 structed with two arcs of teeth, *c'*, *c'*, and *d'*, *d'* and the large gear has plane convex arcs, *e'*, *e'*, to operate in connection with reversed or concave arcs, *f'*, *f'*, of the pin-
 115 ion, *a'*, the whole being formed and arranged as shown in the drawings. While a convex arc, *e'*, and a concave arc, *f'*, are in contact, the pinion *b'*, will have no mo-
 120 tion, although the arc, *e'*, may move within the arc, *f'*, but as soon as a toothed arc of the gear, *b'*, encounters a toothed arc of the pinion, *a'*, it will set the pinion in motion
 so as to rotate its shaft and produce a move-
 125 ment of the frisket carriage. The intermittent motions of the frisket carriage are thus
 130 secured by the conjoint action of the said pinion, and gear so constructed.

The next part of the press to be described is the mechanism for removing the sheet of
 125 paper from the table, *G*, to and over the bed or form. This mechanism consists mainly in nippers applied to the frisket, *D*, they be-
 130 ing exhibited at, *V*, *V*, in Fig. 1.

Fig. 11, exhibits a vertical section and
 130 Fig. 12, a rear elevation of the frisket and

its nipper apparatus, the nippers being represented therein as open. Each of them consists of two jaws, f^4 , g^4 , hinged together as shown at, h' . The upper jaw f^4 , of each pair of nippers is fastened to a shaft, i' , whose journals are supported in projections or bearings, k' , k' , extending up from the frisket, D. Each jaw, g^4 , rests on a rod, l' , which extends from one to the other of two levers or lifters, m' , m' , which rest on the inking roller frame, F, and serve to support the lower jaw, g^4 , level, particularly while it is approaching toward the sheet table, G. The said lower jaw, g^4 , is furnished with a small bend or projecting lip, n' , the same being made to extend upward in front of the adjacent or outer edge of the upper jaw, f^4 . The purpose of this lip has been hereinbefore mentioned.

A spring o' , arranged at the back of the frisket as seen in Fig. 12, presses against arms p' , p' hinged to and extending downward from one side of the shaft i' , as shown in the drawings, such spring serving to close the nippers. On the shaft, i' , being turned in its bearings so as to elevate the upper jaws of the nippers, the lower jaws of the said nippers by being supported upon the rod, l' , will at the same time be depressed or tipped downward. Thus, while the nipper jaws are being opened each will move away from the other. The opening of the nippers is effected at the proper time by the pressure of a bent arm r' , upon a stud or projection, s' , extended from the shaft, i' , the said bent arm, r' , extends from a lever, s^4 , whose fulcrum is shown at, t' , see Figs. 1, and 2. Directly underneath the said lever is a bevel gear, u' , which carries in rear of its range of teeth, two cams, v' , w' , one of which is shown by a red line, while the other is exhibited by a blue line in Fig. 2. The outer end of the lever, s^4 , rests on the cam v' , while that of another lever, x' , carrying a stud, y' , rests on the cam, w' . A shaft, z' , extends along the side of the machine as shown in Figs. 1, and 2, and carries four bevel pinions, a^2 , b^2 , c^2 , and, d^2 . Motion is imparted to the said shaft, z' , from the driving shaft, K, whose spur gear, P, engages with another small gear, f^2 , carrying a bevel gear g^2 , which in its turn engages with a pinion, c^2 . Furthermore, the bevel gear, u' , engages with and is rotated by the pinion, c^2 . That bevel pinion which is at one extremity of the shaft, z' , serves to impart motion to a bevel gear, h^2 , which may be supposed to operate the main shaft of the ink cylinder. The lever, x' , and its stud, y' , actuate a bent lever, i^2 , applied to the underside of the part, f , of the table G. The lesser or inner arm of said line i^2 presses against a lever, k^2 , arranged as shown in Fig. 5, and also in Fig. 13, which exhibits a section of the said lever and the pointing apparatus connected

with it and applied to the part f , of the table, G. The point or pin for pointing a sheet of paper preparatory to its being printed and while it is being laid on the table, G, is shown at, l^2 , in Figs., 1, 5 70 and 13. It extends from a foot cam, m^2 , constructed and arranged with respect to it and the lever, k^2 , as shown in the drawings. A spring, n^2 , serves to press the lever against the cam, such cam being provided with a locking notch or recess, o^2 , formed in its heel and for the reception of the adjacent arm of the lever, k^2 . This locking recess serves to enable the said lever to maintain the point in an upright position while the sheet of 80 paper is being printed. After the printing of the sheet has taken place, and the nippers have seized the sheet, the lever, k^2 , by the action of the bent lever, i^2 , will be moved away from the point so as to allow the said 85 point to be drawn downward into an inclined position by the sheet of paper while the said sheet is being drawn by the nippers away from the table, G. By such means the sheet will be drawn off the point and subse- 90 quently it will be elevated into an upright position by the action of its lever, k^2 , against the cam, m^2 , such lever being actuated by its spring, n^2 . If more than one point is to be used, each additional one should have simi- 95 lar appliances.

The next part of the mechanism to be described is that for receiving the sheet of paper from the carrying tapes, reversing it and placing it on the pile platform, E, or a 100 pile of paper thereon. At the rear end of the machine, there is a shaft p^2 , (see Fig. 6,) which carries two or any other suitable number of wheels, r^2 , r^2 , see Figs. 5, and 6, and is revolved by a bevel gear, s^2 , that en- 105 gages with the pinion, a^2 , herein before described. Each of the wheels r^2 , at its circumference carries a nipper lever t^2 , which plays on a fulcrum, u^2 , and is formed with a projection, v^2 , extending below, the fulcrum 110 and affixed to a zigzag or other proper spring, w^2 , carried by the wheel and arranged as shown in Fig. 5. The said nipper levers, t^2 , while the wheels are being revolved are moved successively against and by two 115 stationary bars, x^2 , y^2 , arranged as shown in the drawings. As the sheet of paper is being delivered from the carrying tapes, it will be received upon the peripheries of the wheels, r^2 , r^2 , and underneath the jaws, z^2 , z^2 , 120 of the nippers. Now, while the said jaws, z^2 , are being moved forward with the sheet, they will be carried in contact with the bar, x , and by it will be closed down upon the sheet. In this manner, the sheet of paper 125 becomes connected to the wheels which as they continue to revolve will carry it along with them and it will be turned over so as to bring its printed side uppermost. The sheet while being held by the wheels will fall 130

upon the pile table or the pile of paper thereon and be discharged from the wheels; the said discharge of the sheet taking place by reason of the tail or longer arms of the nipper levers being borne against the bar, y^2 , as they pass by the same. The nipper may be continuous stretching across, being fixed to arms on the end of the nipper shaft, or there may be separate nippers attached to arms movable on the nipper shaft or, on movable wheels as above described. With nipper stretching entirely across the sheet it may be received on an inclined plane and the nipper be attached at both ends to an endless band and the sheet drawn down the inclined plane under the end of the same and delivered printed side up on the table.

Having thus described my improved power printing press, what I claim as new therein and as my invention is as follows:

1. I claim the improvement in the construction of each of the platen rails, a^3 , a^3 , the same consisting in the chute, k , and a notch or depression, l , arranged therein and with reference to the rollers or tapes substantially in manner and for the purpose as herein before specified.

2. I also claim the arrangement and combination of the slider R, with the operating cam and the pin or stud O, on the rocker toggle, such slider being actuated by a foot treadle, n , a spring q , and the cam, r , of the toggle substantially as described.

3. I also claim the mode of insuring the return movement of the toggles and their gradual forward motion, after each impression has taken place, the same being accomplished by the notched wheel, w , or its notch, x , as described.

4. I also claim the mode of constructing the gears, a' , and, b' , for operating the frisket carrier, viz, with the toothed arcs, c' , c' , d' , d' , and the concave and convex arcs, e' , e' , and, f' , f' , unprovided with teeth, the whole being arranged so as to operate together substantially as specified.

5. I do not claim the subject of the United States Patent, No. 7205, but I claim the combination of two or any other suitable number of wheels, r^2 , r^2 , lever nippers t^2 (applied respectively to them) and their opening and closing bars x^2 , y^2 , or mechanical equivalents for such bars, the same being substantially as and for the purpose described.

6. I also claim the above specified mode of constructing each of the nippers, V, V, for receiving the sheet of paper from the table, G, viz, so that each jaw may move away from the other, while the upper is being raised, the same producing the advantages not only of insuring the passage of the lower jaw underneath the sheet of paper simultaneously with that of the other jaw over it, but of both jaws closing upon the paper at one and the same time so as not to lift it out of place.

7. I also claim the mode of constructing the lower jaw, g^4 , of each pair of nippers, V, viz, with a lip or bend, n' , arranged thereon and for the purpose described.

8. I also claim the mode of applying and operating each of the points, l^2 , viz, hinging or jointing it to the table, G, and combining with it a stop, m^2 , and lever, k^2 , or the equivalents therefor, the whole operating or being made to operate substantially as described.

9. I also claim the improved method of operating the frisket carrier, the same consisting in causing it to descend and pass in an inclined position under the delivering tapes and rollers, while the nippers, V, V, may be approaching the sheet table, G, the same enabling the press to be made lower and shorter than when the frisket carriage is moved horizontally under the said delivering tapes or rollers.

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Witnesses:

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