

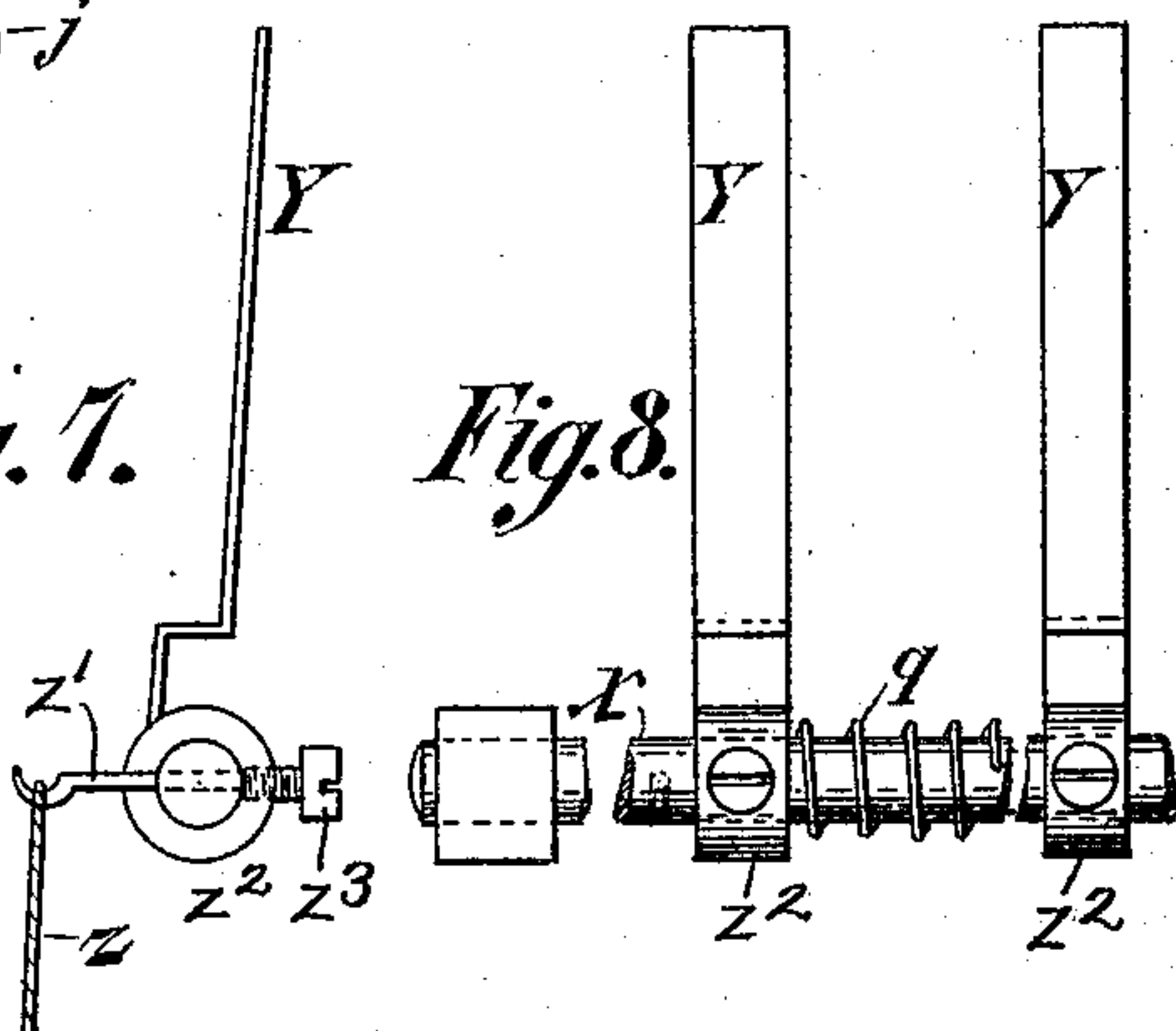
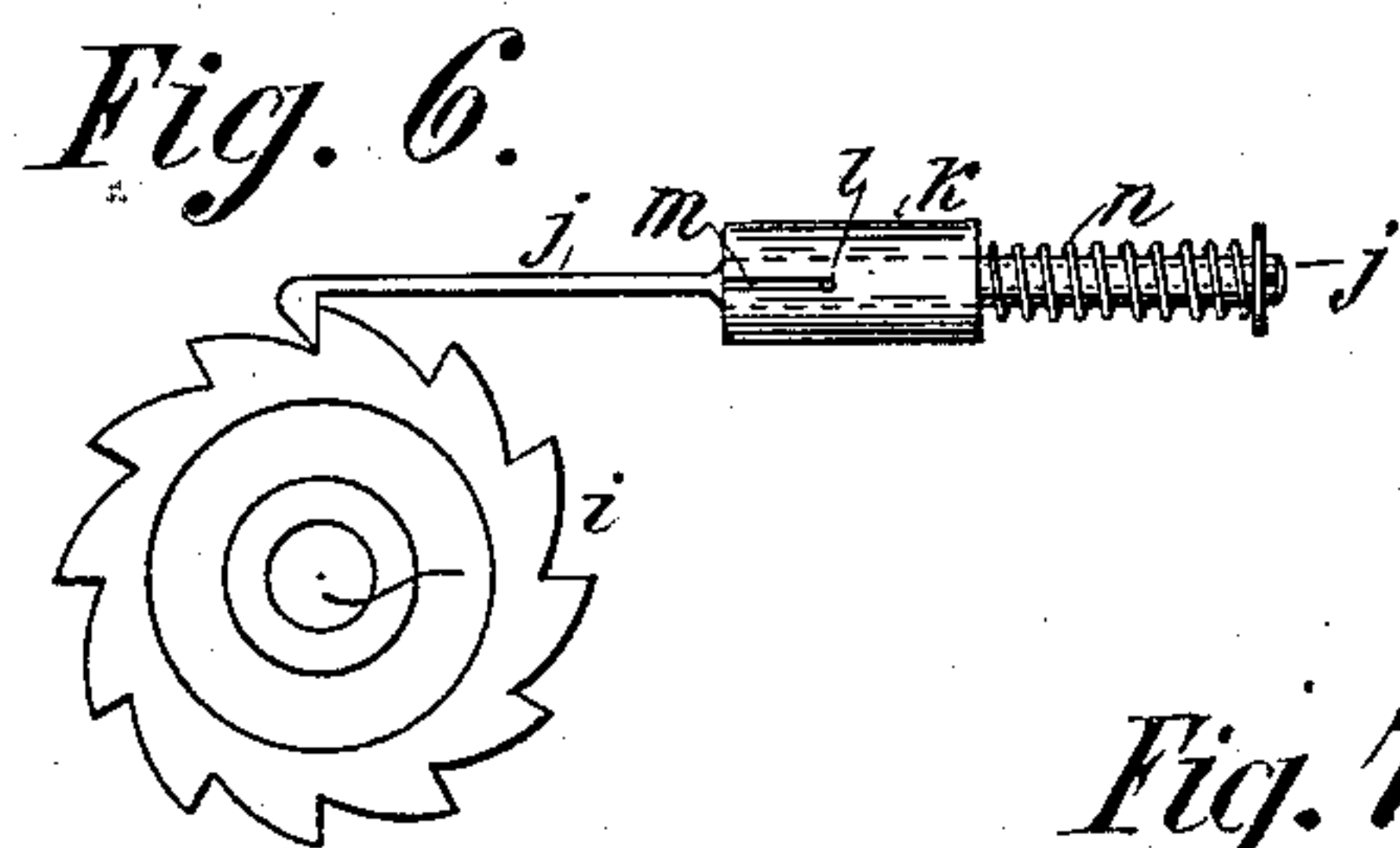
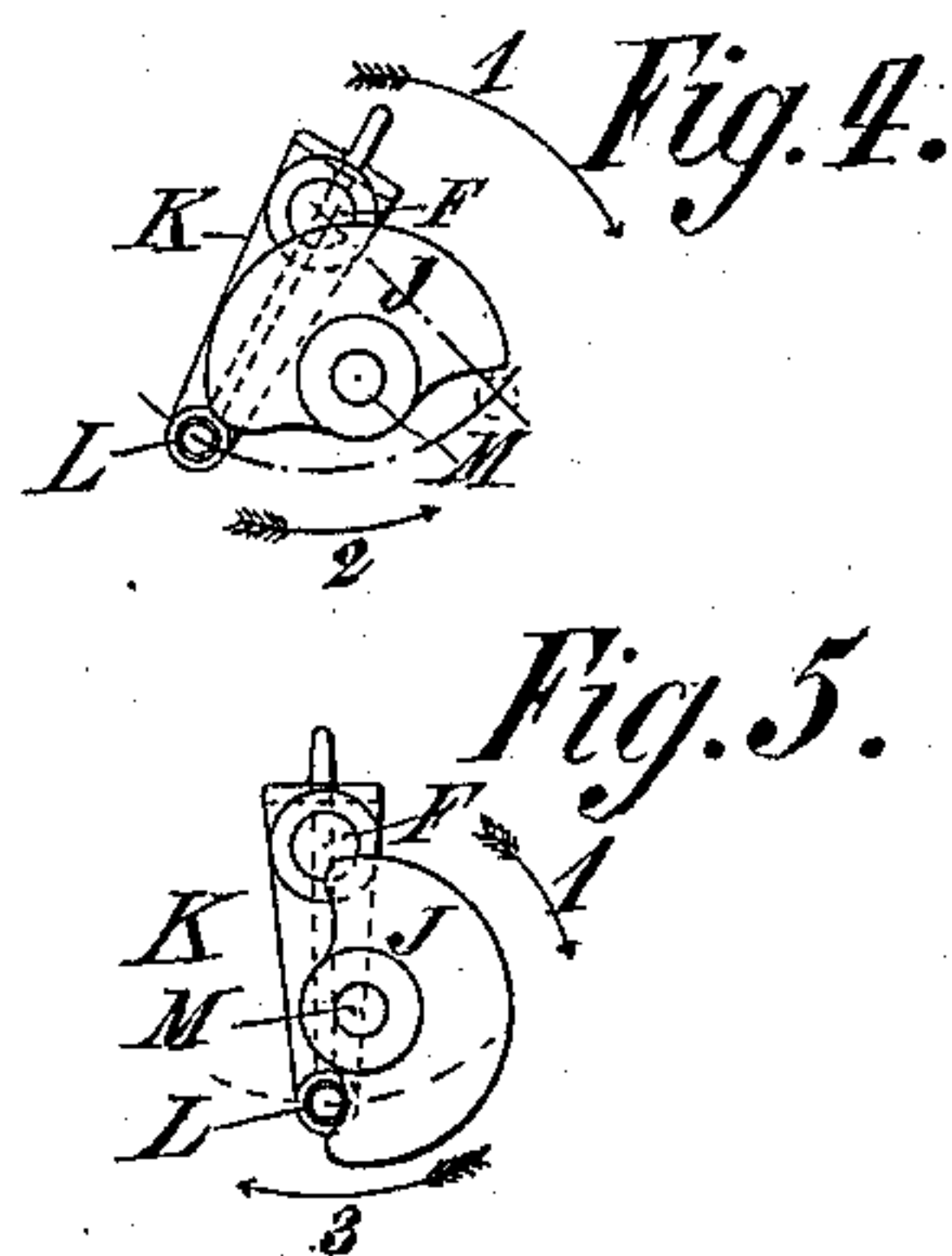
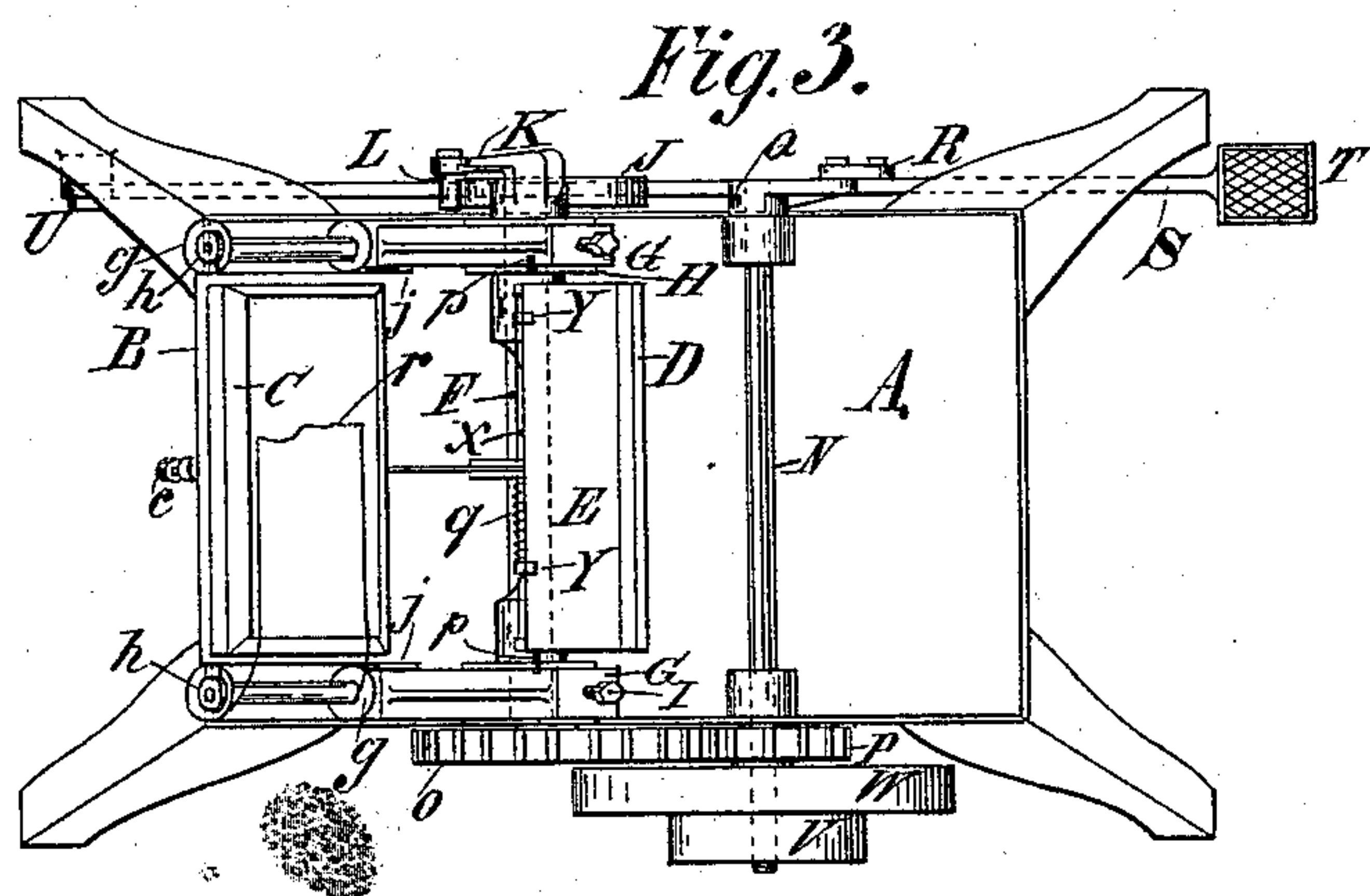
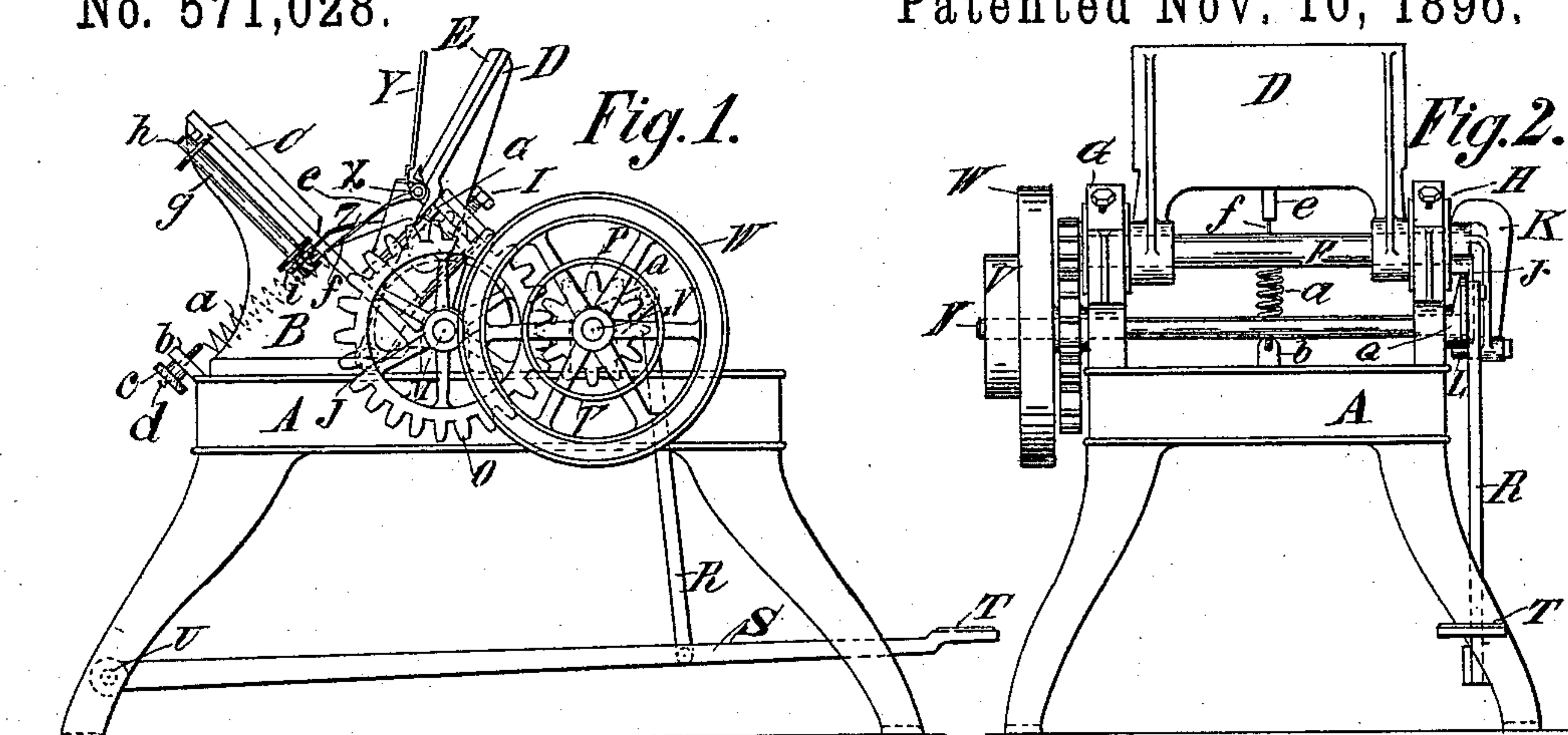
(No Model.)

G. P. VAN WYE.

PRINTING MACHINE FOR DUPLICATING TYPE WRITTEN WORK.

No. 571,028.

Patented Nov. 10, 1896.



Witnesses
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PRINTING-MACHINE FOR DUPLICATING TYPE-WRITTEN WORK.

SPECIFICATION forming part of Letters Patent No. 571,028, dated November 10, 1896.

Application filed November 1, 1894. Serial No. 527,619. (No model.)

To all whom it may concern:

Be it known that I, GARRY P. VAN WYE, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented a new and useful Improvement in Printing-Machines for Duplicating Type-Written Work, for the purpose of printing letters, circulars, or any other printed matter where a number of copies are wanted and it is desirable that the printing should imitate type-writing, of which the following is a specification.

My invention relates to improvements in printing-machines in which the printing is done by means of a blow movement, either through an inked ribbon or otherwise, as it is evident that the form of type may be inked by means of a roller or pad, as is now commonly done in other printing-presses and printing-machines. It is also evident that a machine adapted to print with a blow movement may be constructed in various ways, but the way I have found most convenient and suitable for this purpose is a machine in which, first, a suitable arm and plate are so constructed as to hold the paper on which the printing is to be done and adapted to be rocked back and forth by a suitable device, and so adjusted that the front of the plate may impinge against a form of type; second, a suitable arrangement for rocking the arm and plate so that the plate may be brought against the form of type with a blow movement and returned so that the printed sheet may be taken out by the operator and a blank sheet inserted; third, a suitable cushion on the front of the said plate, preferably made of vulcanized rubber, to somewhat soften the effects of the blow and produce an even impression on all parts of the sheet in printing; fourth, a suitable device for holding the paper against the said cushion while being brought against the form of type and also while being returned; fifth, a suitable means of adjusting the said arm and plate so that the said cushion will always strike evenly on the said form of type; sixth, a suitable device for holding an inked ribbon and permitting it to feed evenly and smoothly over the form of type; seventh, a suitable device for feeding the said inked ribbon over the form of type and so adapted that the ribbon

may be reversed and fed across the type in the opposite direction after being fed across in one direction. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view in elevation of the entire machine. Fig. 2 is an end view of the same. Fig. 3 is a plan view. Fig. 4 is a detail view of the cam and lower extension of the rocking arm. Fig. 5 is another view of the same with the cam and arm in a different position. Fig. 6 is a detail view of the ribbon-feeding device. Fig. 7 is a detail side view of the paper-holding device, and Fig. 8 is another view of the same.

Similar letters refer to similar parts throughout the several views.

In Fig. 1, A represents the frame with legs suitably attached for holding the same in its proper position. Journaled on the top of this frame in a suitable manner is the shaft N, on which is attached the belt-pulley V, the fly-wheel W, and the gear-wheel P. On the opposite end of the shaft N, and attached thereto, is the crank-arm Q, to which is attached in a suitable manner the rod R connecting the crank-arm Q with the foot-lever S, which is suitably attached to one of the legs of the frame A at U and bearing on the other end the foot-plate T. Thus it will be seen that the printing-machine may either be operated by steam, electric, or other power in connection with the belt-pulley V, or by foot-power in connection with the crank-arm Q.

The gear-wheel on the shaft N meshes with another gear-wheel O, which is attached to shaft M, the shaft M being suitably journaled on the frame A. On the opposite end of the shaft M is attached the cam J, which, together with the shaft M, revolves in the direction of the arrow 1, Figs. 4 and 5. On the outer edge of the cam J revolves the small roller L, attached in a suitable manner to the arm K, which is attached to the shaft F. The shaft F is journaled in adjustable bearings, which may be constructed in various ways, but for the purpose of my invention I have chosen the way shown in Figs. 1, 2, and 3, in which the shaft F is journaled in the block H, which is held in position by the guides G and adjustable therein by means of the thumb-screw I,

for the purpose hereinafter set forth. Attached to the shaft F by means of arms, as shown in Fig. 2, is the plate D. On the front of the plate D is a cushion E, against which the paper rests while receiving the blow against the form C. This cushion or platen E should be firm enough to give an even impression over the whole form C without allowing the type to cut or break through the paper, and at the same time it should have a certain degree of elasticity, so as to protect the type as much as possible. For the purpose of my invention I have chosen vulcanized rubber as being most suitable for this purpose.

Attached to the frame A in a suitable manner is the inclined frame B, bearing a suitable "bed," "chase," and "form"—terms in common use among printers—with suitable arrangements for holding the same. These parts are not described here for the reason that they are in common use in printing-presses and printing-machines now in use, but for the purpose of convenience we will designate the form as C.

To the plate D is attached in a suitable manner the arm *e*, and attached to the arm *e* is the spring *a*, the other end of which is attached to the rod *d*, on which is a thumb-nut *c*, which, in connection with the small plate *b*, attached to the frame A, forms a suitable combination for regulating the tension of the spring *a*.

It will be observed that the spring *a* is so placed as to exert a constant force on the plate D and arm K, which is held in the position shown in Fig. 1 by means of the cam J through the greater part of its revolution. When the cam J in its revolution in connection with the shaft F reaches the position shown in Fig. 4, it ceases to exert any force on the roller L on the arm K, whereupon the spring *a* draws the plate D forward on the form C with a blow movement, and at the same time the arm K with the roller L rocks in the direction shown by arrow 2, Fig. 4. The force of the blow on the form C, it is evident, will be regulated by the tension of the spring *a*.

When the arm K with small roller L has rocked a sufficient distance in the direction of arrow 2, Fig. 4, to permit the platen E to impinge upon the form C, the cam J will immediately take effect on the roller L, bringing it back in the direction indicated by arrow 3, Fig. 5, and the plate D back to the position shown in Fig. 1.

For the purpose of holding the paper against the platen E while being printed I prefer to use the mechanism illustrated in Figs. 7 and 8, Fig. 7 being an end view and Fig. 8 being a sectional side view of the same. The mechanism consists of the shaft X, suitably journaled at each end of the plate D. The arms Y Y are held on the shaft X by means of the collars Z² and made rigid thereon by means of the set-screws Z³. Attached to the shaft X is the spring *q*, which is also attached to

the plate D in a suitable manner so as to hold the arms Y Y firmly against the platen E. Attached to the shaft X is a small arm Z', to which is attached a cord Z, the other end of which is attached in a convenient manner to some part of the frame A in such a way as to raise the arms Y Y, as shown in Fig. 1, when the plate D is brought back by the cam J, and thereby permitting the removal of the printed sheet and the insertion of another sheet of paper.

The shaft F bears the plate D, and the bearings of the shaft F being adjustable by means of the thumb-screw I, as hereinbefore set forth, it is evident that the platen E on the plate D may be so adjusted as to strike a uniform blow on every part of the form C.

The blow movement I claim as an important part of my invention, because I have found by experience that there is a material difference between the effect produced by a blow movement and that produced by pressure, the force now used in printing-presses. Especially is this the case in the shade of color. I do not intend to limit myself to the mechanism herein described for the attainment of this result, as it is evident that it would be just as easy to bring the form of type against the platen with a blow movement, or that both should oscillate and meet with a blow movement, in any case producing the same result in duplicating typewritten work; nor do I intend to limit myself to the use of a spring for producing the oscillation of the platen or form, or both, as there are other devices well known in mechanics which would produce the same results.

As a means of inking the type I prefer to use an inked ribbon *r*, Fig. 3, which is fed over the type or form and is wound on a ribbon-spool *g* at either end of the said form, the said ribbon-spools revolving in the bearings *h*.

The device I have chosen for operating the ribbon-spools is that shown in Fig. 6. The wheel *i* is attached to the lower end of the shaft bearing the ribbon-spools *g g*. The casing *k* is attached in a suitable manner to the frame B, so that the plate D, or an extension thereof, shall impinge against the end of the pawl *j* as the plate D descends against the form C, driving the pawl *j* through, so as to engage another tooth of the wheel *i*, and when the plate D is raised by the cam J the spring *n* on the pawl *j* acts on the said pawl and brings it back to the position shown in Fig. 6, and in so doing revolves the ribbon-spool, and thereby feeds the ribbon over the said form of type. The pin *t*, working in the slot *m*, prevents the spring *n* from bringing the pawl *j* back too far.

Having thus described the improvements, what I claim as my invention is—

1. In a printing-press, a platen supported by a pivoted arm, a cam-shaft and means for rotating the same, a cam on said shaft adapted

to engage said arm and suddenly release the same, and a spring to move said arm toward the type.

2. In a printing-press, a movable platen, a spring to move said platen toward the type, and a cam to move said platen away from the type and suddenly release the same, substantially as described.

3. In an organized printing-machine for producing imitation of type-written work, the combination of a printing-couple consisting of an impression-surface and a printing-form constructed to hold lines of type, an inking-ribbon, and mechanical devices acting on one member of the printing-couple whereby the said members are brought together with a blow movement to produce an impression, all substantially as and for the purpose described.

4. In a printing-machine, the combination of the shaft N, adapted to be turned by foot or other power, the gear-wheel P attached to the shaft N which meshes with the gear-wheel O, attached to shaft M, the cam J attached to the shaft M, the arm K attached to the shaft F, the plate D attached to the shaft F, the arm *e* on the plate D, the spring *a* attached to the arm *e*, with suitable means for adjusting the tension of the spring *a*, all substantially as set forth.

5. In a printing-machine, the combination of the shaft N, the gear-wheel P on the shaft N which meshes with the gear-wheel O on the shaft M, the cam J on the shaft M, the arm K on the shaft F, the plate D on the shaft F, the platen E on the plate D, the arm *e* on the plate D, the spring *a* attached to the arm *e* with means for adjusting the tension of the spring *a* and having a suitable device for holding the paper to be printed against the platen E while the plate D and arm K are in motion.

6. In a printing-machine, the combination of the shaft N, the gear-wheel P on the shaft N which meshes with the gear-wheel O on the shaft M, the cam J on the shaft M, the arm K on the shaft F, the plate D on the shaft F, the platen E on the plate D, the shaft X on the plate D, the spring *q* on the shaft X, the arms Y Y held on the shaft X by the collars Z² and the set-screw Z³, the arm Z' on the shaft X, the cord Z attached to the arm Z' the other end of which is attached to the frame A, the plate D having the arm *e*, the spring *a* in connection with the arm *e*, with a suitable means for adjusting the tension of the spring *a* all substantially as and for the purpose set forth.

7. In a printing-machine, the combination of the plate D on the shaft F, the platen E on the plate D, with a suitable device for compelling the platen E to impinge upon the form

C with a blow movement, an inking-ribbon and suitable means for drawing the same across the form C.

8. In a printing-machine, the combination of the plate D on the shaft F, the arm K on the shaft F, the platen E on the plate D, with a suitable device for compelling the platen E to impinge upon the form C with a blow movement, the ribbon-spools *g* in the bearings *h* on the frame B with a suitable device for operating the ribbon-spools, substantially as and for the purpose set forth.

9. In a printing-machine, the combination of the plate D on the shaft F, the arm K on the shaft F, the platen E on the plate D, with a suitable device for compelling the platen E to impinge on the form C with a blow movement, the ribbon-spools *g* in the bearings *h* on the frame, the wheel *i* on the shaft bearing the ribbon-spools *g*, the pawl *j* to engage the teeth of the wheel *i*, the casing *k* attached in a suitable manner to the frame B between the wheel *i* and the plate D so that plate D shall impinge on the end of the pawl *j* in descending, the spring *n* on the pawl *j*, the pin *t* on the pawl *j* working in the slot *m*, all substantially for the purpose set forth.

10. In a printing-machine, the combination of the shaft N journaled on the frame A and adapted to be turned by foot or other power, the gear-wheel P on the shaft N, which meshes with the gear-wheel O on the shaft M, the cam J on the shaft M, the arm K on the shaft F, the wheel L on the arm K adapted to rock the arm K in connection with the cam J, the guides G on the frame B, the blocks H in the guides G, the thumb-screws I working in the guides G and blocks H, the shaft F journaled in the blocks H, the plate D on the shaft F, the platen E on the plate D, the rod X on the plate D, the spring *q* on the shaft X, the arms Y held on the shaft X by the collars Z² and the set-screws Z³, the arm Z' on the shaft X, the cord Z attached to the arm Z' and attached to the frame in a suitable manner so as to raise the arms Y for removing and inserting the paper, the inked ribbon *r* fed over the form C, the ribbon-spools *g* held on the frame B by bearings *h*, the wheel *i* on the shafts holding the ribbon-spools *g*, the pawl *j* to engage the wheel *i*, the spring *n* on the pawl *j*, the casing *k* attached in a suitable manner to the frame B so that the plate D shall impinge on the end of the pawl *j* in descending, the pin *t* on the pawl *j* working in the slot *m* all substantially for the purpose set forth.

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