

J. GILBERT.

Machines for Cutting Cards.

No. 146,897.

Patented Jan. 27, 1874.

Fig. 1.

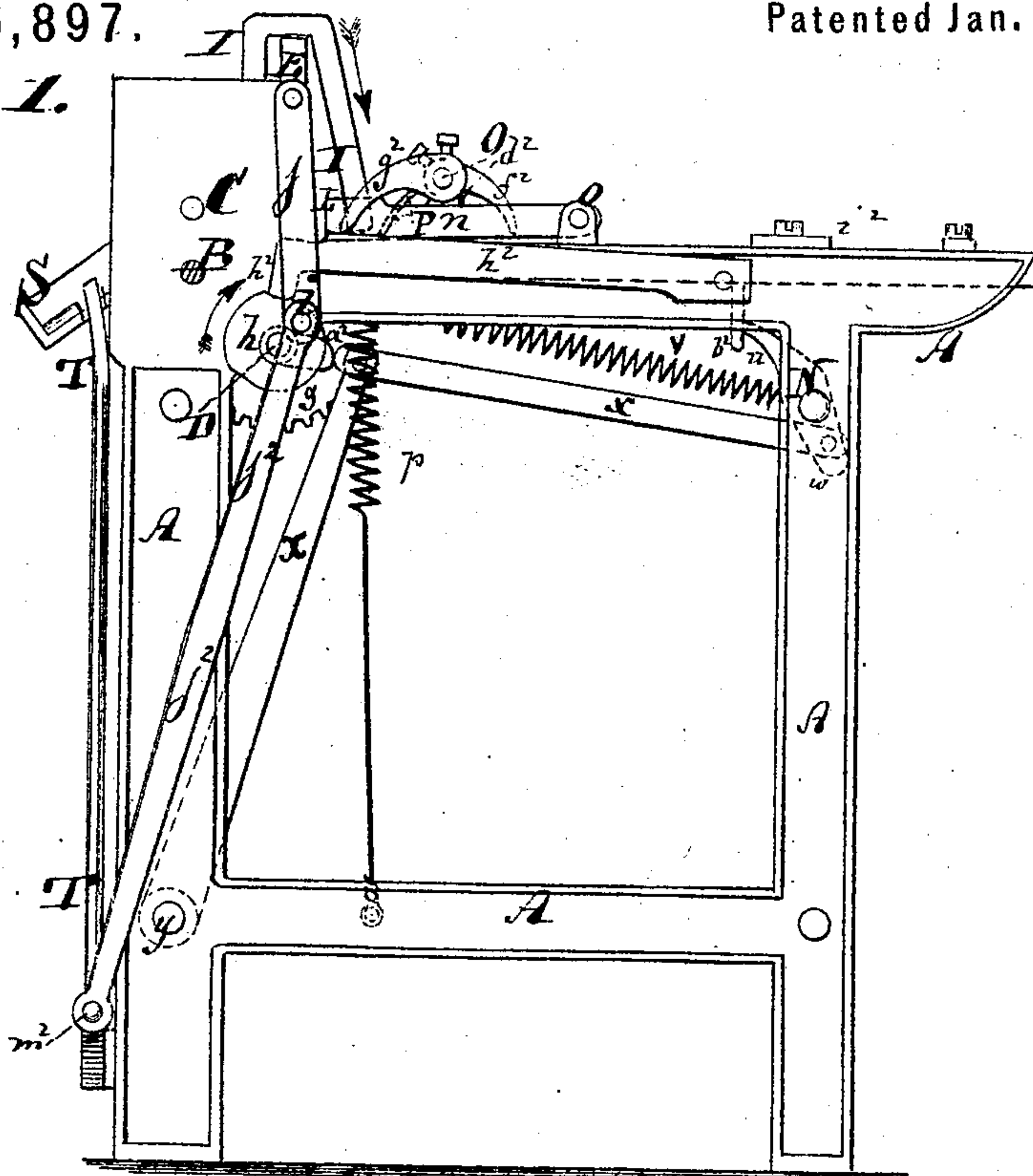
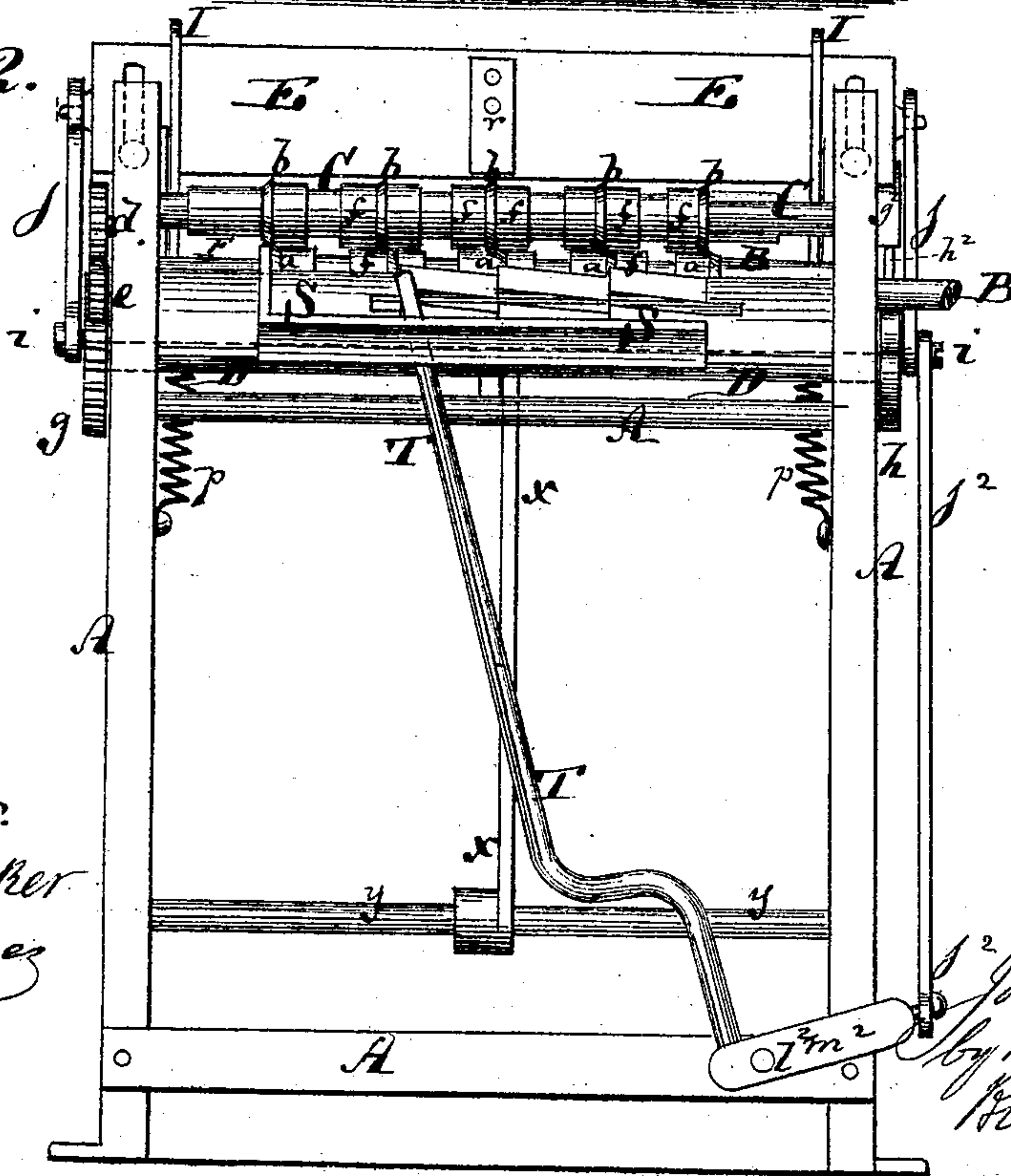


Fig. 2.



Witnesses:

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Fig. 6.

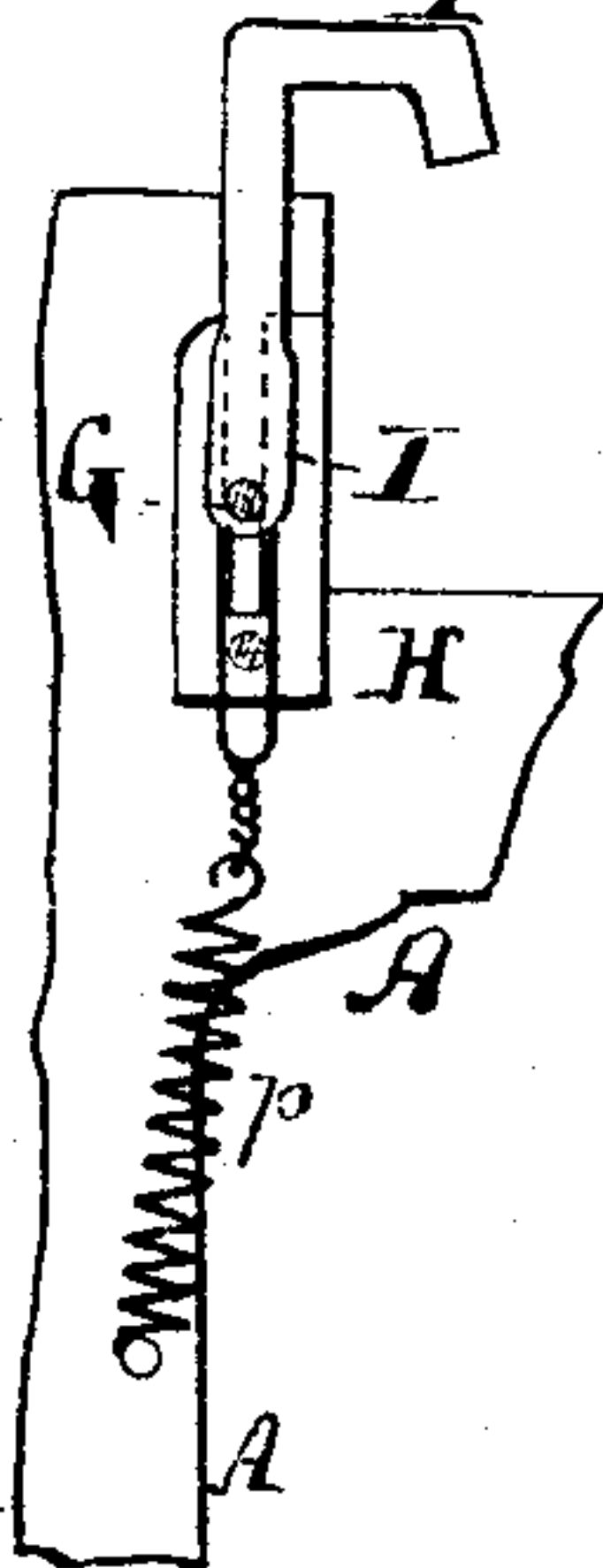


Fig. 3.

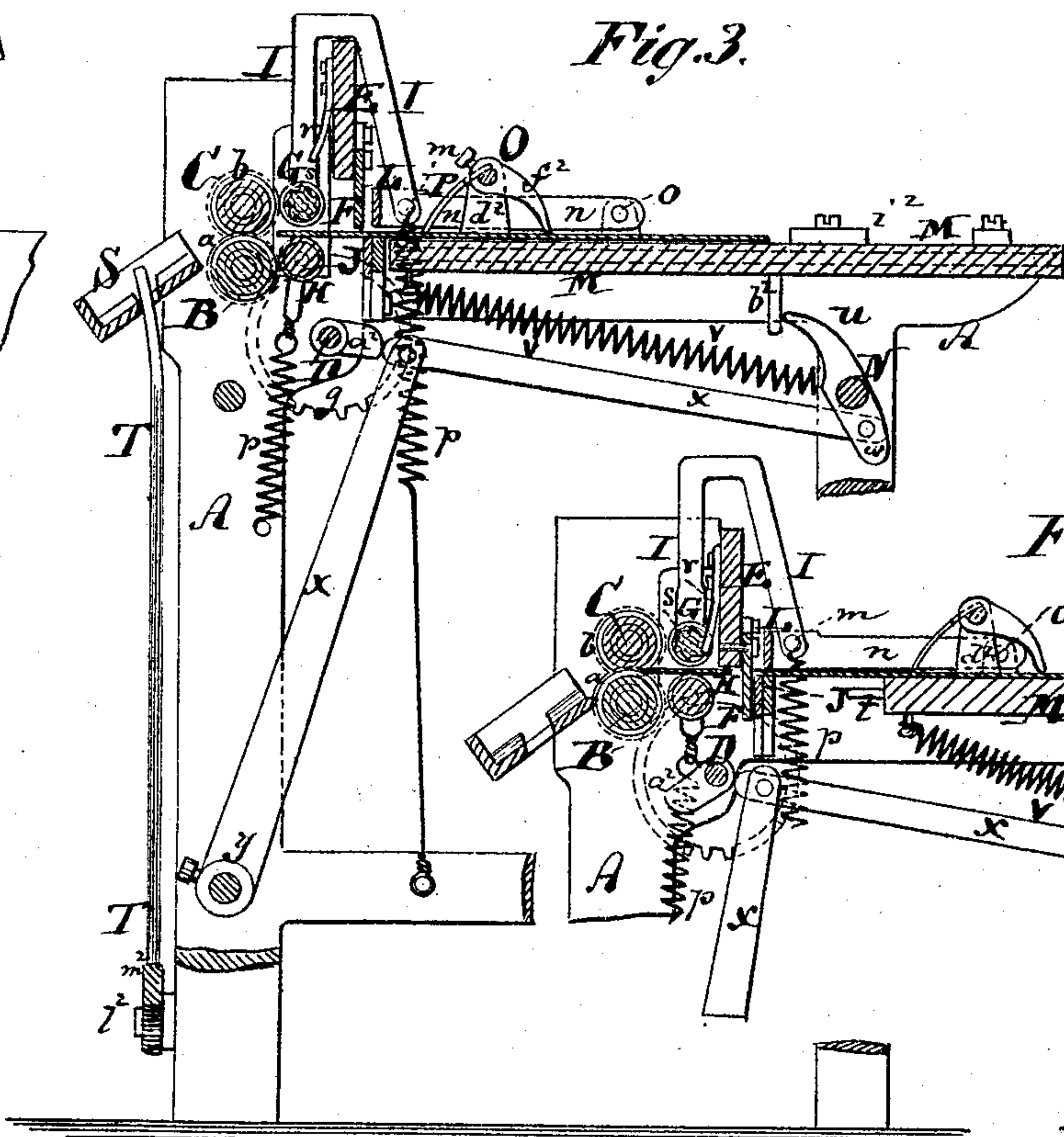


Fig. 5.

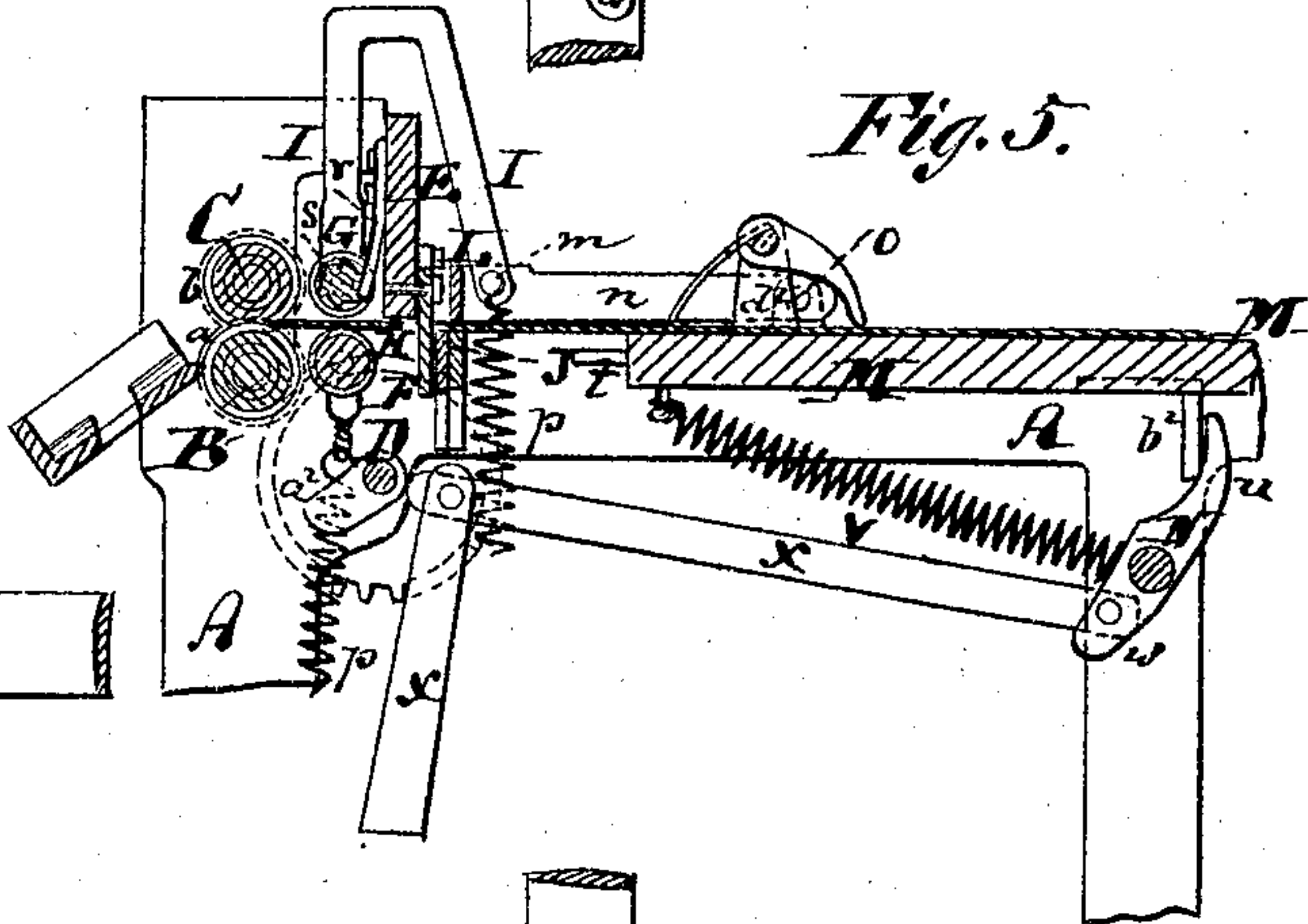
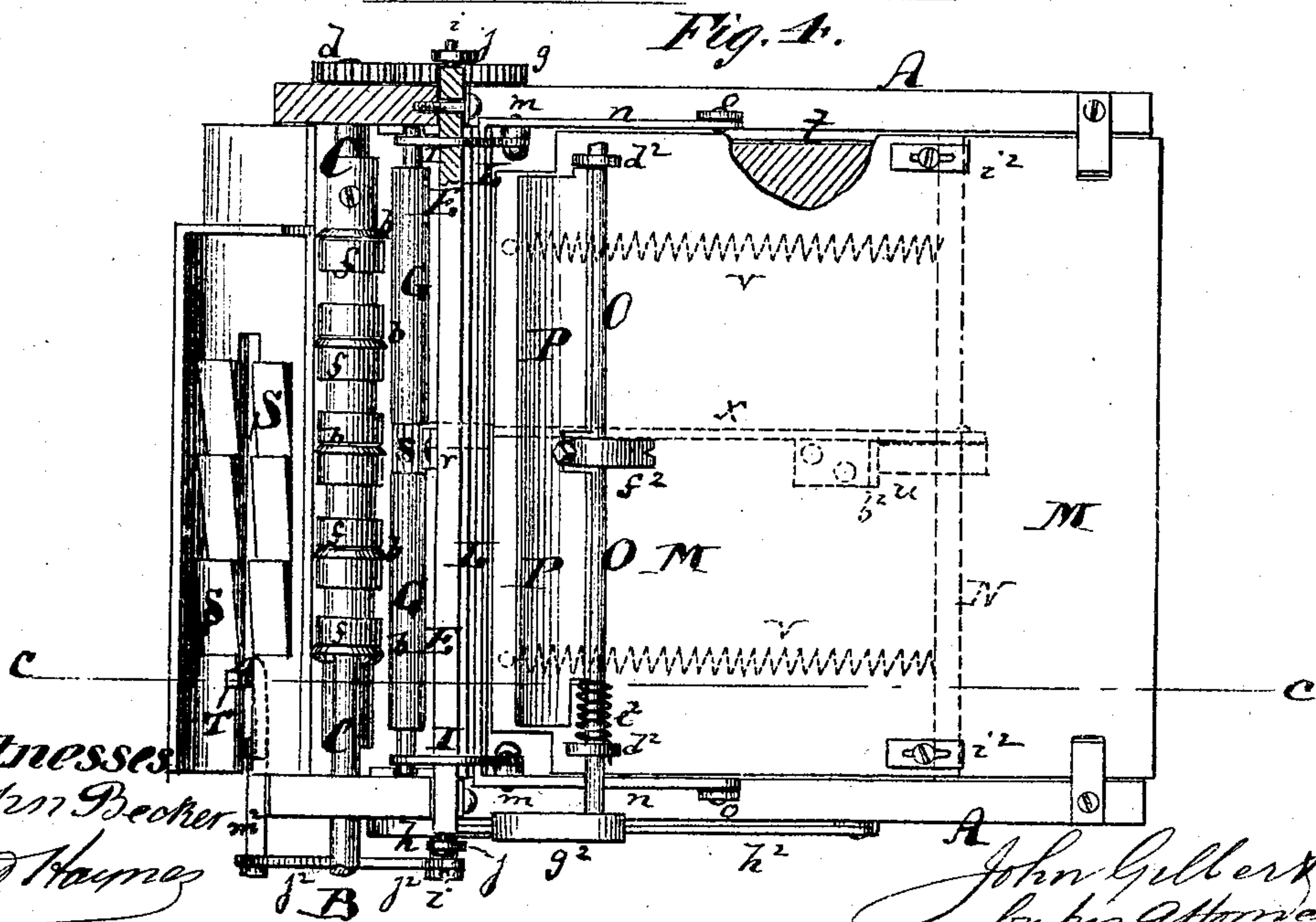


Fig. 4.



Witnesses

John Brecher

Fred Haynes

John Gilbert
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UNITED STATES PATENT OFFICE.

JOHN GILBERT, OF NEW YORK, N. Y., ASSIGNOR TO VICTOR E. MAUGER,
OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CUTTING CARDS.

Specification forming part of Letters Patent No. **146,897**, dated January 27, 1874; application filed
September 12, 1873.

To all whom it may concern:

Be it known that I, JOHN GILBERT, of the city, county, and State of New York, have invented an Improved Machine for Cutting Cards, of which the following is a specification:

Figure 1 is a side elevation of my improved machine for cutting and assorting playing-cards. Fig. 2 is a front elevation of the same; Fig. 3, a longitudinal vertical section thereof on the line *c c*, Fig. 4. Fig. 4 is a plan or top view, partly in section, of the same; Fig. 5, a detail vertical longitudinal section on the line *c c*, Fig. 4, showing the parts in a position different from that shown in Fig. 3. Fig. 6 is a detail sectional side view of the adjustable yoke in which the upper feed-roller is hung.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to produce a machine on which sheets of card-board can be divided into single cards or pieces of any suitable size, and on which the cards or pieces thus cut from a larger sheet will be assorted or superposed in the requisite order.

The invention is particularly applicable to the cutting and assorting of playing-cards. Such cards as usually made are printed on large sheets, each sheet containing the cards necessary for a pack, or for parts of one or more packs. In cutting such sheets heretofore two machines always had to be employed, one for cutting the sheet into strips, and the other for cutting each strip into single cards. The cards thus cut were usually dropped into boxes or receptacles, and had then to be taken out and assorted by hand, thus involving a great amount of labor.

As to the cutting of cards from sheets, my invention chiefly consists in combining a longitudinal cutter with a series of transverse cutters on one machine, so that the sheet will be cut into strips, and each strip into cards by one continuous process. In connection with these improvements, my invention consists in the arrangement of proper feeding and clamping devices, whereby the sheet is moved toward the cutters at the requisite intervals.

In the accompanying drawing, the letter A represents the frame of my improved cutting and assorting machine. The same is made of

metal or other suitable material of the proper strength and size. In the front part of this frame is hung transversely a horizontal roller, B, to which rotary motion is imparted by suitable mechanism. This roller carries a series of circular cutters, *a a*, the spaces between which are equal to the lengths at which it is desired to cut the strips into cards. Above or, if desired, beneath the roller B is hung, in the frame A, another roller, C, which carries an equal series of cutters or circular knives, *b b*, that are directly in line with the knives *a a*, in the manner shown in Fig. 2, and produce, in combination with said knives *a*, the shear-cut necessary for dividing the strips into single cards. The roller C carries a pinion, *d*, at one end, which gears into another pinion, *e*, mounted upon the roller B, so that whenever motion is imparted to the latter the roller C will be moved with equal speed, but in the opposite direction. Between the knives *a a* on the roller B, and the knives *b b* on the roller C, are fitted upon the said rollers rubber washers *f f*, which, by bearing against each other with their peripheries, in the manner clearly shown in Figs. 2 and 3, serve as feeding devices for carrying the cards between the two rollers B C as they are cut from a strip. Instead of rubber, leather, or other elastic material, may be used on these rollers for the purposes of feeding. The pinion *e* of the roller B is also in gear with a toothed wheel, *g*, that is mounted upon the end of another transverse horizontal shaft, D, hung in the frame A, somewhat beneath and behind the roller B. At its other end the shaft D carries a cam or eccentric, *h*, which is more fully shown in Fig. 1. Crank-pins *i i*, on the cam *h* and toothed wheel *g*, which two crank-pins are in line with each other, connect by rods *j j* with a cross-bar, E. This cross-bar is guided against projections of the frame A, and thereby confined to a straight up-and-down motion whenever the shaft D is revolved. Suitable bolts may be affixed to the projecting part of the frame A above named, and caused to project through slots of the cross-bar E, for the purpose of more completely guiding it, and preventing longitudinal as well as lateral displacement. To the lower edge of the cross-bar E is rigidly fastened a cutting-

blade, F, which is more fully shown in Fig. 3, and which, during the up-and-down motion of the cross-bar, will move up and down with the same behind the rollers B and C above mentioned. The lower edge of the blade F is sharpened to cut paper, pasteboard, or other fabric with facility. Between the blade F and the rollers B C are introduced two more rollers, G and H, of which the roller H is hung in the frame A parallel to, and with its upper edge in line with, that of the roller B, while the upper roller G is hung behind C in a pair of yokes, I I, that extend over the cross-bar E. Back of the cross-bar the lower ends of the yokes are pivoted by pins *m* to side bars *n n*, that are, at *o*, pivoted to lugs projecting from the frame A. Springs *p* connect with the yokes I and side bars *n n*, and tend to draw them down, and only when the cross-bar E is raised, by means of the crank-pins *i i*, into the position shown in Fig. 3, so it arrives under the bend of the yokes I I, will the latter be raised so as also to swing the side bars *n* upward, though slightly only, on their pivots *o*. The front ends of the side bars *n n* are connected together by a cross-bar, L, which serves as a clamp, as hereinafter more fully described, and which is directly above another cross-bar, J, that is rigidly fastened to the frame A. It is evident that whenever the yokes I I are raised by the action of the ascending cross-bar E, the roller G will also be raised from off the roller H, but, as soon as the cross-bar E has started on its descent, the springs *p* will immediately lower the yokes and thereby bring the roller G down again into the lowermost position, which is shown in Fig. 5. The cross-bar E, thereupon still further descending, causes a projecting pawl, *r*, with which it is provided to strike a ratchet-wheel, *s*, formed on the roller G, and thereby to impart intermittent rotary motion to the said roller G, for purposes hereinafter more fully set forth. With the exception of the ratchet-wheel S, that may be in the middle of the roller G, or at either end of the same, the said roller, as well as the roller H, is, by preference, covered with rubber or other elastic material, to constitute a partial-feeding roller. Behind the stationary cross-bar J is fitted, upon suitable rails *t t* that project from the sides of the frame A inwardly, a table or platform, M, which is in a horizontal position and whose upper surface is in line about with the upper edges of the rollers H and B. This table M is capable of horizontal back-and-forward motion—that is to say, away from and toward the rollers B and C. It receives this motion partly by a cam, *u*, mounted upon a transverse rock-shaft, N, and partly by springs *v v*, that extend from the rock-shaft, N, above the table M, to the front part of said table. A crank, *w*, of the rock-shaft N connects with a pair of pointed levers, *x x*, that connect at *y* with the frame A. A cam, *a*², on the shaft D bears against the jointed or any other part of these levers *x x*, and tends to swing the crank *w* into the position shown in

Fig. 3, and thereby to cause the cam *u* of the rock-shaft N to strike a downwardly-extending projection, *b*², of the table M and move said table forward toward the cross-bar J and into the position shown in Fig. 3. As soon as the crank *a*² recedes from the levers *x x* the springs *v*, which have been extended by the aforementioned movement of the table, contract and move the table rapidly backward and away from the cross-bar J into the position shown in Fig. 5. In upwardly-projecting lugs *d*² of the table M is hung a transverse bar, O, to which is fastened a clamp or griper, P, that bears with its front and lower edge down upon the table M, or upon the sheet of card-board lying upon such table. A spring, *e*², shown in Fig. 4, connects one of the uprights *d*² with the shaft O or griper P, so as to cause said griper to bear firmly down upon the table. To the shaft O is or may also be fastened a backwardly-projecting finger, *f*², shown in Figs. 3 and 4. This finger may also but slightly bear upon the table. At the extreme end of the shaft O is fastened to the same another forwardly-projecting finger, *g*², that is, by the action of the spring *e*², caused to bear upon a bar, *h*², that is pivoted to the side of the frame A and rests upon the edges of the cam *h* of the shaft D. During the rotations of this cam *h*, the lever *h*² is alternately but slightly swung up and down, and, when it is swung up, it causes the shaft O to vibrate and lift the griper P from off the table, while, when, by the action of the cam *h*, the lever *h*² is caused to be swung upward, the power of the spring *e*² upon the griper P is enhanced, or at least brought into action, and the griper will take full hold of the matter lying upon the table M. Upon this table are also fastened suitable gages *i*², shown in Fig. 4.

The sheet to be cut is placed upon the table, introduced with its front portion underneath the griper P and centered by the action of the finger *f*², its longitudinal position being determined by means of the gages *i*², which are fitted to the table, said gages being necessary, or at least desirable, for properly facing the sheet before commencing operations. After the sheet has been fastened in this manner upon the table M, rotary motion is imparted to the roller B, and, by the action of the same on the shaft D and the further action of said shaft D on the rock-shaft N, the table is caused to move forward into the position shown in Fig. 3. At the same time, or rather when the table has completed its forward motion, the cross-bar E commences to descend, owing to the continued rotation of the shaft D and the downward motion of the crank-pins *i*, and, in descending, carries the cutter F down, and causes said cutter to reach the projecting portion of the paper or pasteboard, and cut the same from off what remains on said table. The back edge of the cross-bar J acts as a stationary shear, in connection with the movable blade F. The first strip usually detached from the card-board is narrow and ragged, and not

to be used for cutting into cards, and its width is generally so small that it does not reach to the rollers G and H, and is therefore not generally held and moved by the same, but drops down in front of the cutter F immediately after having been detached. While the table M was moved forward, as stated, and just before the knife F began to cut, the cross-bar L was, by its springs *p p*, drawn down upon the cross-bar J to clamp the card-board that projected from the front part of the table. After the ragged edge has been cut from the paper, the table M is moved back again by its springs *i*, but while being moved back the griper P is raised from off the card-board, and the cross-bar L retained firmly down upon the card-board, directly above the cross-bar J, and holds the card-board firmly in position while the table moves back from under it. Thus, the card-board or paper is never carried back by the table. When, however, the table has reached its backward position, the cross-bar E has also reached its most upward position, and by bearing under the yokes I I raises the cross-bar L from off the card-board, and allows the table, during its subsequent forward motion, to move the card-board forward with it, the griper P taking fresh hold immediately after the backward position of the table has been reached. The table then moves the sheet forward, the projecting part of which enters under the raised cutter F, and beneath the roller G, almost up to the rollers B C. The next descent of the cross-bars L and E causes the detachment from the sheet of paper or pasteboard of a width of paper of the size desired. The strip thus detached, during the descent of the knife F, is already taken hold of by the roller G, which then receives the intermittent rotary motion, as above described. The detached strip is thereby passed to and between the rollers B C, by which it is cut into separate cards or small pieces, all of which are deposited, after they leave the rollers B C, upon an inclined platform, S, that is fastened to the frame A, forward of the roller B C, as shown. After the first strip of the material for cards has been detached, the table is again moved back, leaving the uncut part of the card-board clamped by the cross-bar L, and the operation is in every other respect repeated, in the manner already described.

Figs. 3 and 5 illustrate the several positions of the parts during the extremes of motion, Fig. 5 showing the knife F when drawn downward, after the cross-bar E has already imparted motion to the roller G, the yoke I also bearing down to allow the roller G to operate and to cause the cross-bar L to bear on the card-board, the table M having already been carried back by its springs *r*. Fig. 3 shows

the position of the parts after the table is moved forward, but before the knife F has commenced to cut, and the cross-bar L commenced to take hold of the forward portion of the sheet, the sheet being shown in position in both figures; Fig. 5 also showing the detached portion of the sheet during its passage forward between the rollers B C. The table S, upon which the detached cards are dropped, is graduated, substantially in the manner described in the aforementioned Letters Patent of Victor E. Mauger, the steps being formed in line with the knives *a a*, respectively, as is indicated in Fig. 4, so that each separate card falls upon a separate step. The table S, in its middle, or near the lower or the upper part, is slotted lengthwise, parallel to the rollers B C, and through this slot extends the upper end of a lever, T. The lower end of this lever connects, by an arm or elbow, *m*², with a rod, *j*², whose upper end is fastened to one of the crank-pins *i*, as is more fully shown in Fig. 2. During the rotations of the crank-pin *i*, the lever T will be vibrated on its pivot *l*², and thereby carried from the position shown in Fig. 4, where its upper end is in one end of the slot in S, to the position shown in Fig. 2, where its upper end is at the other end of said slot, and back. While the cards drop from between the knives *a b* upon the table S, the lever T is in the position shown in Fig. 4, but after the cards have fallen upon said table, the lever T moves gradually and slowly into the position shown in Fig. 2, and thereby shoves the card from the first step upon that lying on the second, and the two then upon that lying on the third, and the three then upon that lying on the fourth step, and thus superposes the cards in the exact order in which they were cut from the strip, assorting them at the end of the table in the desired manner. It is evident that the lower edge of the table S is flanged, as is also that end toward which the cards are shoved by the lever T, and that it is also made of such size, as to length, that it will only receive the cards which it is desired to preserve, but not any narrow and useless end pieces that may be cut from an excessive width of the original sheet.

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

1. The combination of the roller G with the yoke I and clamp L, for simultaneous operation, substantially as set forth.

2. The cross-bar E, carrying the cutter F, and placed beneath the yokes I to raise the roller G and clamp L, as specified.

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Witnesses:

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