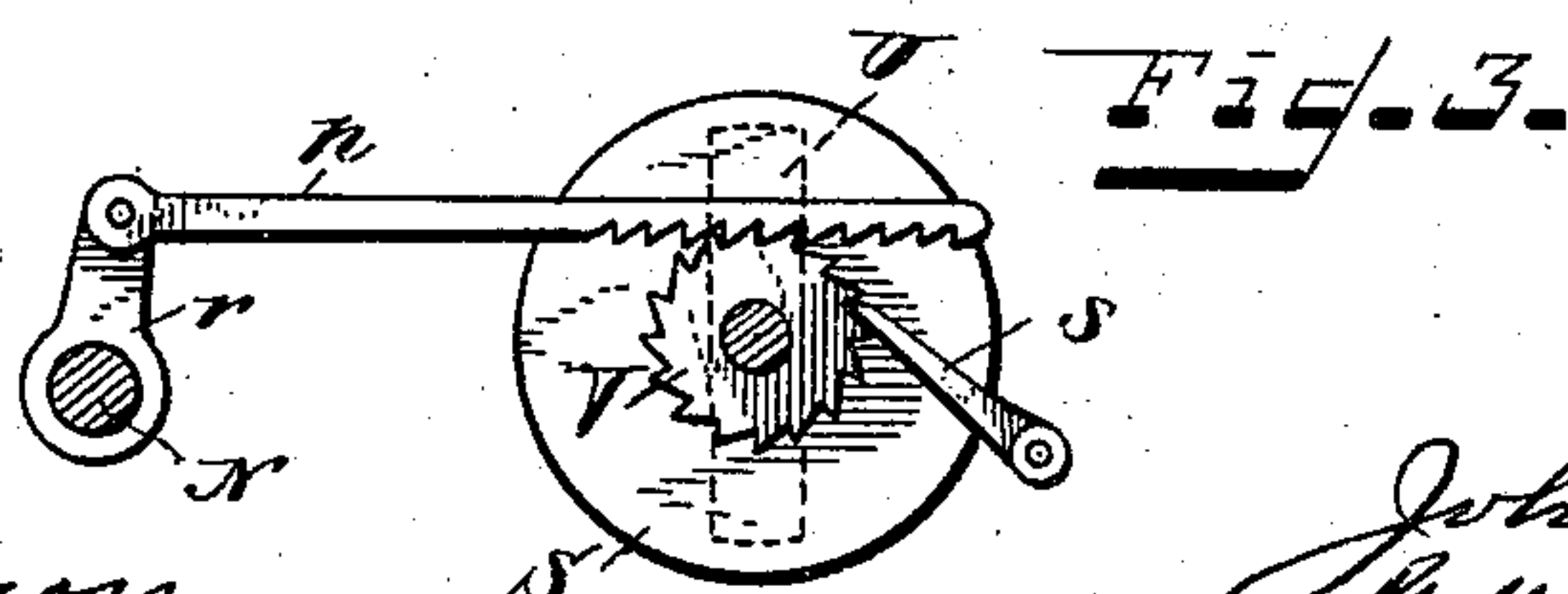
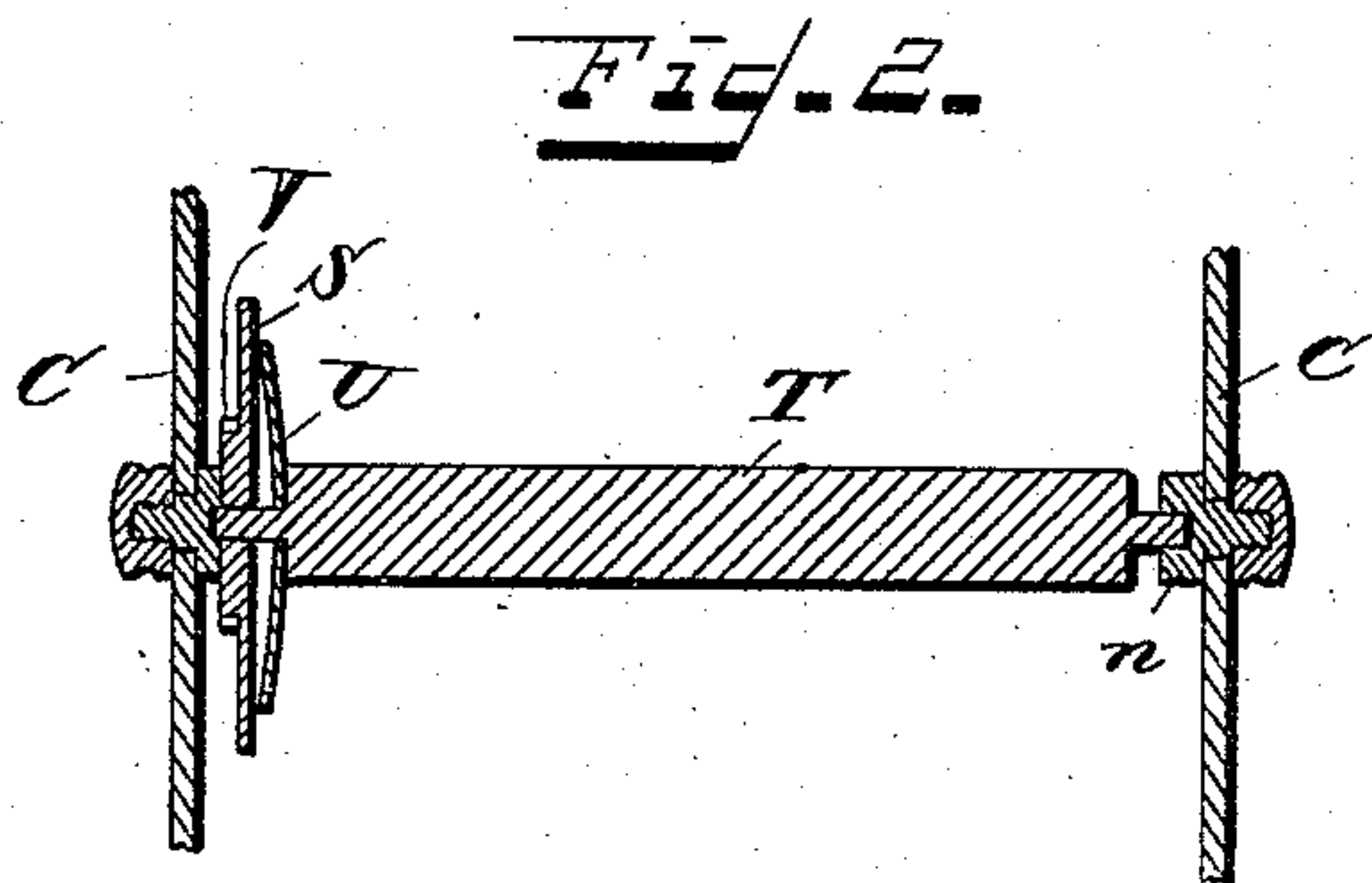
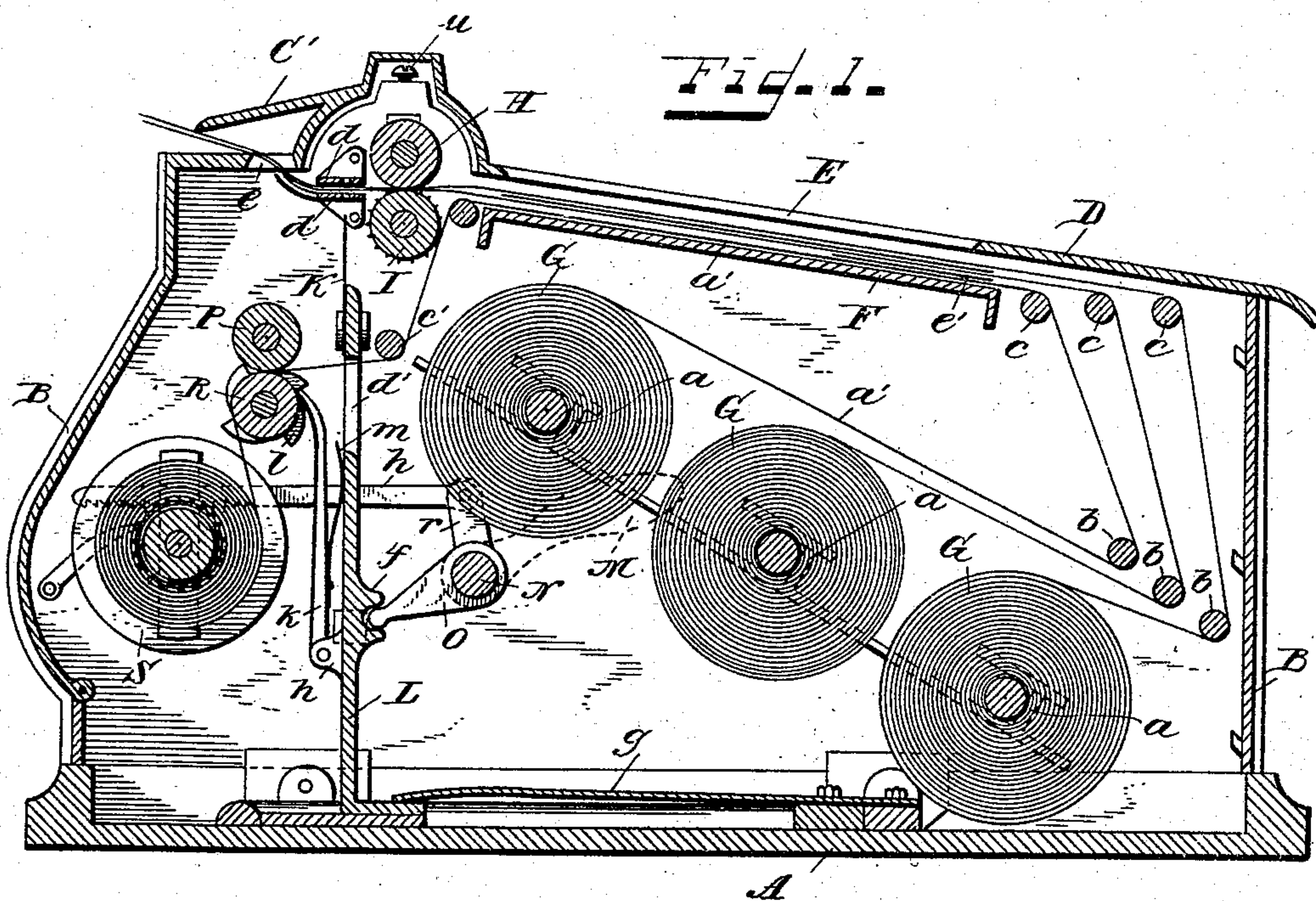


3 Sheets—Sheet 1.

# AUTOGRAPHIC REGISTER.

Patented July 23, 1895.



*J. Thomson Cross.*

Alfred M. Allen

Inventors  
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(No Model.)

3 Sheets—Sheet 2.

J. KIRBY, Jr., W. E. CRUME, C. D. GRIMES &  
J. M. CLARK.

AUTOGRAPHIC REGISTER.

No. 543,342.

Fig. 4. Patented July 23, 1895.

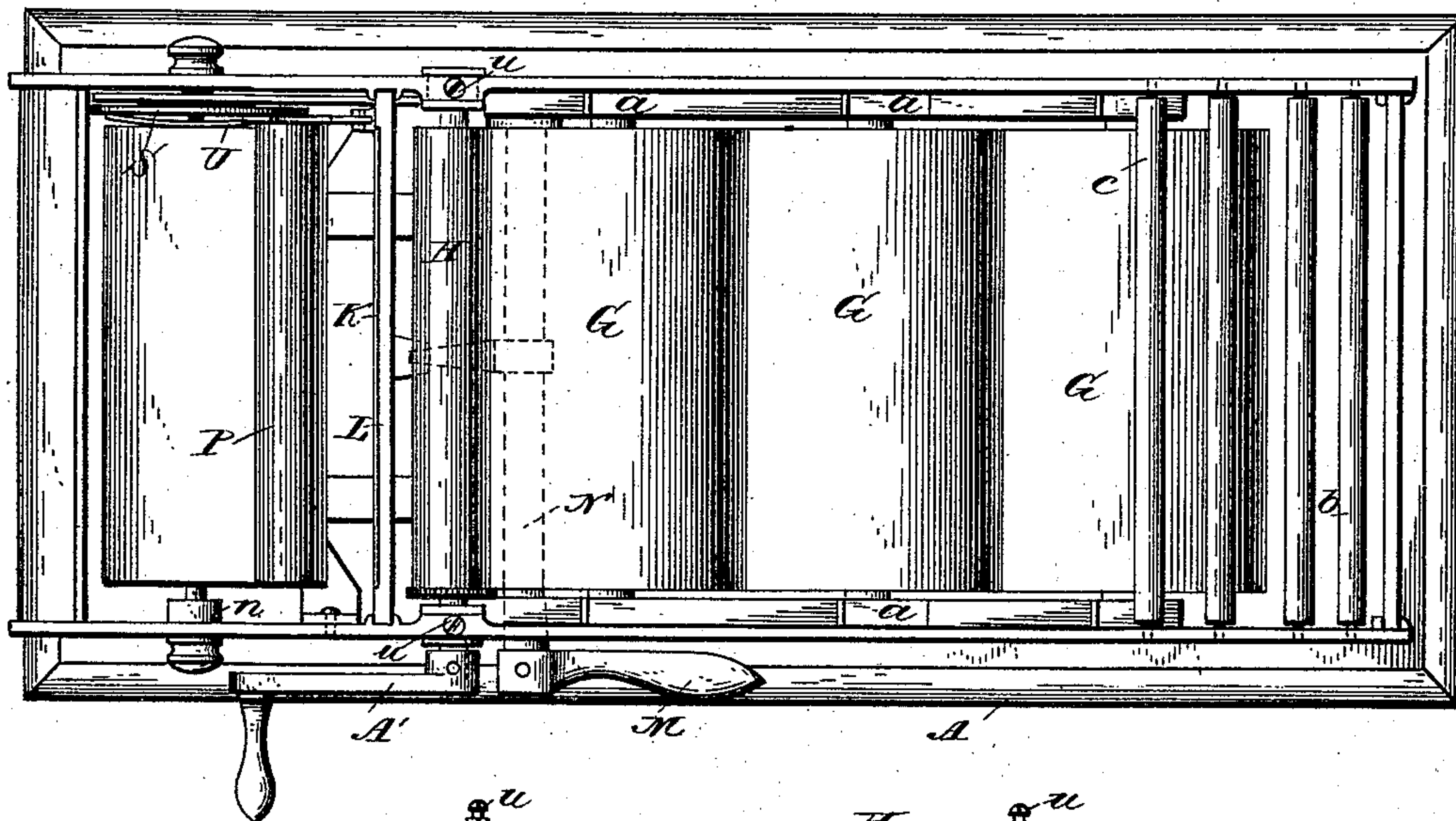
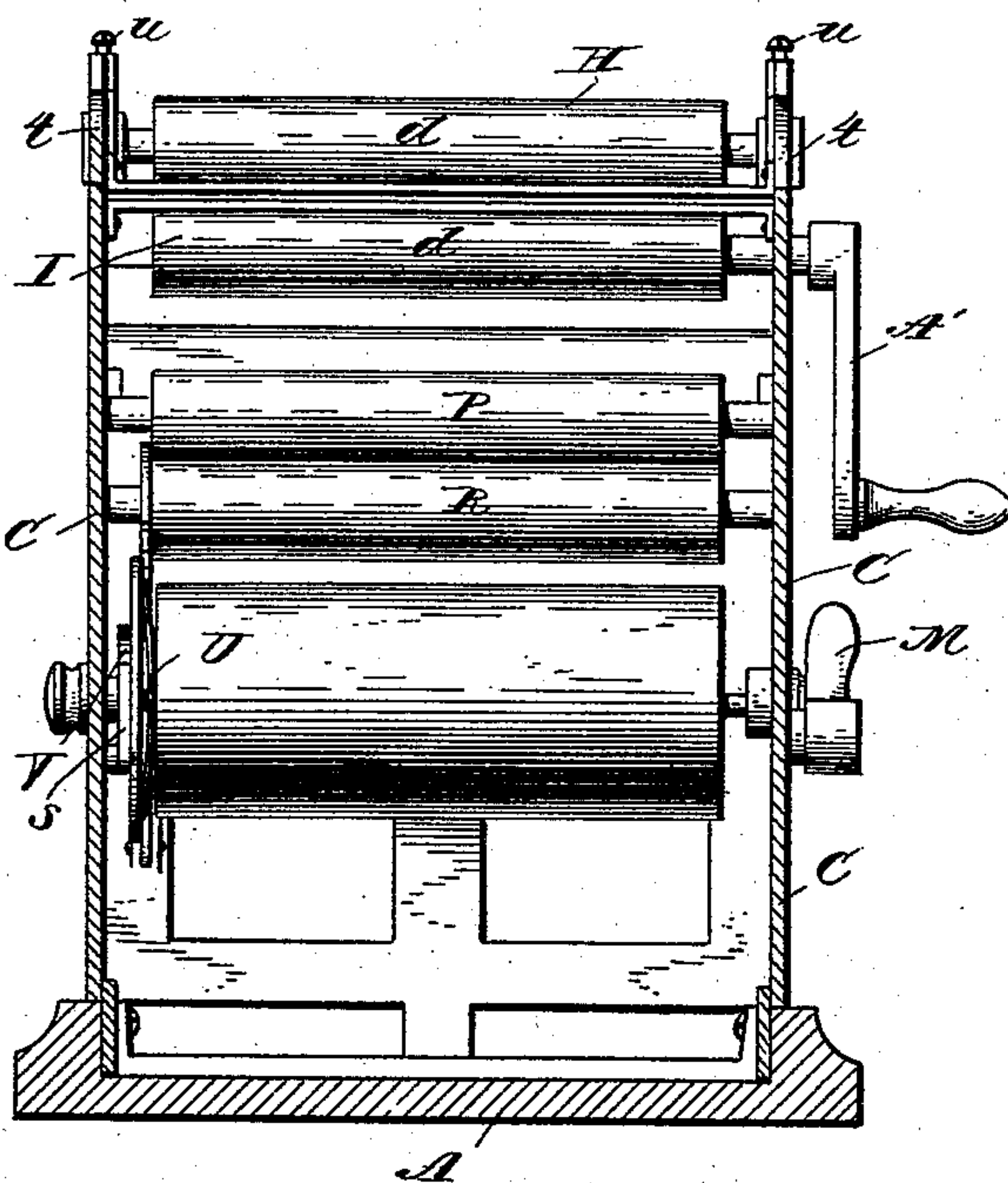


Fig. 5.



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3 Sheets—Sheet 3.

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AUTOGRAPHIC REGISTER.

No. 543,342.

Patented July 23, 1895.

Fig. 6.

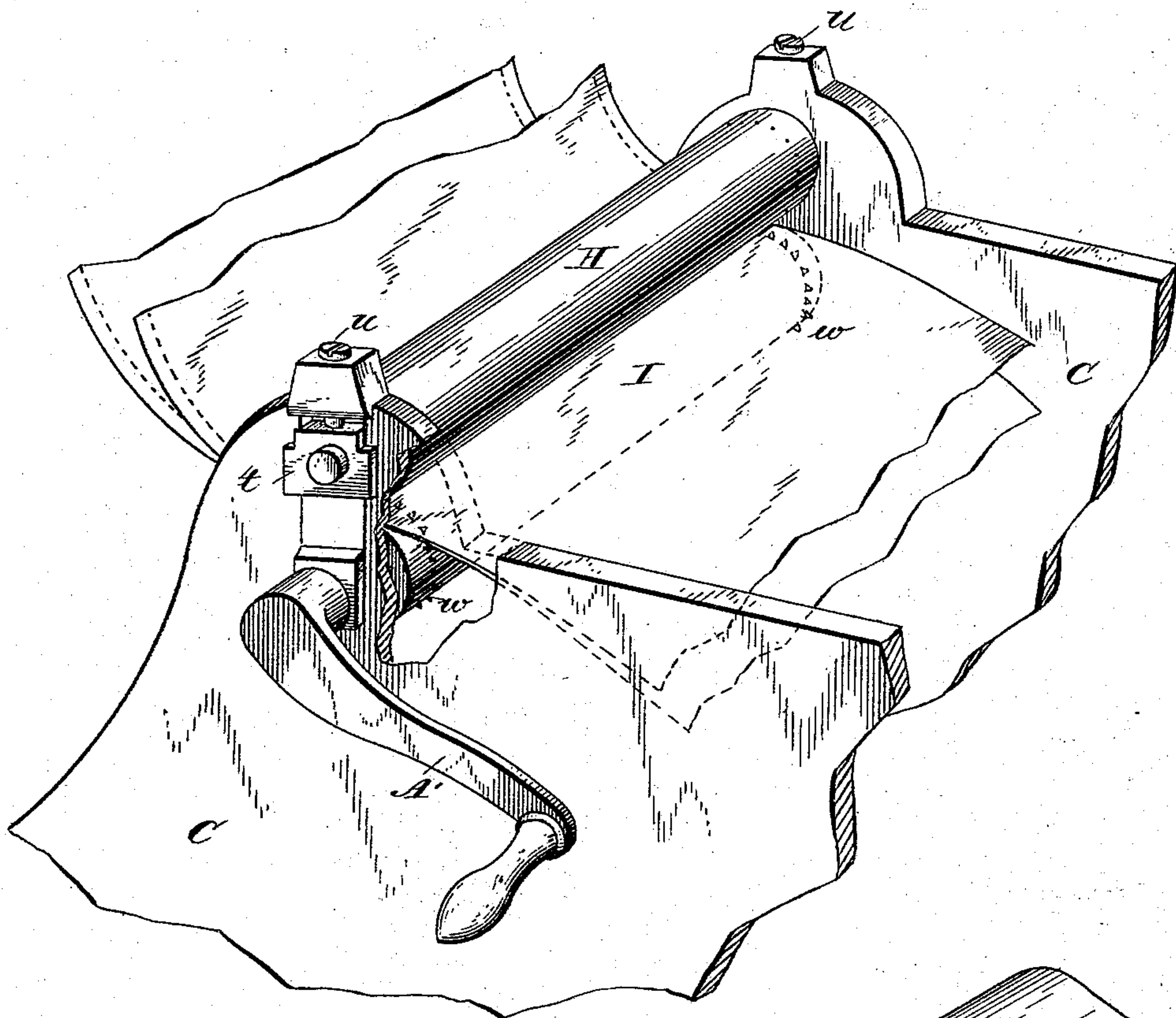


Fig. 7.

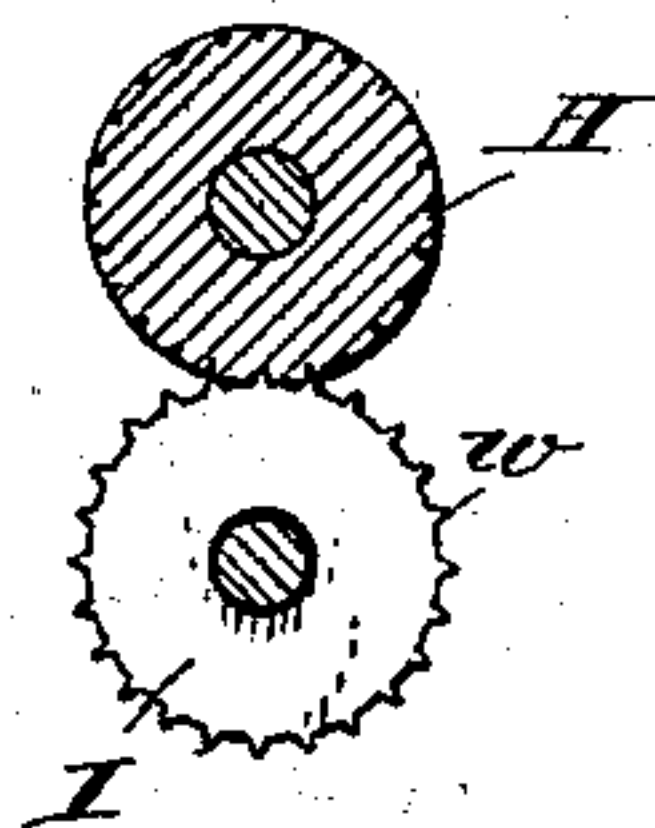
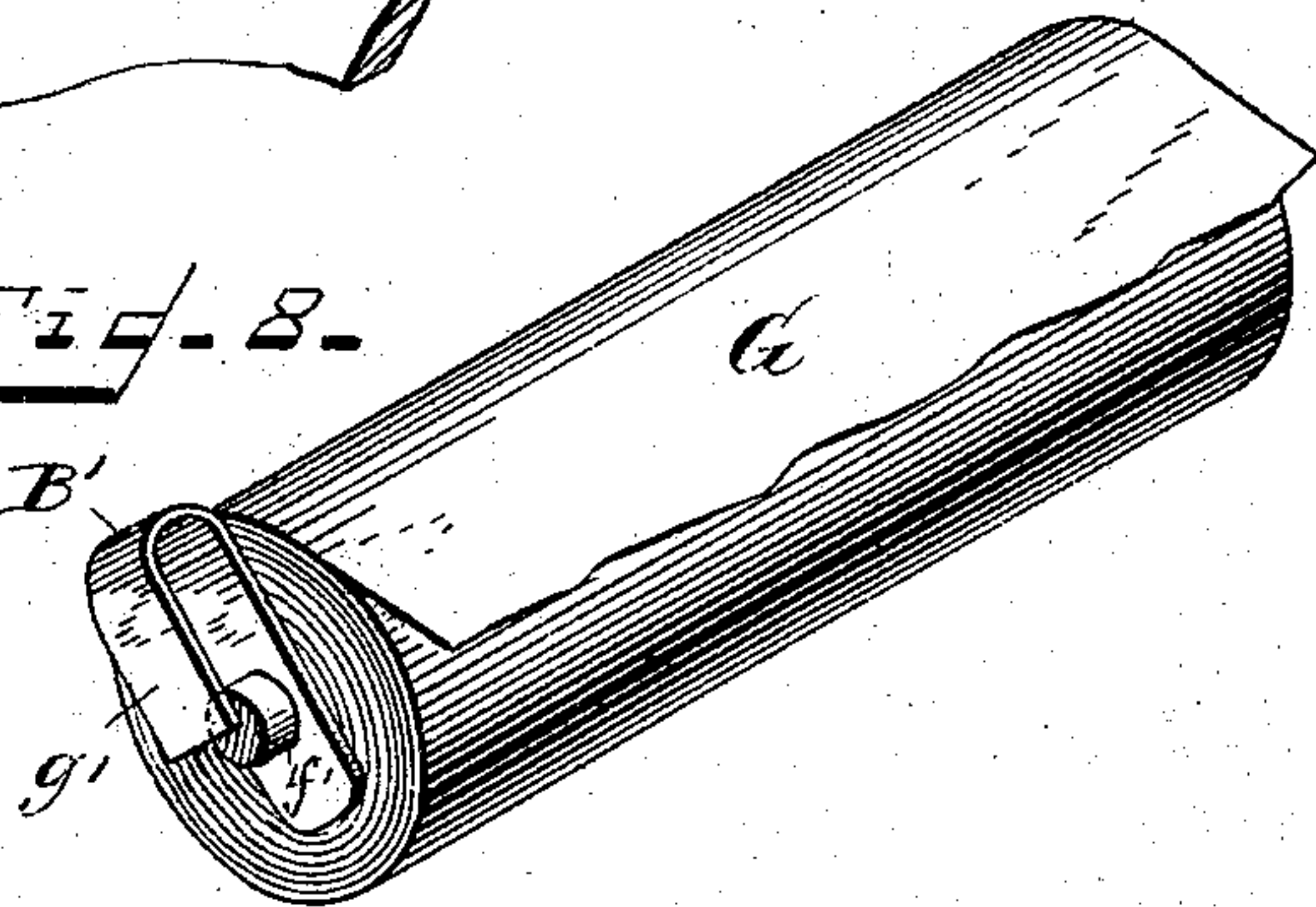


Fig. 8.



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# UNITED STATES PATENT OFFICE.

JOHN KIRBY, JR., WILLIAM E. CRUME, CHARLES D. GRIMES, AND JOHN M. CLARK, OF DAYTON, OHIO, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE CARTER-CRUME COMPANY.

## AUTOGRAPHIC REGISTER.

SPECIFICATION forming part of Letters Patent No. 543,342, dated July 23, 1895.

Application filed August 17, 1891. Serial No. 402,873. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN KIRBY, Jr. WILLIAM E. CRUME, CHARLES D. GRIMES, and JOHN M. CLARK, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Autographic Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to improvements in machines for registering autographic writings, more particularly for the use of salesmen in stores and the like, in which a number of strips of paper are employed unwound from one or more delivery-rolls and passing over a writing-tablet carrying manifolding material interposed between the sheets, so that duplicate impressions may be made, one or more of said written sheets containing the sales-memoranda being stored within the case, while the others are delivered without the case and the written portions are cut or torn from their respective strips.

The first part of our improvements relate to a novel construction and arrangement of parts to be hereinafter more particularly pointed out and claimed, whereby the total amounts of all sales may be conveniently registered on a separate strip of paper, one sum directly under and in immediate proximity to the preceding one for convenience in adding, and said strip of totals thereupon be stored away and concealed in the case.

In autographic registers as ordinarily constructed the entire duplicate sheet or sheets alone have been usually filed away or stored in the case; but with such construction and arrangement it is not practicable for the total amounts of all sales during any given time to be footed up from the duplicate sheets, which have been filed away without first taking down on a separate sheet the various totals, so as to get them in shape for footing up, a proceeding which necessarily wastes much valuable time. The object of our improvements in this respect therefore is to do away with the necessity of this extra work, when it is desired to ascertain the sum-totals of sales

registered by the machine in any given period, and to so arrange the strips of paper and mechanism that at the same time that duplicates are made of each sales-memorandum the sum-total of each sale will alone be transferred to a separate strip of paper, which on the succeeding operation of the machine will only be moved far enough to bring the next transfer of a total sum on the separate strip directly under and close to the preceding one, and so on in succession, thus furnishing in the end a strip of paper with the total amounts of each sale arranged in proper order one directly under the other, so that the amounts can be readily and easily footed up.

The second part of our improvements consists of an adjustable bearing for one of the feed-rollers of the machine, whereby the same may be set to compensate for any irregularity in size of the rollers, and the pressure may be arranged to carry the strips of paper straight, while the third part of the improvements consists in providing one or both of the feed-rollers with a series of points or teeth, which will pierce the paper strips being fed through the rollers and hold them in line. In machines of this class heretofore much difficulty has been experienced where two or more strips of paper are used in keeping the several strips of paper in line with each other. It is customary to employ ruled paper for both the upper and under strips, and when the machine is started these ruled strips are placed exactly in line, so that the writing on the upper strip will be transferred to the same lines on the lower strip and the various items of the sale will appear at the same places on all the strips. Irregularity in pressure of the feed-rollers and the difference in friction on the strips it is found soon causes the strips to slip as they pass through the rollers, so that the printed rulings soon lose their position of alignment and the memoranda on the upper strip will not be transferred to the proper lines on the lower strip or strips and it thus becomes necessary to reset the paper frequently, often in the busiest time of the day, much to the annoyance and inconvenience of the user, especially as in the resetting great care has to be taken to start the strips perfectly straight or the



pressure of the feed-rollers will cause one or all of the paper strips to buckle and pull improperly. It is to overcome these defects that the second and third parts of our improvements are directed, and these improvements consist, as above set forth, of devices to regulate the pressure of the rollers and of means to hold at all times the paper strips in their original alignment.

A fourth part of our improvements consists of means to prevent the paper after it has passed the feed-rollers from buckling up under the severing-knife and thus choking the machine and preventing its operation. In machines of this class it is customary to feed one or more of the strips out on top of the case through a slot therein, which has ordinarily been uncovered, so that the operator in using the machine was very apt to and would naturally rest his hand on the machine just in front of the feed-rollers, and the paper as it issued from the slot, thus coming in contact with the person of the user, would be retarded in its movement and the paper at once begin to back up and crimp behind the knife, so that further operation of the feed-rollers would fail to deliver the strip from the machine, necessitating a removal of the top cover and a straightening of the paper before the machine would operate. Especially was this difficulty experienced when the paper strips were light and thin, as is usually the case, and a very slight touch on the strip was then all that was necessary to render inoperative the entire machine. Our improvement in this respect is intended to entirely obviate this difficulty and consists of a shield or additional cover or top piece to entirely cover the slot-opening through which the paper is delivered and to extend some distance beyond the opening, and with this improvement we find that the paper, if it then comes in contact with any article, will not be so retarded as to back up under the knife, and besides the hand of the user will naturally rest on the shield and will not cover the opening through which the paper issues.

A fifth part of our improvements consists of a novel tension device for the dispensing-rolls of paper in the supply-compartment of the machine.

It is necessary in order that the machine shall operate properly that there should always be proper tension on the dispensing-rolls, and various tension devices have hitherto been employed, consisting for the most part of weighted tension-rollers to rest on the rolls of paper, or the rolls of paper have been journaled one above the other in an inclined slot, so that one roll would itself serve as a tension for the others. These devices we have not found, however, to work satisfactorily, and as a novel tension device we use a flat spring either loose or secured to the case with its end bearing against the end of the journal or of the roll of paper, so as at all times to keep proper tension on the rolls. When we em-

ploy a loose spring we prefer to bend the same into a loop and fit same loosely over one journal of the roll, so that one end of the spring will bear against the end surface of the roll and the other against the case.

In the drawings, Figure 1 is a central longitudinal section of the machine. Fig. 2 is a central longitudinal section of the storing-reel for the strip of total sales. Fig. 3 is a side elevation of the mechanism for actuating said storing-reel. Fig. 4 is a top plan view of the machine with the top covers removed. Fig. 5 is a front view of the delivery end of the machine with the sides and bottom of the case in section and the top cover removed. Fig. 6 is a detail perspective view of the feed-rollers and part of the case. Fig. 7 is an end view of the pair of feed-rollers. Fig. 8 is a perspective view of one of the supply-rolls and the tension-spring therefor.

Like letters indicate identical parts in all the figures.

A is the bottom; B B, the ends; C C, the sides, and D the top of the casing for the working parts of the register. The top D is provided with the usual opening E, underneath which is secured the writing-tablet F, supplied with manifolding-paper and over which tablet the duplicate strips of paper are passed with the carbon-paper between them in the usual way.

G G G are the dispensing-rolls from which the paper strips are supplied, each of which is journaled independently of the others in the bearings *a a a*. (Shown in the dotted lines of Fig. 1.) The paper from these rolls is passed under and over the guide-rods *b b b* and *c c c*, over the writing-tablet and the two upper strips between the feed-rollers H and I, whence these two strips are delivered between the slotted knife-bars *d d* and out through the slot *e* in the top of the case, the lower knife-bar being preferably extended and curved upward, as shown in Fig. 1, to more effectually guide the paper strips without the slot. These paper strips, which are delivered on top of the case, are severed from their respective rolls by the knife K rigidly secured to the knife-carrier frame L, which is reciprocated vertically by the operation of the hand-lever M secured to the shaft N journaled in the sides of the case in the rear of the knife-frame. The knife-frame and knife are raised by the arm O secured to the shaft N, the end of which arm engages the tooth *f* on the knife-carrier frame, so that a depression of the hand-lever M raises the knife-frame and drives the knife K within the slots of the knife-bars *d d* and thus severs the sheets from the rolls. A strong spring *g*, bearing against the base of the frame L, returns the knife and frame to their original positions after the sheets are severed and the hand-lever M is released.

The third and lowest strip of paper from the topmost roll, as shown in Fig. 1, is intended to receive the totals of the amounts of sales.



This strip  $a'$  is not passed with the other strips through the rollers H and I, but passes from the writing-tablet over guide-rod  $b'$ , under guide-rod  $c'$ , through an opening  $d'$  in the knife-frame L, and between the additional feed-rollers P and R, which are journaled from side to side of the case on the other side of the knife-frame. A short strip of carbon-paper  $e'$  or other manifolding material is interposed between the strip  $a'$  and the upper strips, so that the memoranda of sales made on the upper part of the topmost sheets on the tablet will not be transferred to this strip  $a'$ , but only the total amount of the sale.

The strips from the dispensing-rolls are preferably ruled with horizontal lines, and space is left at the bottom for the sum-total of the sales, so that the salesman, after adding up the various items of each sales-ticket, places the total amount at the bottom, which total alone thus becomes transferred to the lowest strip  $a'$ . If only a single item is entered on the topmost strip the salesman will in such case place that amount at the bottom as before, so that the amount of each sales-ticket will always alone be transferred to the lowest strip. As the amount of the next sale should appear on this strip directly under the preceding one and close to it, means must be provided to carry forward the lowest strip only such a short distance that the next sum transferred will appear in the proper place. This is accomplished in the following way: Pivoted to the lug  $h$  on the knife-frame L is a pawl  $k$ , which engages the teeth of a ratchet-wheel  $l$  on the shaft of the lower supplemental roller R, the pawl being held in engagement with the ratchet by the spring  $m$ . It will therefore be obvious that every time the hand-lever M is operated to raise the knife K to sever the upper sheets from their respective rolls the pawl  $k$  will likewise be raised and consequently will turn the feed-rollers P and R a part of a revolution, and thus the strip  $a'$  will be fed forward just far enough to carry the amount of the last sale beyond the edge of the short strip of carbon-paper  $e'$ , and so on till the strip is full. This strip, after passing the feed-rollers P and R, is then stored on a storing-reel journaled in the lower part of the case, where it is stored until the totals are to be footed up or otherwise. It will be manifest, however, that as the paper strip  $a'$  is fed forward the same distance each time by the rollers P and R and the same is wound on the storing-reel, which is constantly increasing in diameter as the roll is wound up, the movement of the reel must be differentiated to compensate for this increased size of the roll. As the circumference of the roll increases in length more paper will be needed on the reel with a given amount of revolution thereof than when the roll is small, and if the reel were given a positive fixed movement upon each operation of the machine the paper would tend to wind on the reel faster than delivered and consequently would tear.

We have, therefore, provided means to overcome this difficulty and allow the receiving-roll of paper to slip as the tension increases.

T is the spindle for this roll, one end of which is journaled in the hub  $n$  secured to one side of the case C, while the other end is journaled in the disk S, which is in turn journaled in the other side of the casing, so that the disk S and spindle T can turn independently of each other. A curved spring U, secured to the spindle T, bears strongly with its outer end against the inner surface of the disk S, so that there is a frictional clutch between the disk and spindle and normally they will revolve together. A ratchet-wheel V is formed on the outer surface of this disk, which is engaged by a rack-bar  $p$ , pivoted to a crank-arm  $r$  secured to the shaft N, operated by the hand-lever M, so that the operation of the knife-cutting mechanism will cause the disk S to rotate a certain definite amount with each stroke, a pawl  $s$  preventing any back movement of the ratchet-wheel or disk. Although the disk S will thus be impelled a definite amount with each operation of the machine as the paper is wound on the spindle T, as soon as the size of the roll increases, so that the tendency would be to tear the paper, the spring U and with it the spindle T will slip on the disk S and only the proper amount will be wound on the roll.

It will be understood that while we have illustrated this part of our invention in connection with a register in which only two other slips are used, which are afterward severed from the rolls, our invention is not to be limited to this particular class of machines; but that it is equally applicable to the various other forms of autographic registers.

As we have already set forth, in order to keep the ruled strips of paper exactly in line and cause them to travel straight through the machine means must be provided to adjust the pressure of the feed-rollers and to hold the various strips of paper by mechanical means. In order to obtain this adjustment and to propel the paper strips evenly, one of the rollers, preferably the lower one, I, is journaled securely in the case, and the upper roller is journaled in sliding boxes or bearings  $t t$ , which are arranged to slide vertically in the sides of the case, as shown in Fig. 6, while set-screws  $u u$  are employed, bearing against the upper surface of the boxes, by means of which the pressure of the rollers may be regulated, as desired. In addition to this we provide one of the rollers, preferably the lower one, with a series of pointed teeth or pins  $w$ , driven in or otherwise secured to the roller near each end. When the rollers are made of wood, metal, or other hard material cavities are made in the upper roller to correspond with the pins in the lower one to receive the points as the rollers are revolved, but when rubber rollers are used it is not necessary to make such cavities. With these pins it will be manifest that as



the rollers are revolved the pins will puncture the strips of paper, hold them exactly in line and cause them to move through the machine uniformly. In order to revolve the rollers the shaft of the lower one is provided with the handle A'.

For the purpose of obtaining a proper tension on the dispensing rolls of paper we also provide the tension-spring B', one end of which is provided with an opening  $f'$  to fit around the spindle of the roll, and the other end  $g'$  is bent back to form a loop. The outer end of this spring bears against the side of the case, while the other end is in contact with the end of the roll of paper, and thus a constant tension is kept on the roll. The portion  $g'$  of the spring B' is made slightly narrower than the bearing  $a$  for the spindle of the roll, and the tension-spring being slipped over the end of the spindle, as shown in Fig. 8, the roll is placed within the case so as to rest upon the bearings and bring the spring parallel with the sides thereof, and in this position the portion  $g'$  of the spring will bear against the side of the case and the other portion against the end of the roll. We find this form of tension-spring to give much better results than the ordinary tension-rollers in use hitherto.

In order to prevent the accidental touching of the strips of paper as they issue from the machine through the slot  $e$ , and the consequent backing up of the strips and the clogging of the machine, we provide a shield or cover C', which is secured to the top cover and extends out over the slot  $e$ , so as to effectually cover the same, but still allow ample space for the delivery of the strips.

It will, of course, be understood that while the last four parts of our invention are illustrated as applied to a particular kind of machine our invention in this respect is not to be limited to this class of machines, but is equally applicable to other classes of autographic registers.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an autographic register in which a plurality of strips of paper are employed, the combination with the writing tablet over which the paper strips are propelled and manifolding material between the upper strips of paper, with feeding mechanism for said upper strips, of a sheet of manifolding material narrower than said tablet, interposed between the lower and upper strips of paper and separate feeding mechanism for said lower strip, which when actuated, feeds said strip a shorter distance than the upper strips are fed, substantially as shown and described.

2. In an autographic register in which a plurality of strips of paper are employed, the combination with feeding and cutting mechanism for the upper strips, with manifolding material between said upper strips and a writing tablet over which said strips are pro-

pelled, of a narrow sheet of manifolding material interposed between the lower and upper strips, separate feeding mechanism for said lower strip, and means whereby said feeding mechanism may be operated simultaneously with the cutting mechanism for the upper strips to feed said lower strip a shorter distance than the upper strips, substantially as shown and described.

3. In an autographic register in which a plurality of strips of paper are employed, the combination with feeding mechanism for the upper strips with manifolding material between said upper strips and cutting mechanism for severing said strips from the rolls, of a narrow sheet of manifolding material interposed between the lower and upper strips, separate feeding mechanism for the lower strip, with storing reel to receive said strip, and means connecting said reel and separate feeding mechanism to the cutting mechanism, whereby the operation of said cutting mechanism will operate said reel and separate feeding mechanism to feed said lower strip a shorter distance than the upper strips are fed, substantially in the manner and for the purpose described.

4. In an autographic register in which three or more strips of paper are employed, the combination with a writing tablet over which the paper strips are propelled and manifolding material between the upper strips of paper, of a sheet of manifolding material narrower than said tablet, interposed between the lower and upper strips of paper, and independent feeding mechanism for the lower strip, substantially as shown and described.

5. In an autographic register in which three or more strips of paper are employed, the combination, with a writing tablet over which the paper strips are propelled, and manifolding material between the upper strips of paper, of a sheet of manifolding material narrower than said tablet, interposed between the lower and upper strips of paper, and feeding mechanism for the lower strip which when actuated feeds said strip a shorter distance than the upper strips are fed, substantially as shown and described.

6. In an autographic register the combination with a case having an opening in its top for the delivery of one or more of the paper strips, feeding mechanism therefor, and cutting mechanism to sever the strips from the roll, of a shield or top piece wider than the opening secured to the top cover and extending out over and beyond said opening to protect the same and prevent the buckling of said strips under the cutting mechanism, substantially as shown and described.

7. In an autographic register, the combination, with the case and a dispensing roll of paper journaled therein, of a plate shaped to embrace the journal of the roll and bearing against the entire end of the roll, and a spring projection, integral with the plate, curved to have its bearing against the case at or near



the journal bearing of the roll, substantially as shown and described.

8. In an autographic register in which three or more strips of paper are employed, the combination, with the writing tablet over which the paper strips are propelled and manifolding material between the upper strips of paper, of a sheet of manifolding material narrower than said tablet interposed between the lower and upper strips of paper, and a storage reel for said lower strip, with means for actuating the same to wind up the record strip and feed same a shorter distance than the upper strips are fed, substantially as shown and described.

9. In an autographic register in which three or more strips of paper are employed, the combination with a writing tablet over which the paper strips are propelled, and manifolding material between the upper strips of paper, the feeding mechanism for said upper strips, of a sheet of manifolding material narrower than said tablet, interposed between the lower and upper strips of paper, and separate feeding mechanism for said lower strip.

10. In an autographic register in which three or more strips of paper are employed, the combination with the feeding and cutting

mechanism for the upper strips, with manifolding material between said upper strips, and a writing tablet over which said strips are propelled, of a narrow sheet of manifolding material interposed between the lower and upper strips, and separate feeding mechanism for said lower strip, substantially as shown and described.

11. In an autographic register in which three or more strips of paper are employed, the combination with feeding and cutting mechanism for the upper strips, with manifolding material between said upper strips, and a writing tablet over which said strips are propelled, of a narrow sheet of manifolding material interposed between the lower and upper strips, separate feeding mechanism for said lower strip, and means whereby said feeding mechanism may be operated simultaneously with the cutting mechanism of the upper strips, substantially as shown and described.

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