

Koch & Schule,

3 Sheets Sheet 1.

Paging and Numbering Machine.

N^o 86,763.

Patented Feb. 9, 1869.

Fig. 2.

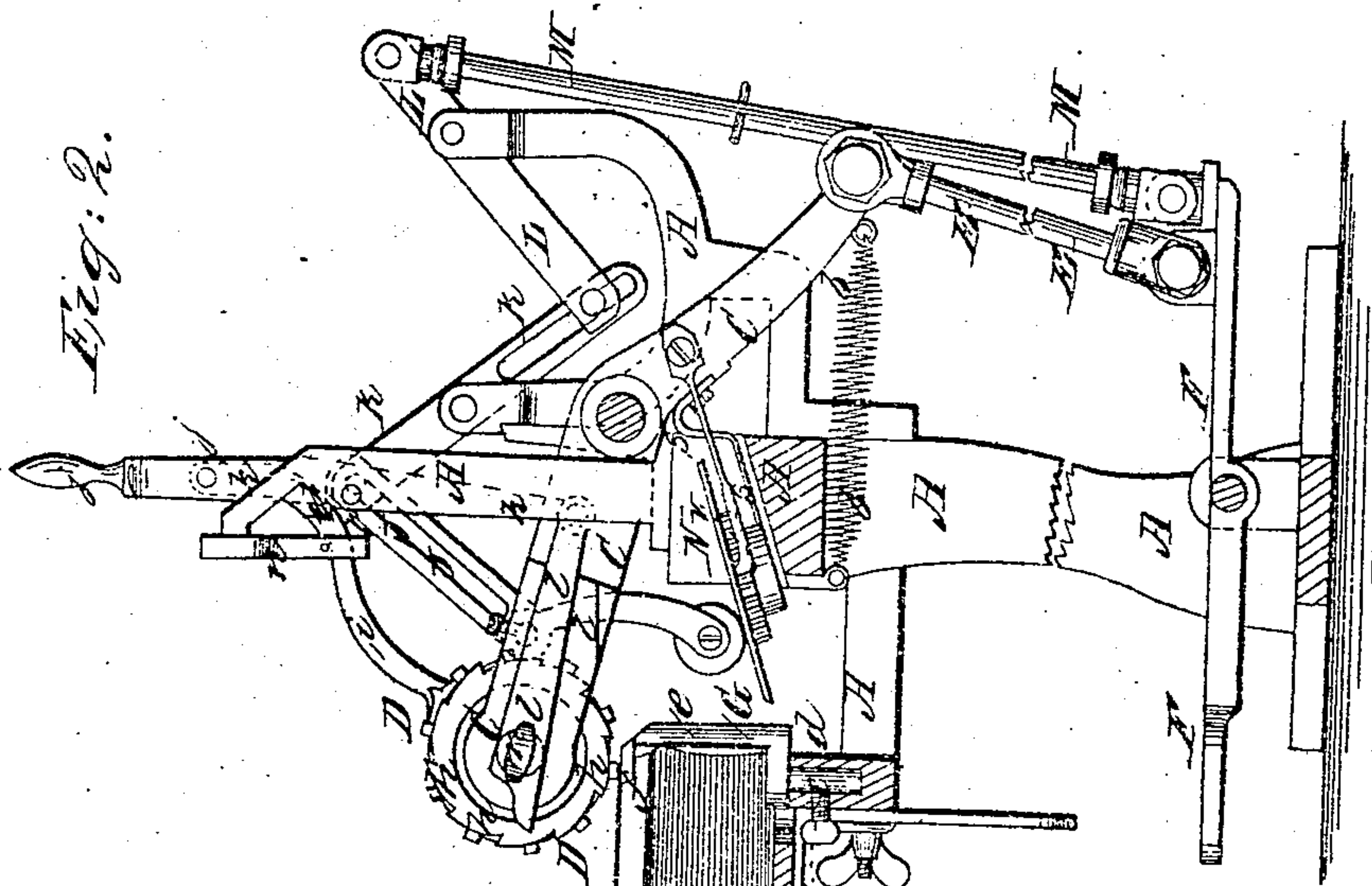
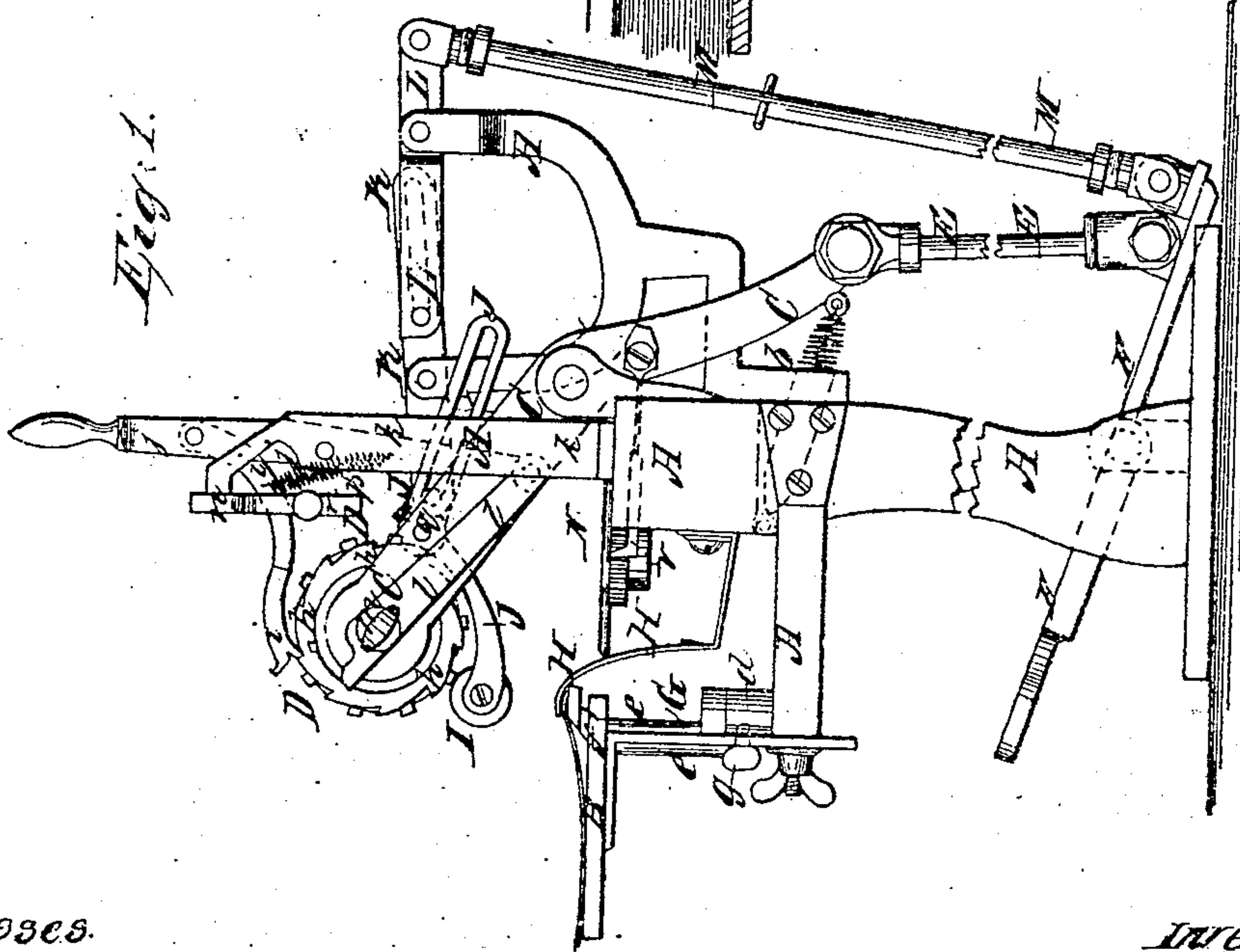


Fig. 1.



Witnesses.
J. A. Frank
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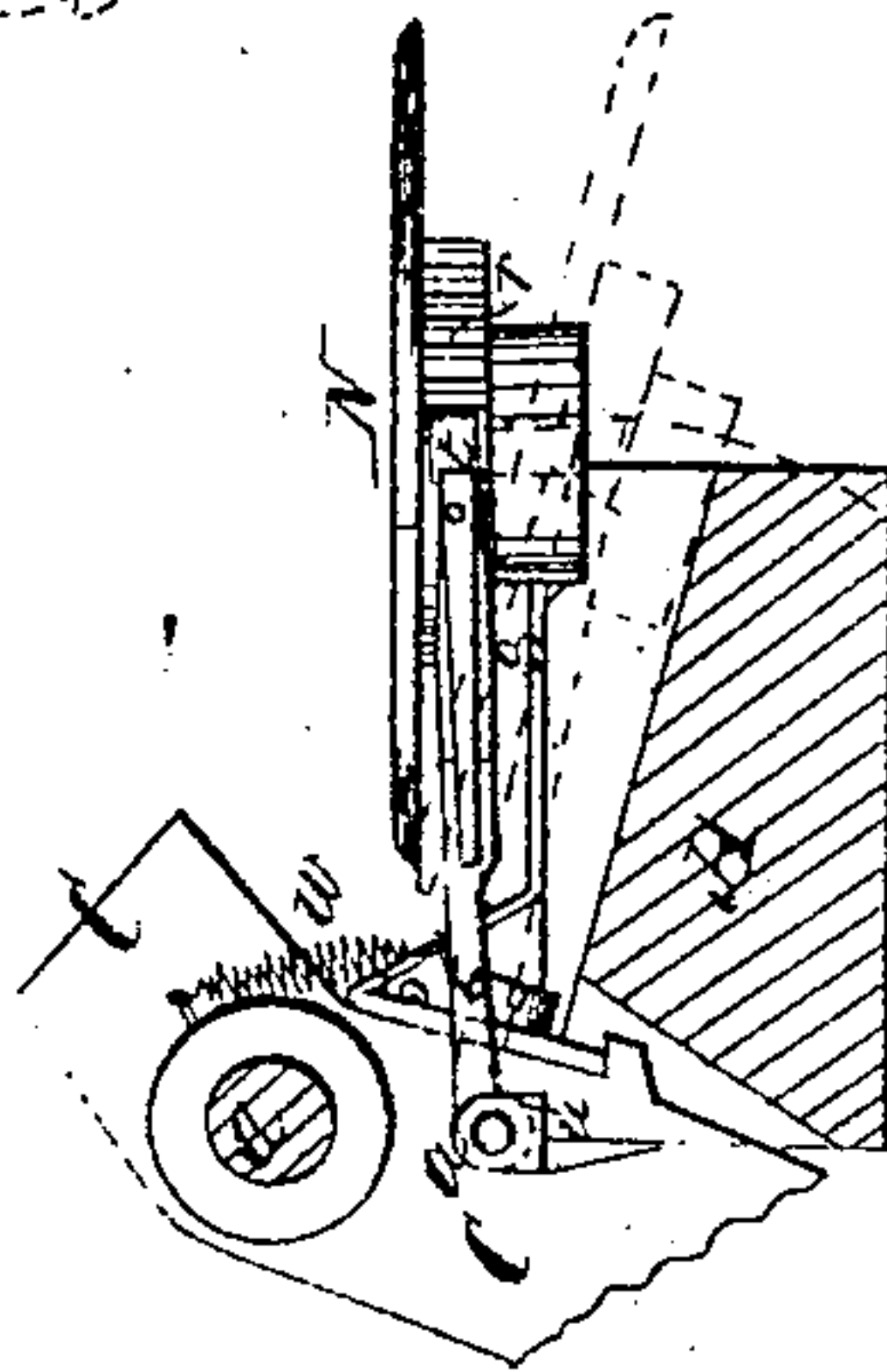
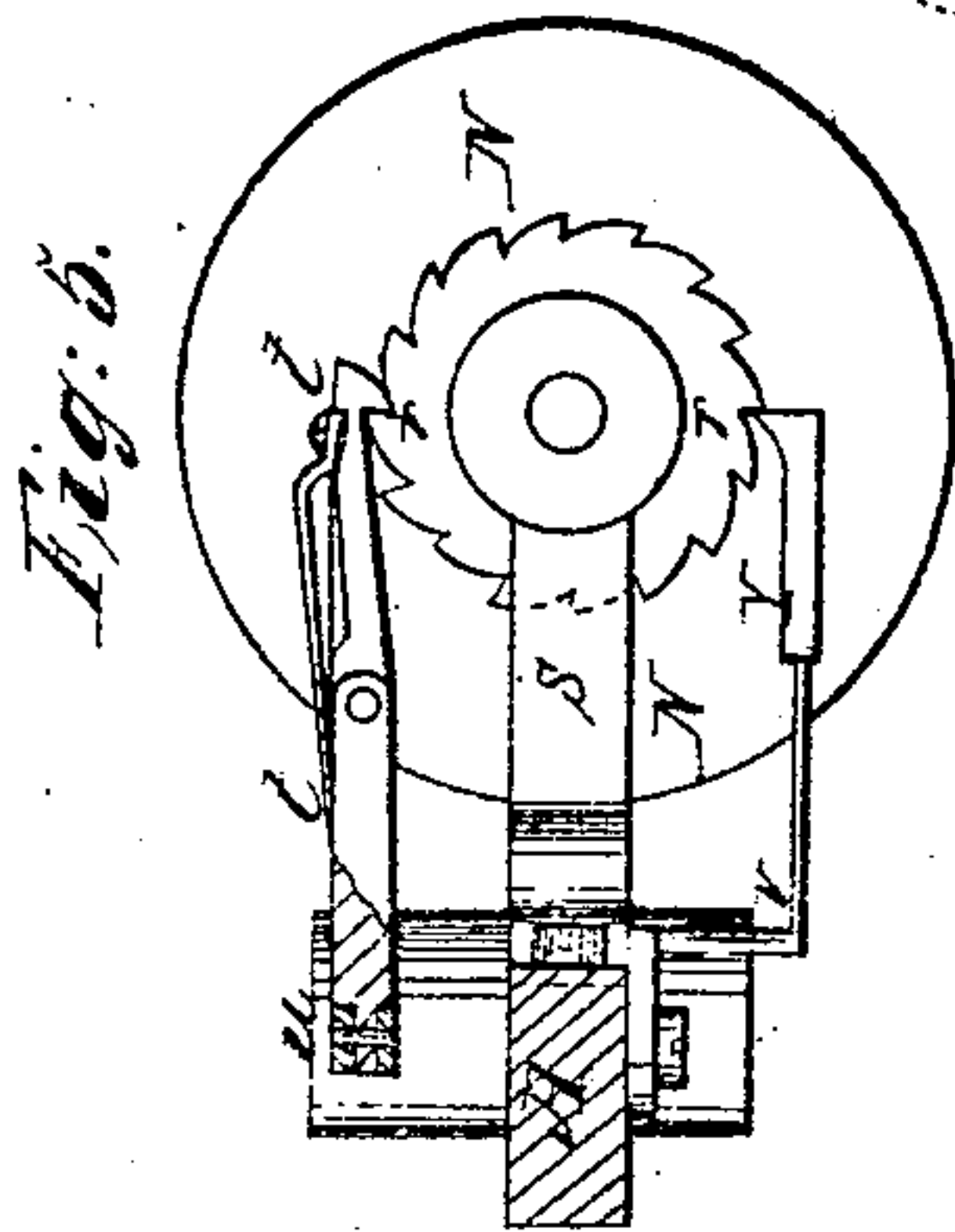
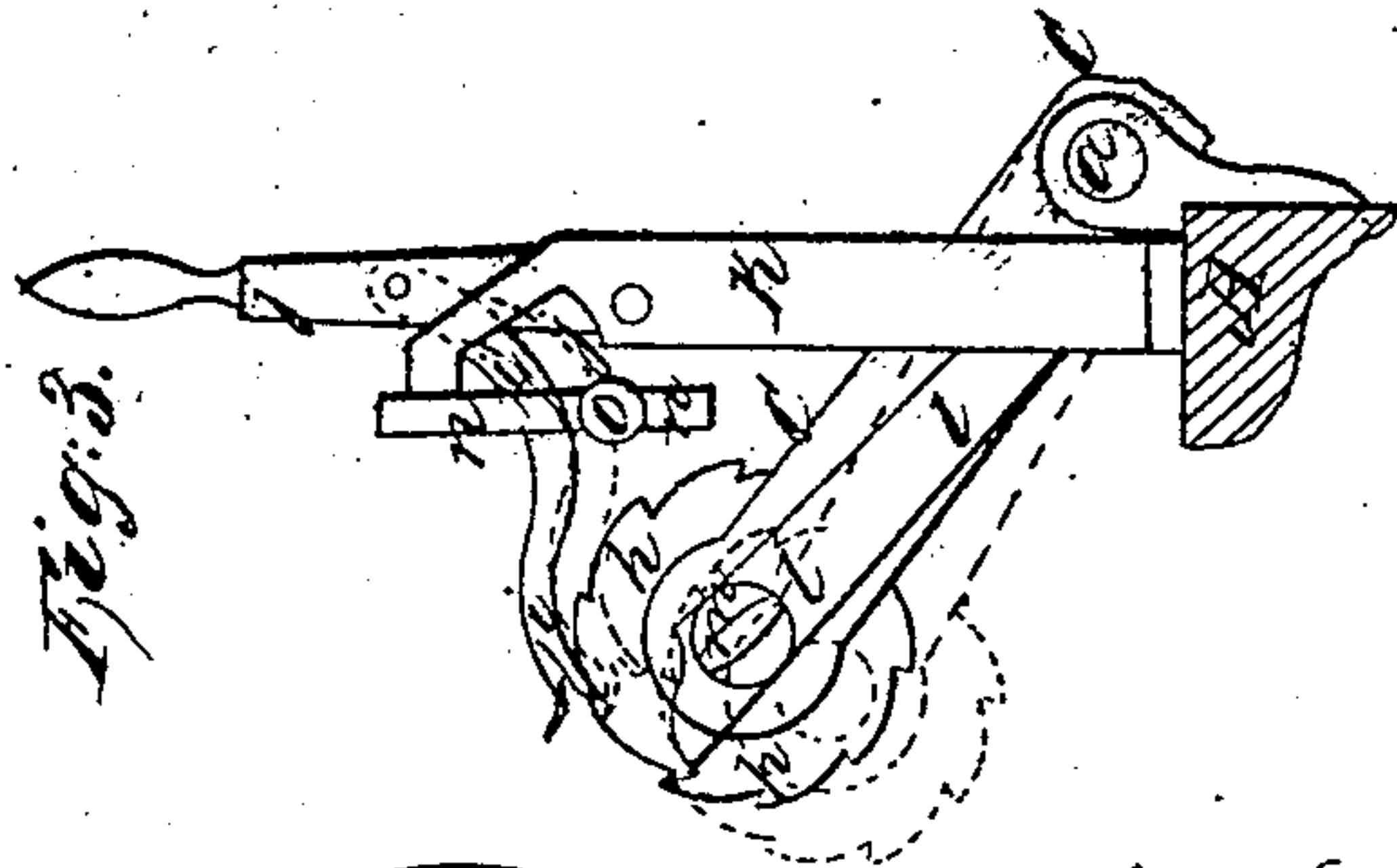
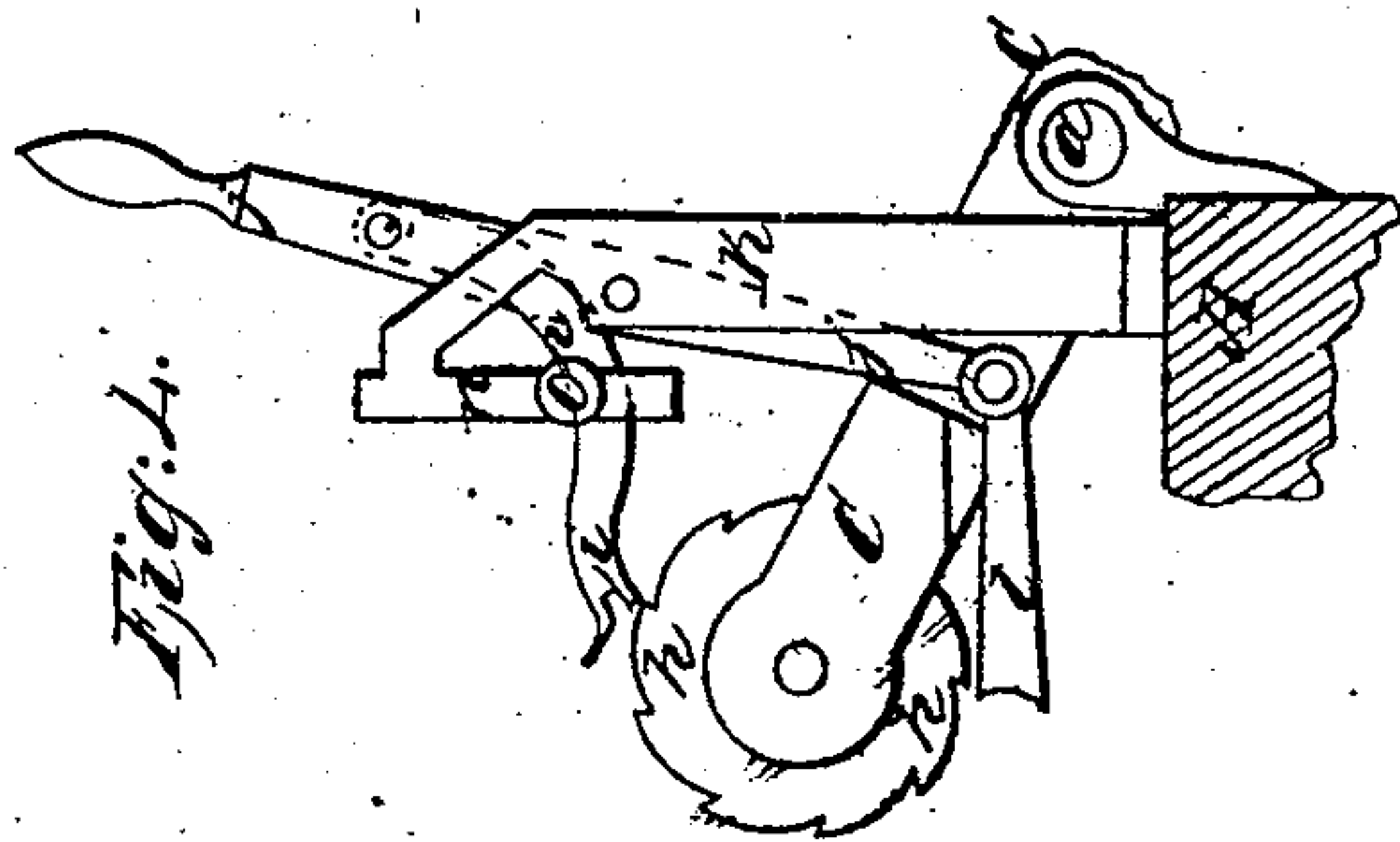
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Koch & Schulte, ^{3 Sheets. Sheet 2.}

Paging and Numbering Machine.

N^o 86,163.

Patented Feb. 9, 1869.



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Paging and Numbering Machine.

N^o 86,763.

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Fig: 1.

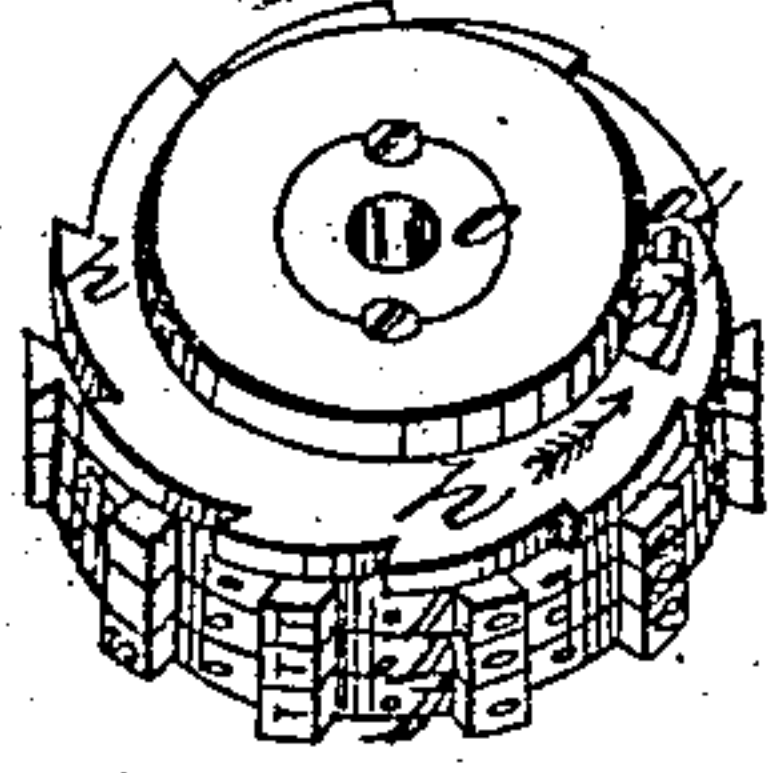


Fig: 8.

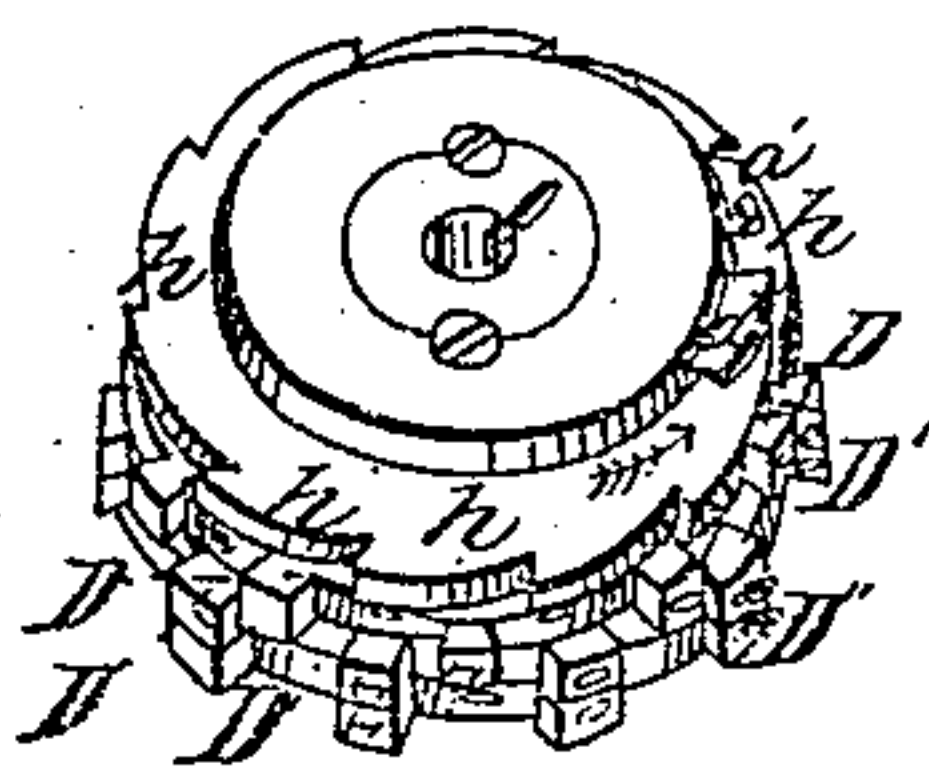


Fig: 9.

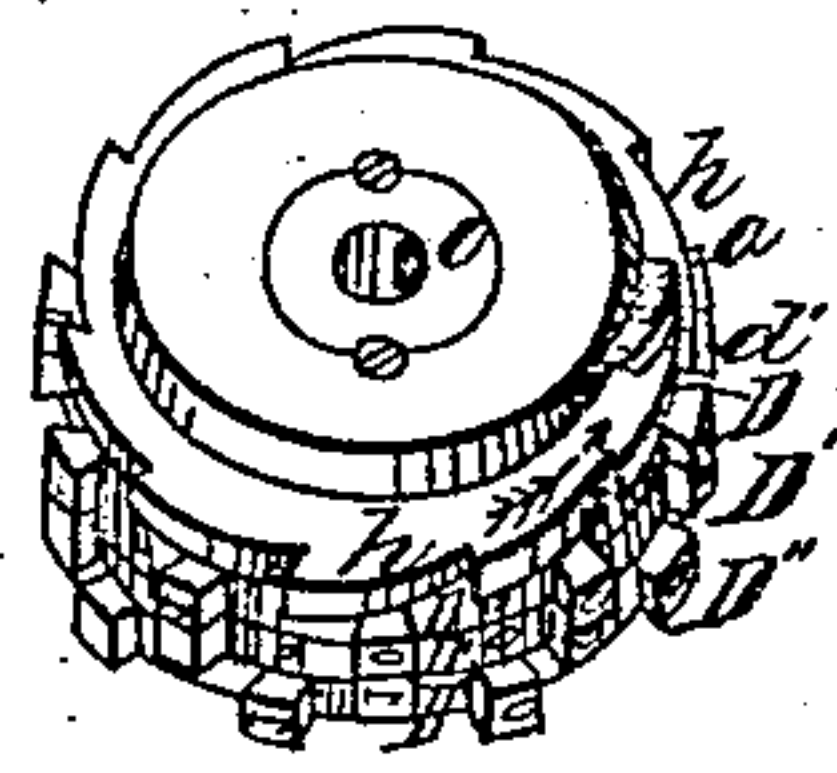


Fig: 10.

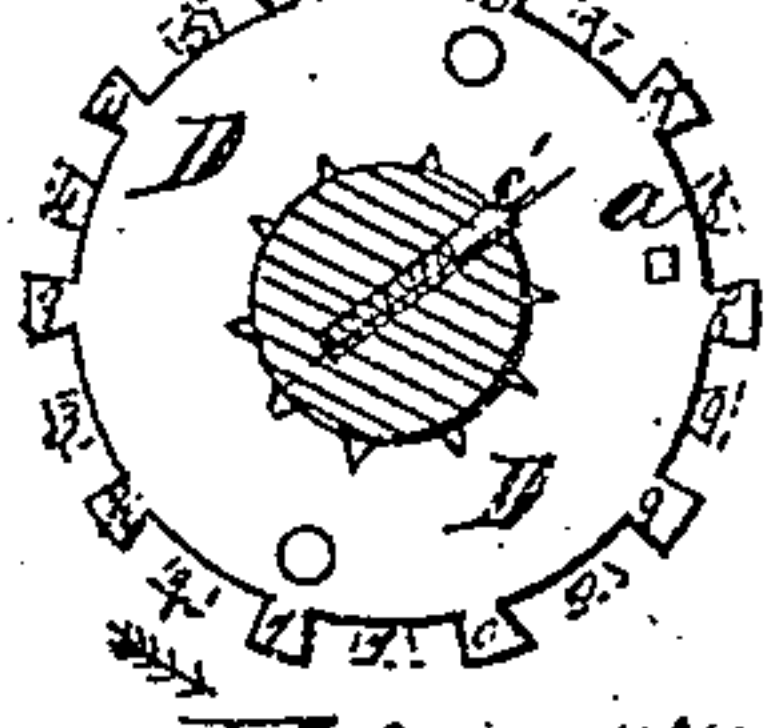


Fig: 11.

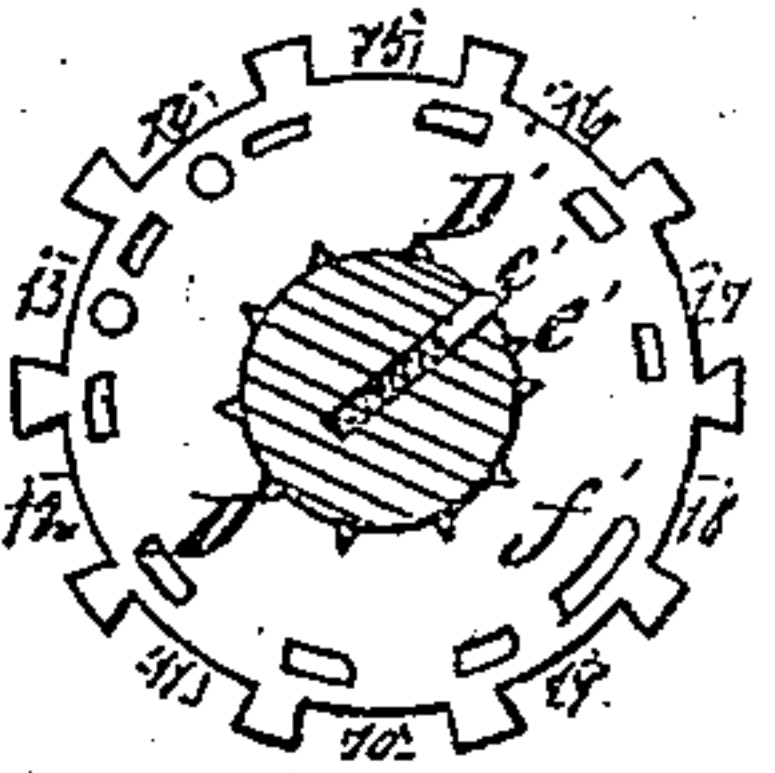


Fig: 14.

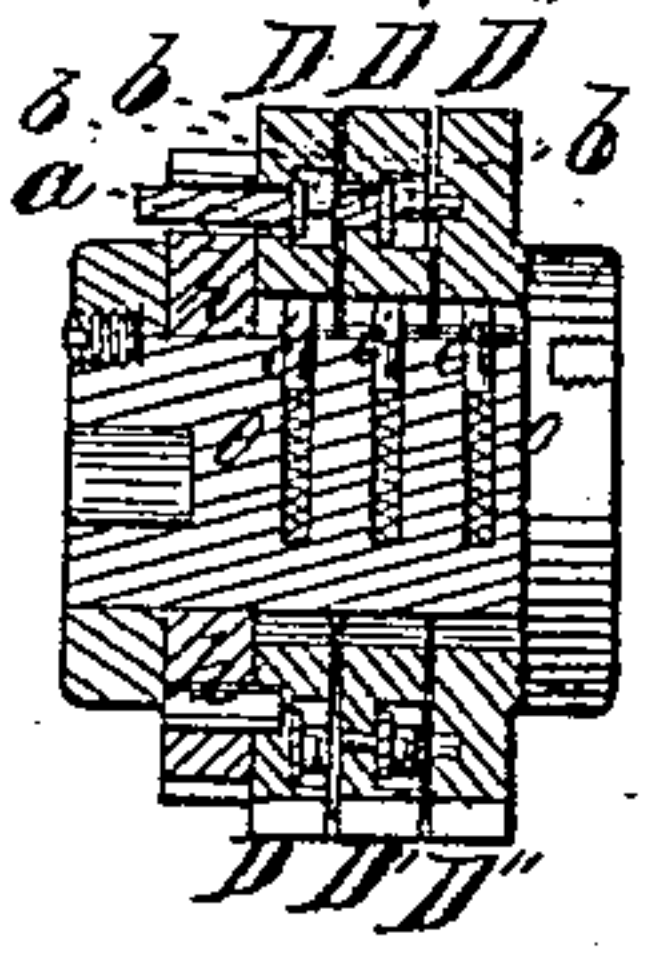


Fig: 12.

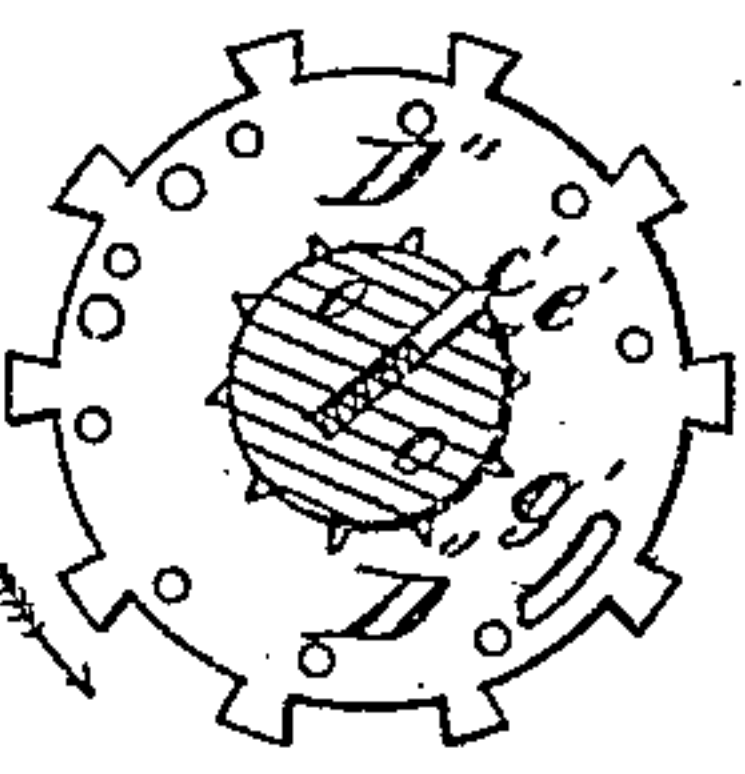
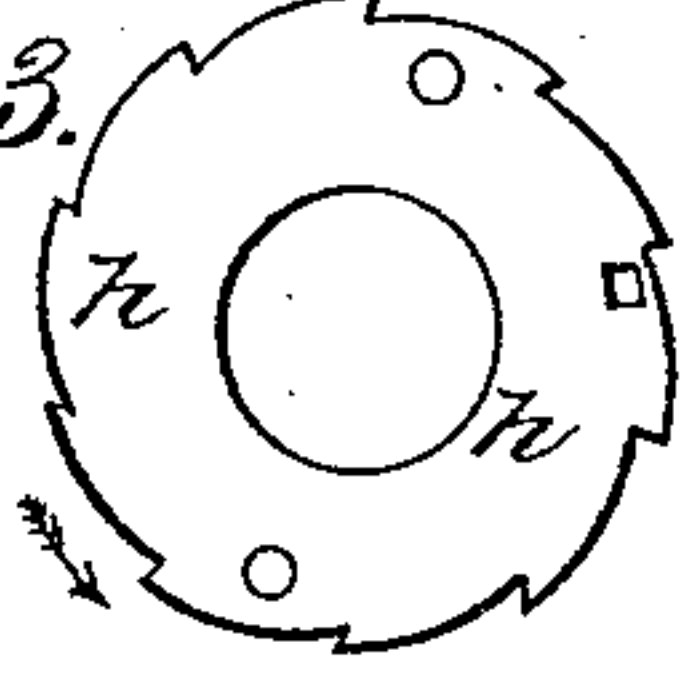


Fig: 13.



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PHILIPP KOCH AND GOTTLOB SCHÜLE, OF NEW YORK, N. Y.

Letters Patent No. 86,763, dated February 9, 1869.

IMPROVEMENT IN PAGING AND NUMBERING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, PHILIPP KOCH and GOTTLOB SCHÜLE, of New York, in the county and State of New York, have invented a new and improved Paging and Numbering-Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1, Sheet I, represents a side elevation of our improved paging and numbering-machine.

Figure 2, Sheet I, is a side elevation, partly in section, of the same.

Figures 3 and 4, Sheet II, are detail side views of the apparatus for turning the printing-roller.

Figure 5, Sheet II, is a detail inverted plan view of the ink-plate, and

Figure 6, Sheet II, is a detail side view of the same.

Figures 7, 8, and 9, Sheet III, are perspective views of the printing-roller.

Figure 10, Sheet III, is a face view of the disk or plate for printing the units.

Figure 11, Sheet III, is a face view of the disk or plate for printing the tens.

Figure 12, Sheet III, is a face view of the disk or plate for printing the hundreds.

Figure 13, Sheet III, is a face view of the toothed disk, by means of which motion is imparted to the printing-roller.

Figure 14, Sheet III, is a vertical transverse section of the printing-roller.

Similar letters of reference indicate corresponding parts.

The invention relates to a new machine for paging blank books, and for numbering bank-notes, bills, checks, and other suitable articles; and

The invention consists, first, in a new apparatus for turning the printing-roller, which is turned or set, when it arrives at its highest elevation, by a lever, which can be adjusted so as to turn the said roller one-tenth or one-fifth part of a revolution, as may be desired, or not at all, if the same figure has to be continually printed.

The invention consists also in a novel device for inking the printing-type, and in a new manner of operating the said device. The inking-roller is applied to the figure which is to print, immediately after it has been set by the aforesaid setting-device.

The invention also consists in a novel manner of operating the plate upon which the inking-mixture is held, and in a new device for imparting to it intermittent rotary motion.

The invention further consists in the use of a new avail-block, for supplying that portion of the paper which is to be printed, said block being reversible, for the purposes hereinafter specified.

The invention finally consists in a new arrangement

of the printing-rollers or disks, the object being to so set them that the naughts of the second and third disks can be brought out of play without necessitating their removal from their disks.

This object is obtained by so arranging the slots, into which the pin connecting the disks fits, at the end of each revolution, that the second and third disks can be turned, to bring their types out of line with the types of the first disk, so that only the types of the first disk will print, although those on the other disks remain on them.

A, in the drawing, represents the frame of our improved paging and numbering-machine, made of metal, wood, or other suitable material.

On the front part of the said frame is arranged an up-and-down adjustable table, B, to support the books, or sheets of paper, or other material to be numbered.

O represents a bell-crank, forked at one end, and pivoted, by a horizontal pin, *a*, to the frame of the machine.

In the forked front arm of the lever O are arranged the bearings of the printing-disks D D' D'', &c., which disks have the required type set or formed on their rims, as shown.

The other lower arm of the lever O is pivoted to a rod, E, which at its lower end is secured to a treadle, F, as is clearly shown in figs. 1 and 2.

A spring, *b*, attached to the lower end of the back arm of the lever O, and to the frame A, as in fig. 2, serves to hold the forked end of the said lever up, as in fig. 1.

When the treadle is pressed down, the action of the spring will be overcome, and the printing-disks will be forced down upon the paper to be numbered, and then, as soon as the treadle is released, the forked end of the lever O and its disks at once fly up again.

In the front part of the frame A, and projecting through the rear part of the table B, is arranged a block, G, which has a pin-shank, *c*, fitted into a socket, *d*, that is arranged in the frame A.

By means of a set-screw, *g*, or some other equivalent device, the shank *c*, and with it the whole block G, can be clamped in any desired position. When the screw is loosened, the said block is free to turn in its socket.

The body of the block G consists of an upright bar, *e*, which is not in line with the pin *c*, and of an upper horizontal arm, *f*, projecting from one side of the upright bar *e*, as shown in figs. 1 and 2.

When separate sheets are to be numbered, the block is set with its upright portion *e* in front, and its arm *f* projecting to the rear, as in fig. 1.

The table B is raised nearly to a level with the surface of the arm *f*, as in fig. 1, and the paper to be printed is placed upon the table, and that portion of it which is to be numbered, upon the block G, as indicated in fig. 1.

When, then, the treadle is operated, the printing-disks will come down, and will force the face of the

type upon that portion of the paper which rests on the block, and thus the desired number is printed.

To prevent the spreading of ink beyond the desired limits on the paper, a guard-plate, H, may be used, which is perforated with a hole just large enough to let the type pass through.

Said plate is fastened to the frame, and the hole through it is above the block G, as is indicated in fig. 1.

For paging books, the block G is turned, so as to have its arm *f* project to the front, as shown in fig. 2. Thereby a recess is formed under the arm for the leaves of the book to fit in, as indicated in fig. 2.

The table B is adjusted up or down, according to the thickness of the book, and the leaf to be paged is placed with its corner upon the block G, as shown.

The guard-plate H cannot be conveniently used for paging books.

On the same axle with the printing-disks is mounted a ratchet or toothed disk, *h*, which has ten teeth, and which, as it is turned by suitable mechanism, serves to turn the printing-disks in the required succession.

In our machine, as the bifurcated end of the lever C is being swung up by the action of the spring *b*, the upper tooth of the wheel *h* strikes against the end of a lever, *i*, which arrests it, and thus, as the disks continue to move upward with the lever C, the wheel *h* is turned, and the type set during the upward motion of the disks.

The lever *i* is with its rear end pivoted to the upper part of a bar, *j*, which is pivoted to an upright-projecting arm, *k*, of the frame A, and which is at its lower end pivoted to the rear end of a bar, *l*.

The front end of the bar *l* is, by means of a pin or screw, *m*, pivoted to the axle of the disks D, D', and *h*, as is clearly shown in figs. 1, 2, and 3.

The bar *i* fits through a slotted plate, *n*, which forms part of the upright *k*, and in which a removable pin or screw, *o*, is arranged.

When the lever *i* rests upon the pin *o*, as in figs. 1 and 2, its end will be elevated, so that it will meet the uppermost tooth of the wheel *h*, and the type will thus be set one figure ahead during each motion of the treadle.

The manner in which the lever *i* acts upon the ratchet-wheel *h*, is clearly illustrated by red and black lines in fig. 3.

When the screw *o* is removed or drawn out of the way of the lever *i*, the same will drop in the slot of the plate *n*, as in fig. 2, and its end will then come in contact with the tooth which is in rear of the uppermost tooth of the wheel *h*, and will thus move the wheel two teeth ahead, which causes two type-figures to be advanced during each stroke, which is of importance for paging books.

Should the lever *i* not be heavy enough, a spring, *p*, may be employed to draw it down, while the disks are brought down to print.

When the bar *l* is detached from the axis of the printing-disks, as in fig. 4, the lever *i* will, when it rests on the pin *o*, have no power to move the disks, but will yield to their upward motion; but if, in this case, the pin *o* is withdrawn, as in fig. 4, the end of the lever *i* will set the disks one tooth, the lever then operating until it has brought its tooth vertically above the axis of the disks.

When the lever *i* does not at all operate automatically, as aforesaid, the device will always print the same figures, and if they are to be changed, they can be set by taking hold of the upper end of the bar *j*, and swinging that forward and backward until the required change is effected.

I represents the inking-roller. The same is hung in the bifurcated front arm of an elbow-lever, J, which is, by a pin, *g*, pivoted to the lever C, as shown, and which has a slotted rear arm, as shown in figs. 1 and 2.

K is a straight lever, pivoted, near its middle, to a

stationary part of the frame A, and having at its front end a pin, that fits through the slot of the lever J.

The rear end of the bar K is slotted, and connected in a similar manner with a lever, L, as shown.

The rear end of the lever L is, by a rod, M, connected with the treadle F.

Thus, when the treadle is not used, the levers K L are in line, or nearly so, as in fig. 1, and the roller I is held up against the type; but when the treadle is depressed, the levers assume the position shown in fig. 2, and cause the roller I to swing down upon an inking-plate, N. Thus, when the type-disks are moving down to print, the inking-roller moves down to take up fresh ink, and as soon as they have been raised again, and have consequently been set by the lever *i*, the inking-roller is swung up, and inks that type, or row of types, which is to print next.

The inking-plate N is a circular flat plate, with a ratchet wheel, *r*, secured to its under side, and is hung in the front end of a spring, S, which is secured to or projecting from the lower arm of the lever C, as is shown in figs. 2, 5, and 6.

Into the teeth of the ratchet-wheel engages a hook, *t*, which is formed on a bar that is, at its other, rear end, pivoted to the frame A, by a pin, *u*, the pin *u* being below the shaft *a*, as is clearly shown in fig. 6.

On the other side of the ratchet-wheel *r*, catches, against its teeth, a spring-pawl, V, which projects from the lever C, as shown.

When the lever C is moved by the action of the treadle, the plate N will move with it around the pin *a*, and will be brought into the inclined position shown in fig. 2, and by red lines in fig. 6. By this downward motion it will lower the hook *t*, which, swinging around its pivot *u*, will describe a shorter curve than the tooth on the ratchet-wheel *r*, which is in front of it; and by this difference of motion the hook is brought into the next forward tooth of the ratchet-wheel, so that when the plate is raised again by the action of the spring *b*, the tooth, caught by the hook, will be retained by the same, and the ratchet-wheel and the plate N will consequently be turned.

By means of a spring, *w*, the hook is held constantly against the under side of the plate N.

Thus, by means of the said oscillating motion, intermittent rotary motion is also imparted to the plate N, so that constantly fresh ink will be brought under the inking-roll.

The plate N is held by a spring, so that it may yield to the downward pressure of the inking-roll, to allow the same to take up a full supply of ink.

The toothed wheel *h* is, by means of screws or otherwise, secured to the face of the first disk, D.

All the disks, D D', &c., as well as the wheel *h*, are hung on an axle, O, as is all clearly shown on Sheet III, and a spring-catch, *a'*, is fitted to the unit-disk D, and one, *b'*, to the ten-disk D', as usual.

For each disk there is, as usual, a spring-catch, *c'*, projecting from the axle O into notches cut into the inner edge of the disks, as shown in figs. 10, 11, and 12. The catch *a'* projects through the wheel *h*, and by a cam, *d'*, on the face of the latter, the catch *a'* is forced in once during every revolution.

The springs for holding the catches *a'*, *b'*, &c., are segmental, and are concealed between the disks as usual, and as shown in fig. 14.

In fig. 7 the printing-roller is shown, as it can be used when constructed as usual. The types of the various disks are all in line, and if the 0, or any one of the units, were to be printed, the naughts in the second, third, &c., disk, would also be printed, and their types had, therefore, to be removed, to allow the printing of the units, and to be reinserted when tens or hundreds were to be printed.

To avoid all the inconvenience connected with the removal and reinsertion of the types, we have arranged

an additional notch, e' , in the inner edge of each disk, D' , D'' , &c., as in figs. 11 and 12, to allow their being locked, by the catches c' , in such position that their types are out of line with those of the types on the unit-disk, as is clearly shown in fig. 1. Thus the unit-disk can be turned, and its printing-type will always be out of line with the types on the other disks as long as units are to be printed; but as soon as the 9 has been printed, the catch a' will be depressed by the cam d' , and will fit into a slot, f' , that is provided in or through the disk D' , and as the disk D is then turned, it will turn loose on D' , until their types are in line, and then the catch a' will have arrived at the end of the slot f' , and the rest of the motion of D will be shared by D' , until the figure 1 of the disk D' is with the naught of D , in the printing position. The tens and units will now remain in line, as in fig. 9, but out of line with the hundreds on D'' , until the figure 99 has been printed. Then the catch a' is again depressed, and depresses the catch b' , which fits into a long slot, g' , that is provided in the disk D'' , as in fig. 12.

The latter half of the next move of the disks D D' will then carry along the disk D'' , while the first half of that move served to bring the types of the three disks in line. If more than three disks are used, they will, on the same principle, be brought into operation when their turn has come.

We are aware that all the parts in this arrangement of disks are old, except the notches e' , to hold the types out of line, and the slots f' g' , in a second, third, &c., disk, to bring them into line again when necessary.

We claim as new, and desire to secure by Letters Patent—

1. The block G , when turning in socket, and provided with an upright portion, e , that is eccentric to the turning-pin c , and with a horizontal upper plate, f , all made as and for the purpose described.

2. The device for setting the type-disks, consisting of the levers i , j , and l , with or without the pins o and m , all made and operating substantially as herein shown and described.

3. The device for operating the inking-roller I , consisting of the jointed levers J , K , and L , bar M , and treadle F , all made and operating substantially as herein shown and described.

4. Converting the oscillating motion of the ink-plate N into intermittent rotary motion, by means of the hook t , pivoted below the point on which the plate swings, and engaging the teeth of a ratchet-wheel, r , which is secured to the under side of the plate N , substantially as herein shown and described.

5. The arrangement, with relation to the bifurcated lever C , of the type-disks D , roller I , oscillating and turning plate N , and the setting-bar i , as herein described, for the purpose specified.

6. The pin o , for supporting the lever i , when arranged so as to cause the lever to move the type-disks one figure ahead, while, without it, the type-disks will be moved two figures ahead, as specified.

7. The lever l , for locking the lever j , to which the lever i is secured, to allow the full operation of the said lever i , while the said operation will be interrupted when the lever l is detached from the axis of the type-disks, as set forth.

8. The disks D' D'' , when provided with slots f' g' , employed in combination with the catches a' b' , for the purpose of bringing the numbers on two or more disks in line with each other, after having been held out of line by the catches c' and notches e' , substantially as herein shown and described.

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