

(No Model.)

3 Sheets—Sheet 1.

T. J. A. MACDONALD.
NUMBERING MACHINE.

No. 450,783.

Patented Apr. 21, 1891.

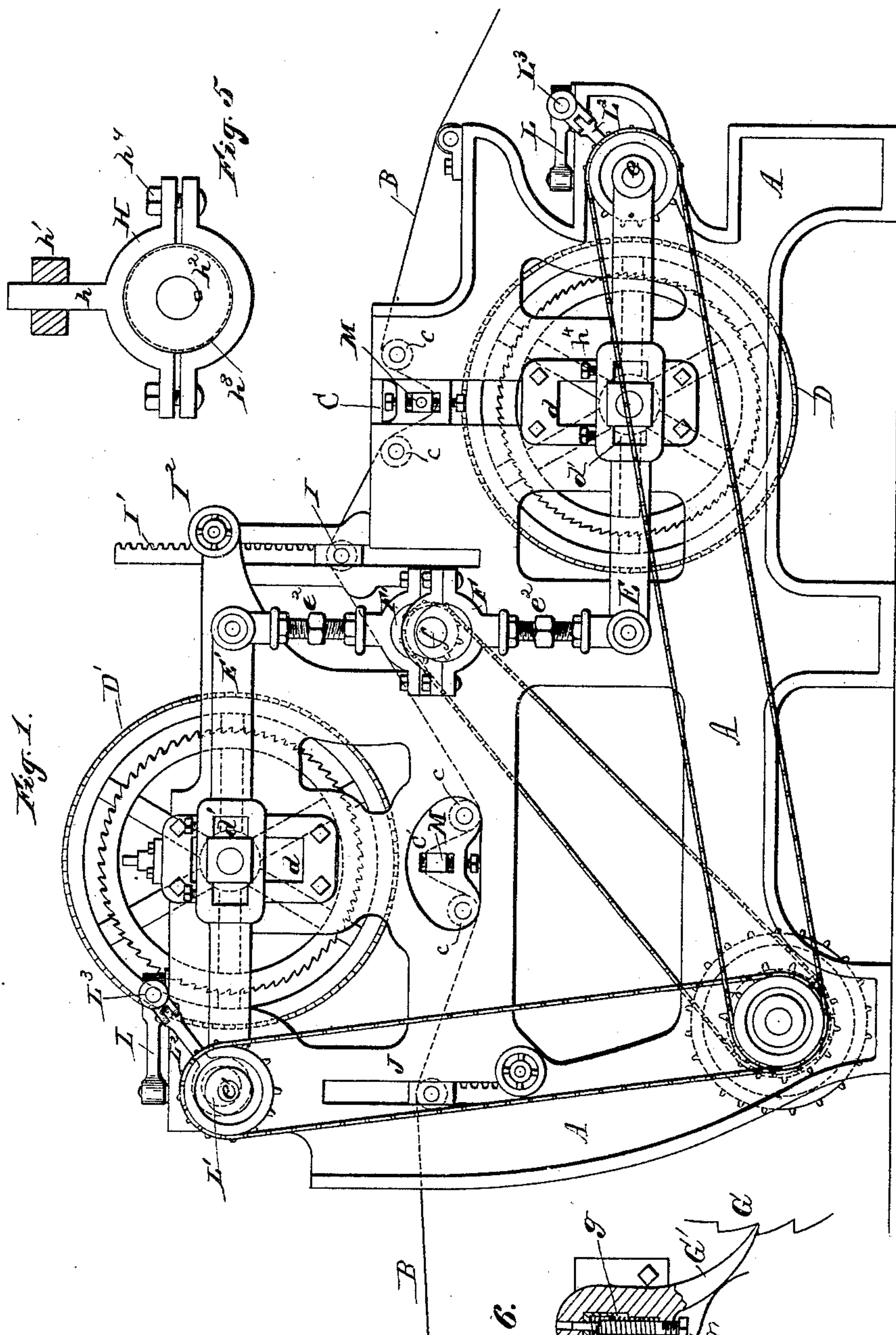
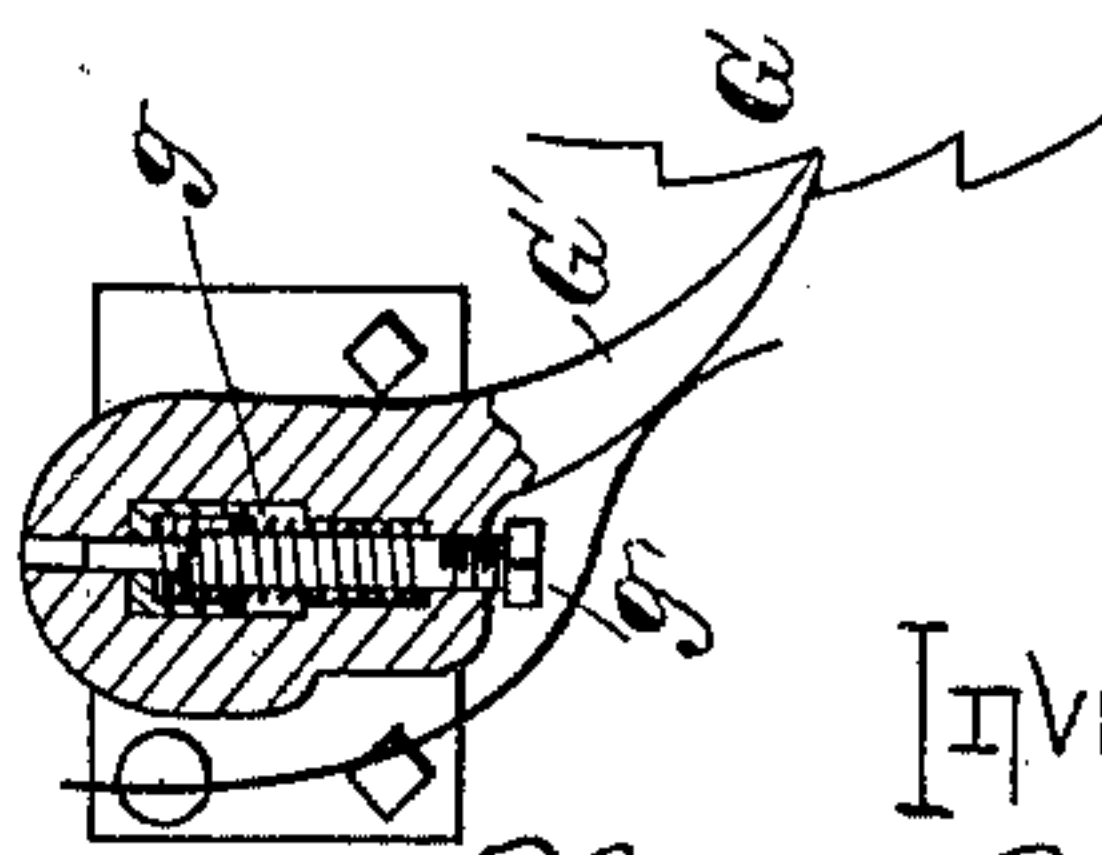


Fig. 1.

Fig. 5.

Fig. 6.



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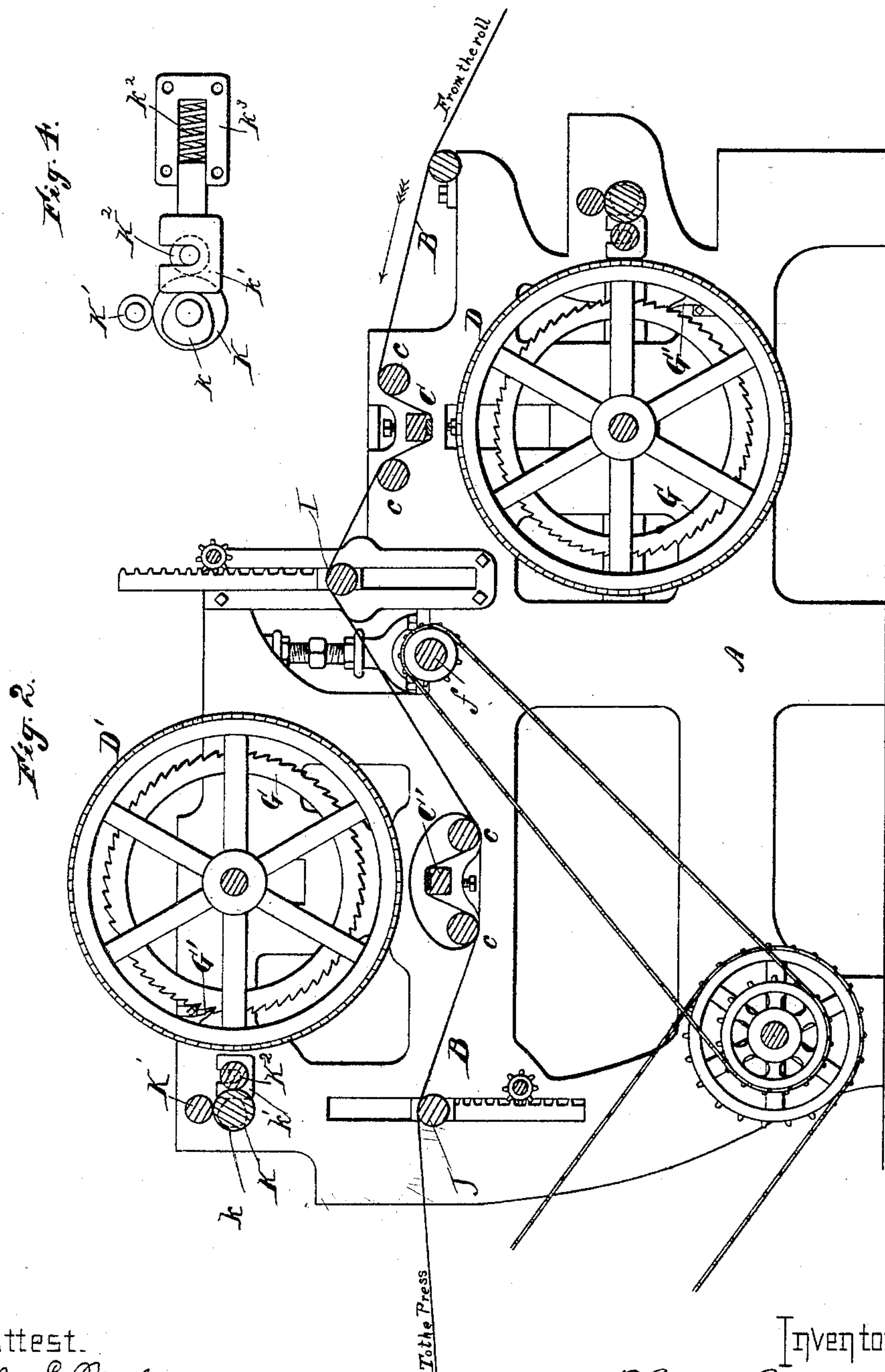
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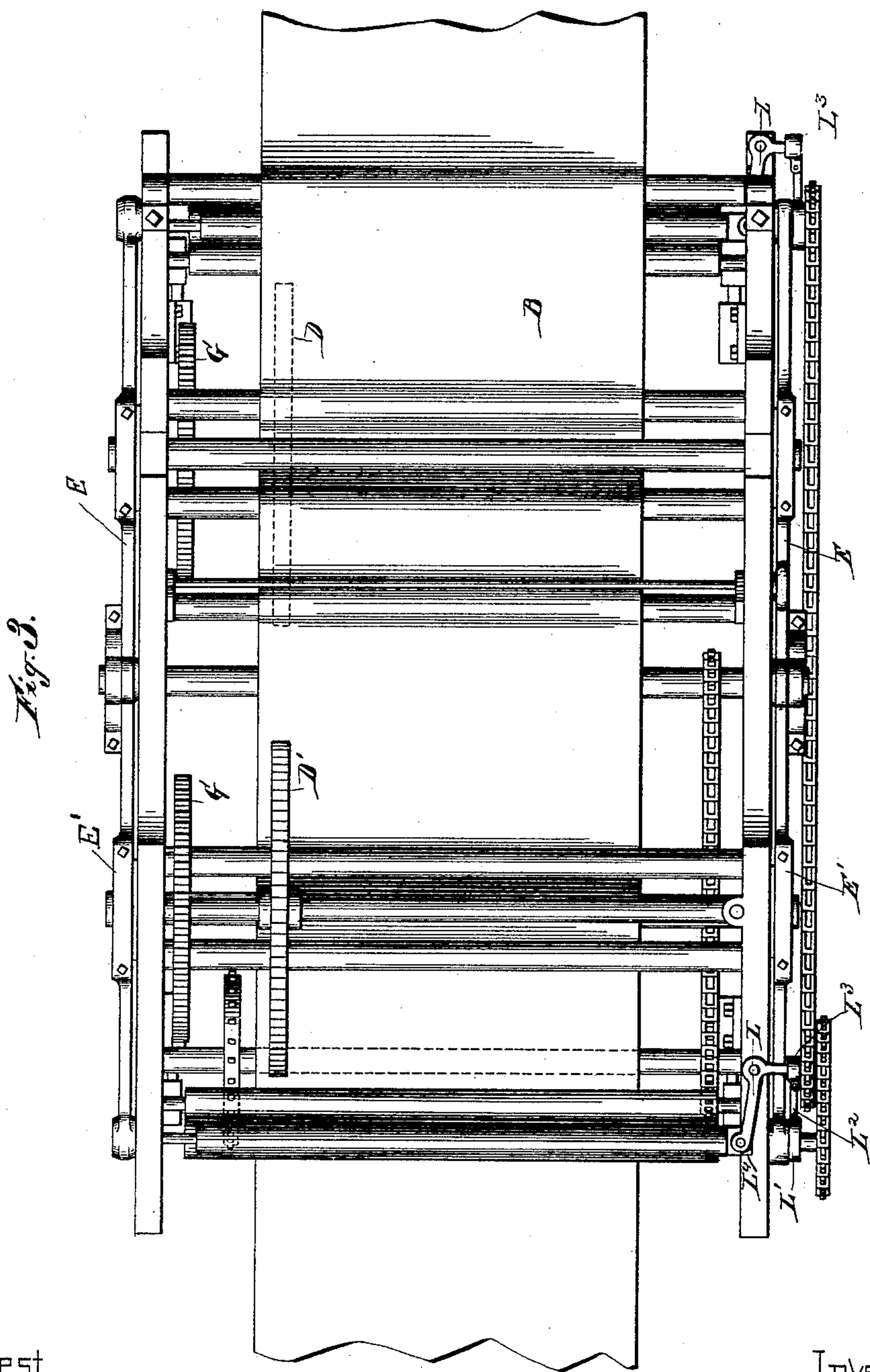
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UNITED STATES PATENT OFFICE.

THOMAS J. A. MACDONALD, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CARTER & COMPANY, LIMITED, OF NIAGARA FALLS, NEW YORK.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,783, dated April 21, 1891.

Application filed July 21, 1888. Serial No. 280,619. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. A. MACDONALD, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Numbering-Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan view. Figs. 4, 5, and 6 are detail views.

It is the purpose of my invention to produce a machine for printing consecutive numbers upon sale-slips, checks, and other articles of like nature; also, to produce a mechanism which shall be capable of printing consecutive numbers upon both sides of such a sale-slip, check, &c.

This machine is specially designed for consecutive numbering of checks, sale-slips, and devices of like nature intended to be grouped in the form of a book or block. Heretofore it has been customary to employ for this purpose a series of type-wheels arranged side by side, each of which is provided with the ten digits, with mechanism for operating the said type-wheels; but such arrangement of the type-wheels and their necessary operating mechanism are complicated and expensive, and the printing is usually unsatisfactory.

My invention consists in the improved organization of a machine which is comparatively simple and in many respects adjustable, and is also more efficient in its operation, all as hereinafter fully described, and specifically set forth in the claims.

Referring to the annexed drawings, A represents the main supporting-frame.

B is the sheet or strip of paper upon which the sale-slips, checks, or other similar matter are to be printed, and which is to be provided by this machine with consecutive numbers of any given number—as, for instance, bunches of fifty or a hundred.

C and C' are respectively the first and sec-

ond platens or impression-bars, upon which the paper rests when receiving the impression from the printing or numbering wheels, said platens being disposed, respectively, under one and over the other of the said wheels and different distances from the paper-feeding end of the machine. Adjacent thereto are tension-rollers *c*.

D and D' are respectively the lower and upper printing or numbering wheels, each wheel being provided upon its periphery with the consecutive numbers corresponding with the blocks or bunches to be numbered—as, for instance, from one to fifty. The printing or numbering wheels are rigidly mounted on shafts, which are journaled at opposite ends to two pairs of frames E E and E' E', each of which pairs is arranged on opposite sides of the machine, and the two pairs are in different planes and pivoted, respectively, at opposite ends of the machine, as shown at *e e'*, and extending lengthwise of the machine, the free end of one pair of frames being above and those of the other pair being below the rotary horizontal shaft *f*, which is extended across the machine and has secured to its ends eccentrics F F', to which the free ends of the aforesaid frames are connected by eccentric-straps and right and left screw-couplings *e²*, as shown in Fig. 1 of the drawings. Said screw-couplings allow the connections between the eccentrics and frames E E and E' E' to be shortened or lengthened, as may be required, to cause the printing or numbering wheels to print the web of paper passing over the platens. The rotation of the aforesaid eccentrics imparts vertical oscillating movement to the frames E E and E' E', which carry the numbering-wheel D upward against its platen C and the numbering-wheel D' simultaneously down against the platen C', thus printing the paper on both sides simultaneously. The shaft of each numbering-wheel is provided with a ratchet-wheel G, and a spring-pawl G' is so adjusted that as the numbering-wheel descends the next adjacent pawl will yield to the downward movement of the ratchet, and as the numbering-wheel and ratchet-wheel rise the pawl engages the ratchet and revolves the numbering-wheel, so as to bring the next suc-

ceeding number into proper position to deliver its impression upon each numbering-wheel shaft. A friction-collar H, having a stud h , projects through a stationary part h' on the frame of the machine. In this contrivance the disk h^2 is rigidly keyed to the shaft, and preferably has at its periphery a surface of leather or equivalent material h^3 . About this is the clamp-collar H, the pressure of which is governed by clamping-bolts h^4 . In this way the motion of the numbering-wheel is made positive and is accurately determined by the pawl G'. This pawl G' has a longitudinal movement by reason of the slot g . (Shown in detail in Fig. 6.) The adjusting-screw g' regulates the distance through which the pawl may be moved longitudinally before it comes to rest. Now the friction exerted by the friction appliance H upon the shaft of the numbering-wheel is so great that as the ratchet-wheel rises the spring-pawl G does not exert sufficient resistance to turn the ratchet-wheel; but, on the contrary, the pawl is lifted longitudinally until arrested by the adjusting-screw g' . Then it affords a resistance to the further upward movement of the ratchet-wheel and so turns the ratchet-wheel shaft, and with it the numbering-wheel, through the space necessary to bring the next number into proper position to deliver its impression. Now the numbering-wheel may be made larger or smaller and it may have more or less numbers upon it and so require to be revolved through a less or greater angle. This angle is of course determined by the upward movement of the ratchet-wheel after the pawl has come to rest, and this distance is determined by the adjusting-screw g' , which may cause the pawl to come to rest at one point or another, as the case may demand.

The operation of the device will now be understood. The machinery having been set in motion, the sheet B is caused to pass through the machine in the direction of the arrow. The shaft f in revolving operates, through the medium of the eccentrics F and F', to bring the numbering-wheels D D' simultaneously against the two impression-bars, and they deliver their impressions upon the lower and upper sides, respectively, of the sheet or strip of paper. Now in the further revolution of the shaft f the numbering-wheels recede. The pawl G operates to advance the wheels one number-space and the operation is repeated. The sheet is, by mechanism forming no part of this apparatus, caused to feed through the machine at any desired speed dependent on the intervals along the sheet at which the consecutive numbers are to be printed.

I represents a spacing-roller, from which the strip of paper passes between the two impression-bars C C'. This spacing-roller is pivoted at opposite ends to vertical racks I', which are supported movably and vertically on the main frame, to which frame are pivoted

hand-pinions I², which engage the aforesaid racks. By turning these pinions the racks are caused to raise or lower the aforesaid spacing-roller. It is apparent that this adjustment of this roller I upward increases the length of the sheet between the two impression-bars C C', and it therefore affords a means whereby the distance between the points of impression on the sheet may be accurately adjusted, so that the numbers upon the checks or sale-slips, &c., may be caused to be printed at just the proper localities upon the two sides of the sheets. So, again, J represents a similar spacing-roller, the purpose of which is to regulate the length of the strip between the impression-bars C' and the form on the printing-press to which the strip is being fed to be printed, and so furnishes a means for accurately adjusting the sheet, so that the numbered portions will come to their exact proper places in the press, not only with respect to the form, but with respect to the perforating and cutting appliances connected with the press. Again, any change in the size of the numbering-wheel will require a corresponding change in the locality of the two impression-bars C C'. I therefore provide at M at the extremities of said impression-bars adjusting-screws, whereby the ends of the impression-bar may be adjusted up and down, and thus brought nearer to or farther from the numbering-wheels. This, with the adjusting-screws e^2 , adjusting the frames E and E' of the numbering-wheels, provide for any necessary regulation in this particular.

K and K' are ink-distributing rollers, and K² is the inking-roller, which delivers the ink to the numbering-wheel. Upon the shaft of the ink-roller K are cams k . The inking-roller K² is journaled in boxes k' . These boxes are in turn held against the cams by springs k^2 , located in suitable housings k^3 on the frame of the machine, and so it is that at each revolution of the distributing-roller K the cams k force the inking-roller K² into contact with the type on the numbering-wheels. The distributing-roller K' is given a suitable transverse motion along the distributing-roller K by the bell-crank lever L. This is in turn operated by the eccentric L' and suitable connections L² L³ L⁴.

In order that the numbering-wheels may move directly up and down instead of in the arc of a circle, their shafts are each journaled with boxes which move up and down in straight vertical guides d , and the frames E E' are each provided with a longitudinal slot d' , in which the aforesaid journal-box is seated movably lengthwise of the slot.

By a machine of this character I am enabled to print the numbers in consecutive order, from one up to any desired number, for a bunch or block of sale-slips, checks, or other blanks, and am enabled also to print simultaneously the numbers on both sides of the said blanks. This can be accomplished with great speed and with perfect accuracy, the

numbers being given any desired relative positions upon opposite sides of the said blanks. So, also, by shifting either numbering-wheel out of service the machine is adapted for
 5 printing with equal facility the numbers in consecutive order upon one side only of said strip. The numbering-wheel may have cavities in which regular type may be inserted separately, although I prefer to set up the
 10 type, stereotype the same, and arrange the stereotyped strips upon the periphery of the numbering-wheel. I do not limit myself to any particular method of arranging the said numbers upon the said wheels.

15 What I claim is—

1. In a machine for numbering sale-slips and the like upon both sides, the combination, with the numbering-wheels, one operating upon the top and the other upon the under side of the slip, and means for intermit-
 20 tently revolving the same, of frames supporting said wheels, pivoted at opposite ends and eccentrically mounted at their adjacent ends upon a single shaft, whereby the revolution
 25 of the shaft will simultaneously bring the impression-wheels in contact with the paper, substantially as described.

2. In combination with the main supporting-frame and two platens and printing-wheels
 30 arranged at different distances from the paper-feeding end of the machine, a spacing-roller between said platens, vertical racks on opposite sides of the machine carrying the said spacing-roller and supported vertically
 35 and movably on the frame, and hand-pinions

pivoted to the said frame and engaging the aforesaid racks, substantially as described and shown.

3. The combination of the two pairs of frames E E and E' E', each of which pairs is
 40 arranged at opposite sides of the machine lengthwise thereof and in a different plane than the other pair, and the two pairs pivoted, respectively, at opposite ends of the machine, the shaft f, extending across the machine be-
 45 tween the free ends of the aforesaid frame, rods connecting the eccentrics to the free ends of the frames E E E' E', shafts extending across the machine and mounted on the said frames, and printing-wheels D D, rigidly at-
 50 tached to said shafts and platens, respectively, under one and over the other of said printing-wheels, substantially as described and shown.

4. In a machine for numbering sale-slips and the like, the combination, with removable
 55 numbering-wheels and a supporting-frame E, pivoted at one end and connected with the revolving eccentric F by connecting-rods adjustable as to their length, of a movable im-
 60 pression-bed and a screw M for adjusting the same, all operating to adapt the device to different sizes of numbering-wheels, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

THOMAS J. A. MACDONALD.

Witnesses:

M. B. O'DOHERTY,
 SAMUEL E. THOMAS.