

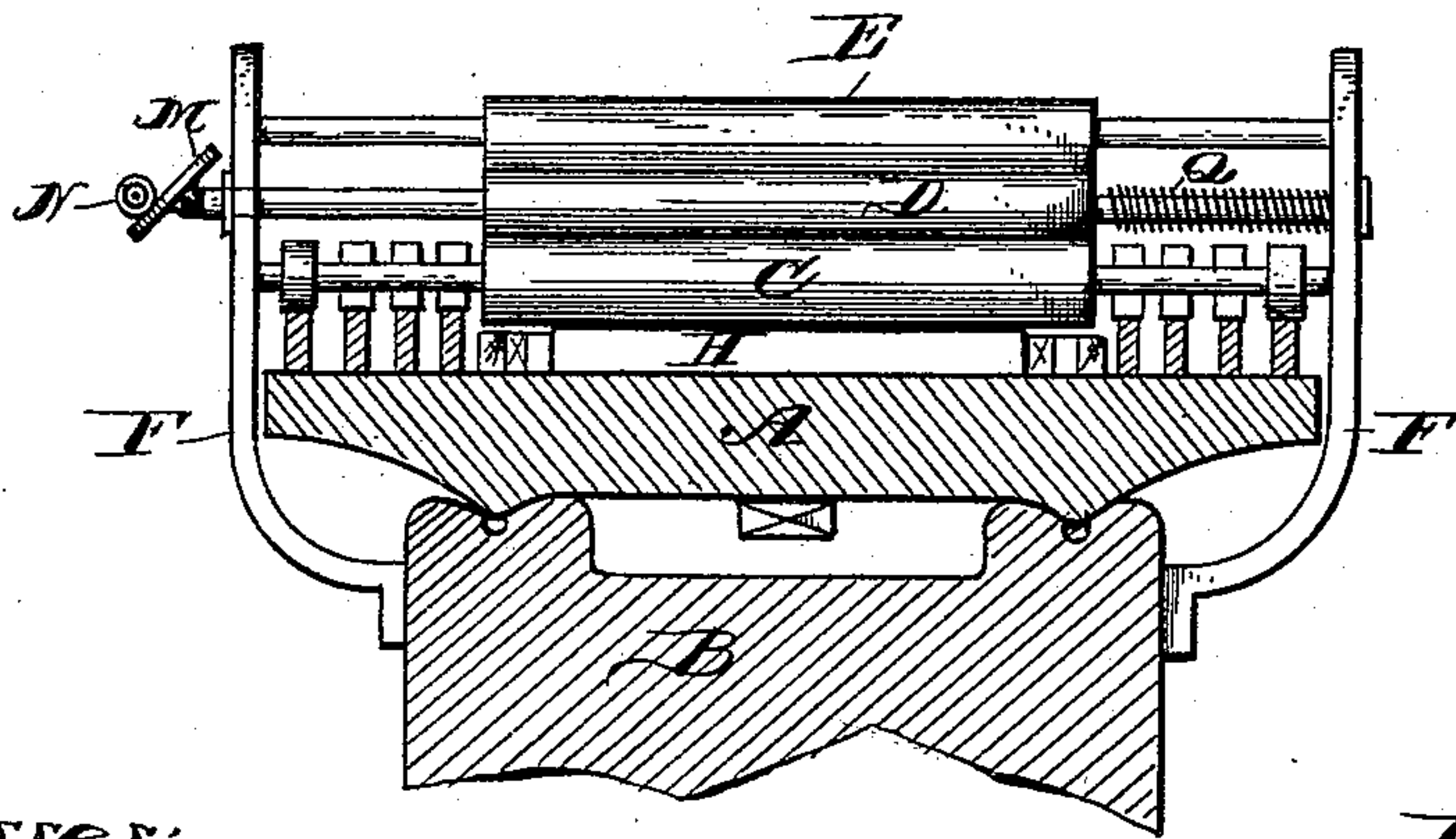
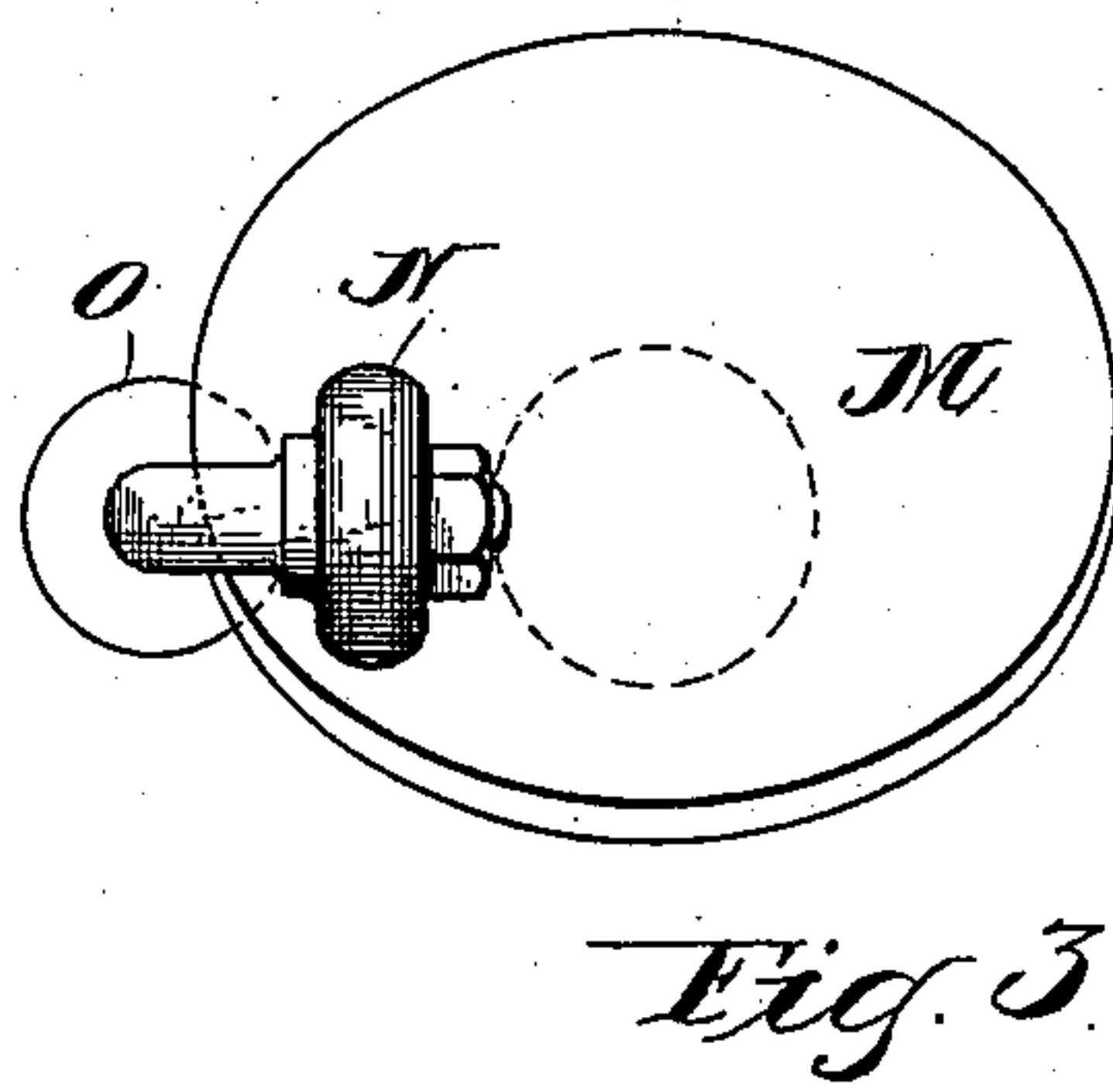
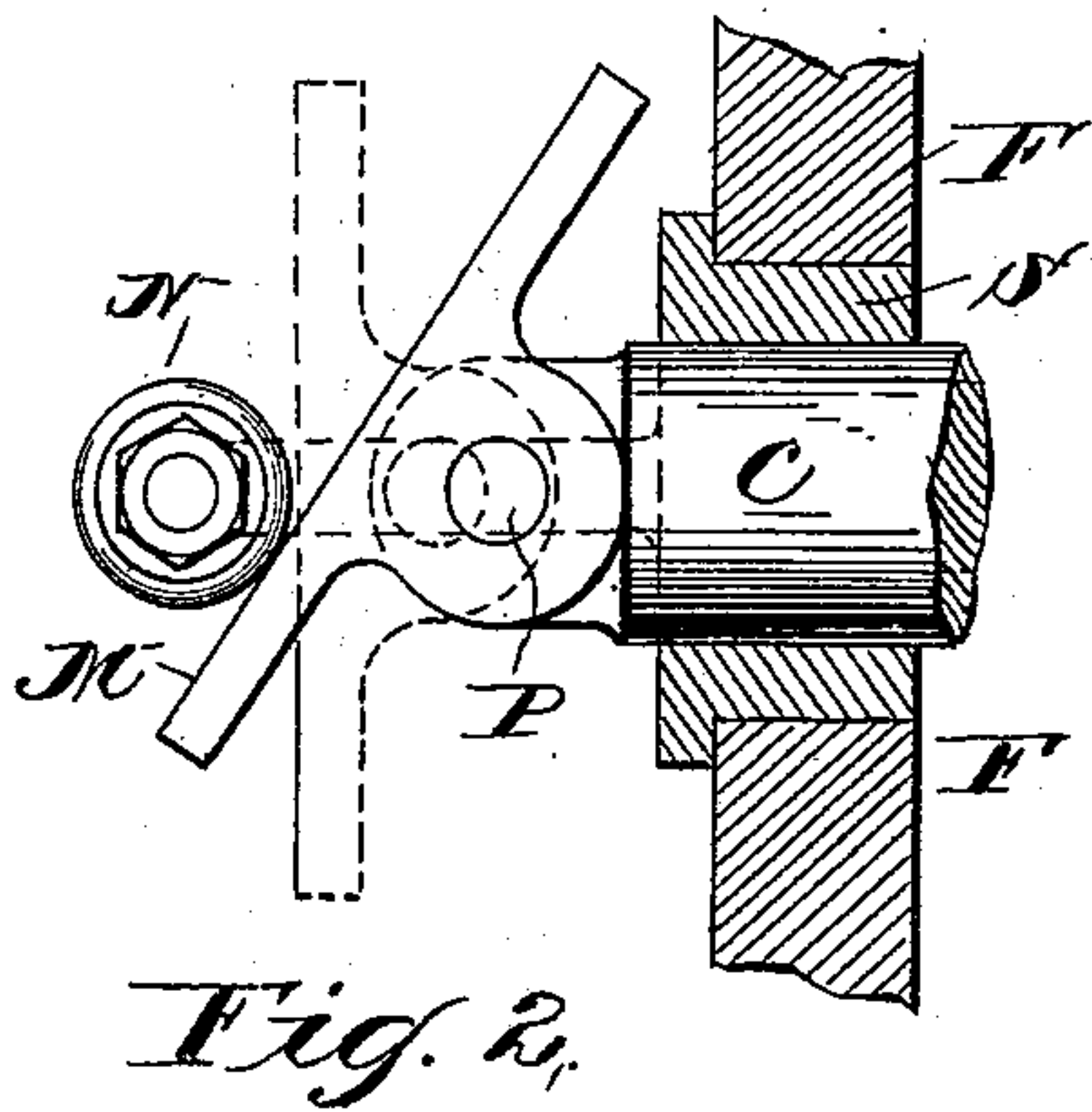
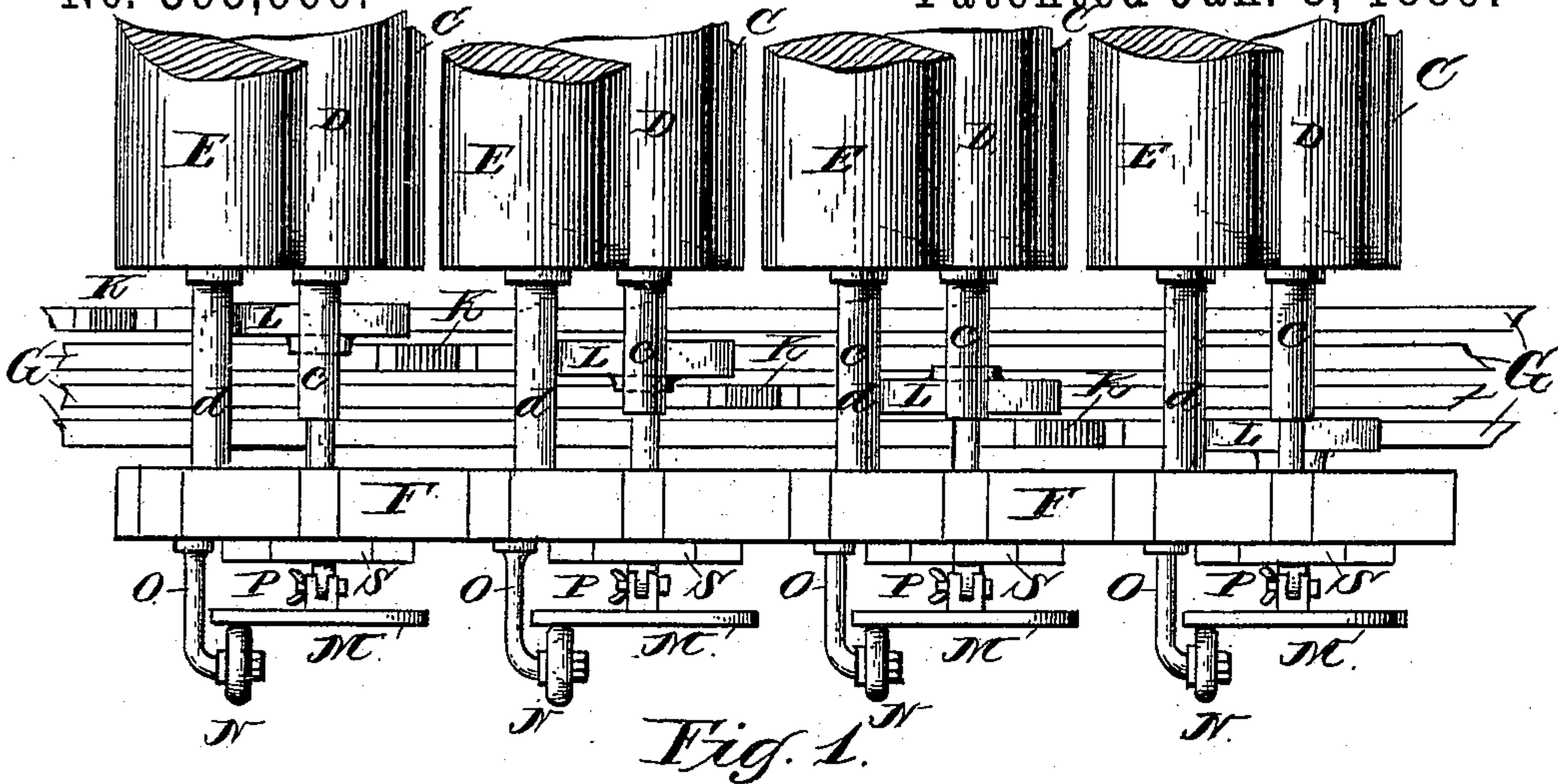
(No Model.)

H. C. A. FFROST.

MEANS FOR RECIPROCATING INK DISTRIBUTING ROLLS OF
PRINTING MACHINES.

No. 395,966.

Patented Jan. 8, 1889.



Witnesses:
J. Thomson Cross
Will. E. Rouze

Fig. 4.

Inventor:
Henry C. A. Frost.
per *Henry M. [Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

HENRY CHRISTIAN ABSTINENCE FFROST, OF SYDNEY, NEW SOUTH WALES.

MEANS FOR RECIPROCATING INK-DISTRIBUTING ROLLS OF PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 395,966, dated January 8, 1889.

Application filed September 15, 1887. Serial No. 249,796. (No model.) Patented in Victoria February 4, 1887, No. 4,921; in New Zealand February 27, 1887; in New South Wales April 6, 1887, No. 2,054, and in England April 25, 1887.

To all whom it may concern:

Be it known that I, HENRY CHRISTIAN ABSTINENCE FFROST, a subject of the Queen of Great Britain, residing at Sydney, in the British Colony of New South Wales, have invented certain new and useful Improvements in Means for Reciprocating Ink - Distributing Rolls of Printing-Machines, (for which I have obtained Letters of Registration in the British Colony of New South Wales under date of April 6, 1887, No. 2,054, and Letters Patent in the colonies of Victoria, dated February 4, 1887, No. 4,921, and in New Zealand and Great Britain, in which latter countries I have filed applications for Letters Patent on the 27th day of February, 1887, and on the 25th day of April, 1887;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan view of so much of a printing-machine as is necessary to the illustration of my invention. Fig. 2 is a detail sectional side elevation, and Fig. 3 a detail end view illustrating the means for reciprocating the distributing-rolls; and Fig. 4 is a vertical transverse section of part of the machine.

My invention relates to that class of printing-machines designed for the production of broad sheets in one, two, three, four, or more colors at one printing, and with the colors showing alternately or separate lines, or with the several lines partly colored, or with several colors in harmonized or radiant tints and blends. In these machines a separate set of inking apparatus is provided for every color required, the inking-rollers being kept clear of the form by special bearing or carriage wheels running on rails affixed to the table, and wherever a particular-colored ink is to be used a depression in the line of rails allows the bearing-wheels to drop and the inking-rollers to come in contact with the face of the type or lithographic stone.

In order to obtain a good distribution of the ink from the wavers to the inking-rollers,

I construct one or more of my wavers for each color in such a way that it has end-play in its bearings, and on the end of the roller I affix a swash-plate that can be adjusted at varying angles. By means of a spring or similar expedient the swash-plate is kept up against a fixed roller attached firmly to the machine, and thus as the inking-roller and its spindle revolve an endwise movement backward and forward is imparted to it, the amount of the travel being dependent on the inclination of the swash-plate. By printing first in a given number of colors—say four—and leaving blank spaces, and by printing a second time with the same four or other colors, a great many varieties of effects can be produced, and secondary, tertiary, or radiant colors be shown.

The invention consists, essentially, in the means referred to for imparting endwise motion to the swash-plates, substantially as hereinafter fully set forth, and specifically pointed out in the claim.

In order that my invention may be clearly understood, I will now describe how I apply the same to a cylinder printing-machine wherein the table has a reciprocating motion; but it will be easily understood that the same effects could be attained where the table has a revolving motion by constructing cylindrical rails with elevations and depressions.

A indicates the movable table of a printing-machine; B, the bed on which said table travels; C, the inking-rollers, of which I have shown four, Fig. 1, each intended for a different color; D, the intermediate wavers or distributing-rollers, and E the first wavers, taking the ink from any suitable supply founts or troughs, which are supported from the cheeks F, Fig. 1, said cheeks being arranged on opposite sides of the machine.

To the table are secured rails G, provided with depressions K in their upper faces, and L are the carriage or bearing wheels on the spindles of the inking-rollers C and traveling on said rails G.

On one end of the spindle of each intermediate roller or waver, D, is hinged a swash-plate or disk, M, whose inclination may be adjusted by means of thumb-screws P, and

N are disks or rollers mounted on bearings of the fixed arms O, secured to the framing of the machine.

On the spindle *c* of the wavers D, at the opposite end, is mounted a coiled spring, Q, or other like device, exerting its power on the rollers D to return them into their normal position when moved out of it.

By the means just described a reciprocating motion is imparted to the wavers D in the direction of their longitudinal axis, the spindles of said wavers being free to move in their bearings S in the cheeks F of the machine.

The inking-rolls C have their bearings in vertical slots formed in the cheeks of the frame, so as to allow them to rise and fall as the plate travels back and forth.

The method of operation is as follows: A form of type or lithographic stone is affixed to the table of the machine in the ordinary way, and the inking apparatus, with as many sets of inking-rollers as there are colors required to be printed, takes the place of ordinary inkers, each color-inker having carriage or bearing wheels L on its spindle. The rails K are set upon the table at either side closely together between the "chase" and that part of the outside frame which is ordinarily used for the cylinder-bearer, and they are fastened in that position by the ordinary side-stick and quoins; these rails G being thus affixed under the lines of the carriage-wheels in such a way that each inker is kept, say one-eighth of an inch, clear of the stone or type face by means of the carriage-wheels on its spindle, except where a depression in the rails allows the carriage-wheels to drop and the inker to

come in contact with the type or stone, and the portions inked occur as the depressed portions of the rails K have been previously regulated as to position, frequency, and length. When the inker is on the type, it will revolve from contact with the type form or stone and depressed rail-sections; but when it is clear of the type it revolves from the contact of carriage-wheels on the raised rail-sections and causes the other rollers to revolve. The weight of the rails keeps the inkers in contact with the intermediate wavers. To effect an even distribution of the ink or color, the wavers D are made to travel to and fro in their bearings by the action of spring Q (or similar device) forcing them one way and the inclined swash-plate M and roller N forcing them the other way as they revolve, and the amplitude of this endwise motion can be varied by altering the inclination of said swash-plate M.

Having now fully described my invention, what I claim is—

In a printing-press, the combination, with the inking-roll and the ink-distributing roll, of devices for imparting endwise motion to the distributing-roll, which consists of a disk pivoted on the roller-journal to adapt the same to be set to an inclination relatively to the axis of the roll, an abutment bearing on the face of the disk, and a spring for returning said roll into its normal position when moved out of it, substantially as and for the purposes specified.

HENRY CHRISTIAN ABSTINENCE FROST.

Witnesses:

FRED WALSH,

HENRY P. CHATER.