

(No Model.)

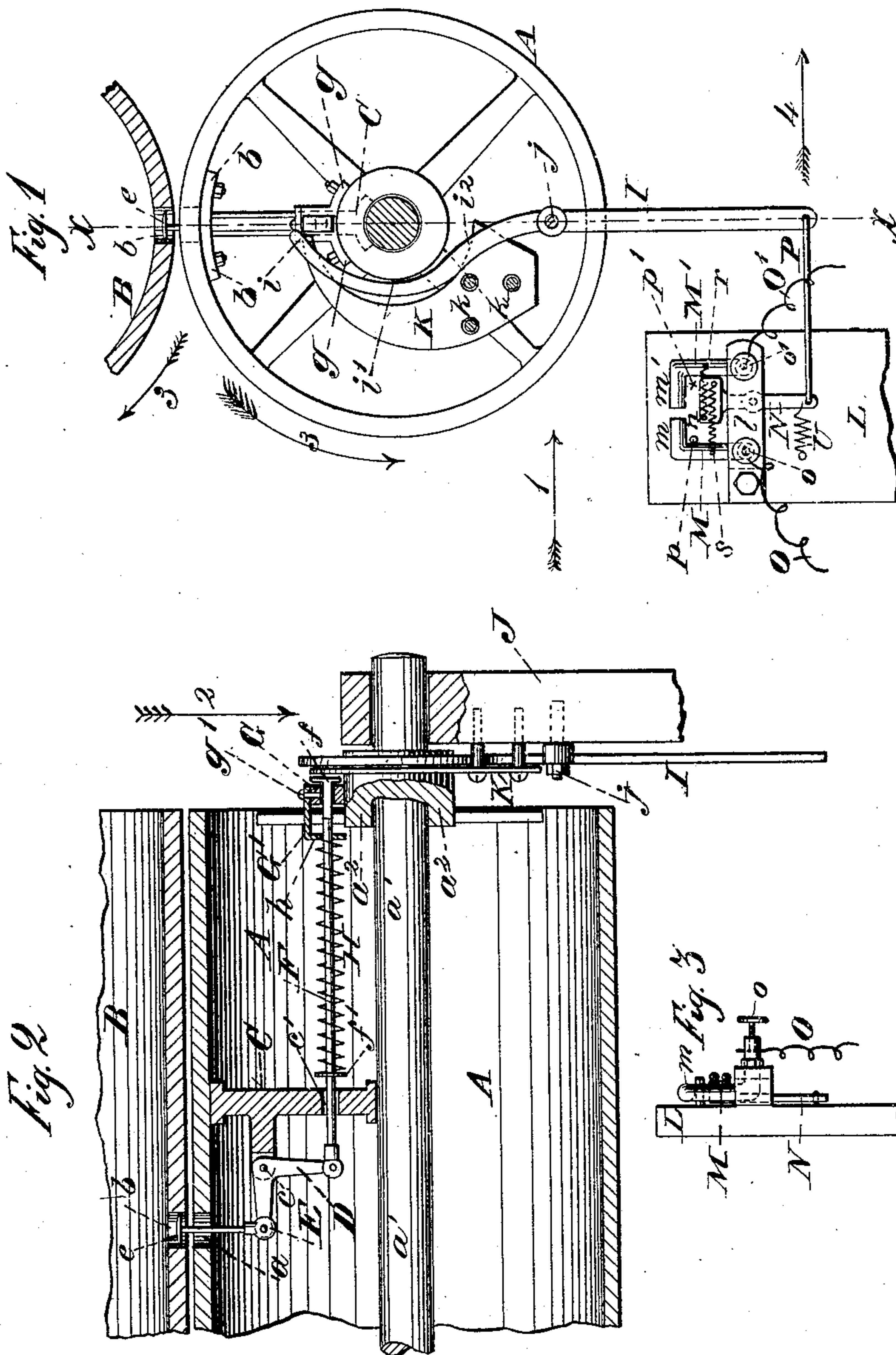
2 Sheets—Sheet 1.

G. ROSQUIST.

COUNTING APPARATUS FOR ROTARY PRINTING PRESSES.

No. 277,945.

Patented May 22, 1883.



Witnesses:

O. F. Malmberg.

R. W. Matthews

Inventor:

Geo. Rosquist

by A. W. Almquist

Attorney.

(No Model.)

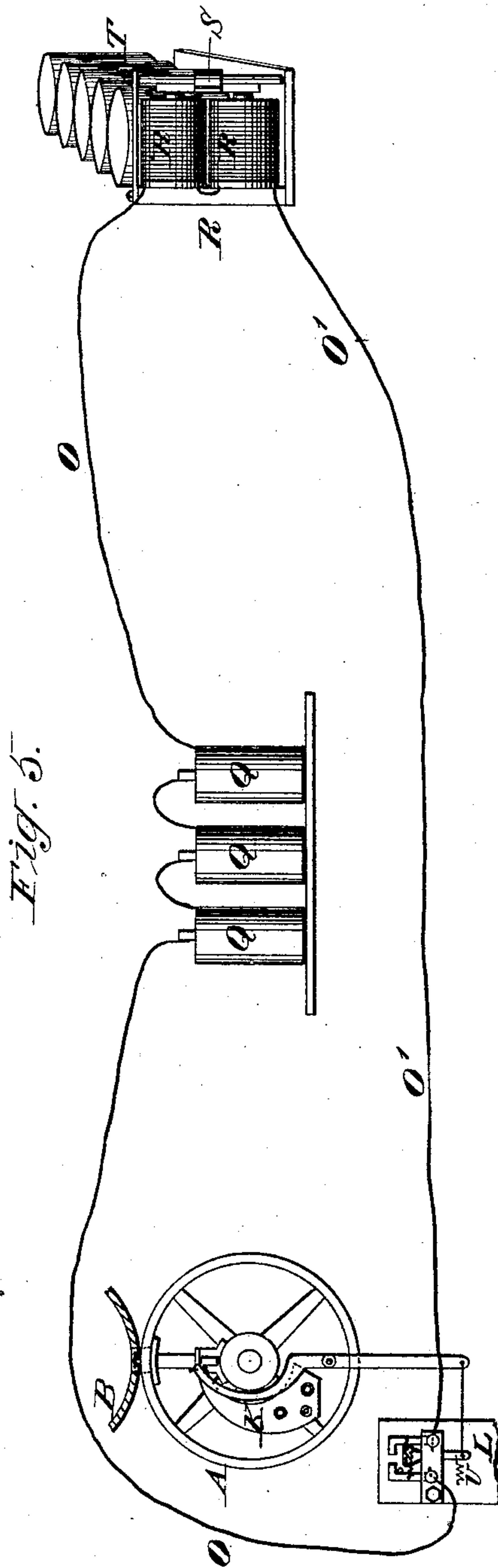
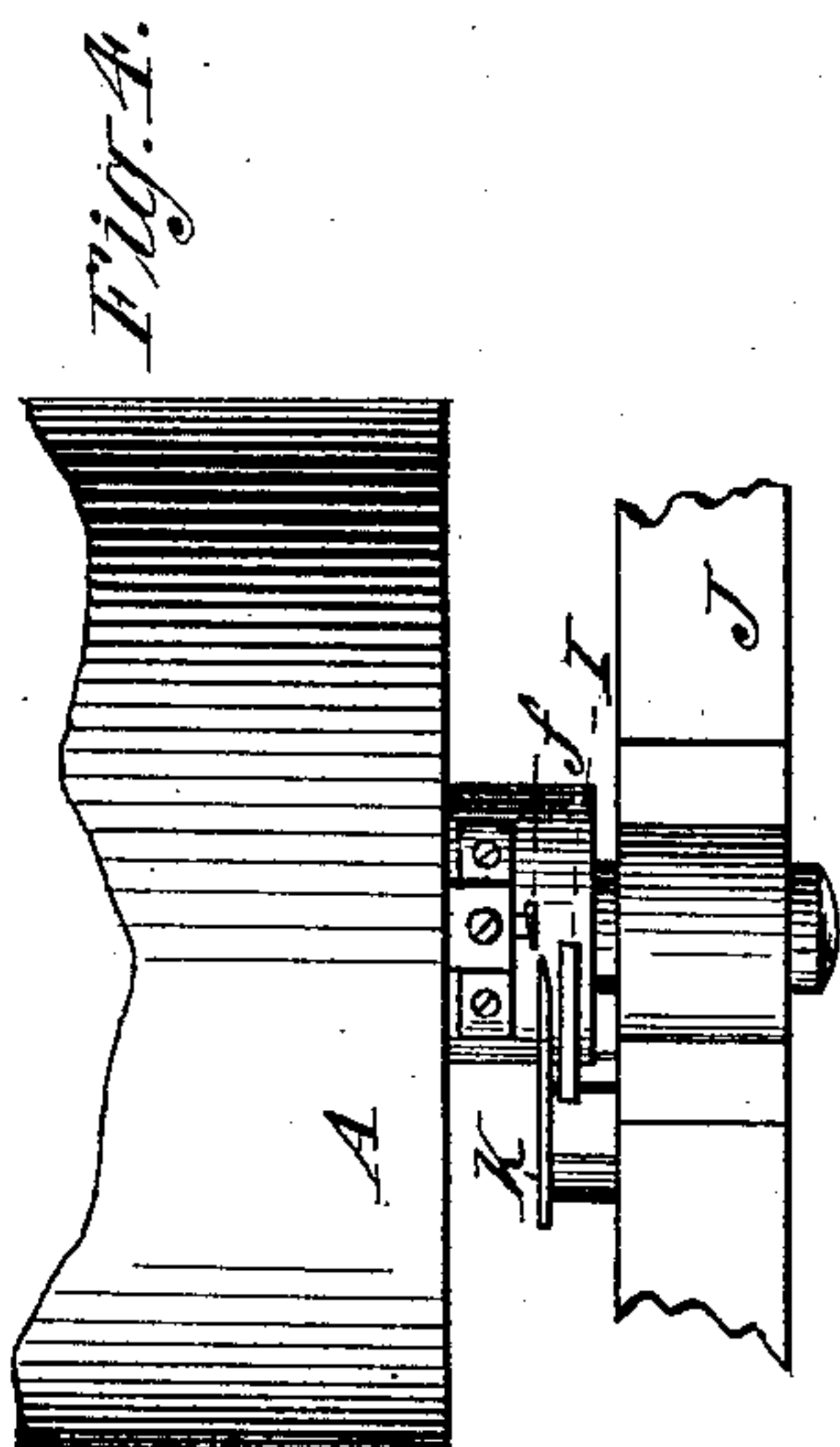
2 Sheets—Sheet 2.

G. ROSQUIST.

COUNTING APPARATUS FOR ROTARY PRINTING PRESSES.

No. 277,945.

Patented May 22, 1883.



Witnesses:
O. F. Malmberg.
R. W. Matthews.

Inventor:
Geo. Rosquist
by A. W. Almqvist
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE ROSQUIST, OF BROOKLYN, NEW YORK.

COUNTING APPARATUS FOR ROTARY PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 277,945, dated May 22, 1883.

Application filed July 20, 1882. (No model.)

To all whom it may concern :

Be it known that I, GEORGE ROSQUIST, a citizen of Sweden, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Counting Apparatus for Printing-Presses, of which the following is a specification.

My invention relates to apparatus for counting, by motion transmitted to numerical indicators, the number of sheets printed in a press, so as to count them while they are being printed. Devices for this purpose, as heretofore made, have been so connected as to be dependent in their action solely upon the revolution or other motion needed for the printing of each sheet. Therefore they continue counting so long as the press is in motion, whether or not any paper is passing through the press at the time. Thus in rotary presses, when, as often happens, the web unwinding from the paper-roll breaks, (the press continuing in its rapid revolution for some time before it can be stopped and the torn paper removed and the edge of the whole web again entered,) the indicator, receiving its motion from the rotation of the cylinder, counts up for a number of sheets which have not passed through the press, and consequently have not been printed. With such arrangement the indicator merely gives a very rough approximation of the number of sheets printed, the real number never being as great as the number shown on the indicator, and thus affords no means of detecting whether any papers have been abstracted or wasted.

The object of my invention is to obviate said defects by a simple and effective device which will actuate the indicator only while the paper is actually passing through the press and being printed, and will cease to work and remain inoperative when the paper breaks and the press runs empty.

My object is also to provide a simple device for communicating motion by assistance of electricity to indicators placed away from the press—such as, for instance, in the office of a printing establishment, where the person in charge can take the index, and thus keep control of the printing at any time while or after the work is being or has been done.

In the accompanying two sheets of drawings,

Figure 1 represents a partial end view of two cylinders of a rotary printing-press, arranged to revolve together, and provided with a counting apparatus constructed according to my present invention. Fig. 2 is a longitudinal vertical section of the same, taken in the line $x x$ of Fig. 1, and seen in the direction of arrow 1, the guide-plate, part of the cylinder-hub, and the circuit-connection lever not being sectioned. Fig. 3 is a vertical edge view of the connection for opening and closing the electric circuit. Fig. 4 is a top view, seen in the direction of arrow 2 in Fig. 2, the upper cylinder being removed. Fig. 5 is a general explanatory view of the apparatus connected by electric battery to a numerical indicator.

A and B indicate any two cylinders revolving together, between which the paper passes during its progress through the printing-press, and which are therefore adaptable to receive a counting device operating by direct contact with the paper.

C is a post or bracket secured radially in the cylinder A, its inner end bearing upon the cylinder-shaft a' , and its outer end having flanges b' , by which it is bolted to the inside circumferential surface of the said cylinder.

To lug c upon the side of the post or bracket C is pivoted a bell-crank, D, and to the horizontal arm of the latter is pivoted a rod, E, having a thin knob, e , upon its outer end, which projects through a hole, a , in the rim of the cylinder A, into an opposite hole, b , through the rim of the cylinder B when the knob is not depressed by the paper web passing between the two cylinders.

To the lower end of the vertical arm of the bell-crank D is pivoted the inner end of a light rod, F, which goes through a hole or opening, c' , in the post C and slides with its outer end in a bearing, G, secured by bolted flanges g upon the cylinder-hub a^2 . An angle-plate, G' , is secured at g' upon the bearing G, and the vertical arm of said angle-plate, through which the rod F also passes, serves as a stop to the outward expansion of a long and weak spiral spring, H, which surrounds the rod F and acts between the said stop and a pin or shoulder, f' , upon the sliding rod F. The extreme outer end of the rod F is provided with a head, f , which, by contact between its inner side and

the outside of the bearing G, limits the expansion of the spring H inward or toward the bell-crank, thus preventing the knob *e* from projecting too far into the hole *b* of the cylinder B.

5 From the foregoing it is evident that if a web of paper were passing between the revolving cylinders A and B the knob *e* would be depressed into the hole *a* until flush with the outer surface of the cylinder A while passing the upper vertical position shown in the drawings, the spring H would be compressed between the stops *f'* and G', and the head *f* of the sliding rod F would be projected a little from the outside of the bearing G. When the knob *e* had traveled past the vertical line far enough to get out of contact with the paper, and the spring H would again be free to expand, the head *f* would be retracted and the knob *e* projected into the normal position shown in Fig. 2.

20 It is also evident that if the web broke off before passing the knob *e* the latter would not be depressed nor the head *f* projected, but would retain their normal positions, producing no motion.

25 The sliding motion of the rod F, being thus made dependent solely upon the depression of the knob *e* by the web, affords a positive means for actuating an indicator to count, one for every sheet, all the paper, and no more, which has actually passed through the press.

30 I will now describe the manner in which I communicate the motion of the rod F to the indicator. If desired to place the indicator upon the frame of the press, the end of the rod F may be made to actuate directly upon the feed-pawl lever or slide-pawl of the first indicator-wheel. The present construction, now in successful operation, is designed for operating the indicator by electricity at a distance from the press and press-room.

40 To the inside of the press-frame J is pivoted, at *j*, a lever, I, whose lower end is connected by a rod, P, to oscillate the lever N of a circuit-breaker, (instead of being connected to the feed-pawl of the indicator, as it might be, if desired,) and whose upper portion is curved to partly surround with its inner edge the hub *a*² of the cylinder A, in juxtaposition to the outer edge of the head *f*, when the latter is projected by depressing the knob *e*, the curve being so formed that at *i* the space between the hub and lever is sufficiently large to allow the projected head *f* to enter between them, thence downward the space gradually becomes narrower, and at *i'* the lever lies close to the hub. From *i'* downward the space may be made suddenly or gradually wider. If the cylinders, with paper web between them, revolve in the direction of arrow 3, the pressure on the knob *e* by the paper will cause the head *f* to move outward and to enter between the lever I and the hub *a*². The head *f*, bearing with its edge against the inner edge of the lever I during the downward revolution from *i* to *i'*, will force the said lever gradually away from the hub. The lower end of the lever I will move in the direction of arrow 4, which motion will

close (or open, if so arranged) the circuit, and the electro-magnet's armature will turn the indicator feed-wheel through the space of one 70 tooth.

The object of curving the lever I, as before stated, is to make its throw comparatively slow and gradual, occupying a considerable portion of one revolution of the cylinder A, 75 and thereby to avoid, in a great measure, the strain and wear of the counting mechanism otherwise due to the necessarily great velocity.

To prevent the head *f* of the rod F from being withdrawn (during its passage from *i* to *i'*) from contact with the lever I by the expansion of the spring H after the paper has ceased to act on the knob *e*, a groove may be cut in the edge of the head *f* to engage with the edge of the lever; or a projection on the outer end 80 surface of the head may be made to engage the outer side surface of the lever; but I prefer to fasten (by stud-bolts *k*) to the inside of the frame J, between the lever I and the rotation-plane of the outer end surface of the head 90 *f*, a plate, K, whose inner edge is concentric with the hub *a*² and lies at a distance therefrom sufficiently less than the height of the working-edge of the head *f* from the hub *a*² to allow the inner side surface of the projected 95 head to be caught by and to slide against the outer side surface of the plate K while the edge of the head *f* operates on the lever I.

To insure working-contact between the head *f* and lever I, even (when from some imperfect spot in the web happening to pass over the knob *e*) the head may not be projected the full normal distance of throw, the opposite edges of the head and plate *f* K, between which the first impact takes place when the projected 105 head engages the plate, are beveled to a wedge-point, as shown in Fig. 4, so that the head will be drawn out farther by passing the incline on the plate as soon as their wedge-edges have engaged together. 110

L is a board, and *l* a bridge secured thereto, both being of non-conducting or insulating material. To and between said board and bridge are pivoted the lever N, and at opposite sides of the said lever two arms, M and M', 115 said arms having their free ends *m* and *m'* bent toward each other, as shown in Fig. 1. To the pivots *o* and *o'* of the said arms M M' are secured wires O and O', connecting them with one or more electric batteries, Q, and with the coils R of an electro-magnet, whose armature S directly or indirectly operates the feed-pawl of an indicator, T. (See Fig. 5.) 120

On the upper end of the lever N is a cross-head, *n*, of wood or other insulator, to which 125 are attached, out of possible contact with each other, two spiral springs, *s* and *r*, whose other ends are fastened to the arms M and M', respectively. The spring *r* keeps the arm M' in contact with the adjacent end of the cross-head *n*, which prevents the end *m'* from touching the end *m* until the cross-head oscillates toward the latter, and the arm M is prevented from being drawn closer than to the normal 130

distance from the arm M by a stop-pin, *p*, secured to the board L; but when the lower ends of the levers I and N are oscillated in the direction of the arrow 4 the ends *m'* and *m* will meet and glide against each other to keep the contact clean, the circuit between the wires O and O' will be closed, or, more properly, a circuit will be established, and the core of the coils R will become a magnet attracting the armatures S to actuate the indicator.

If desired to operate by breaking instead of closing an electric circuit, this may be done by removing the pin *p* from its place at the arm M and inserting it at *p'* as stop to the arm M'. The end *m* will then rest against *m'* (and keep the circuit closed) until moved away from it by the oscillating cross-head, when the circuit will be broken, the magnet will cease to act, and the indicator-pawl will operate on the release of the armature. After each feed movement the levers I N are actuated to resume their normal positions by the contraction of the spiral spring U.

I claim—

1. In a sheet-counting apparatus, the button *e*, or its equivalent, arranged to project, when in its normal position, beyond the surface upon which the web or sheet is to pass, and to be depressed by contact with the passing sheet or web, in combination with means transmitting its motion to an indicator.

2. The button *e*, arranged to project, when in its normal position, beyond the surface upon which the web or sheet is to pass, and to be depressed by the passing web or sheet, a head or other contact-piece, *f*, and suitable intermediate connections for projecting said head by the depressing of the said button, in combination with the lever I, connected with an indicator and actuated by the said head *f* while so projected.

3. The button *e*, arranged to be depressed by the passing web or sheet, and the head *f*, arranged to operate, when projected, in combination with the bell-crank D, rod F, and spring H, for automatically projecting and retracting the said head, substantially as and for the purpose set forth.

4. The revolving cylinders A B, having holes *a b* opposite to each other, the button *e*, projecting normally beyond the surface of the cylinder A, the head *f*, and means for projecting the same by the depressing of the button, in combination with the lever I, curved at its upper end, substantially as described, and the guide-plate K, or equivalent means, for keeping the head *f* projected while traversing the curved working-surface of the said lever.

5. In combination with an indicator, an electric battery, and with the lever I and means for actuating the same by the depressing of the button *e*, the circuit-connection, consisting of the pivoted lever and arms N M M', springs *r s U*, and stop *p* or *p'*, constructed and operating substantially as and for the purpose set forth.

6. The combination, with the cylinder A and lever I, of the projectible head *f* and the guide-plate K, said head and plate being beveled upon those edges by which they first engage each other, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 11th day of July, 1882.

GEORGE ROSQUIST.

Witnesses:

THOS. J. CORBIN,
A. W. ALMQVIST.