(No Model.) 3 Sheets—Sheet 1.

J. R. CARTER.

MACHINE FOR NUMBERING PAPER.

No. 329,715. Patented Nov. 3, 1885.

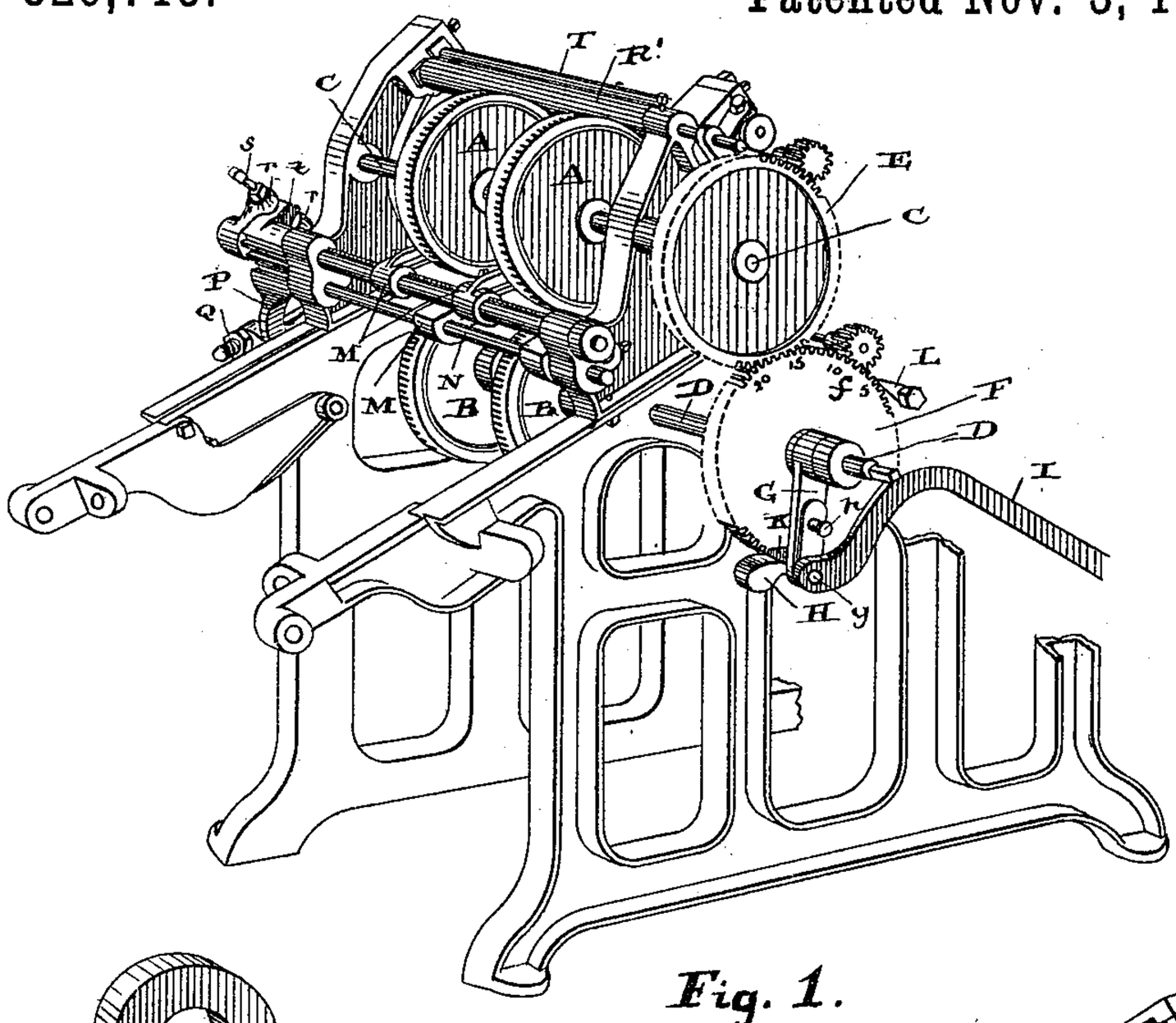

Fig. 1.

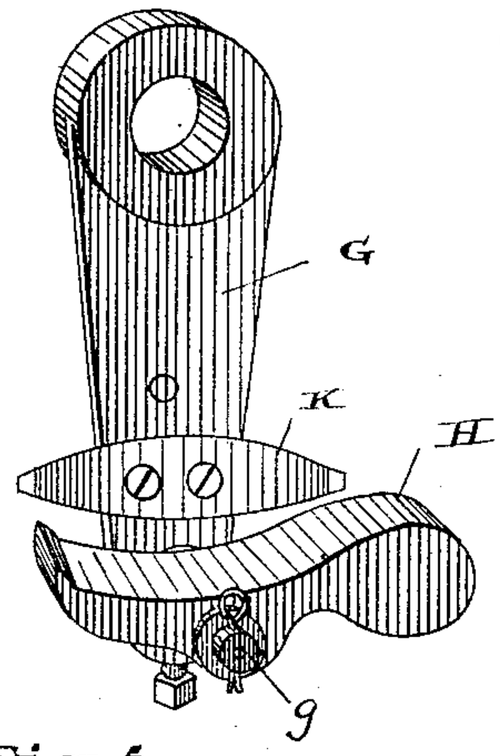

Fig. 5.

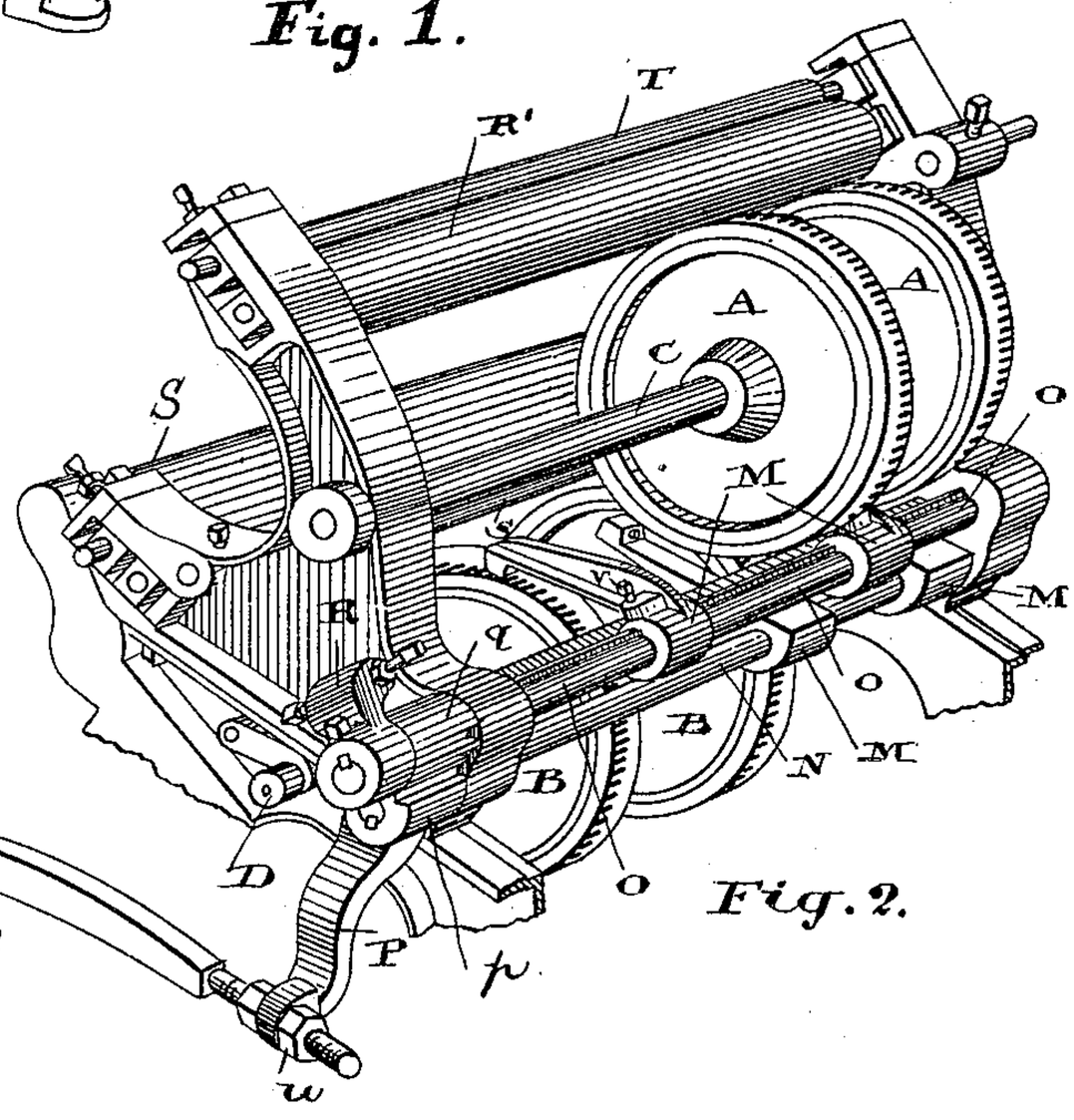

Fig. 2.

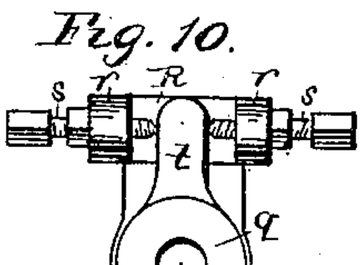

Fig. 10.

Witnesses.

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(No Model.) 3 Sheets—Sheet 2.

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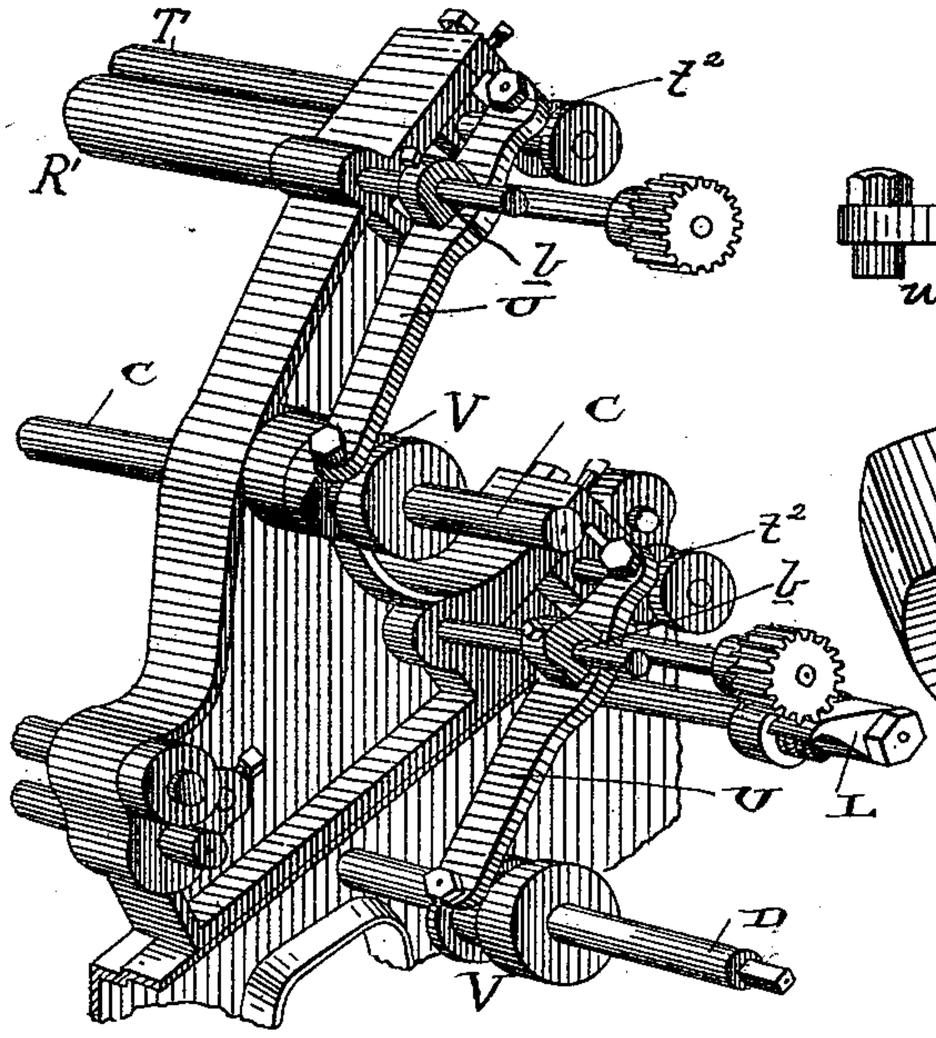

Fig. 3.

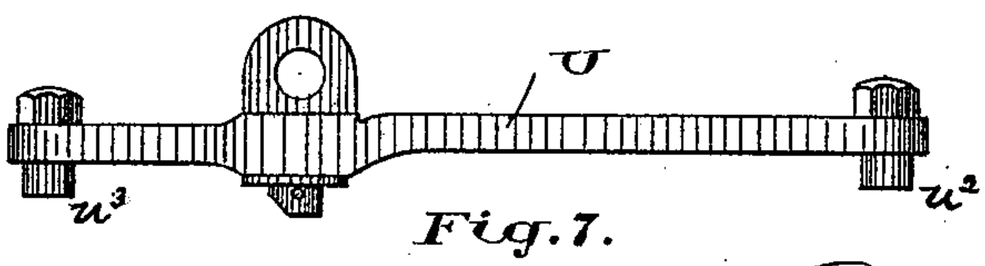

Fig. 7.

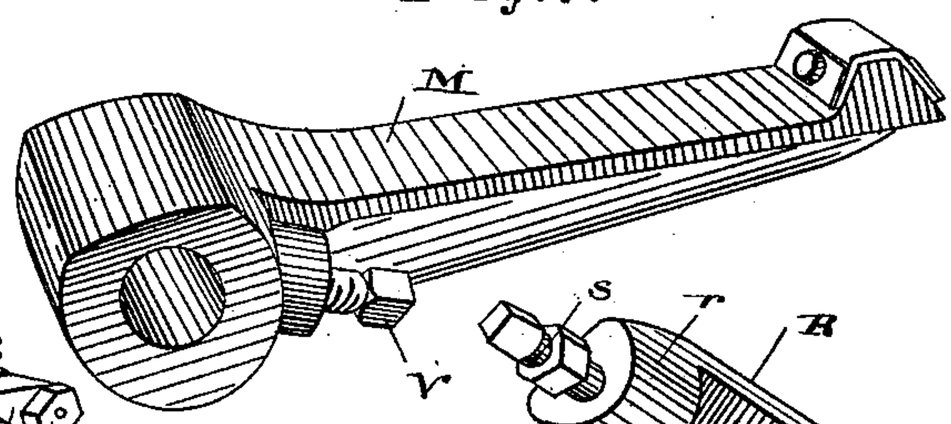

Fig. 8.

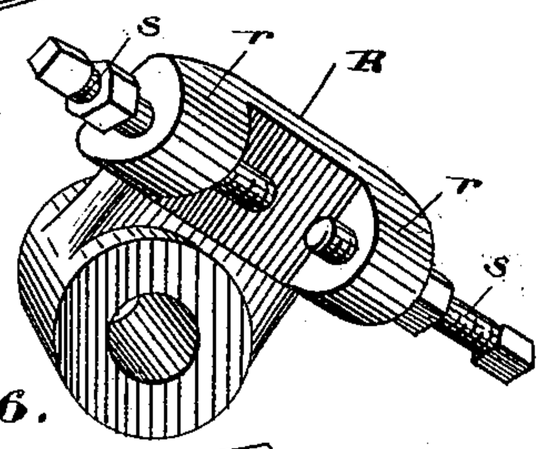

Fig. 6.

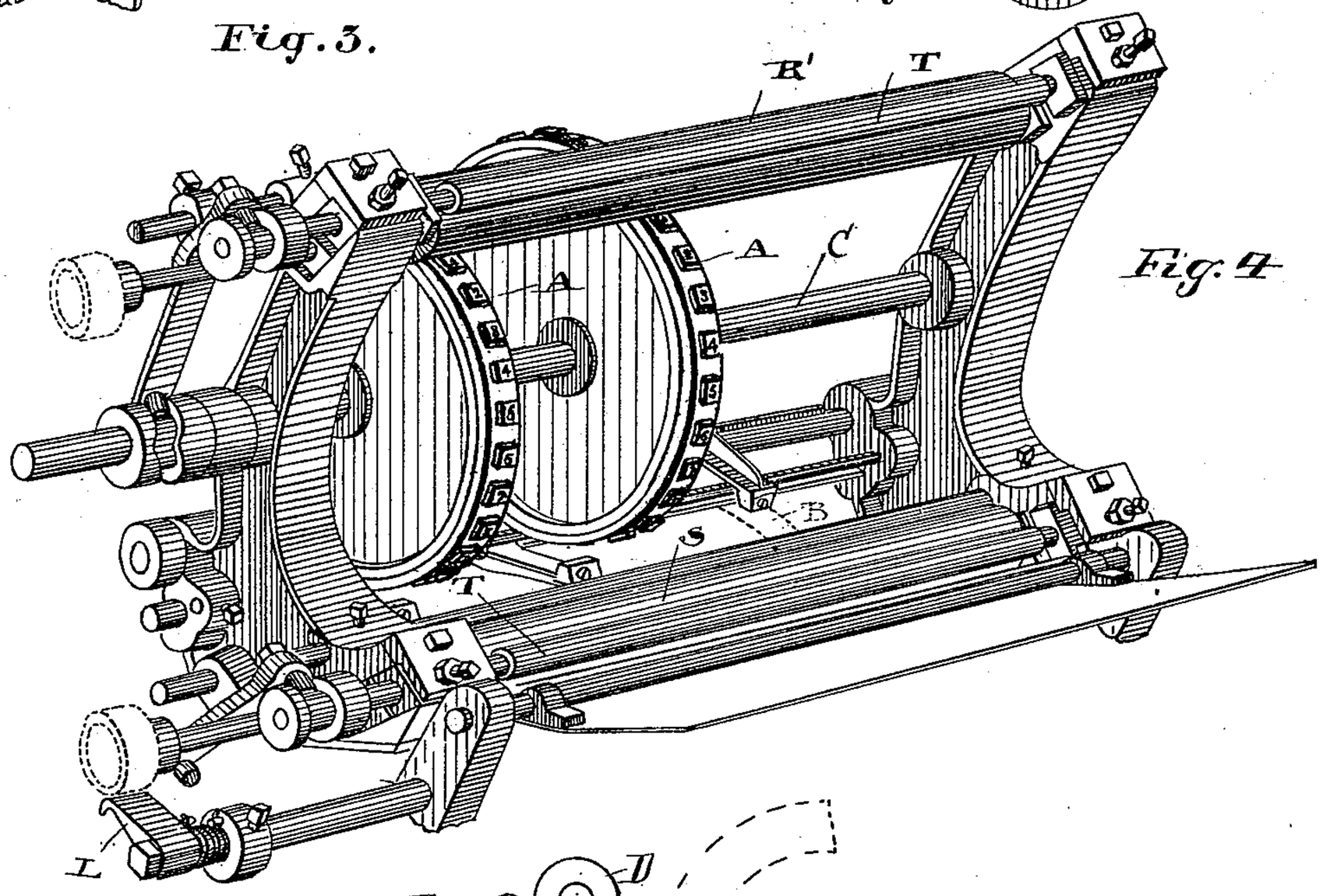

Fig. 4

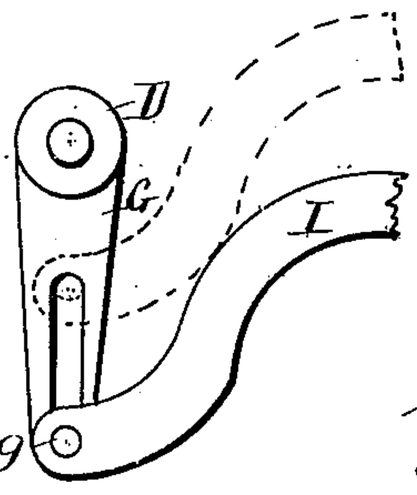

Fig. 9.

Witnesses.

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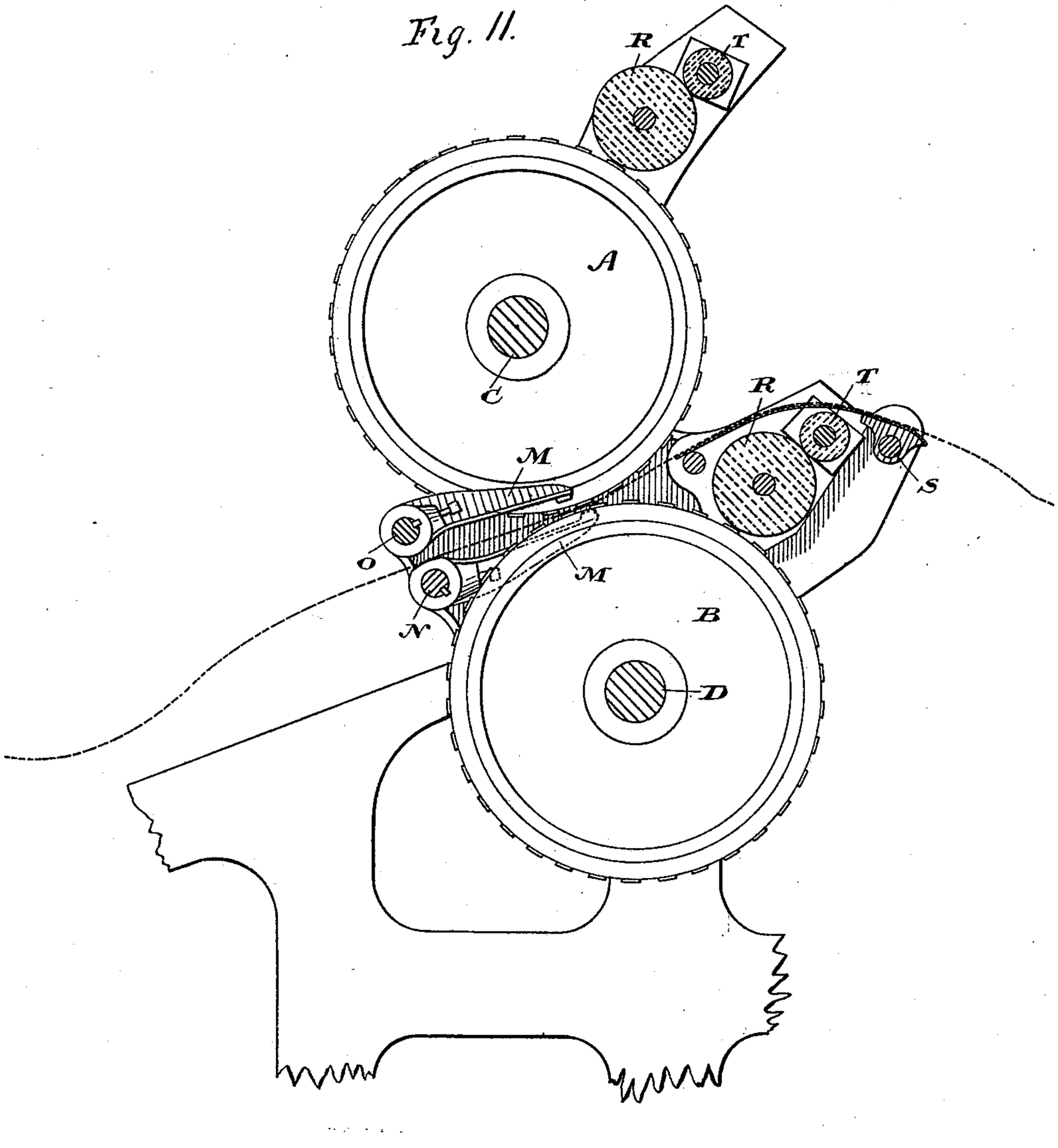
Fig. 11.



Witnesses.

F. B. Fotheringhaugh
J. R. Jackson

Inventor.

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Attys

UNITED STATES PATENT OFFICE.

JOHN ROBERT CARTER, OF NIAGARA FALLS, NEW YORK.

MACHINE FOR NUMBERING PAPER.

SPECIFICATION forming part of Letters Patent No. 329,715, dated November 3, 1885.

Application filed August 7, 1884. Serial No. 139,906. (No model.) Patented in Canada November 19, 1884, No. 20,235.

To all whom it may concern:

Be it known that I, JOHN ROBERT CARTER, of the town of Niagara Falls, in the county of Niagara, in the State of New York, one of the United States of America, manufacturer, have invented a certain new and useful Machine for Numbering Paper; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of the invention is to devise mechanism by which numerals or other signs may be imprinted on paper on either one or both sides during the passage of the web or sheet of paper through the machine; and it consists, essentially, in providing wheels having the numerals or other signs embossed or engraved on their periphery, and locating the said wheels above and below the passage-way through which the web or sheet of paper passes, and so operating the said wheels in connection with suitable platens that the numerals or other signs opposite to the platens will be constantly and regularly changing, while the platens, with equal regularity, will force the paper against the printing-wheels referred to, the whole being arranged and operated substantially as hereinafter more fully explained.

Figure 1 is a perspective side view of my improved mechanism. Fig. 2 is an enlarged view from the side of the machine not shown in Fig. 1. Fig. 3 is a detail of the mechanism for operating the ink-distributer and the roller for inking the printing-wheels. Fig. 4 is a perspective view of the mechanism from the back of the view shown in Fig. 1. Fig. 5 is a detail of the arm for operating the shafts of the driving-wheels. Fig. 6 is a detail of the bracket for adjusting the platens of the lower printing-wheels. Fig. 7 is a detail of the arm for imparting a longitudinal reciprocating motion to the distributing-roller. Fig. 8 is a perspective detail of the platen. Fig. 9 is a detail of a crank-arm with a slot for adjusting the position of the wrist-pin. Fig. 10 is a detail of an adjusting device. Fig. 11 is a vertical section showing in dotted lines the paper passing through the machine.

As my invention is applicable to various kinds of printing-presses, and may also be used as a separate machine, I have not shown, nor is it necessary to exhibit, the machinery for conveying the paper through the machine. It is merely necessary to say that mechanism is provided for conveying the paper between the upper and lower wheels, (marked, respectively, A and B,) on the periphery of which wheels the numerals or other signs to be printed on the paper are embossed or otherwise formed. The wheels A are keyed or otherwise fastened to the shaft C, while the wheels B are keyed or otherwise fastened to the lower shaft, D. Both these shafts are clearly seen in Fig. 1, where it is shown they are geared together by the spur-wheels E and F, the spur-wheel E being keyed to the upper shaft, C, while the spur-wheel F is keyed to the lower shaft, D. On this lower shaft the arm G is journaled, and is connected to the spur-wheel F by a dog, H, which dog is shown clearly in Fig. 5, and is so formed that the arm G may be drawn in one direction without acting on the wheel F, while the movement of the arm in the opposite direction would cause the said wheel F to move in proportion to the distance of the travel of the said arm.

I is a rod arranged to connect the arm G to some revolving part of the machine, so that when the machine is in operation the arm G shall have imparted to it a rocking movement, and through the dog H the spur-wheels E and F derive a rotary motion in proportion to the stroke of the arm, and consequently the printing-wheels A and B may be turned on their axes any given distance by merely adjusting the stroke of the arm G. For instance, the rod I is shown in Fig. 1 connected to the arm G by the wrist-pin *g*. This wrist-pin *g* may be adjustable in a longitudinal slot (see Fig. 9) made in the arm G; or more than one wrist-pin may be provided, as suggested in Fig. 1, where an additional wrist-pin, *h*, is shown in same figure closer to the center of the shaft D. As the rod I is connected at its other end to a crank or eccentric, (not shown,) the stroke of the arm G will be less when it is on the pin *g* than when it is placed on the wrist-pin *h*. Consequently the printing-wheels A and B will revolve a greater distance for each stroke of the arm G when the rod I is connected to the said arm by the wrist-pin *h* than it does when connected to the wrist-pin *g*.

I may here mention that the machine is so set that each stroke of the arm G moves the printing-wheels A and B a distance represent-

ed by the space between the numerals or other signs on their periphery, and the object of providing means for increasing or decreasing the revolving motion of the said wheels is to enable more or less figures being arranged round the periphery of the wheels without altering their diameter. For instance, if I wish to print one hundred numbers at each revolution of the wheels A and B, the numbers on the said wheels will be closer together than if only fifty numbers were arranged round a wheel of the same diameter.

In order to insure that each and every stroke of the arm G shall move the wheels A and B exactly the same distance, I place on the arm G a spring-plate, K, which presses against the face of the spur-wheel F, so as to form a frictional connection between the arm G and the spur-wheel F sufficiently strong to enable the motion of the arm on its return-stroke to carry with it the wheels E and F sufficiently far to take up any lost motion and bring one of the teeth in the spur-wheel F against the end of the dog or pawl L, the rest of the mechanism being arranged, as I shall describe farther on, so that the paper shall not be brought in contact with the numbers on the wheels A and B until the wheel F is at rest with one of its teeth jammed against the end of the pawl or dog L. Consequently each stroke of the arm G moves the wheels A and B the exact given distance required.

In order to bring the paper against the wheels A and B, I provide a platen, M, for each wheel, the paper being carried between the wheel and its particular platen, the platens for the upper wheels, A, being fixed to the lower shaft, N, while platens for the lower wheels, B, are fixed to the upper shaft, O. Both the wheels A and B and the platens M are adjustable on their respective shafts, so that the printing-wheels A and B may be adjusted to bring the numbers at any desired point on the paper, and the respective platen for each wheel may be adjusted so as to bring it in its exact position for its particular wheel.

The shafts N and O are suitably journaled in the frame of the machine at such a point that when rocked they will being the ends of the platens M against the periphery of their respective wheels, the mechanism for imparting the necessary rocking movement to the shafts N and O being timed so as to bring the ends of the platens M against the peripheries of their respective wheels A and B at the exact moment that the said wheels are at rest and the number to be printed on the paper in the exact required position.

I do not claim anything peculiar in the main mechanism for imparting the rocking motion to the shafts N and O; but I do claim something in the peculiar manner of transmitting the motion of one shaft to the other, and of adjusting the said shafts so as to alter the pressure of the platens against their respective wheels.

On reference to Fig. 2 it will be noticed that the lower shaft, N, is provided with an arm, P, and that a rod, Q, is connected to the said arm. This rod Q is connected to some moving part of the machine, so that when the machine is in motion a rocking movement shall be imparted to the arm P, which is conveyed to the lower shaft, N, and to the upper shaft, O, the latter being connected to the shaft N by the boss *p* and toothed collar *q*, the toothed boss *p* being part of the arm P, while the toothed collar *q* is loose on the upper shaft, O, but has a lug, *t*, on it which projects between the jaws *r*, formed on the bracket R, (see Fig. 6,) which is keyed to the upper shaft, O.

s are set-screws screwed into the jaws *r*, so as to provide means for adjusting the connection between the lower shaft, N, and the upper shaft, O, the bracket R being keyed to the upper shaft, O, while the toothed collar *q*, which is loose on the upper shaft, O, meshes with the toothed boss *p*, secured to the lower shaft, N, consequently the motion of the lower shaft, N, is conveyed to the upper shaft, O, through the lug *t*, which extends between the jaws *r*, as shown in Fig. 10, and is adjusted between them by the movement of the set-screws *s*. Consequently by adjusting the set-screws the platens M on the upper shaft, O, may be arranged to come with greater or less force, as desired, against their respective wheels.

In order to adjust the platens on the lower shaft, N, I connect the rod Q to the arm P by jam-nut *u*, (see Fig. 2,) the adjustment of which on the end of the said rod Q will alter the pressure of the platens on the shaft N against their respective wheels.

I do not show any mechanism for imparting the necessary rocking movement to the arm P through the arm Q, as I claim nothing peculiar in it, it being merely necessary to say that the end of the rod Q (which is not seen in Fig. 2) is connected to a crank or eccentric, which imparts to it a regular reciprocating motion calculated to impart the necessary rocking movement to the arm P. I should also mention that the platens are each provided with a set-screw, *v*, so that they may be readily adjusted longitudinally upon their respective shafts, in order, as before stated, to bring them into the exact positions required. It will be seen that to produce the best effect the faces of the platens should be nearly or quite in the same plane; but I do not wish to be understood as limiting myself to platens absolutely in the same plane in the claims following, but only approximately so, in order to distinguish my machine from that class in which there are two platens acting on two sets of type arranged between the faces of said platens. The characters on the wheels A B are supplied with ink by means of the inking-rollers R′ and S. (Shown in Fig. 2.) These rollers are placed adjacent to their respective wheels—R′ to contact with the wheels A upon the shaft C, and S to contact with the wheels B upon the shaft D. Each of these rolls S′

and R′ have an accompanying distributing-roll, T, each having an annular groove, t^2, in its shaft, and these distributing-rolls have a longitudinal motion imparted by arms U, pivoted at *b*, each arm having a pin, u^3, which at one end fits into its respective groove, t^2, and at the other a pin, u^2, which fits into a cam-groove, V, formed in the shafts C and D, respectively. (See Fig. 3.) On the face of the spur-wheel F, I have printed a number of numerals, *f*, which are intended to represent and correspond with the marks or numerals printed on the wheels A and B, the numerals on the wheel F being so arranged that when one comes opposite to the dog L a figure corresponding with it on the wheels A or B, or both, is in position to imprint itself on the paper forced against it by the platens. Consequently the number on the spur-wheel F, when brought opposite to the dog L, indicates the particular number set in position to print. As before stated, the spur-wheel F is keyed to the shaft D, while the arm G, which connects it through the dog H to the main mechanism of the machine, is loose upon the said shaft. It follows, therefore, that the shaft D, when turned by a handle placed on its end, will convey motion to the wheels A and B and the mechanism immediately connected with them without conveying any motion to the rest of the machine. Consequently the ink-rollers may be reinked and the ink well distributed over them without running the entire machine, and after this has been accomplished the proper number to be printed may be brought into position by simply bringing the number required, indicated on the wheel F, opposite to the dog L.

What I claim as my invention is—

1. The combination of two sets of printing-types with two platens, each platen mounted on a separate vibrating support, as the arm M, and coacting with its set of printing-types, and the two platens having their faces in substantially the same plane and moving in opposite directions and acting on the opposite sides of a sheet of paper passing between said vibrating supports, substantially as described.

2. The combination of two sets of intermittently-changing printing-types with two reciprocating platens having their faces in substantially the same plane and facing in opposite directions, each platen acting on the face of its appropriate set of types and moving in the opposite direction when printing to the direction the other platen moves when printing, substantially as described.

3. The wheels A, marked as specified and fastened to the shaft C, having keyed to it the spur-wheel E, the wheels B, also marked as specified and keyed to the shaft D, on which the spur-wheel F is fastened, which spur-wheel gears with the spur-wheel E, in combination with the arm G, loosely journaled on the shaft D and having the dog H attached to it, with the operating-rod I and the platens M, the whole being arranged and operated substantially as and for the purpose specified.

4. The combination, in a numbering-machine, and with the wheels A B and shafts C D, geared together by wheels E F, the crank-arm G, and connections, substantially as described, for imparting motion to the wheel F, a detent, as L, and the spring-plate K, all operating as and for the purposes set forth.

5. The combination, in a numbering-machine, and with the wheels A B, mounted on shafts C D, respectively, and geared together by wheels E F, as shown, of the arm G, the reciprocating pitman I, and connections, substantially as described, for adjusting the stroke of said arm, and the pawls H and L, all arranged and operating as set forth.

6. The intermittently-moving printing-wheels A B, platens M, fastened, respectively, to the shafts N and O, and located substantially as specified, the arm P, connected to the shaft N and driven by the rod Q, in combination with the toothed collar *q*, fitting loosely on the shaft O and meshing with the toothed boss *p*, fastened to the shaft N, the lug *t*, extending from the collar *q* between the jaws *r*, substantially as and for the purpose specified.

7. In a numbering-machine, substantially as described, the combination, with the wheels A B, arranged, as shown, with the platens M, facing in opposite directions and supported on rock-shafts arranged parallel with each other and having a space between them, the shafts being connected, substantially as described, so as to move together by mechanism arranged outside the path of the paper being operated upon, as set forth.

8. In a numbering-machine, substantially as described, the combination, with the wheels B, the platens M, and their rock-shafts N and O, of the arm P and boss *p*, rigid on the shaft N, the collar *q*, mounted loosely on the shaft O and having arm *t*, the block R, rigid with the shaft O and having jaws *r*, and the set-screws *s*, all arranged and operating as set forth.

9. In a numbering mechanism, substantially as described, the combination, with the wheels A B and shafts C D, of the disks E and F, geared together, the disk F having a scale upon its face to correspond with the printing-wheels and receiving its motion through an arm, as G, hung loosely on the shaft D, and a seat upon said shaft D, whereby the wheels A B may be turned independent of the arm G and be made to register at desired points by means of the wheel F, as set forth.

Toronto, July 9, 1884.

JOHN R. CARTER.

In presence of—

CHARLES C. BALDWIN,

JAS. E. MAYBEE.