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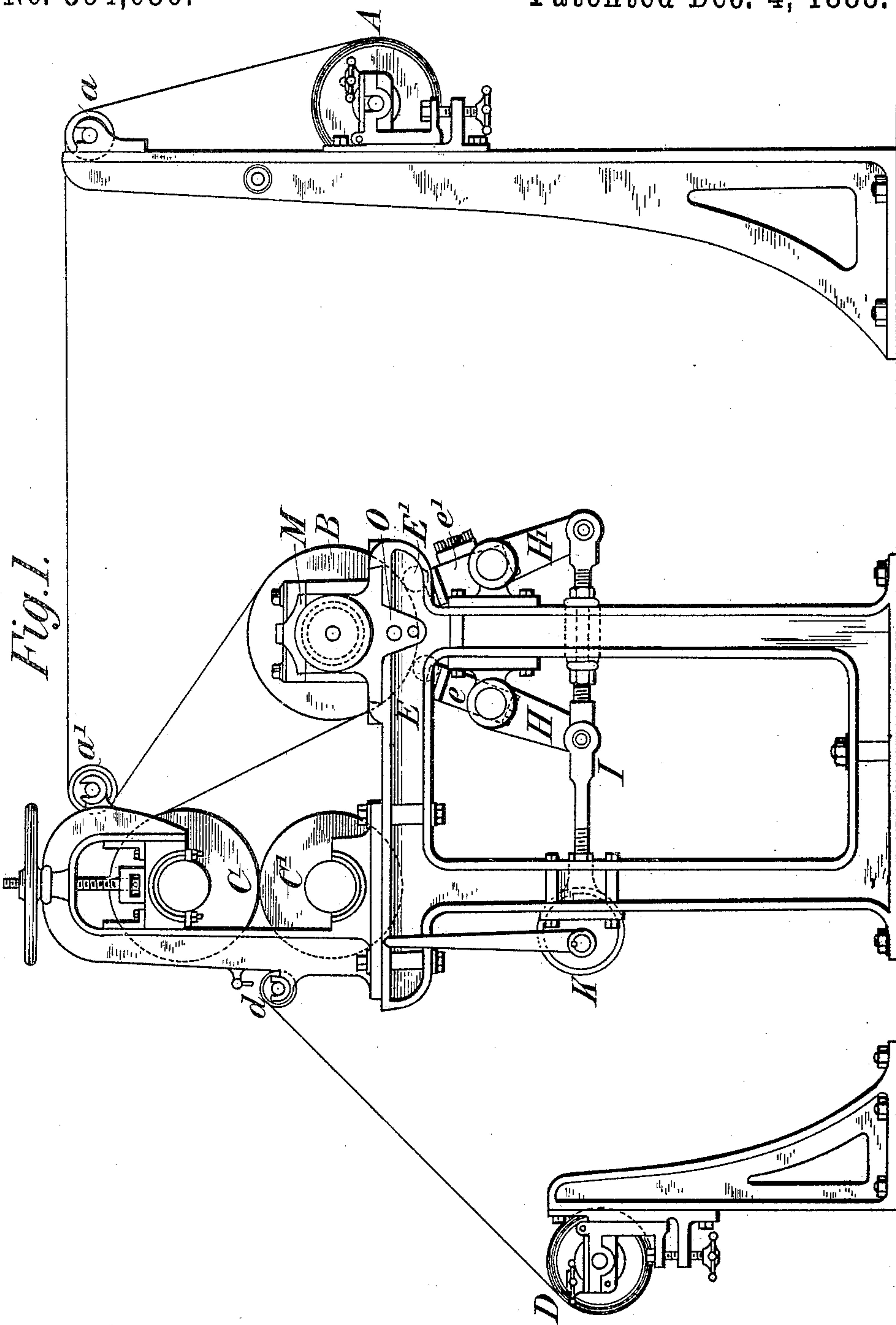
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S. J. TIMOHOWITSCH.

· APPARATUS FOR FILIGRAINING PAPER IN THE WEB.

No. 394,030.

Patented Dec. 4, 1888.



Attest
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(No Model.)

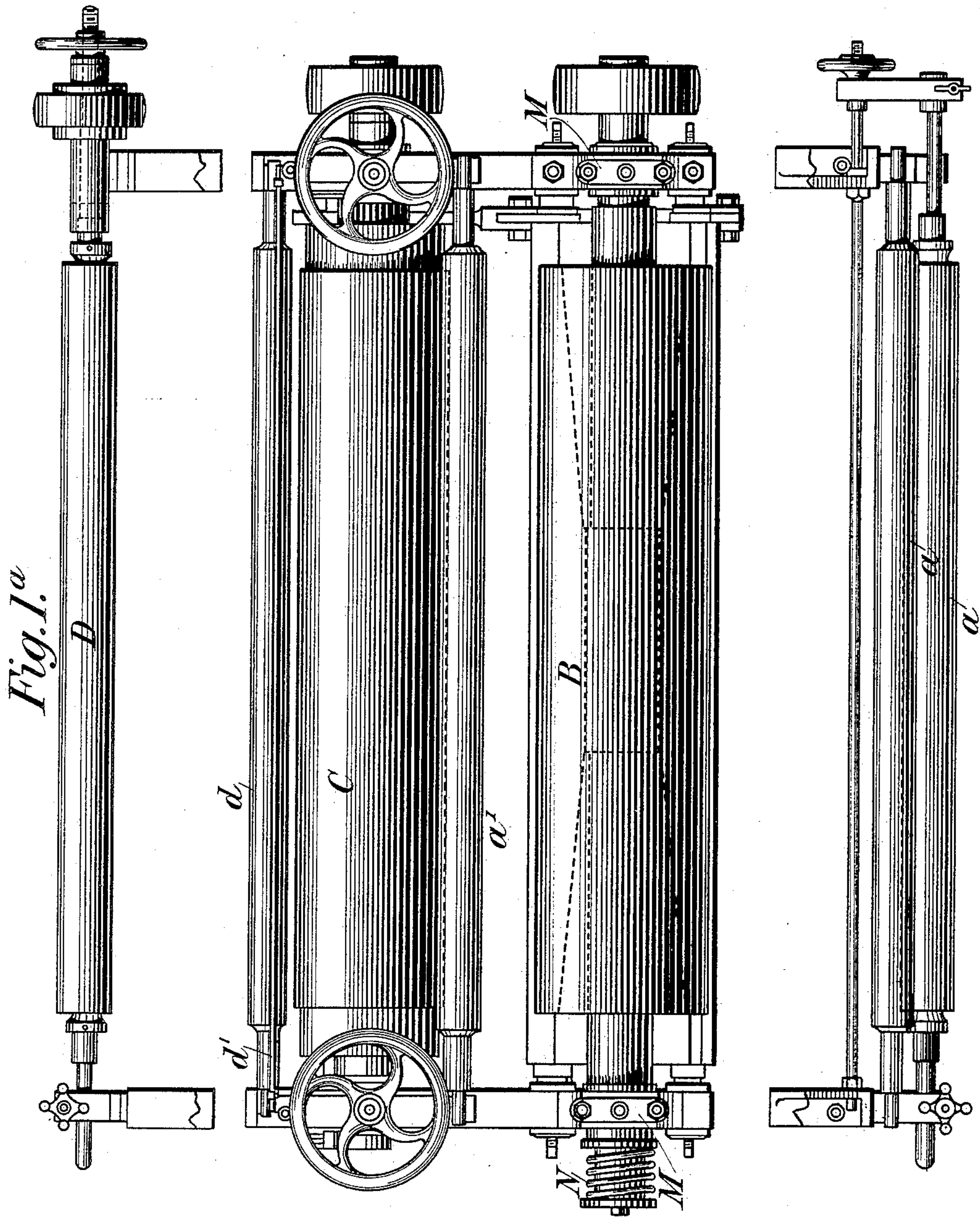
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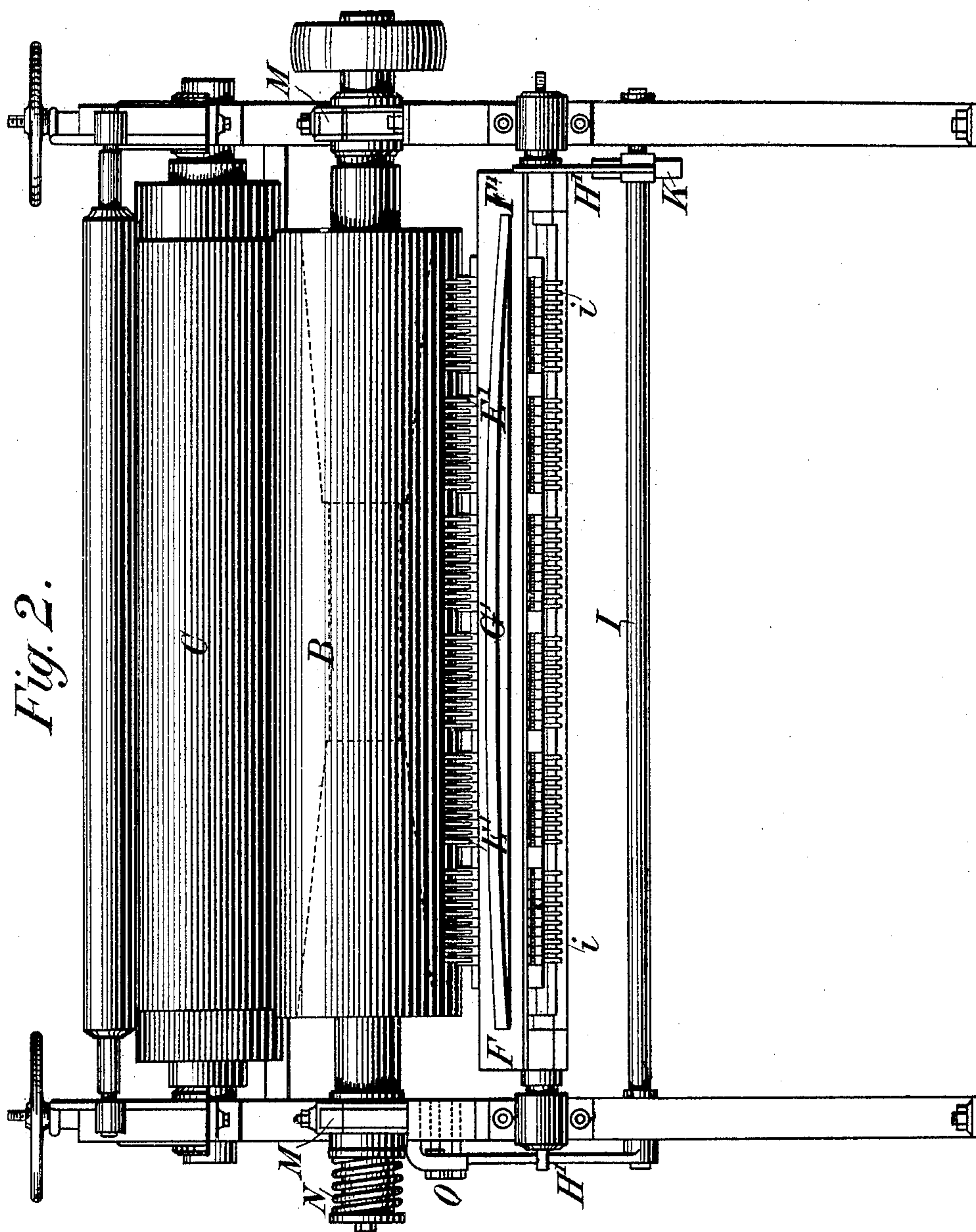


Fig. 2.

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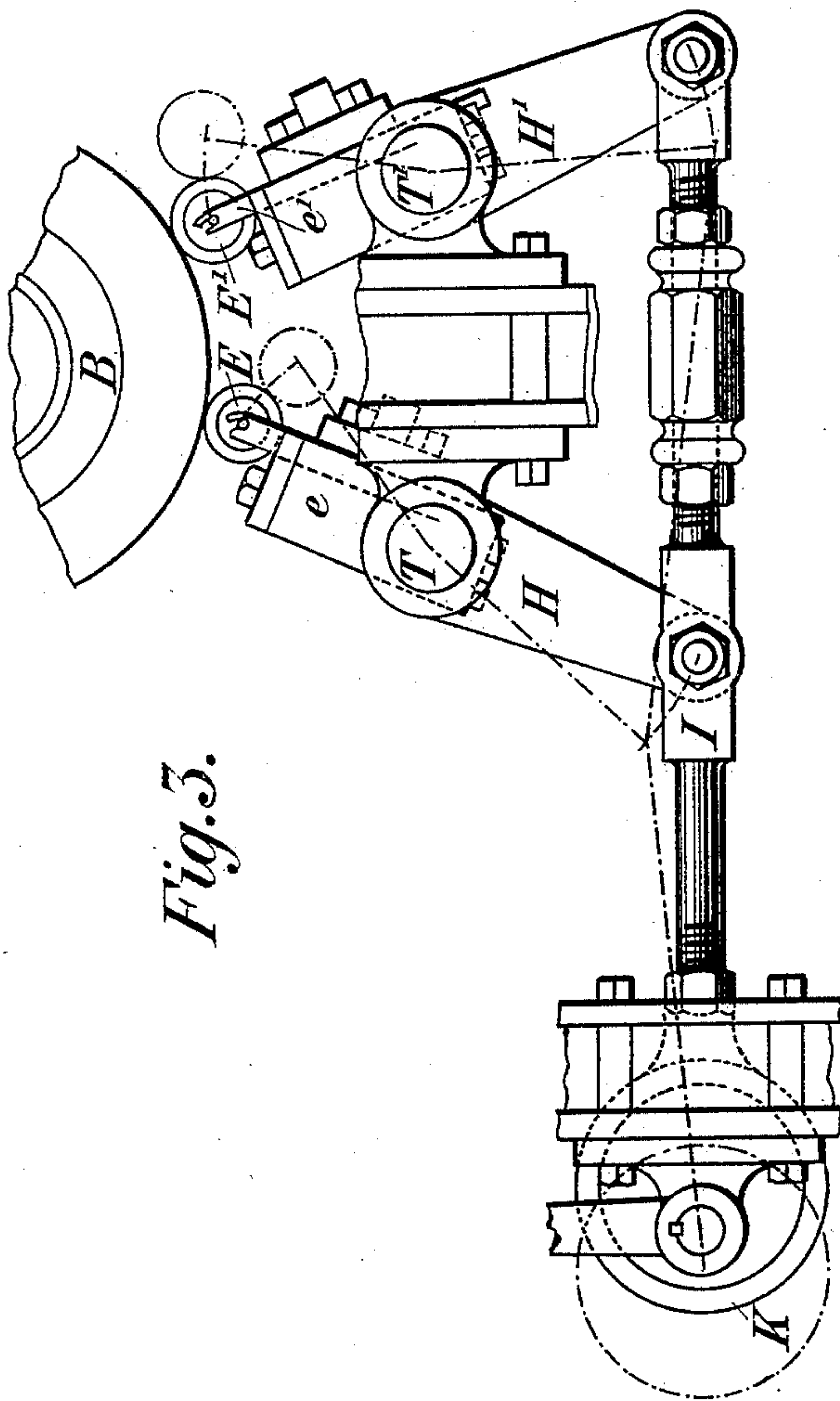


Fig. 3.

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Fig. 4^a.

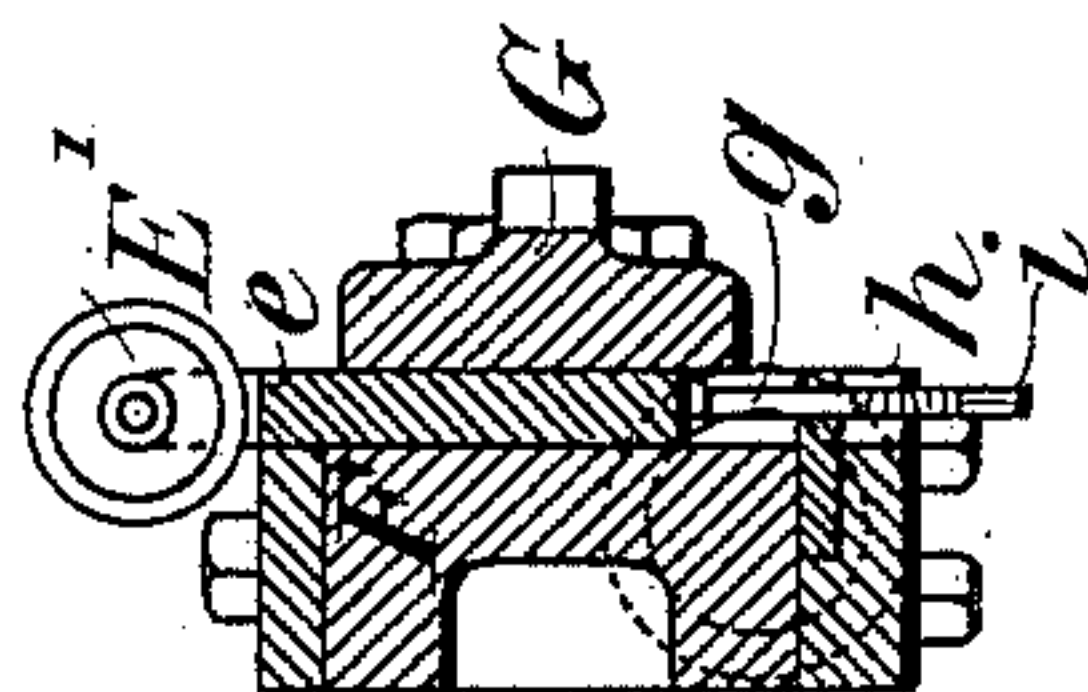


Fig. 4.

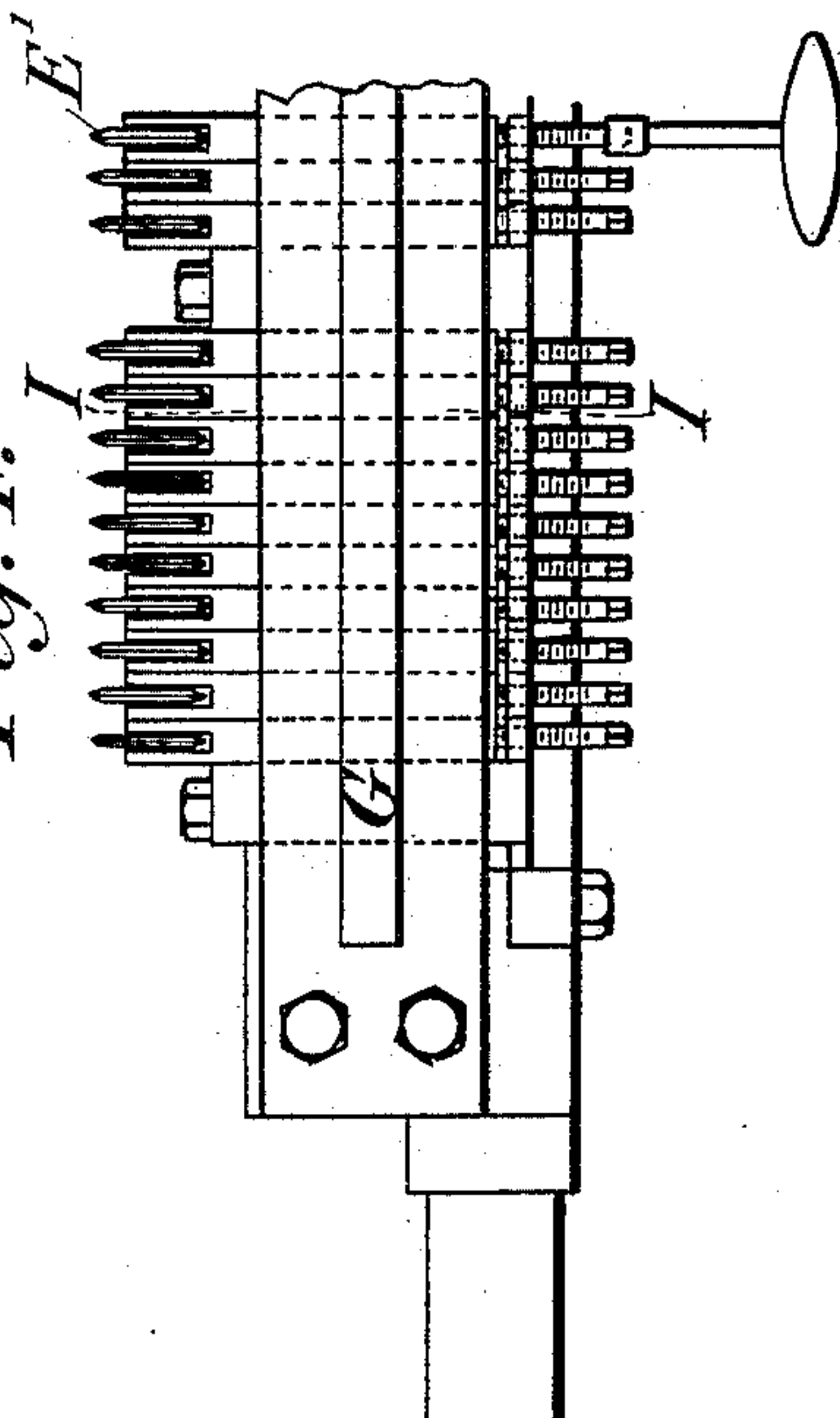
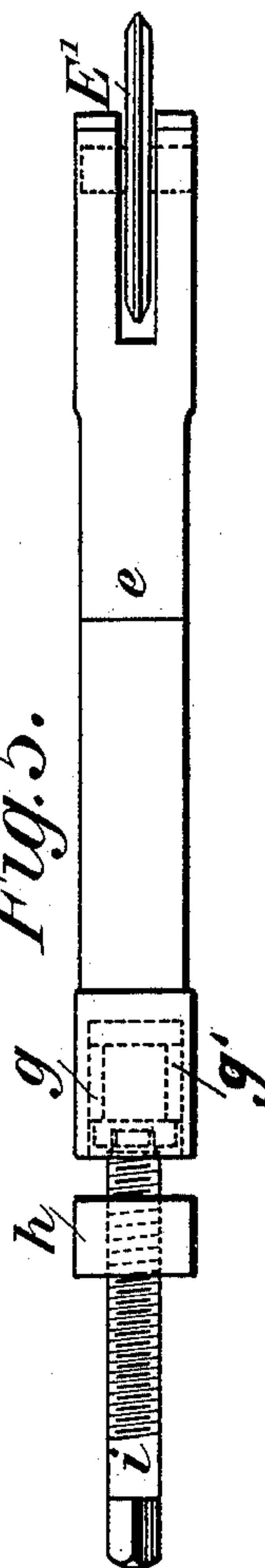


Fig. 5.



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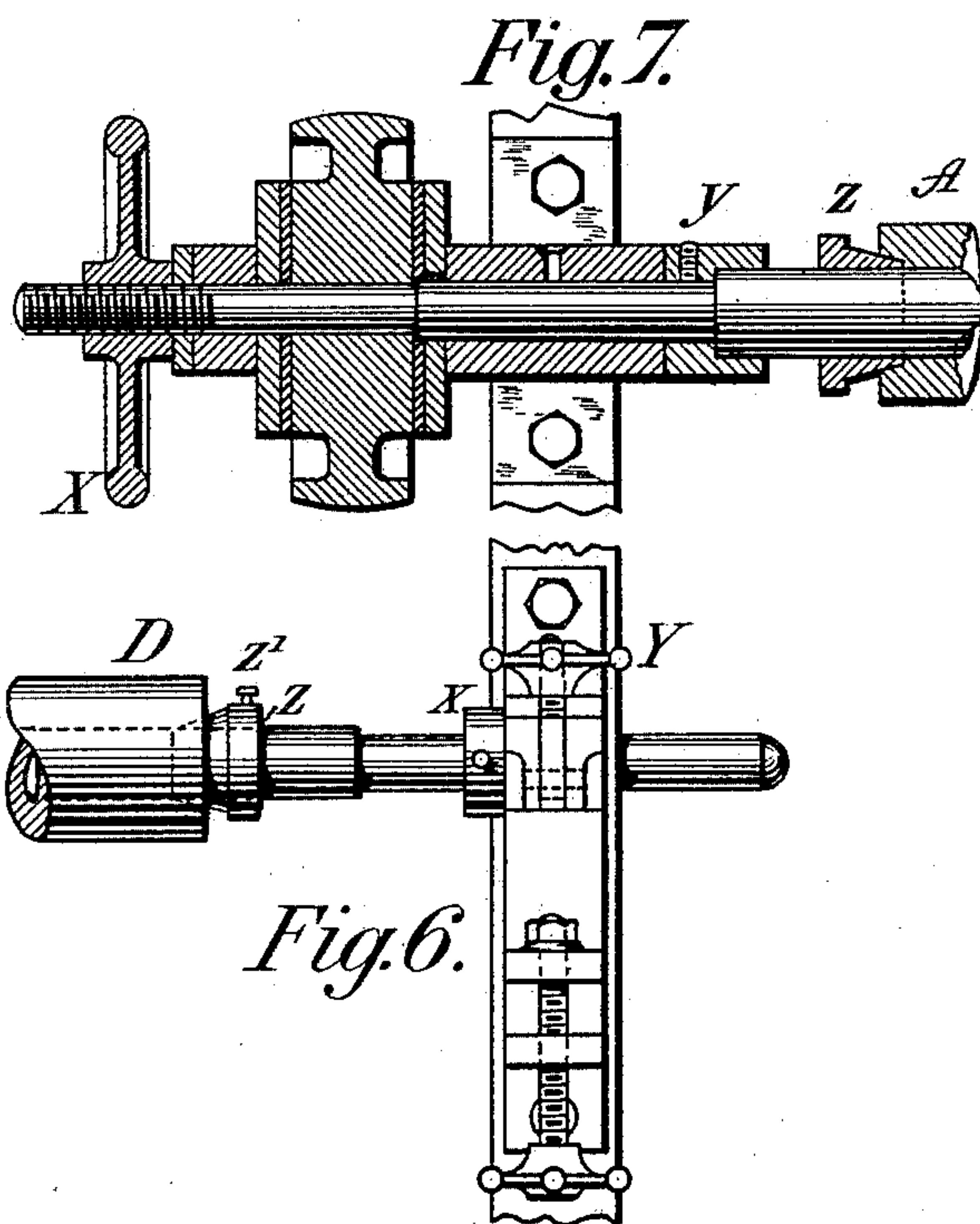
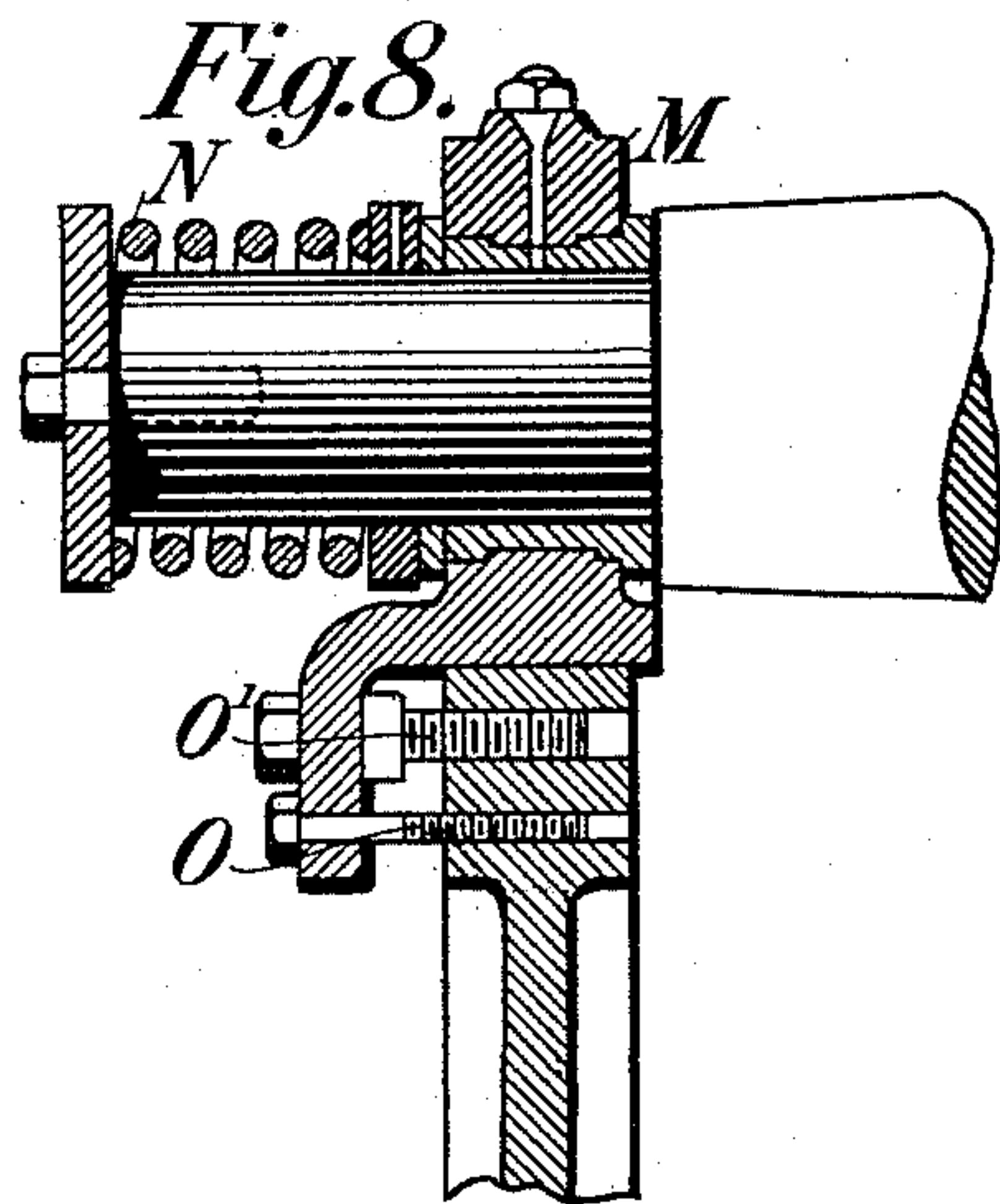


Fig. 6.

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UNITED STATES PATENT OFFICE.

SERGAY JAKOOLEWITSCH TIMOHOWITSCH, OF TROITSKAIA, KALOUGA, RUSSIA.

APPARATUS FOR FILIGRAINING PAPER IN THE WEB.

SPECIFICATION forming part of Letters Patent No. 394,030, dated December 4, 1888.

Application filed September 14, 1886. Serial No. 213,544. (No model.)

To all whom it may concern:

Be it known that I, SERGAY JAKOOLEWITSCH TIMOHOWITSCH, of the town of Troitskaia, in the Government of Kalouga, and Russian Empire, have invented certain new and useful Improvements in Apparatus for Filigraining Paper in the Web, and of which I declare the following to be a specification.

This invention relates to improvements in machines for producing water marks and lines in or on paper; and it consists in the use or employment of a series of small ruling-disks suitably supported, which produce the water marks or lines on the paper, the main object of said invention being to supersede the application of the tedious and expensive manipulations for producing lines on paper by means of a dandy roll or mold now in general use.

One of the great advantages of my present improvement is that it is possible to manufacture an exceedingly fine quality of goods with very little or no refuse, and at the same time greatly decrease the time and number of workmen hitherto necessary to attain the desired end.

In the accompanying drawings, Figure 1 is a side view of the complete apparatus. Fig. 1^a is a top view or plan of the same. Fig. 2 is an elevation of the ruling mechanism. Fig. 3 represents the details of the mechanism for supporting and operating the ruling-disks. Figs. 4 and 4^a represent details of the clamps for the ruling-disks. Fig. 5 is a view of one of the adjustable blocks or supports for the small ruling-disks on an enlarged scale. Figs. 6 and 7 are a front and section, respectively, of the adjustable device for the paper-rollers A D, drawn on an enlarged scale. Fig. 8 is a device for suitably adjusting the supporting-bearing of the roller B.

Fig. 1 shows the general arrangement of the apparatus embodying my invention. The roller or drum supporting the paper is shown at A, mounted in suitable bearings, which may be adjustable vertically, as shown. The paper is carried from this roller over guide-rollers *a a'*, suitably supported in the frame, and from the roller *a'* it passes around a large roller, B, where the lines are marked upon its surface, the paper passing from this roller be-

tween the feed-rollers C C', over a guiding-roller, *d*, to the winding-roller D.

Small disks E E' are arranged directly under the said roller B, supported removably in shanks or spindles *e e'*, placed side by side in series of ten or twelve, six or more of these series being held between the rails F F' and the beams G G'. The said rails F F' are journaled in suitable bearings, and are connected by means of rods H H' to an eccentric, K, by means of a rod, I, whereby a backward-and-forward movement is imparted to the ruling-disks E E', which are rotated as soon as they are brought into contact with the paper drawn around the chilled cast-iron roller B. In order to produce a more or less intense line or water-mark on the paper, the distance existing between the said paper and the small ruling-disks is variable, produced by the adjustment of the shanks of the ruling-disks. As shown in Figs. 4, 4^a, and 5, the lower ends of the shanks are provided with recesses which are adapted to receive small blocks of rubber, *g g'*, and when these shanks are in place between the rails F F' and beams G G' they are supported each by a screw, *i*, passing through a fixed nut, *h*, and bearing upon the elastic material *g*. In this manner the ruling-disks are provided with elastic counter-bearings to equalize the pressure on the paper.

The roller B is arranged in bearings M, so as to allow a longitudinal axial movement, while an involuntary unnecessary movement is prevented by means of the spring N and the counter-screws O O'. The roller C is placed in contact over the roller C', and by their action they reel the paper from the roller B, and guide the same over the small roller *d* to the rewinding-roller D.

In order to laterally adjust the rollers A and D, a suitable regulating mechanism is provided, such as that shown in Figs. 1, 1^a, and 7.

The spindles of the rollers are screw-threaded at one end, and are adapted to slide in their bearings, being coved by the hand-wheel X. The rollers D and A are held upon their spindles by means of cones Z held in place by set-screws. Hand-wheels Y are provided for the vertical adjustment of the rollers.

The operation of my improved apparatus is extremely simple, and is carried out in the following manner: The paper to be water-marked or lined is first drawn through the
5 entire apparatus from the roller A, over the rollers *a a'*, around the chilled cast-iron roller B, over roller C, between rollers C C', and over small roller *d*, to the rewinding-roller D. The
10 apparatus is then set in motion by any suitable motive power, the different rollers having suitable driving-wheels, whereby the whole set of ruling-disks is brought into contact with and presses on the paper drawn
15 around the cast-iron roller B by the action of the eccentric K. At the moment of contact the ruling-disks commence to rotate, and the intensity of the water-marks corresponds to the pressure exerted by the said small ruling-disks on the paper. The width of the water-
20 marked lines correspondingly determines the distance at which the small ruling-disks should be placed from each other. The ruling-disks may be made out of any suitable material. The manner of support may be

changed without departing from the spirit of 25 my invention.

I claim—

1. An apparatus for watermarking paper, consisting of supporting and feeding rollers for the paper, a pair of rocking frames, a series of ruling-disks supported by each rock- 30 ing frame, a connection between the lower ends of the frames, and means for rocking the frames, substantially as described.

2. An apparatus for watermarking, consist- 35 ing of supporting and feeding rollers for the paper, and a series of ruling-disks mounted independently upon vertically-adjustable spindles supported within a rocking frame, substantially as described. 40

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SERGAY JAKOOLEWITSCH TIMOHOWITSCH.

Witnesses:

N. W. HORNSTEDT,

U. S. Deputy Acting Consul.

ANTHONY STEFFEN.