

(Model.)

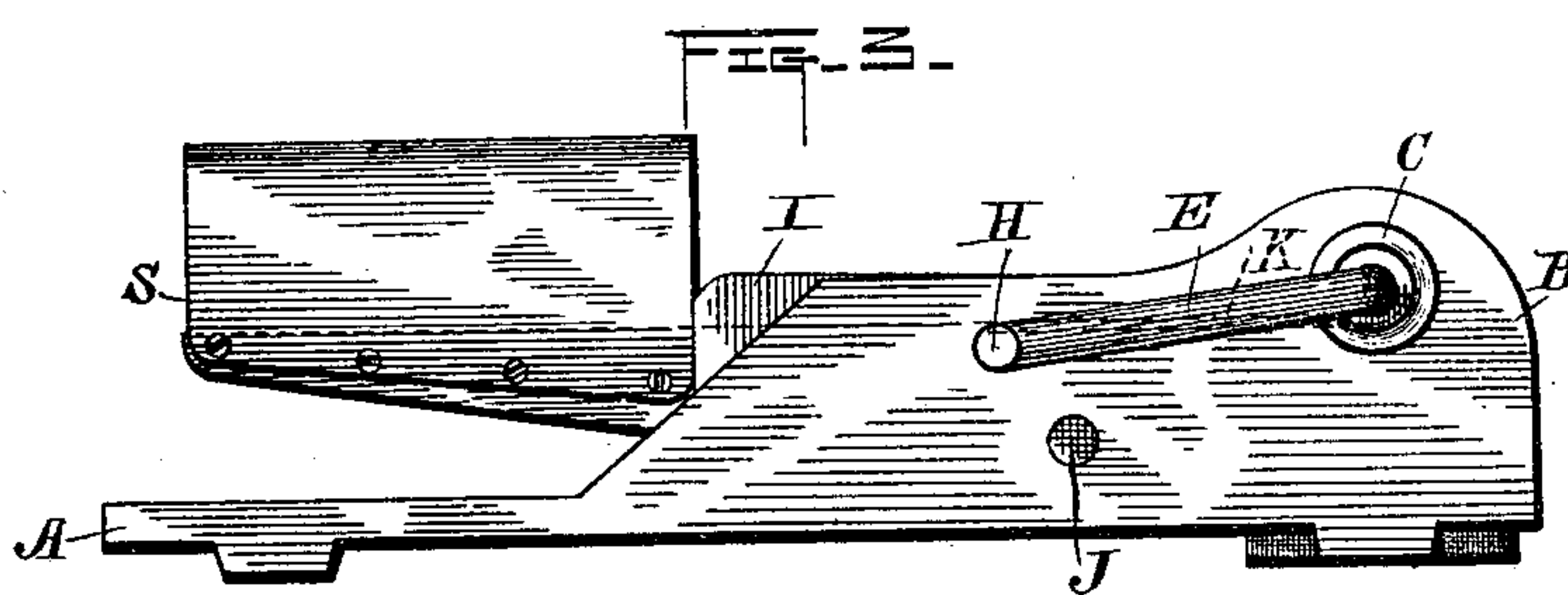
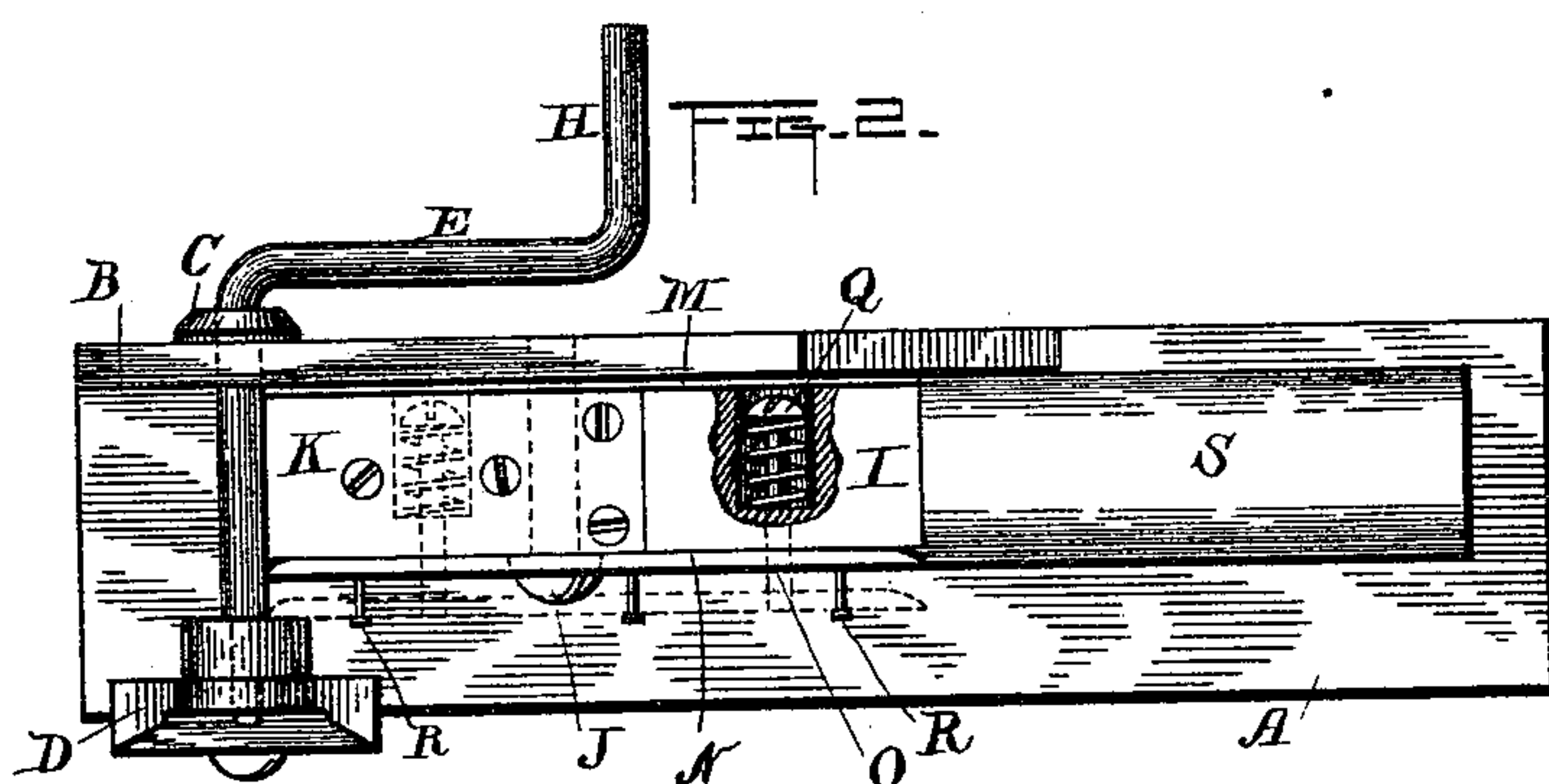
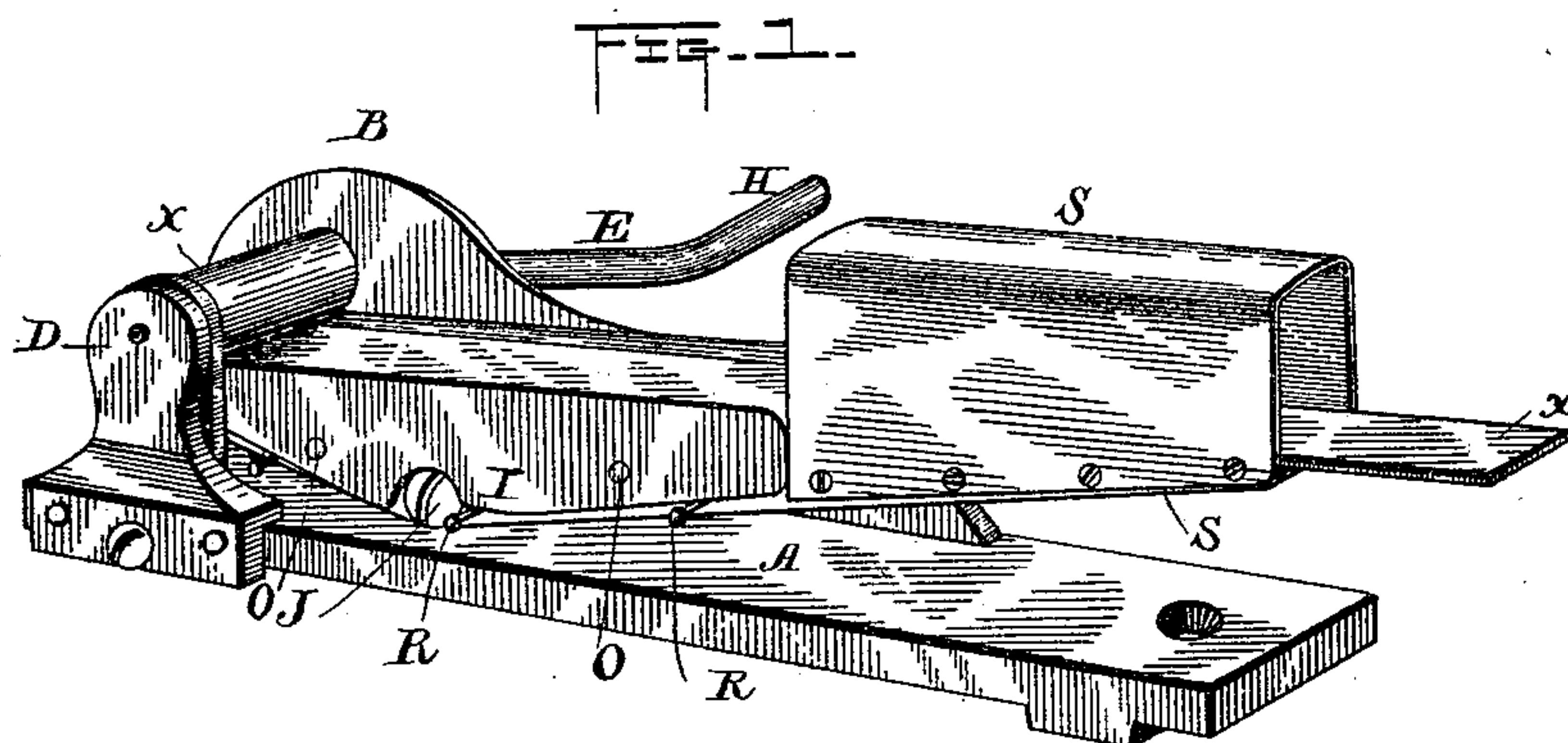
2 Sheets—Sheet 1.

J. F. EARTHART.

DEVICE FOR FORMING CIRCLES, CURVES, AND GEOMETRICAL FORMS.

No. 403,827.

Patented May 21 1889.



WITNESSES:

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W. W. Deane.



INVENTOR:

John F. Earhart.

By *J. S. Zerbe,*

his Attorney.

per L. Deane
2220

(Model.)

2 Sheets—Sheet 2.

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FIG-4-

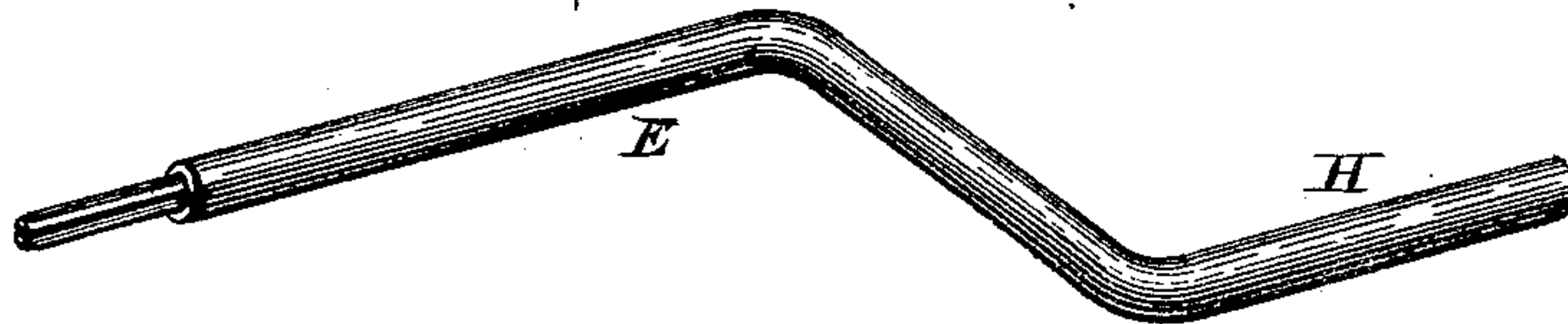


FIG-5-

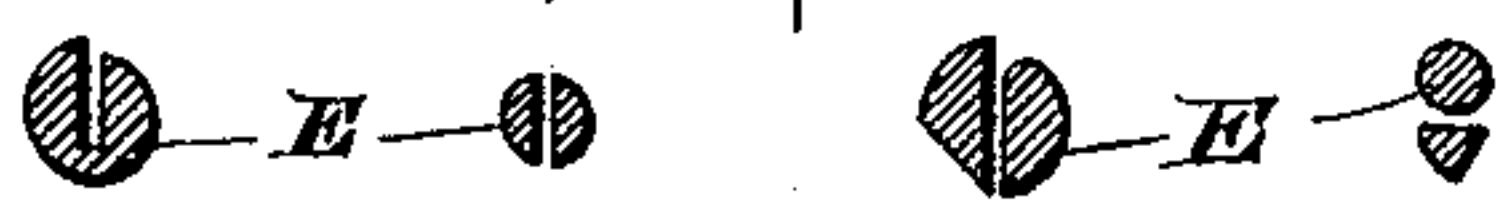


FIG-12-

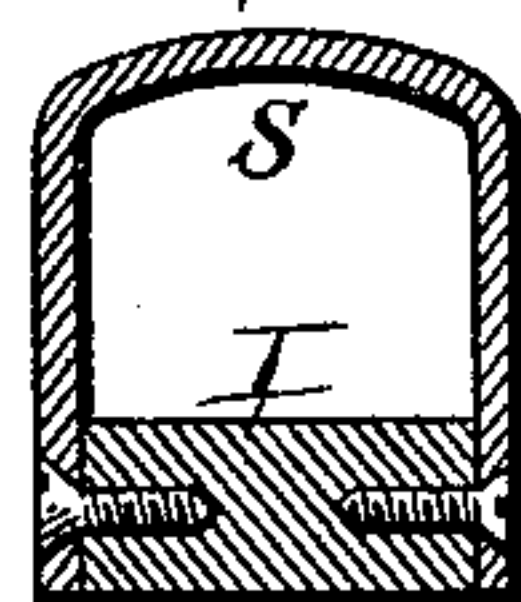


FIG-6-

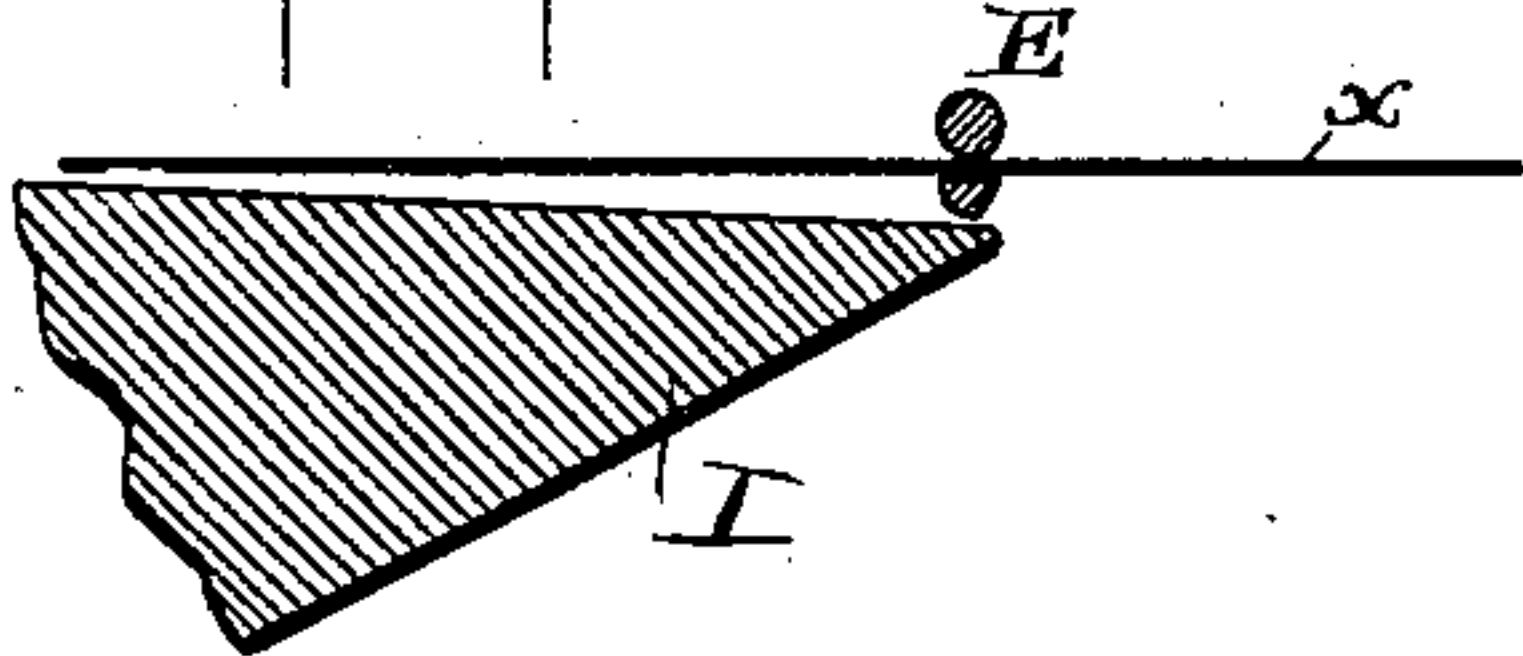


FIG-7-

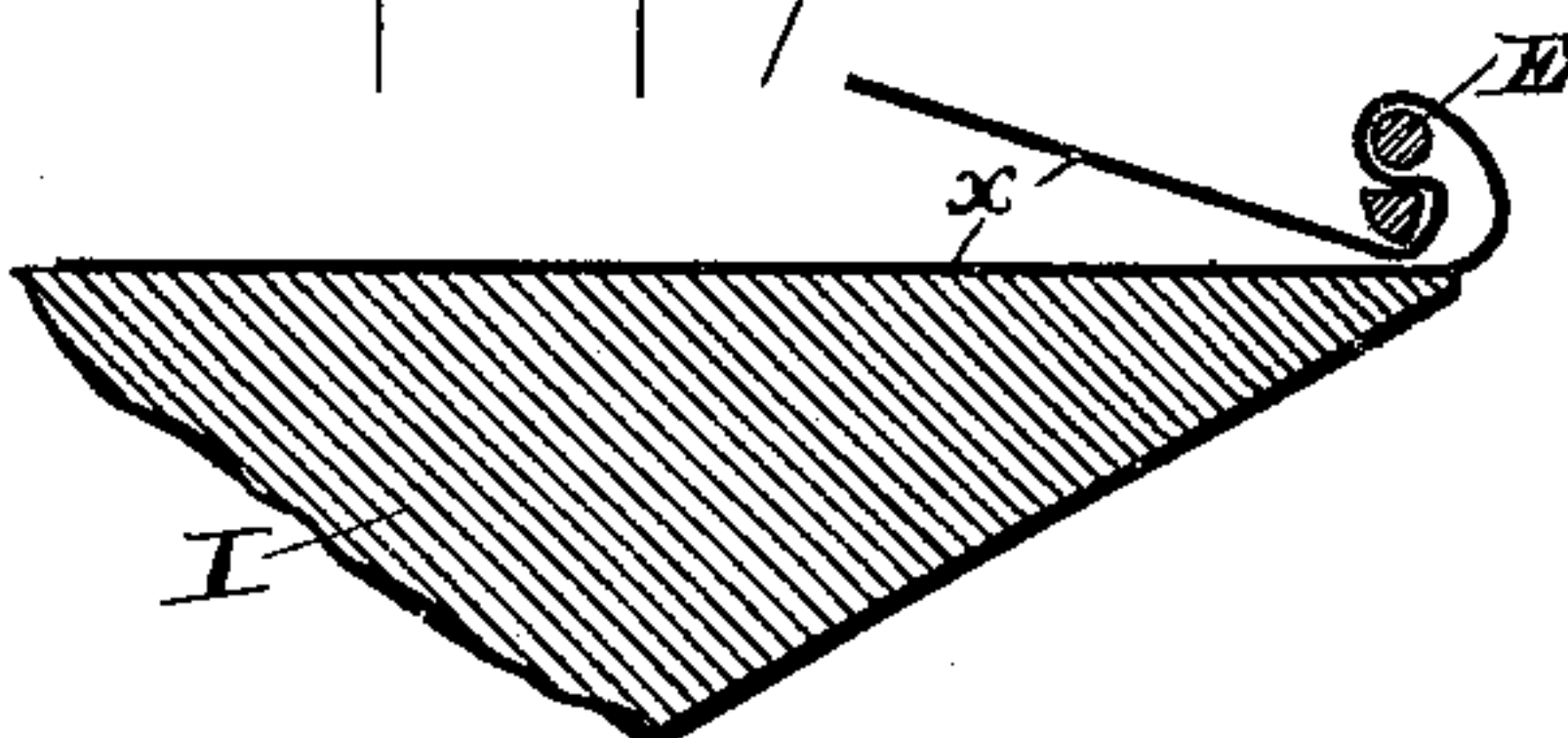


FIG-8-

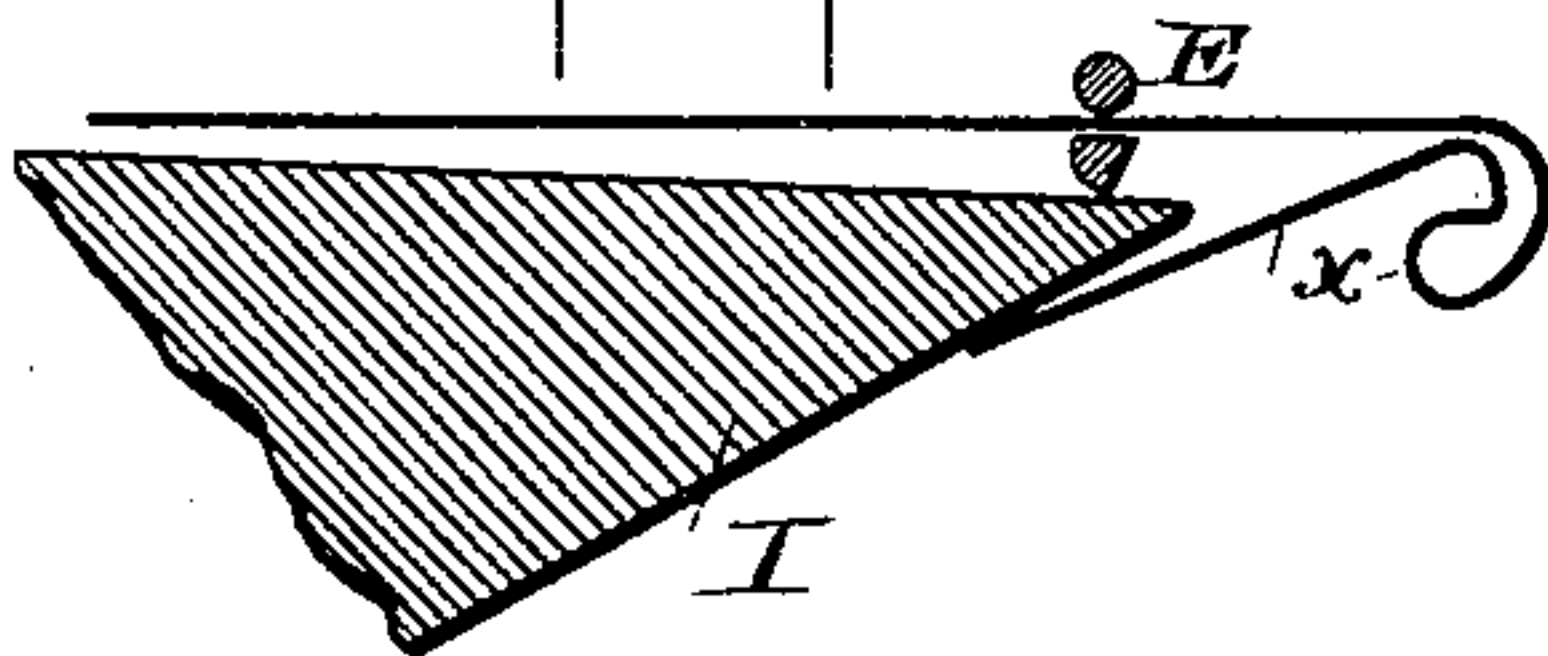


FIG-9-

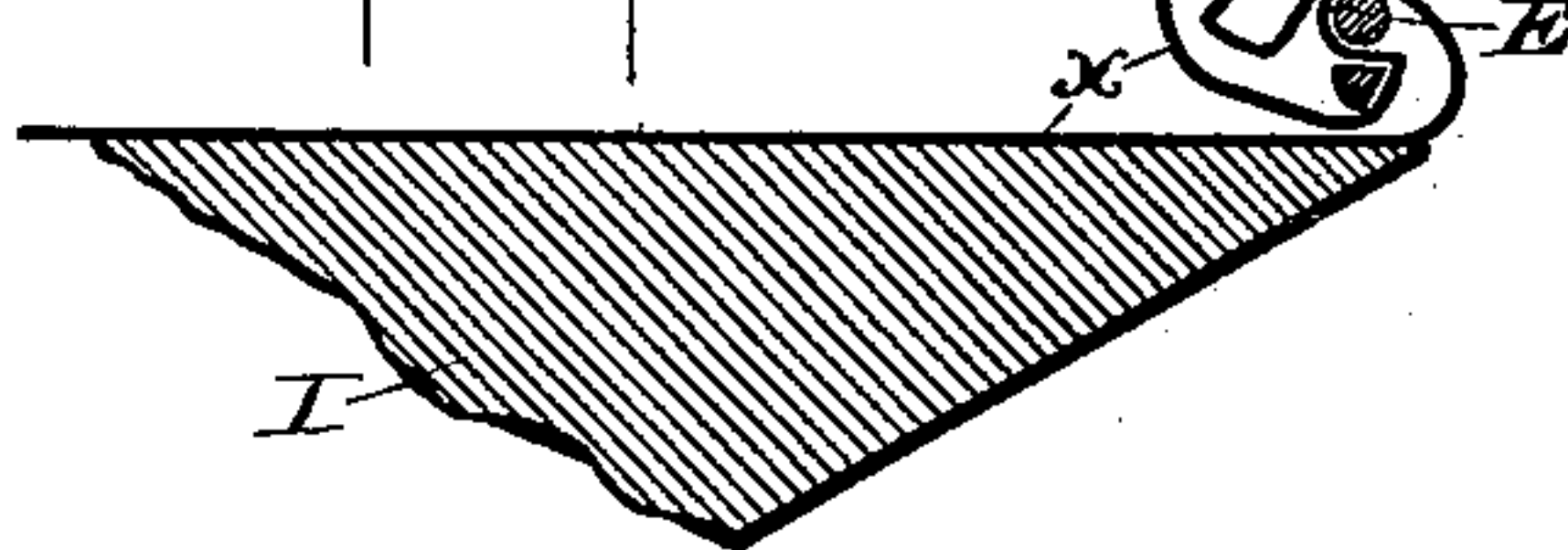
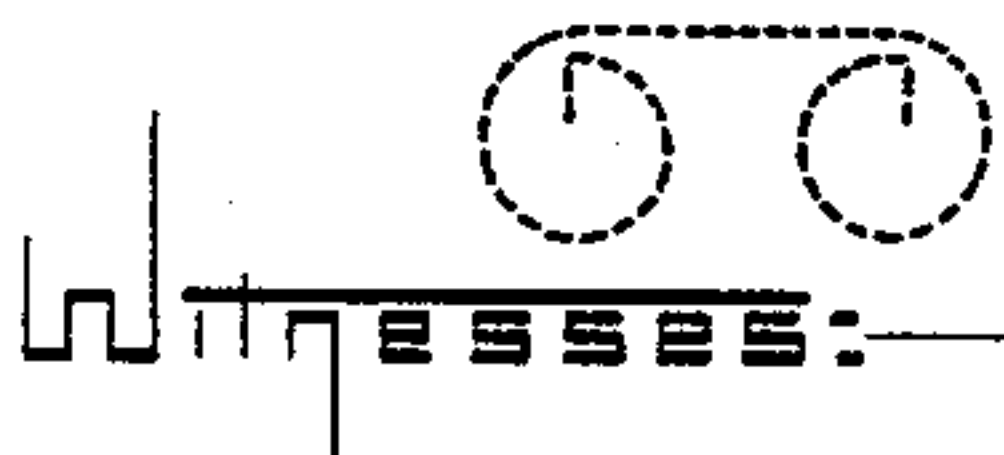
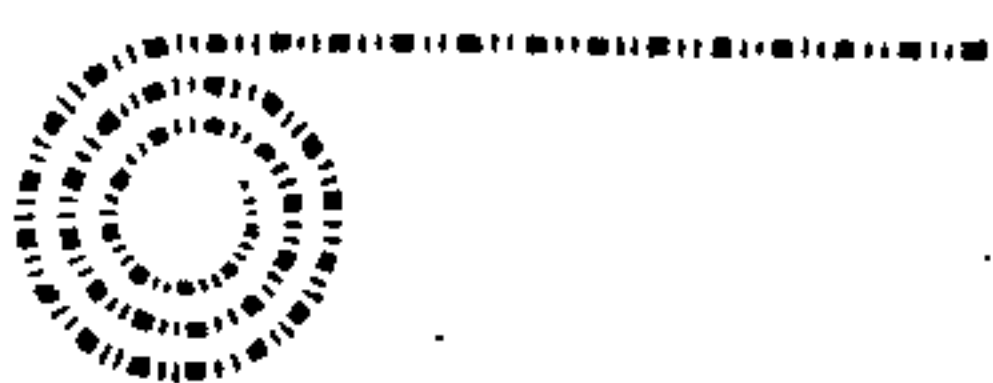


FIG-10-



Witness:
W. W. Deane.

Witness:
John F. Earhart,
By J. S. Zerbe,
his Attorney.
per L. Deane
asse

UNITED STATES PATENT OFFICE.

JOHN F. EARHART, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO JOHN E. RICHARDSON, OF SAME PLACE.

DEVICE FOR FORMING CIRCLES, CURVES, AND GEOMETRICAL FORMS.

SPECIFICATION forming part of Letters Patent No. 403,827, dated May 21, 1889.

Application filed June 11, 1888. Serial No. 276,672. (Model.)

To all whom it may concern:

Be it known that I, JOHN F. EARHART, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Devices for Forming Circles, Curves, and Geometrical Forms, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of this device. Fig. 2 is a top plan view of the same. Fig. 3 is a side elevation. Fig. 4 is a perspective view of the shaft. Fig. 5 is a series of sectional views across the shaft to show some of the differences in grooving and slotting the same. Figs. 6, 7, 8 and 9 are cross-sections showing end of holder and the shaft in the act of bending the metal in various ways to indicate some of the many forms and configuration in the rules that can be made by my machine. Fig. 10 shows forms of the completed rule. Fig. 11 indicates how in making spiral curves on this machine cardboard strips can be used. Fig. 12 is a detail in section showing the hollow handle of the holder.

The object of my invention is to provide a device for forming circles, curves, and geometrical forms to be used in making borders and other ornamentations; and it consists of a suitable base-piece having cast therewith on one side a guard, and at its forward end two ears, in which is journaled a grooved or slotted shaft having a crank. In this base is pivoted a piece having a depressed portion, and the forward end of this piece rests under the grooved or slotted shaft, and the rear end is provided with a hollow handle, through which the rule to be curved or bent is placed, one end of the rule being placed in the grooved or slotted shaft, and the latter is then turned by means of the crank, so as to produce the requisite curve or form desired, as will now be set forth.

In the drawings, A represents a suitable base-piece having along the forward half of one side a guard-piece, B, cast integrally therewith. The forward end of this side guard has a vertical enlargement, C, through which is a horizontal aperture to receive a shaft. On the opposite side of the base, directly

across from this vertical enlargement C, is an upwardly-projecting ear, D, having an embossed hole to receive the end of a shaft. This portion of the device I call the "frame." The shaft E, which fits into and is journaled in the said apertures or holes, has a suitable handle, H, and in the portion in the ear D, and between it and the part B, is recessed along its length, by which is meant that it can either be slotted or simply grooved. The shape of such slots or grooves, and consequently of the shaft in cross-section, can be varied in as many ways as may be desired to make different configuration in the bending of the rule. In the drawings I have represented several different shapes merely to indicate that this wide range is possible, and not only desirable, but necessary.

I represents a holder, being composed of a piece narrower than the base A, which is pivoted or hinged, preferably, at a little out of the center to the side guard, B, by means of a horizontal bolt, J, near its forward end at a point to the rear of the ears C D, through which the shaft E is placed. By thus pivoting the holder it is capable of a rocking motion, which is of peculiar value in securing the necessary pressure between it and the shaft when the machine is being operated. The upward face of this piece I has a reinforcing plate, K, the forward end of which may be slightly turned up or bent around the shaft E. The side of this piece I next to the guard-plate B has a side guard, M, which is permanently fixed at the piece I, while the opposite side of the piece I has a plate or guard, N, to which is attached two pins, O, which project into the piece I, and are provided on the body thereof with coiled springs Q. The space between the plates M N is slightly narrower than the height of ordinary printing-type, or of the rule which is to be bent, so that the springs Q will bind the rule between the guards M N when it is placed on the piece I. R represent headed lugs, which project from the side of the piece I below the guard N, and act as guides upon which the side guard can be moved out or in, and also serve by their heads to limit the outward movements of the guard. At the outer end of the pivoted piece or holder

I is the hollow handle S, of any suitable depth, which is designed for the reception of one end of the metal rule x , when it is to be or has been bent, and wherein it can be turned over without being removed. The forward end of the holder comes under and in convenient relation with the slotted or grooved shaft, which is at right angles to it, so that when the device is operated suitable force can, by pressing on the handle S, be brought to bear at the point where the metal comes between the forward end of the holder and the shaft. This force or contact will essentially aid in giving the best results from the machine.

In operating the device, the rule is laid upon the holder I, one end passing through the hollow handle S. The forward end of the rule is then entered into the groove or slot in the shaft and the crank H turned, so as to wrap the rule around the shaft E, the operator in the meantime pressing upon the handle S, so as to keep the forward end of the piece tightly against the shaft E, and thus wrap the body of the rule around on itself as many times as may be desired. Thus in Fig. 1 the metal rule is shown in the position above described, while in Fig. 10 are indicated a few of the great many different-shaped bends or curves that may be made by this machine. The variety of these shapes is almost indefinite.

I do not confine myself to any particular form, size, or shape of shaft, and for doing the best work each machine must have a full equipment of shafts, both slotted and grooved, so as to produce the various effects. In making borders or ornamentations for a form, I may use only one shaft or a combination of two or more used alternately or successively, so as to produce odd effects or various combinations.

In making some spiral curves I prefer to use strips of card-board, which are laid on the strip to be bent. These card-board strips are then bent with the rule and afterward taken out so as to leave the curved rules separated from each other. Thus in Fig. 11 I show two card-board strips, b , placed on the rule so as to separate the curved portions. The application of one strip is so similar to this as to be readily understood by any workman.

What I claim as new is—

1. A device for curving or bending printers' rules, consisting of a frame and a holder pivoted therein just out of its center and provided with an opening through which the rule is fed and side guards to guide the same, and a shaft journaled in the frame suitably provided along its length with a recess to hold one end of the rule.

2. In a rule curving or bending device, the combination of the frame, the movable holder pivoted therein and having a hollow handle, S, and side guards, M and N, with the crank-shaft journaled in the frame at right angles with the holder and adapted to receive along its length an end of the rule.

3. The combination of frame A, the pivoted holder I, having hollow handle S at one end and fixed guard M at one side, and a movable guard, N, at the other, and a suitable shaft to bend the rule.

4. In a machine, as described, the holder I, having fixed guard M on one side and a movable guard, N, on the other, provided with headed pins O, each having springs thereon, and the headed lugs R in the side of the holder, whereby the upper face of the holder can be adapted to receive wide or narrow pieces of metal rule.

5. The rocking holder I, upon which the metal rule is held and guided, pivoted near its center in the frame and having its forward end in close proximity to the shaft E, made as described and journaled in the frame, whereby in the operation of the machine the forward end of the holder can be brought in contact with the shaft or the metal thereon with any desired force.

6. In a metal-rule-bending device, the combination of the following elements, viz: a frame, a rocking holder pivoted near its center in the frame and constructed and adapted to contain and guide the rule, and the shaft constructed as described and journaled in the frame and located at right angles to the holder, all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, this 24th day of March, 1888, in the presence of witnesses.

JOHN F. EARHART.

Witnesses:

J. S. ZERBE,
R. S. MILLER.