

J. Gatchell.

Bending Springs.

N^o 88,624.

Patented Apr. 6, 1869.

Fig. 1.

Fig. 2.

Fig. 3.

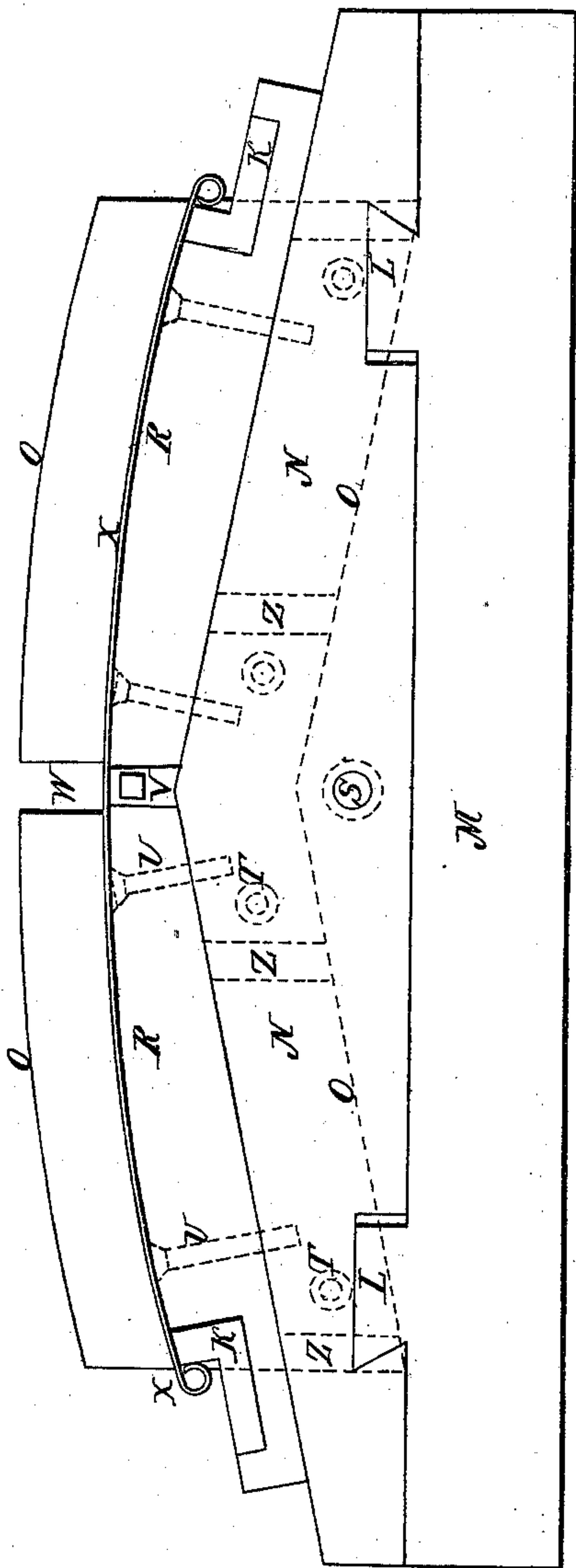


Fig. 4.

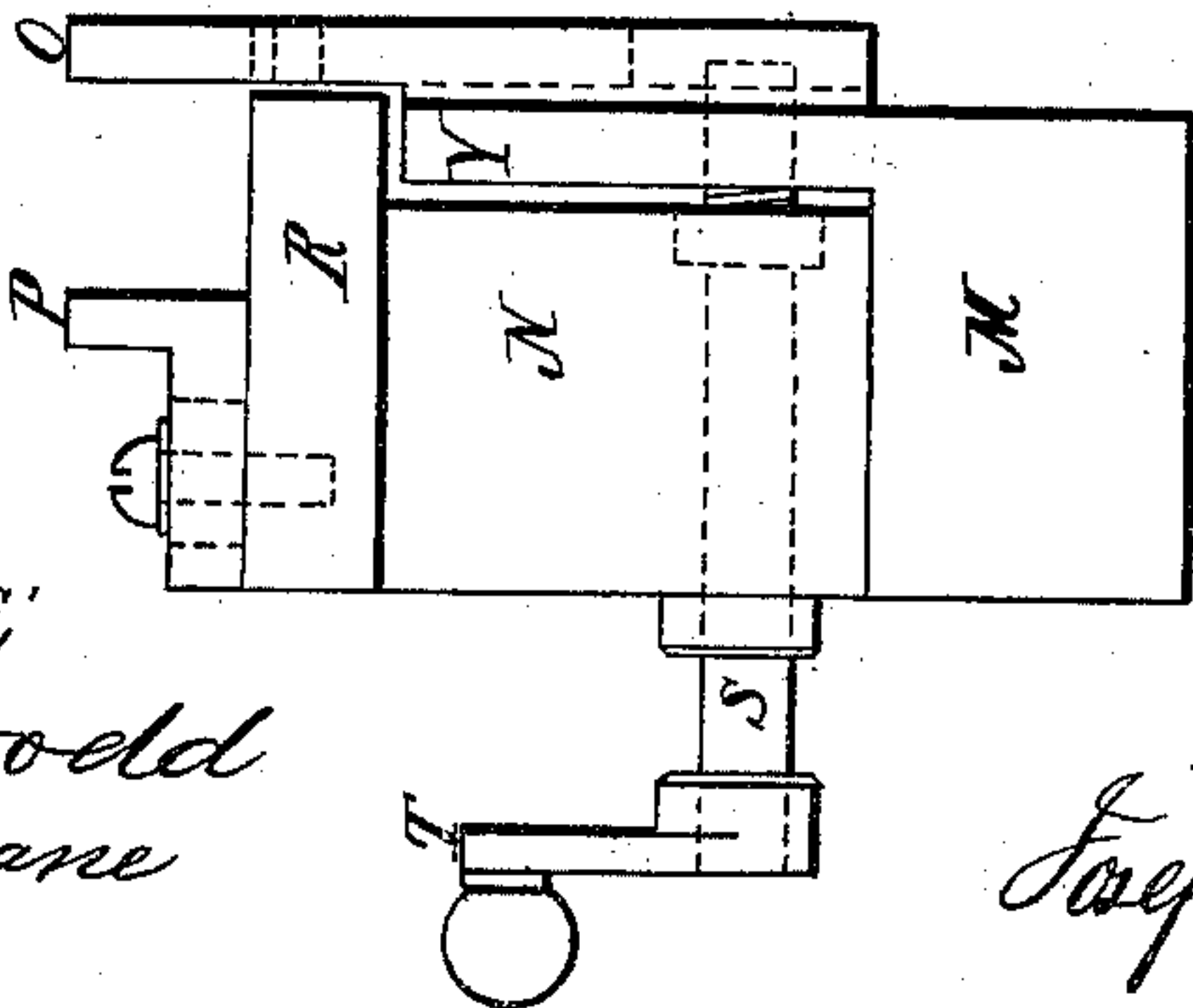


Fig. 6.

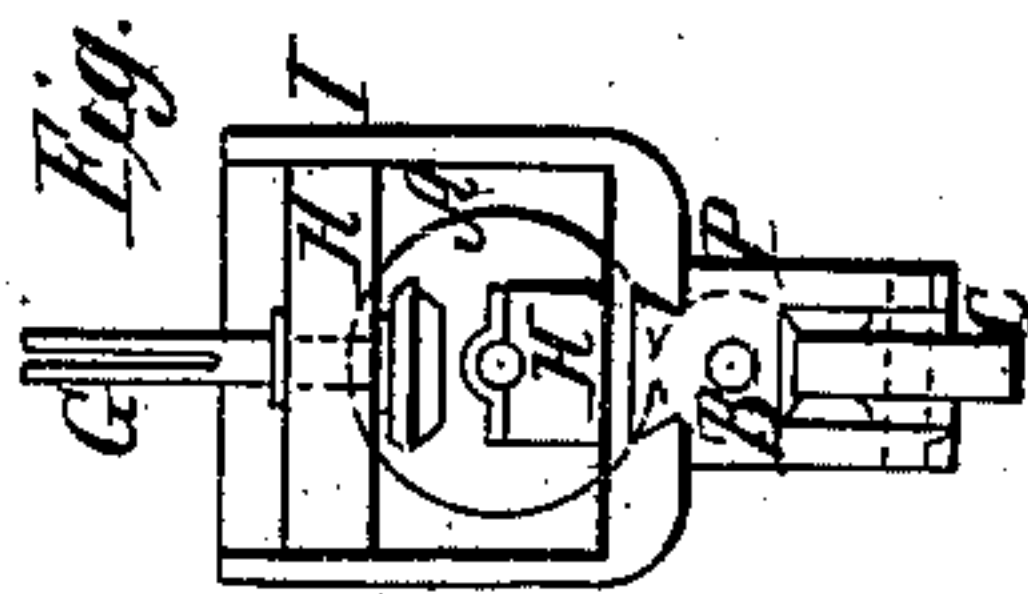
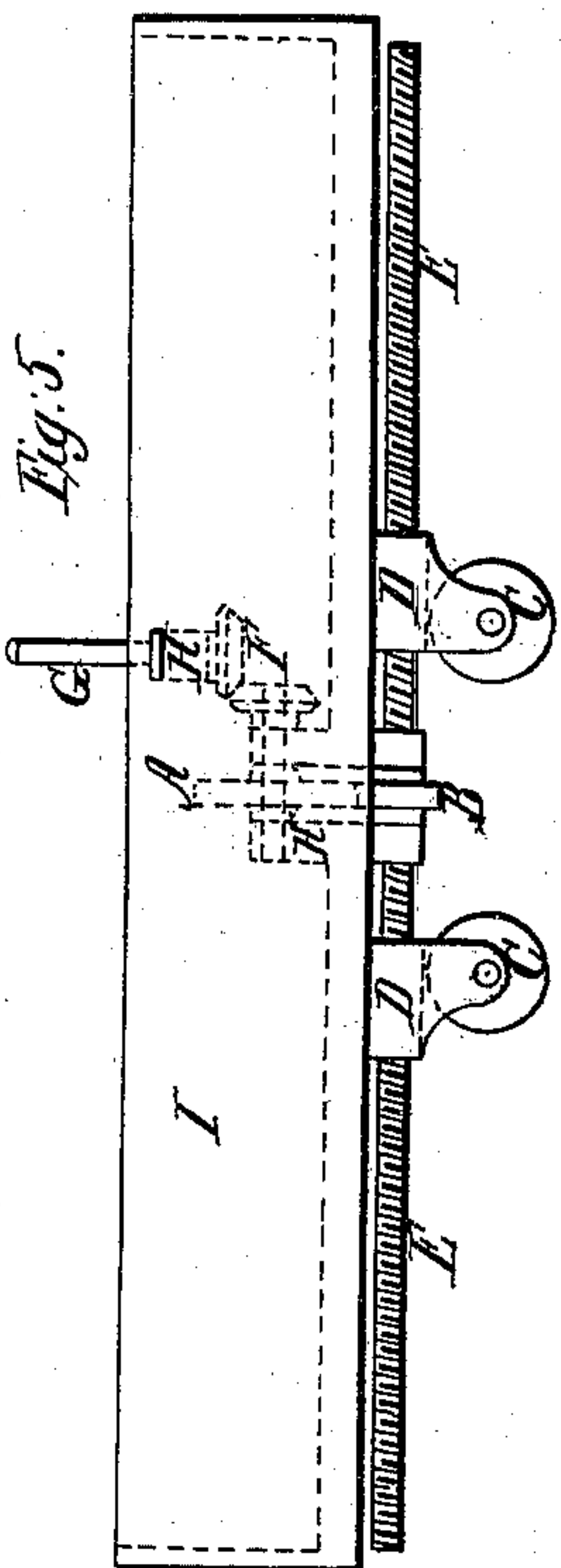


Fig. 5.



Witnesses:
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JOSEPH GATCHELL, OF RAHWAY, NEW JERSEY.

Letters Patent No. 88,624, dated April 6, 1869.

IMPROVED TEMPLET FOR BENDING SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, JOSEPH GATCHELL, of Rahway, Union county, New Jersey, have invented certain Improvements in a Machine for Bending Springs for Wagons, &c., patented by me, on the 3d day of November, 1868, being No. 83,625; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and letters of reference therein.

The improvements relate to the templet marked R, in my patent dated November 3, 1868, and to the mechanism for operating the rolls, marked C, in the same patent.

Having found, by practice with the templets, as first invented and patented, that the springs when hot were wider (by reason of the expansion of the metal composing them) than when cold, I devised the arrangement shown in Figures 4 and 3, where R represents the templet upon which the springs X are laid to be bent, said templet being secured to a sliding base, N, which has a motion, when desired, at right angles to the spring.

This base N slides upon a bed-piece, M, which is provided with dovetails L, to guide the base N, when moved.

This bed-piece M is furnished at one side with a vertically-projecting flange, Y, to which various vertical flanges, O, can be secured, by screws T, thus forming a gauge, in connection with the flanged adjustable gauge P, to guide the springs sideways when being bent.

If these flanges were set the right distance apart, to receive a two-and-a-half inch or any other spring, when hot, the spring, when cool, being narrower when cooled, would have a certain space to move in sideways, and be crooked in the act of cooling just that amount.

I, therefore, provide a screw, S, turned by a crank, T, or any equivalent device, to move the base N, upon which the templet R and the adjustable flange P are fastened, toward or away from the stationary flange, or gauge O.

This arrangement enables one to open quickly the gauges O and P, to such an amount that the spring drops in readily upon the templet R, and then to pinch the spring sideways as it is bent hot, and also to continue the pinching pressure as the spring cools and decreases in width.

The removable flanges O, which are made of the proper length and height to suit each pattern of spring, are kept from touching the fixed flange Y, by resting against certain seats Z upon the flange Y.

These seats Z are designed to produce an open space under the rear edge of the templet R, through which scale, or dirt may drop out of the way, when the templet is moved back, by the screw S, to insert a new spring, or plate.

The adjustable flanged gauge P is constructed, as shown, with slots, by which it can be set at any required distance from the flange O, to suit springs of various widths.

The templet R is constructed with loose pieces K,

fastened into suitable recesses at each end, which can be made of various lengths, to support the ends of springs of several lengths, and of any width required to enter between the ears, made at the head of a spring.

The invention of these pieces K enables me to bend springs, from thirty-six to forty-two inches in length, without any expense for new templets, by simply making pieces K of one, two, or three inches in length to fit at each end of a thirty-six-inch templet.

It will be noticed that the templet R is held to the base N by screws U, so that it can be readily removed, and a different one used in its place.

I find that in bending one plate of a spring on top of another, that the successive plates do not get the right set or rise, as the ends have a tendency to rise when the water is applied to cool them.

I, therefore, place on top of any plate of the spring, before laying on the next plate, a former, (shown in Figure 1,) consisting of a piece of metal, of the same width as the spring, and of any length desired, and tapered from the middle toward each end.

This former, in effect, produces a templet of greater convexity, and can be made to give the plate any desired curvature.

I also find that when two rollers are employed in conjunction to bend springs, they do not press the plate, or spring down to the templet at its middle, for the reason that the points of contact of the two rolls are each distant from the middle of the spring one-half the diameter of the roll.

I, therefore, lay on the top of any hot plate that is being bent, a presser, (shown in Figure 2,) shaped like the former, and full long enough to span the distance between the centres of the rolls.

The pressure of the rolls comes upon the ends of this presser, fig. 2, and it is made stiff enough to press on the middle of the spring, as a roll would do.

A hole, V, is made in the flange O, to admit a bar, carrying a pin, upon which the hole in the middle of each spring is dropped.

The former and presser, described above, have each a hole at their middle, to drop over this pin.

In my patent of November 3, 1868, I have claimed the combination, substantially as described, of the templet-rolls, bending-levers, and weight. Also, the combination of the series of rolls with the bending-levers and templet.

I have made an improvement in the mechanism for moving the rolls back and forth, as they bear on the spring, by which a much more firm and reliable motion is secured, while the arrangement remains substantially the same, and the combination the same as claimed November 3, 1868.

This improvement in mechanism for moving the rolls O, I only describe and claim as an equivalent to the cross-head I and bending-levers Y, which I claimed in combination before, and claim now as substantially the same thing.

In Figures 5 and 6, is shown the cross-head I, made hollow to allow of its being weighted when necessary, constructed so that two carriages D (supporting the two bending-rolls C) can slide freely from the middle toward each end.

These carriages are driven back and forth, to draw the rolls from the middle of the spring, as they bear on it, toward the ends, by a screw with right-hand thread cut on one end, and left-hand thread cut on the other end.

This screw has a gear, B, fastened on it at the middle, which is driven by gears A and F, and shaft G, which extends upward from the cross-head I, and has a groove cut in it, so as to receive motion from other gearing, as the cross-head slides up and down between suitable guides.

This shaft G is reversed at proper intervals, by suitable mechanism, so as to make the screw E alternately move the carriages D and rolls C back and forth over the spring.

The motion and effect produced are the same as that caused by the bending-levers I formerly employed.

In like manner, I use a screw at each end of the cross-

head, to raise and lower it as required, the screws being reversed by suitable mechanism, the motion of all these screws being regulated by adjustable stops, as in ordinary iron-planing machines.

Claims.

What I desire to claim and secure by Letters Patent, is—

1. The templet described, consisting of the bed-piece M, the base N, upper templet R, the loose piece used on upper templet R, (shown in fig. 1,) removable at pleasure, flanges O and P, and screw S, or its equivalent, for moving the base N upon the bed-piece M, as required to receive and pinch the springs when bending and cooling.

2. The blocks, or loose pieces K, in combination with and applied at the ends of the templet R, to extend its use to springs of various lengths and widths.

JOSEPH GATCHELL.

Witnesses:

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THOS. S. CRANE.