

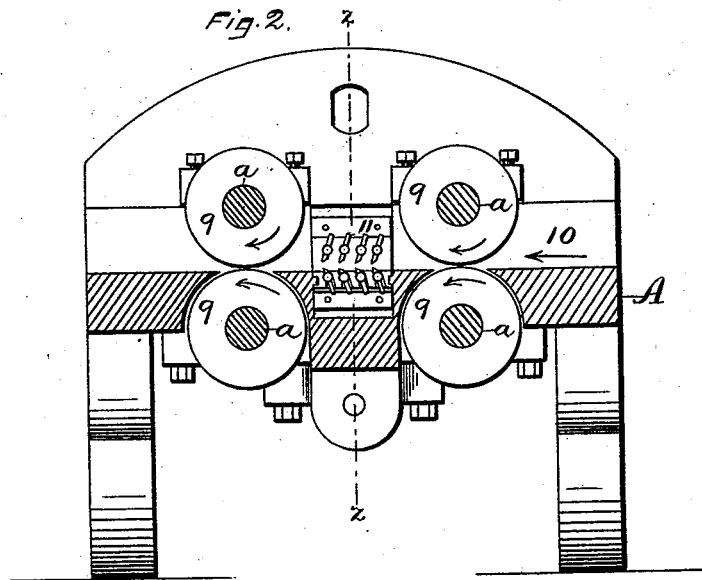
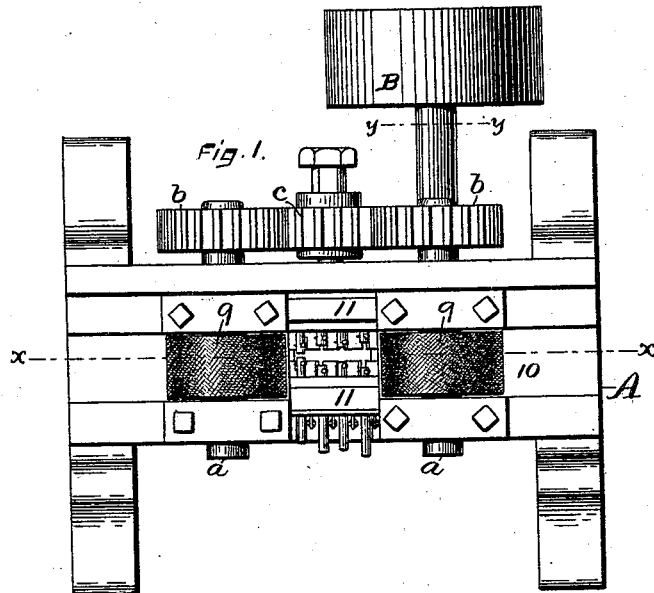
(No Model.)

3 Sheets—Sheet 1.

W. R. ROOT.
MACHINE FOR LINING RULES.

No. 423,446.

Patented Mar. 18, 1890.



Witnesses.

John Edwards Esq.
Chas. H. Whiting

Inventor.

Watson R. Root.

By

James Shepard
Atty.

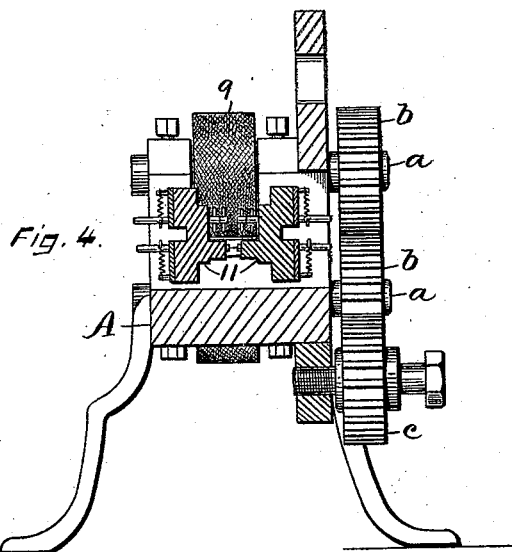
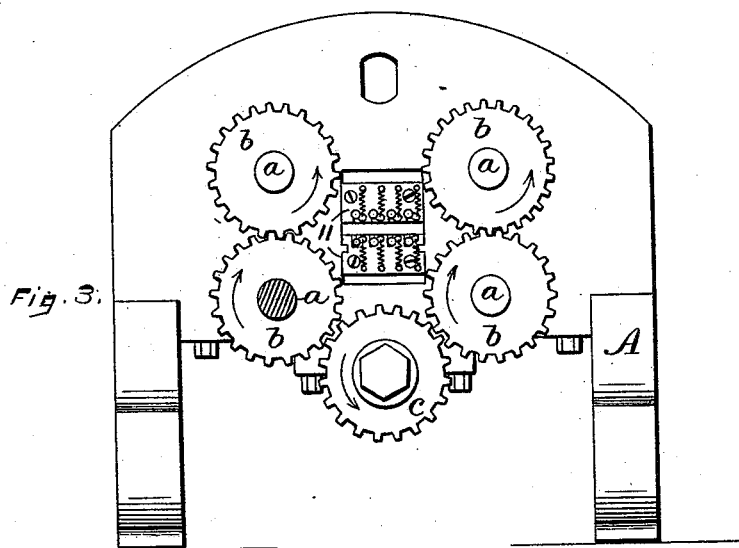
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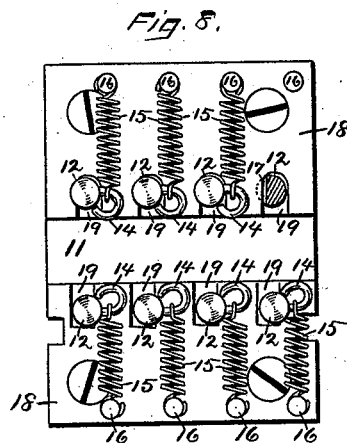
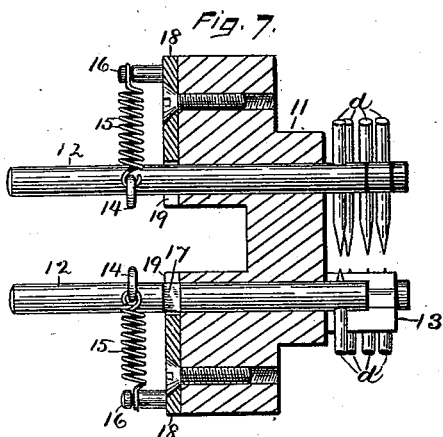
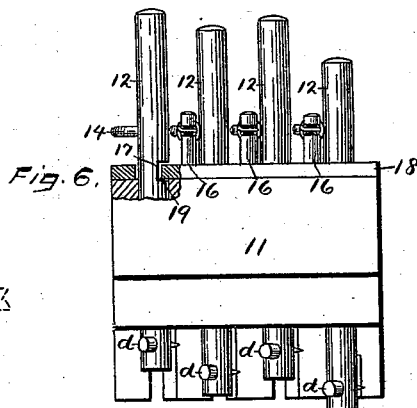
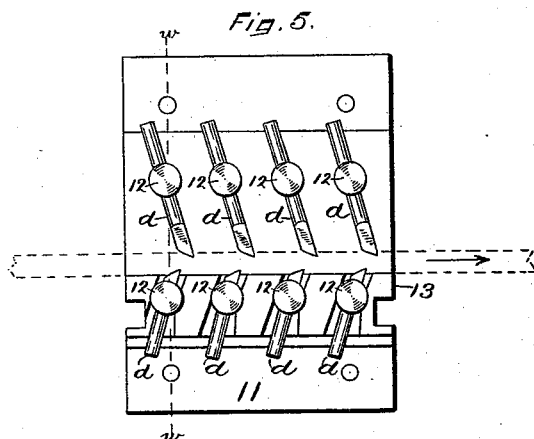
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W. H. Whiting

INVENTOR.

Watson R. Root.
By James Shepard Atty.

UNITED STATES PATENT OFFICE.

WATSON R. ROOT, OF CANTON, ASSIGNOR TO THE UPSON NUT COMPANY,
OF FARMINGTON, CONNECTICUT.

MACHINE FOR LINING RULES.

SPECIFICATION forming part of Letters Patent No. 423,446, dated March 18, 1890.

Application filed September 18, 1889. Serial No. 324,334. (No model.)

To all whom it may concern:

Be it known that I, WATSON R. ROOT, a citizen of the United States, residing at Canton, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Lining Rules, of which the following is a specification.

My invention relates to machines for making the longitudinal lines on rules or other articles; and the chief object of my invention is to provide a machine for doing this work automatically, and consequently more expeditiously and better than heretofore.

In the accompanying drawings, Figure 1 is a plan view of my machine. Fig. 2 is a vertical section thereof on line *xx* of Fig. 1. Fig. 3 is a rear elevation thereof. Fig. 4 is a vertical section on the line *zz* of Fig. 2. Fig. 5 is a detached enlarged view of the marking-points and their mountings. Fig. 6 is a plan view of the same, partly in horizontal section. Fig. 7 is a vertical section on line *ww* of Fig. 5, partly in elevation; and Fig. 8 is a rear view of the same with one of the rock-shafts in section.

A designates the frame, upon which are mounted two pairs of shafts *a*, bearing elastic feed-rollers 9 9, the same being preferably formed of soft rubber. One of these shafts is made longer than the others and provided with the driving-pulley B, Fig. 1, and the respective shafts are provided with gears *b*, which are connected by the intermediate gear *c*, whereby both pairs of rollers revolve in unison in the same direction.

Extending through the machine from right to left at right angles to the axes of the rollers 9 9 there is an opening or passage-way 10, Figs. 1 and 2, one side wall of which may serve as a guide for the passage of the rules to the rollers. Between the pairs of rollers I arrange the marking-points, preferably in four series, for lining or marking simultaneously the opposite sides of a folded rule. I arrange the upper and lower series in one block upon one side of the passage-way for marking one half of a folded rule, and in a companion block I place two like series upon the other side of the passage-way for mark-

ing the other half of said rule. 11 11 designate these blocks, which are secured to the frame of the machine in any proper manner in the position shown in Figs. 1 to 4, inclusive. These blocks are bored horizontally from front to rear and provided with a number of rock-shafts 12. In order to avoid crowding, the smaller parts have their figures or letters of reference placed on them only in the enlarged views, Figs. 5, 6, 7, and 8.

Each of the tool-bearing blocks is provided with a ledge or bracket 13 upon the inner face, which serves as the bed for one side of the rule as it passes along by the marking-points. The marking-points are set in the inner ends of the rock-shafts 12 with their sharpened ends projecting against the rule or into the path of the rule, the broken lines in Fig. 5 indicating a rule as being passed through between the points. Each rock-shaft is provided with an arm or eye 14 for the attachment of springs 15, the other ends of which springs are attached to some stationary point—as, for instance, the posts 16. These springs have a tendency to turn the rock-shafts and swing the points of the marking-tools in a direction to press them against the opposite sides of the rule. The points are set in the rock-shafts so as to bring them into different planes for marking different lines, and their number and position may be varied according to the work desired. These rock-shafts are to have a degree of rocking motion for swinging the points, and some means must be provided for confining them against longitudinal movement. As a convenient means of placing and securing these rock-shafts in place, I notch them upon one side, as shown at 17, and secure them by a plate 18, that is fastened to the outside of the blocks 11. These plates are each provided with a slot 19, the position of which is coincident with the respective rock-shafts, so that the plates may be slipped over the shafts with the metal at one side of the slot 19 in the notch 17 of each shaft, as shown in Figs. 6, 7, and 8, whereby the rock-shafts are held against a longitudinal movement and at the same time permitted to have a certain range of rocking movement. The blocks and tools upon both sides of the

bed will be the same, with the exception that the blocks have their tools arranged to form right and left handed lines, respectively, so that when the blocks are placed face to face the marking-tools will all slant toward that side of the machine to which the feed-rollers will carry the rule. The blocks will also be set such distance apart that their confronting faces will engage the opposite edges of the rule, or in lieu thereof other gages may be provided. An ordinary four-section rule or a two-section rule is folded on the joint that brings the halves of the rule together with their edges abutting, but otherwise left flat.

The operator passes a rule between the first pair of rollers, which grasp the rule and force it between the marking-points for marking the longitudinal lines thereon, and before the first pair of rollers release their hold upon the rule it is caught by the second pair, which will carry the rule along by the marking-points after the first pair release their hold thereon. The direction that the rule moves between the rollers and by the tools is indicated by the darts in Figs. 2 and 5, the movement of the rollers also being indicated by darts in Figs. 2 and 3. In lining a four-section rule the elastic rollers permit the passage of the projecting rule-joint through them, and the swinging movement of the points also permits the passage of the joint under them, while the springs bring the points again into place after the joint has passed. I pass the rule through the machine with the projection of the joint on the upper side of the rule, and I set the rock-shafts for marking the upper side a little farther from the rule, so as to better accommodate the upper points for yielding during the passage of said joints.

I claim as my invention—

1. The combination of a flat bed for supporting rules, the marking-points facing said bed, and the elastic feeding-rollers, substan-

tially as described, and for the purpose specified.

2. The combination of a flat bed for supporting rules, the two pairs of elastic feeding-rollers, and the marking-points between said pairs of elastic feeding-rollers, substantially as described, and for the purpose specified.

3. The combination of a flat bed for supporting rules, a series of yielding marking-points, and the elastic feeding-rollers, substantially as described, and for the purpose specified.

4. The combination of a flat bed for supporting rules, an upper series of marking-points in opposition to said bed, with a lower series of marking-points within said bed for simultaneously marking opposite sides of a rule, substantially as described, and for the purpose specified.

5. The combination of a right and left series of marking-points arranged side by side and suitable gages for simultaneously marking the lines upon both halves of a folded rule, substantially as described, and for the purpose specified.

6. The combination of the block 11, the rock-shafts 12, and the marking-tools mounted in said rock-shafts, substantially as described, and for the purpose specified.

7. The combination of the block 11, the rock-shafts, marking-tools mounted therein, and the springs 15, substantially as described, and for the purpose specified.

8. The combination of the rock-shafts having the notches 17, marking-tools mounted in said rock-shafts, the blocks 11, and the slotted plates 18, with one edge engaging the notches of said rock-shafts, substantially as described, and for the purpose specified.

WATSON R. ROOT.

Witnesses:

JOHN McMAHON,
W. A. HITCHCOCK.