C. S. STEARNS.

Machines for Cutting India-Rubber, Leather, &c.

No. 149,541. Patented April 7, 1874.

Fig. 3.

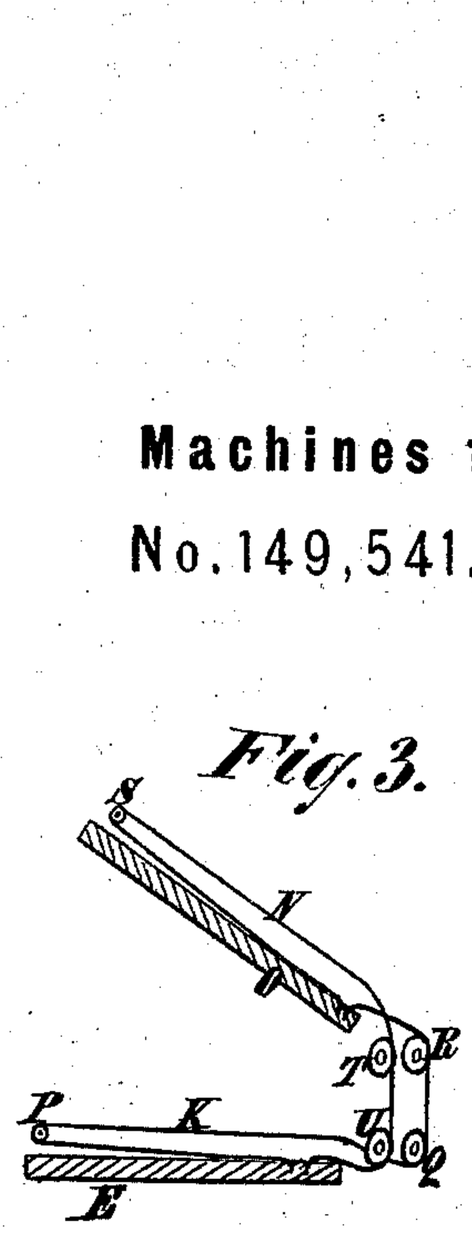


Fig. 2.

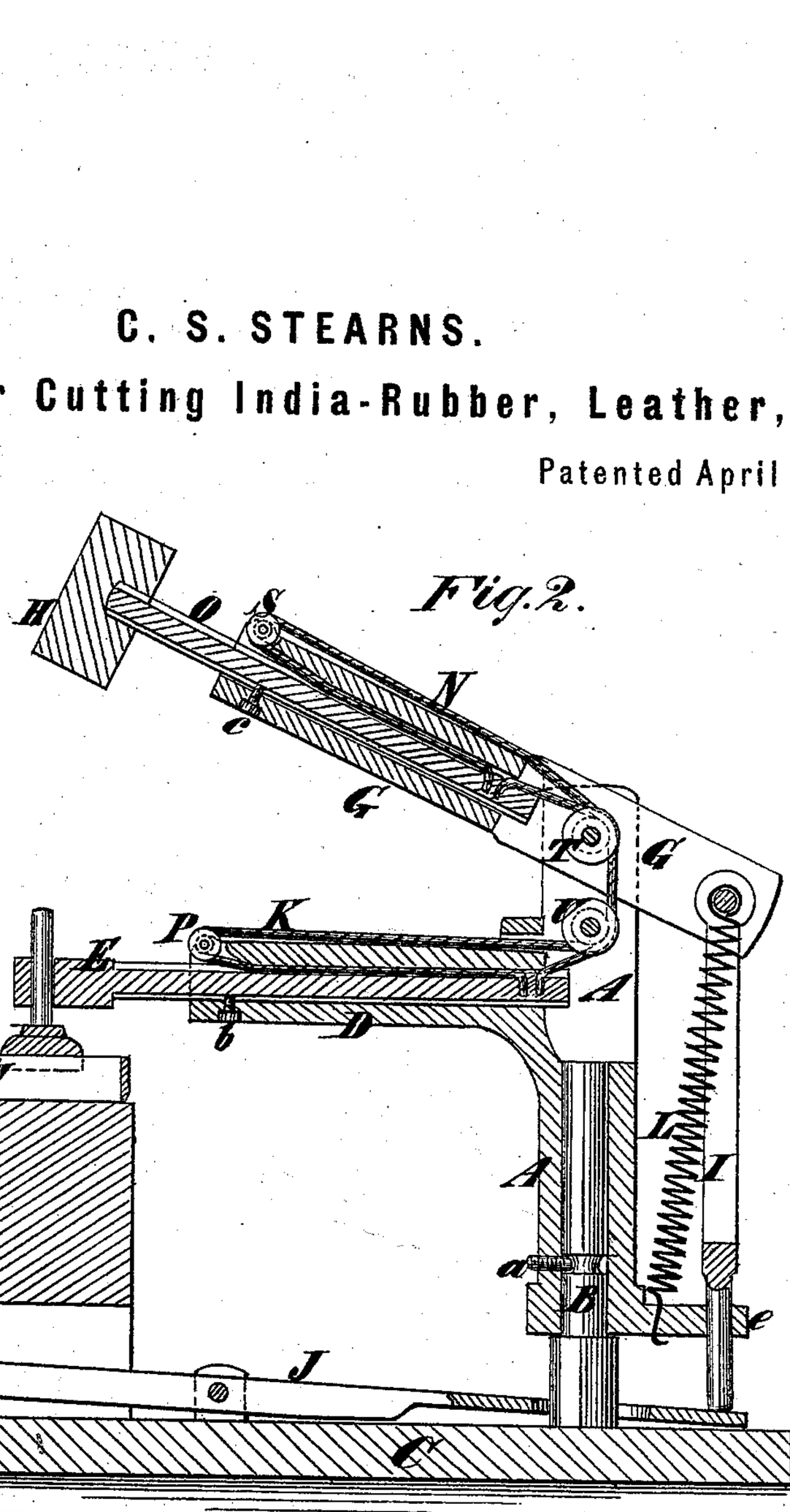
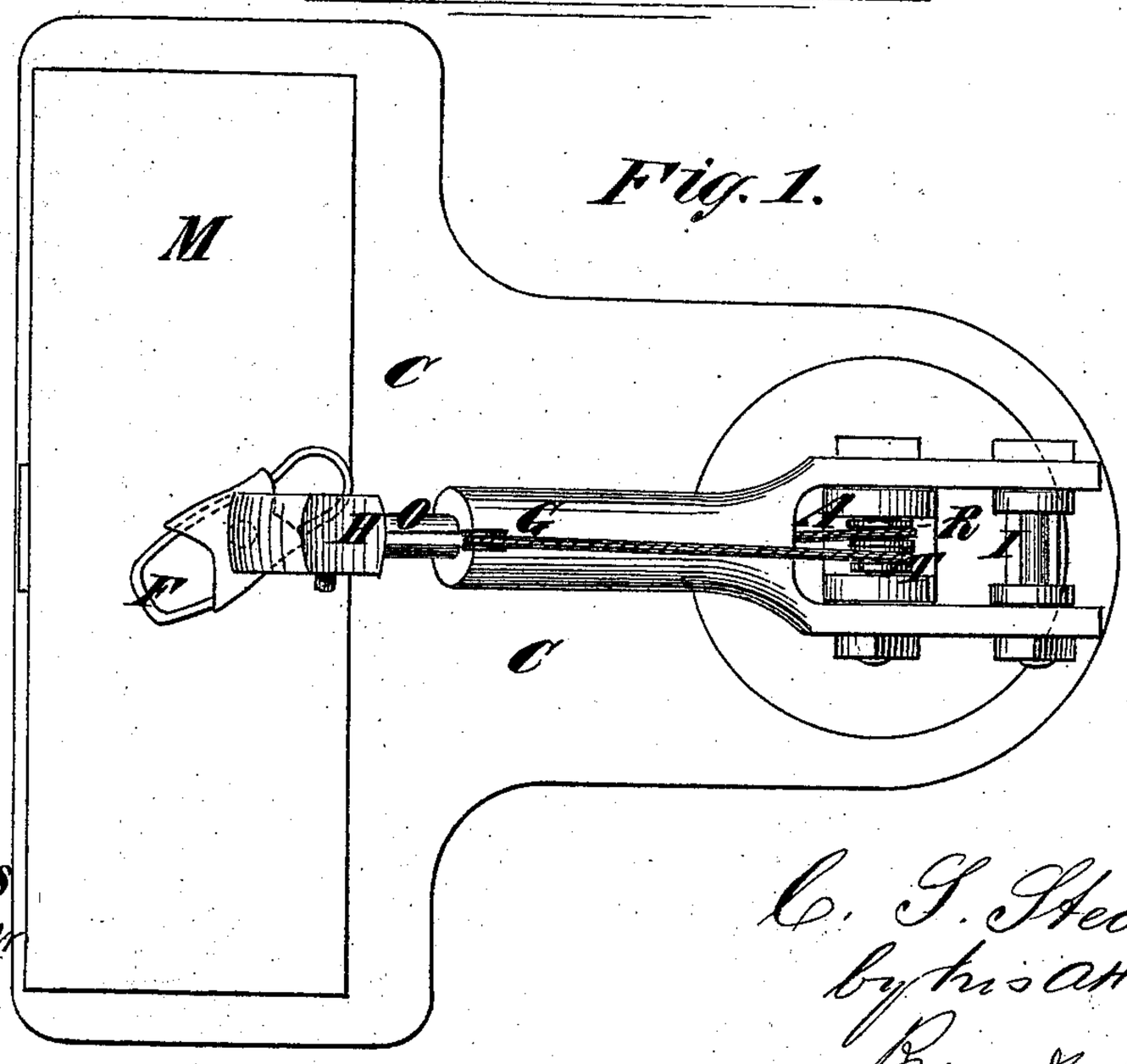


Fig. 1.



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CALEB S. STEARNS, OF MARLBOROUGH, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR CUTTING INDIA-RUBBER, LEATHER, &c.

Specification forming part of Letters Patent No. **149,541**, dated April 7, 1874; application filed September 23, 1873.

To all whom it may concern:

Be it known that I, CALEB S. STEARNS, of Marlborough, in the county of Middlesex and State of Massachusetts, have invented an Improved Machine for Cutting India-Rubber, Leather, &c., of which the following is a specification:

This machine consists essentially of a post or standard swiveled to a suitable base-piece, and provided with two arms fitted with longitudinally-adjustable bars or slides, one of which carries the cutting-punch, and the other of which carries a hammer, and is made capable of being oscillated or swung up and down by a treadle or other means, so that the hammer may operate the punch. By this means the punch is enabled to reach any portion of the block on which the material to be cut is placed, and the two arms are so combined that their relative positions are always preserved, and, therefore, no matter where the punch may be, the hammer will be in the proper position to strike it.

In the accompanying drawing, Figure 1 is a plan or top view of the improved machine. Fig. 2 is a central vertical section of the same; and Fig. 3 is a diagram, illustrating the manner of combining the hammer-arm and punch-arm so that they move together.

Similar letters of reference indicate corresponding parts in the several figures.

A is the swiveling standard before alluded to. It fits an upright post or stud, B, on a base-piece, C, and is secured thereon, as regards longitudinal displacement, by a pin or screw, *a*, that fits into a circumferential groove in the post. The bottom edge of the standard rests on a shoulder on the post B, and is thereby supported. From its upper portion there extends, in a horizontal direction, a hollow arm, D, which is fitted with an extensible bar, E, longitudinally grooved in its upper side to receive a cord, K, by which its extension is effected. A pin, *b*, fitting into a groove in the under side of the bar, maintains its position in the arm, but does not prevent it from moving longitudinally. The cutter or punch F, for cutting the leather or other material, is arranged at the end of this bar. It is of suitable form to cut the material into the desired shapes, and has a shank provided on it to fit a socket on the end of the aforesaid bar E, so that it may be easily struck by the hammer; and, in order that the operator may conveniently hold the shank of the punch while adjusting the implement to the portion of the material to be cut, it is made to extend considerably above its socket in the bar. Above the arm D the standard A is bifurcated, or, in other words, is split into two parts to receive the swinging arm G, which carries the hammer H. This arm is pivoted near one end within the bifurcated portion of the standard, and its rear end, which is nearest the pivot, is furnished with a rod, I, which passes down through a guide, *e*, on the bottom of the standard A, and rests upon the rear end of a treadle-lever J, by which the arm G is operated. This rod is bifurcated above the guide *e* to accommodate a spiral spring, L, which connects the rear end of the arm G with the lower part of the standard, and, by tilting up the outer end of the arm, raises the hammer H, arranged on a bar, O, projecting from its outer end, after it has been forced down by the treadle. The treadle-lever has its fulcrum on the base-piece C, and its foot-piece projects from under the block M, on which the material to be cut is placed. Its rear end is circular, and is perforated to clear the post B. This circular form which the end has, being approximately concentric with the swinging standard, insures its being always under the rod I, no matter into what position the latter may be brought by the swinging of the standard round to enable the punch to reach any particular part of the material on the block M. The arm G is fitted with a longitudinally-adjustable bar, O, which carries the hammer, and, like that which carries the punch, is grooved on one side to receive a cord, N, by which its position is shifted. It is likewise grooved on the opposite side to receive a pin, *c*, which maintains the other grooved side uppermost, and thereby keeps the hammer always in the proper position to strike a downward blow.

Thus far in the description of the two bars E and O, I have only told how they are free to slide in and out of the arms D and G, which support them. I will now proceed to describe the manner of combining them together, so that they will move correspondingly. In do-

ing this I will refer mainly to the diagram, Fig. 3. The cord K is made fast at one end to the inner-end portion of the bar E, and extends thence along the groove in its upper side, and around a pulley, P, at the outer end of the arm D, and along the top of this arm to a pulley, Q, arranged on a suitable pivot or axle within the bifurcated portion of the standard A. From this pulley it passes around another pulley, R, arranged on the pin that pivots the arm G to the standard A, and thence it passes into the groove in the upper side of the hammer-bar O, to a point not far distant from the inner end of the said bar, and there it is made fast. The cord N is made fast to the bar O, in juxtaposition to the end of its fellow cord K, and extends forward along the upper grooved side of the bar to a pulley, S, on the outer end of the arm G, and, passing around it, extends along the top of the arm to a pulley, T, on the pivot of the arm, and thence down under a pulley, U, which is located on the same axle with the pulley Q. From there it extends to the rear portion of the bar E, where it is fastened in juxtaposition to one end of the cord K. By means of these two cords, thus applied, whenever the punch is shifted so that its bar is moved inward or outward relatively to its arm D, the hammer-bar O will be correspondingly moved, and therefore will, throughout the various evolutions of the punch, ever be maintained in its relative position thereto, so that it will strike its shank whenever the treadle is operated to cause this.

I will illustrate this with reference to the diagram. Whenever the punch-bar E is moved outward, the cord N, which is fastened to its rear end, pulls around the pulleys U and T, and likewise around the pulley S, at the end of the arm G, and so draws the bar O forward. Likewise, when the same bar E is pushed inward, it pulls the cord K around the pulley P, at the end of the arm D, and around the pulleys Q and R, and thereby draws the hammer-bar O inward, too. In either case, the cord which is inoperative is slackened by the action of that which is operative, and therefore does not interfere with its operation.

The material—leather, india-rubber, or whatever else it may be—is placed on the block M, and the punch, by means of its handle, is repeatedly adjusted in position on it, to cut it to the best advantage. The hammer is brought down by the treadle to strike the punch in each position, and thereby forces it through the material, and cuts from it pieces in shape corresponding to the form of the punch's cutting-edge.

The hammer might be operated after the manner of a regular trip-hammer, if that, for any reason, should seem better than the mode just described; but it will always be combined with the punch, as stated.

Instead of sliding within the arms D and G, the punch and the hammer-bars E and O might be constructed to slide on ordinary slideways, projecting from the standard A.

The machine thus constructed can equally well be driven by treadle or power.

What I claim as my invention is—

1. The combination of the swiveling standard A, with an attached arm in which the punch or cutter is arranged, and another attached arm carrying a hammer, and having an up-and-down swinging movement, substantially as described, whereby the hammer will strike the punch in whatever position it may be shifted by oscillating the standard, as herein set forth.

2. The combination, with the standard and its two arms or ways, of sliding bars or slides capable of longitudinal adjustment on the latter, and combined together so as to move in conjunction, substantially as specified, for the purpose described.

3. The combination, with the two bars or slides E and O, of the cords K and N, and their pulleys P, Q, R, S, T, and U, essentially as and for the purpose specified.

CALEB S. STEARNS.

Witnesses:
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