

(No Model.)

4 Sheets—Sheet 1.

T. COLDWELL.
BRUSH TRIMMING MACHINE.

No. 359,847.

Patented Mar. 22, 1887.

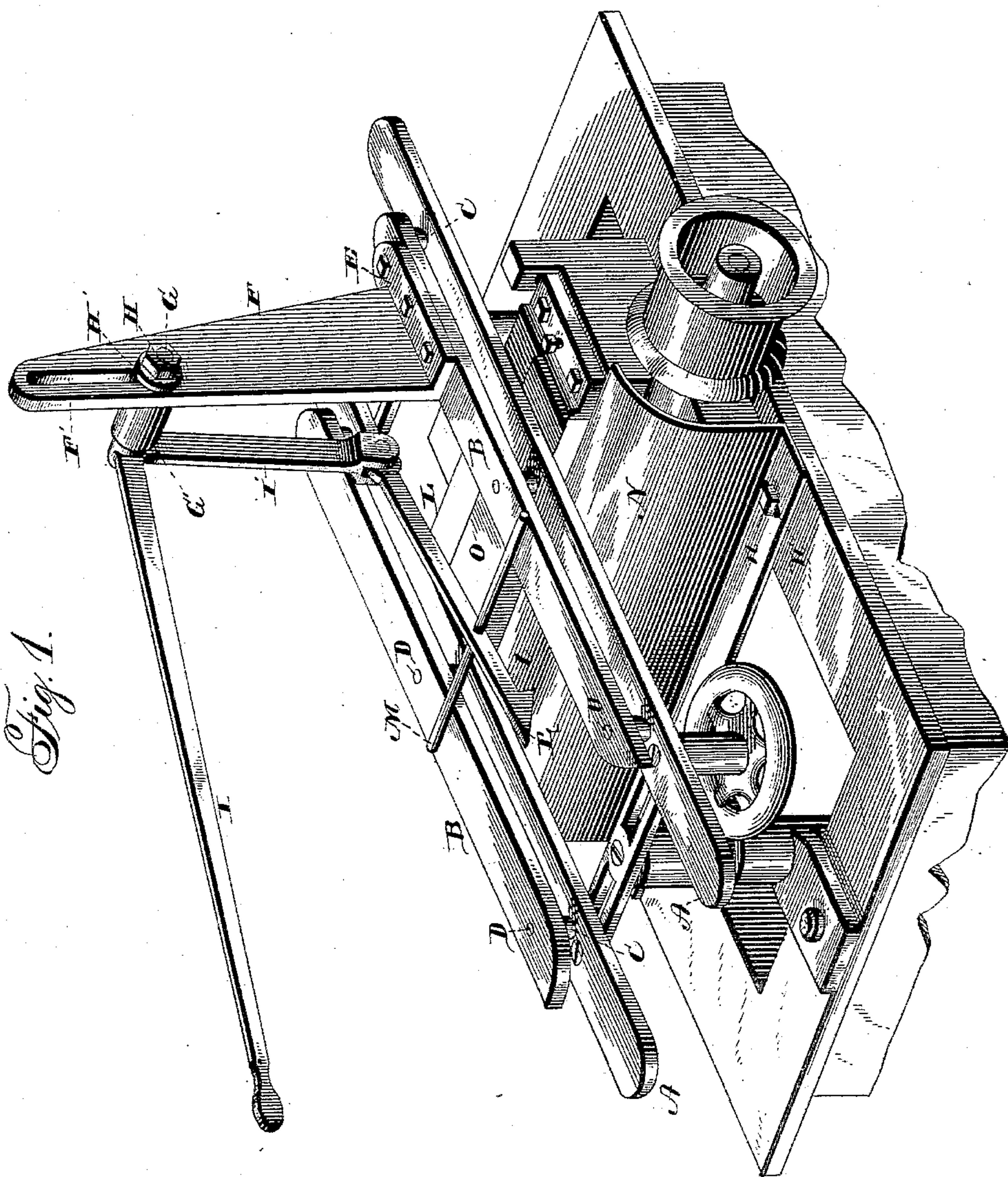


Fig. 1.

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Inventor
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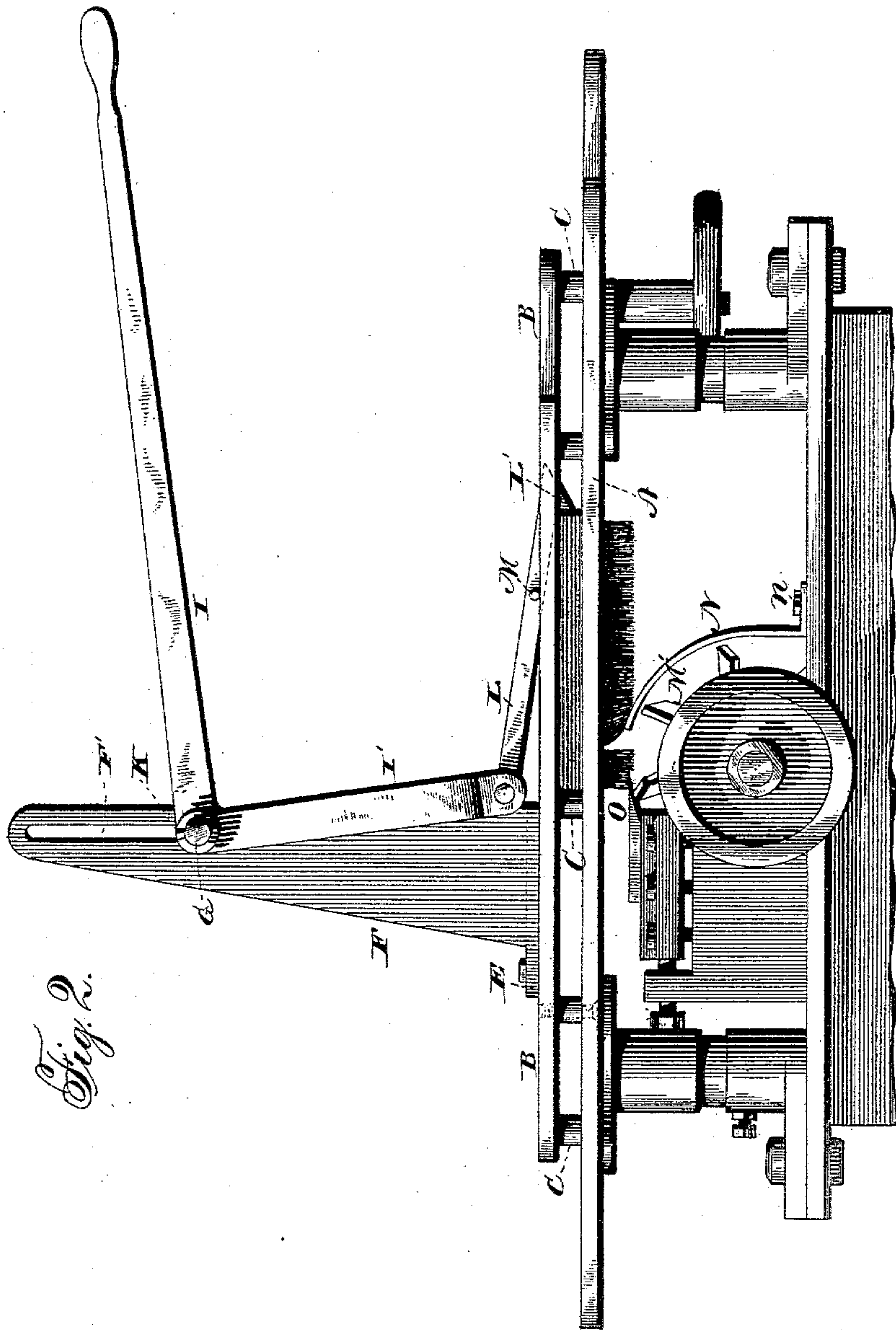
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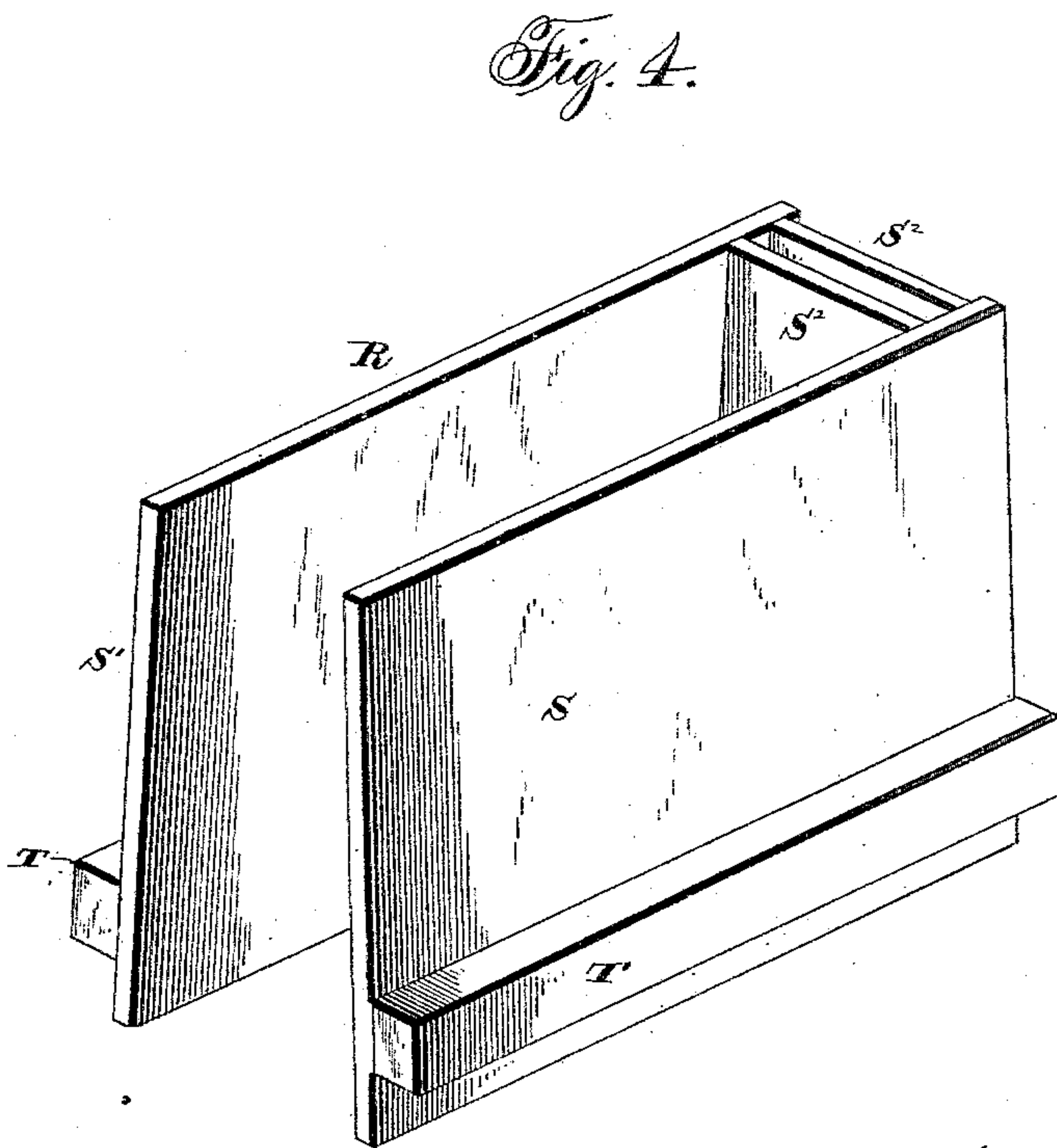
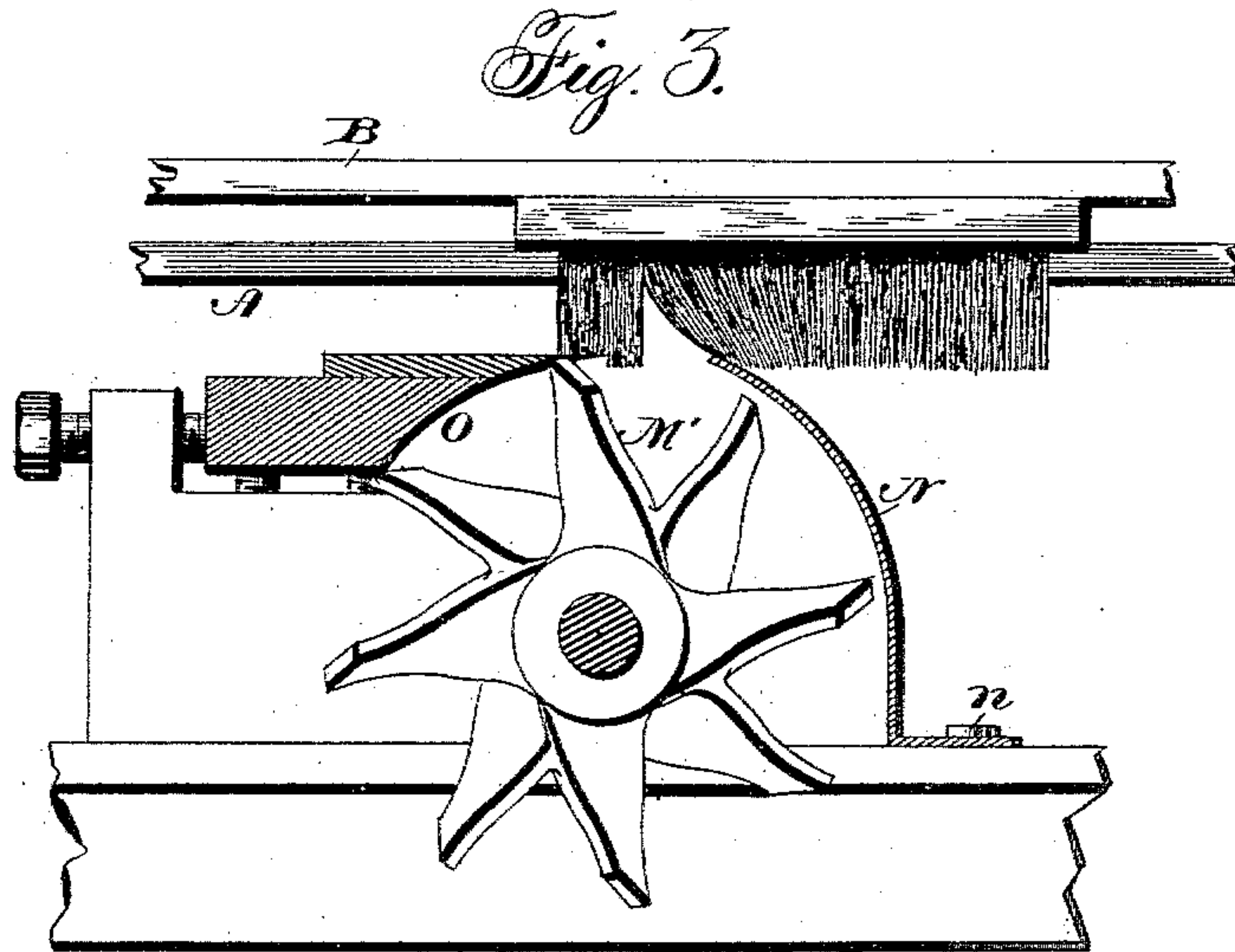
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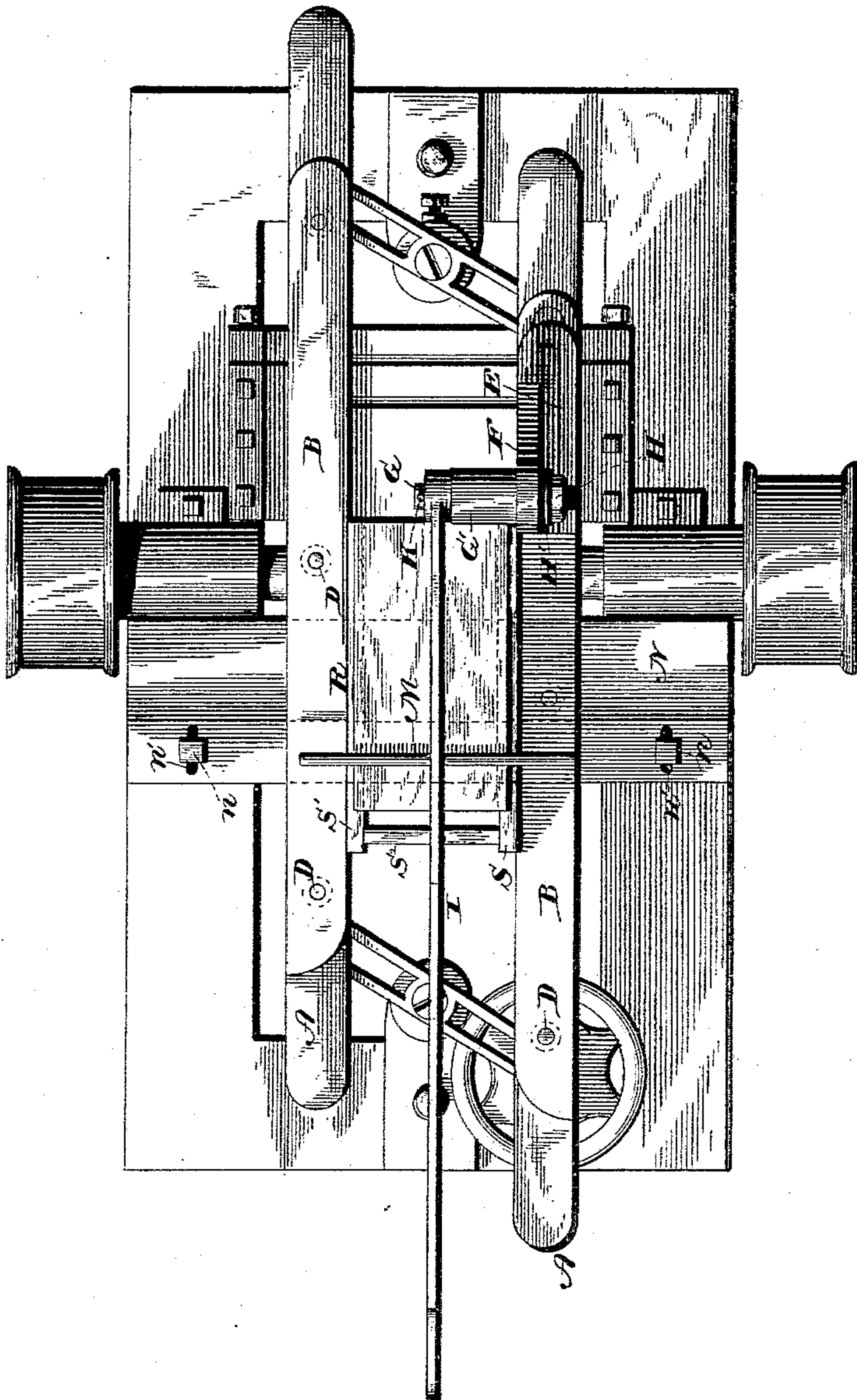
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Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS COLDWELL, OF NEWBURG, NEW YORK.

BRUSH-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 359,847, dated March 22, 1887.

Application filed May 8, 1885. Serial No. 164,822. (No model.)

To all whom it may concern:

Be it known that I, THOMAS COLDWELL, of Newburg, in the county of Orange, and in the State of New York, have invented certain new and useful Improvements in Brush-Trimming Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of my machine; Fig. 2, a view in side elevation of the same on the side opposite to that shown in Fig. 1, showing a brush as being cut; Fig. 3, a detail sectional view showing the action of the shield in connection with the cutters while a brush is being trimmed; Fig. 4, a detail perspective view of the guiding and supporting holder for brushes with long bristles; and Fig. 5, a plan view of my machine, showing the holder in use.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improvement in brush-trimming machines; and to this end my invention consists in the machine and the construction, arrangement, and combination of parts, as hereinafter specified.

In the drawings I have shown my invention as applied to the form of brush-trimming machine shown and described in my United States Patent No. 294,583, March 4, 1884. In such patent the frame of the machine, the fixed and revolving cutters, and the means for adjusting the guides for supporting and guiding the brush being trimmed, either toward or from each other or vertically, have been so clearly set forth and described as not to need special description here. For information concerning these various parts of the machine I would refer to the said patent.

The parallel guide-bars A A serve merely to guide and support the back of the brush being trimmed at the desired height above the cutters. Where wire brushes or coarse and stiff brushes are to be trimmed, however, it is found not sufficient merely to support the brush-back and guide it longitudinally, but there must be some means for holding the brush down in place, so that the trimming can be done evenly, and also for feeding the brush through the machine with some power.

In the case of wire brushes or coarse and stiff brushes of various materials it has been found that the revolving cutter beneath the brush bearing up against the wires or bristles tends to throw or force the brush upward. To hold the brush down in place positively, I have provided the upper guide bars, B B, parallel to bars A A, and supported from and above such bars by means of the tubular posts or distance-pieces C C. These upright distance-pieces, of which there can be any desired number, are situated between the corresponding upper and lower guide-bars, near the outer sides of the bars, so as to leave bearing-space for the brush-back against the upper and lower bars. Screw rods or bolts D D pass up through the lower guide-bars and the distance-pieces C C, and are tapped at their upper ends into the upper bars, as shown in the drawings. The space between each upper and lower bar is to be sufficient to just admit the side portion of the brush-back, so that the brush as it is slid along can have no vertical play.

The upper bars, B B, are made shorter than the lower ones, so that one end of the brush can be quickly placed in position between and supported upon the projecting lower bars, and the brush can then be slid forward with the sides of its back passing under the upper guide-bars. With the upper and lower bars of the same length, some care and time would be necessary to properly insert the brush-back between the guide-bars.

The bars B B, being rigidly supported upon and connected with bars A A, are adjusted with them by the adjusting devices described in my patent referred to.

Upon one of the bars B B is screwed, as shown, the bottom plate, E, of the upright standard F, provided at its upper end with the vertical slot F'. Through such slot passes one end of stud G, which is formed with the collar or enlargement G' bearing against the inner side of the standard F. Upon the outer end of the stud is screwed the nut H, and between such nut and the outer side of the standard is the washer H'. Upon the inner portion of the stud G, over the way between the brush-guides below, is pivoted at its angle the right-angled lever I, having, as shown, a pin, K, to keep the lever in place on the stud. To the downwardly-extending arm I' of this lever

is pivoted one end of the link L, which at its other end is formed on its under side with the pawl-like projection L', having its abrupt side 7 facing toward the inner or pivoted end of the link. The outer end of the link is cut at an 5 angle to form a continuation of the inclined outer side of the pawl-projection.

The link L, with its pawl, I call my "pawl-link." Such link is, near its pawl end, provided with a transverse pin or bar, M, adapted 10 to rest upon the upper sides of the top guide-bars, B B, so as to support the end of the link and prevent its dropping down too low between the guides.

15 In operation, when a brush has been started between the guides, as described, the lever I is swung to carry the pawl-link out over the brush until its pawl-projection drops down behind the end of the brush-back. If, then, the 20 lever-arm I be pulled down the pawl-link will be moved so as to draw the brush with considerable power, and as slowly or as fast as desired through the guideway therefor and over the cutting devices.

25 In brush-trimming machines as heretofore made with revolving cutters, as the brush is fed up to and over the cutters the bristles are not cut the required amount by single cuts, but only by a series of small cuts. Each bristle 30 as it comes within reach of the moving cutters has first a small portion clipped off, then another, and so on until it comes directly over the edge of the stationary cutter, when the last portion of the desired cut is taken off. As 35 the bristles are thus each acted upon a number of times by the cutters, there is a useless waste of power. It has heretofore, because of this repeated clipping or chewing action of the cutters, been impossible to trim wire brushes 40 by a machine driven by hand-power. To avoid such action of the cutters, and insure that each wire or bristle shall be cut off the required amount by one cut only, I provide in front of and over the revolving cutter M the shield N, 45 preferably curved, as shown, concentrically with the arc of travel of the cutter-edges. This shield extends across the machine, and is fastened to the frame by means of screws *n n*, passing through slots *n' n'* into the table or upper 50 portion of the frame, as shown. As thus fastened, the shield is obviously capable of being adjusted nearer to or farther from the revolving cutter. The upper or outer face of the upper edge of this shield is situated in a 55 plane above the circle of movement of the cutter-edges. With this construction, as the brush to be trimmed is moved up toward the cutters the bristles or wires of it are, as they approach the cutters, held back by the shield, 60 as shown in Figs. 2 and 3, until their points of attachment are over, or nearly over, the edge of the stationary cutter O, when the lower ends of the bristles or wires slide off over the edge of the shield and snap quickly forward against the edge of the stationary knife, where they 65 are cut off the whole of the desired amount

by single cuts of the knives of the revolving cutter. With a shield so arranged and acting in connection with revolving and a stationary 70 cutter, it has been found quite possible and comparatively easy to cut with hand-power even wire brushes.

The upper guide-bars, B B, described hereinbefore, for engaging the upper side of the brush-back at its sides and so holding the 75 brush down positively in place, is especially desirable for use where the shield N is used, as described, because the bristles or wires of the brush, being bent as they pass over the shield, obviously tend to press or force the brush up- 80 ward.

In the drawings I have shown a shield which not only acts upon the bristles or wires of the brush, as described, but also serves as a protecting-shield for the revolving cutter. 85

Instead of making the shield so extensive, it is sufficient, so far as the retarding action upon the bristles is concerned, if only a narrow plate or bar extends across above the cutters in position to engage the bristles, as the 90 upper portion of the shield is shown as doing in the drawings. I do not, therefore, limit myself to a shield so extensive as to hide the cutter and extending down throughout its length to the level of the attaching-flange at 95 the sides.

As the guides cannot conveniently be made vertically adjustable to any great extent with reference to the cutters, it is desirable that the machine be provided with some means for 100 properly holding and guiding brushes with bristles or wires of considerable length with the bristles or wires in position to be cut the desired amount by the cutters. I have therefore provided for use in combination with the 105 other elements of my machine a holder, R, which consists of the two upright side boards, S and S', a sufficient distance apart at their tops to secure and support upon their upper edges the sides of the back of the brush, as 110 shown in the drawings. They preferably slant away from each other toward the bottom a little, as shown, so as to make the space between them flaring downward to correspond with the usual shape of a brush. They are 115 connected together only at their rear ends by the two parallel upright brace-boards S² S². Upon the outer side of each side board, near its lower edge and parallel thereto, is the longitudinal guide-strip T. These two guide- 120 strips are adapted to fit and slide between the upper and lower guide-bars, B B A A, at the sides of the brushway on the machine in precisely the same way as a brush-back has already been described as doing. 125

The holder R is made of such height as to support the brush to be trimmed with its bristles extending below its lower edge, so as to be properly cut by the cutters as the holder is moved along over them. The ends of the bristles are engaged in the same way as before by 130 the shield; but as they are so long there is lit-

the tendency to lift or raise the brush. It can then be easily held down in place in the holder by hand. This holder, as described, is of especial advantage in the trimming of rattan brushes for stables and other uses.

When the holder is used, the stud forming the pivot of the lever I is adjusted farther up in the slot in the standard. This can easily be done by loosening the nut H, sliding the stud upward the desired amount, and then screwing up the nut again to clamp the standard on opposite sides between the washer H' and the collar G' on the stud. The holder can then be slid through the machine by hand, or the pawl-link can be caused to engage the end of the brush in the holder, or of the holder itself, and the lever-arm I' can be depressed to draw the brush through the machine over the cutters.

Instead of slotting the standard, as described and shown, I contemplate making an upright series of holes in it, in either of which the pivot-stud can be placed and fastened in adjusting the pivotal point of the lever.

My device for bending back the bristles and allowing them to snap quickly into position to be cut, as described, can obviously be used whether the brush moves with reference to the cutting devices or the brush is held stationary and the cutters move along with reference to it.

Having thus described my invention, what I claim is—

1. In a brush-trimming machine, in combination with the cutting devices, a retaining-piece adapted to engage the ends of the wires or bristles before they reach the cutting devices, and then to let them snap quickly into position to be cut, substantially as and for the purpose described.

2. In a brush-trimming machine, in combination with the stationary cutter and the revolving cutter, a piece in front of the cutters adapted to engage the bristles or wires of a brush, substantially as and for the purpose described.

3. In a brush-trimming machine, in combination with the stationary cutter, the revolving cutter and the shield having its upper edge adapted to engage the bristles or wires of the brush before they come within reach of the revolving cutter and hold and bend them back, and then allow them to snap over against the stationary cutter, substantially as and for the purpose described.

4. In a brush-trimming machine provided with a guideway through which the brush is passed, the stationary cutter below the same, the rotary cutter acting in conjunction with the stationary one, and the shield having its upper edge situated above the rotary cutter-blades in position to engage and retard the lower ends of the bristles or wires of the brush before they come within reach of such cutter-blades, substantially as and for the purpose described.

5. In a brush-trimming machine provided with a brush-guideway adapted to guide the brush and support it as it is passed along the stationary cutter, the rotary cutter in front of the same and acting therewith, and the curved shield in front of the rotary cutter adapted to engage with its upper edge and retard the lower ends of the bristles or wires of the brush before they are acted upon by the rotary cutter-knives, substantially as and for the purpose described.

6. In combination with the two lower guide-bars, the two corresponding upper guide-bars, the tubular posts or distance-pieces between the upper and lower bars at each side, and the screw-bolts passing up through the lower bars and posts or distance-pieces and tapped into the upper bars, substantially as and for the purpose described.

7. In a brush-trimming machine, in combination with the guideway for the brush, a pivoted lever and a link with a projection adapted to engage the brush end, substantially as and for the purpose described.

8. In a brush-trimming machine, in combination with the upper and lower guide-bars for engaging and guiding the opposite sides of the brush-back, a pivoted lever, a link having its outer end made pawl-shaped, and the pin or bar on the link resting upon the upper guide-bars, substantially as and for the purpose described.

9. In combination with the upper and lower guide-bars of the brush-guideway, a standard fastened to one of the upper guide-bars provided with a vertical slot, a stud extending through such slot and over the guideway, means, substantially as described, for fastening the stud at any desired point of adjustment along such slot, the angle-lever pivoted upon the stud, and the pawl-link pivoted to an arm of the lever, substantially as and for the purpose described.

10. The brush-holder adapted to receive a brush and support the sides of the brush-back upon its upper edges, provided with longitudinal ribs on its sides adapted to fit and slide in the brush-guides of a brush-trimming machine, substantially as and for the purpose described.

11. The brush-holder consisting of the upright boards attached together at one end by means of one or more transverse brace-boards, and provided on their outer sides with longitudinal ribs adapted to fit and slide in the brush-guides of a trimming-machine, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of April, A. D. 1885.

THOMAS COLDWELL.

Witnesses:

A. E. MANCHESTER,
E. P. CORWIN.