(No Model.) 3 Sheets—Sheet 1.

J. M. SCHILTZ.

MACHINE FOR BARBING WIRE NAILS.

No. 424,227. Patented Mar. 25, 1890.

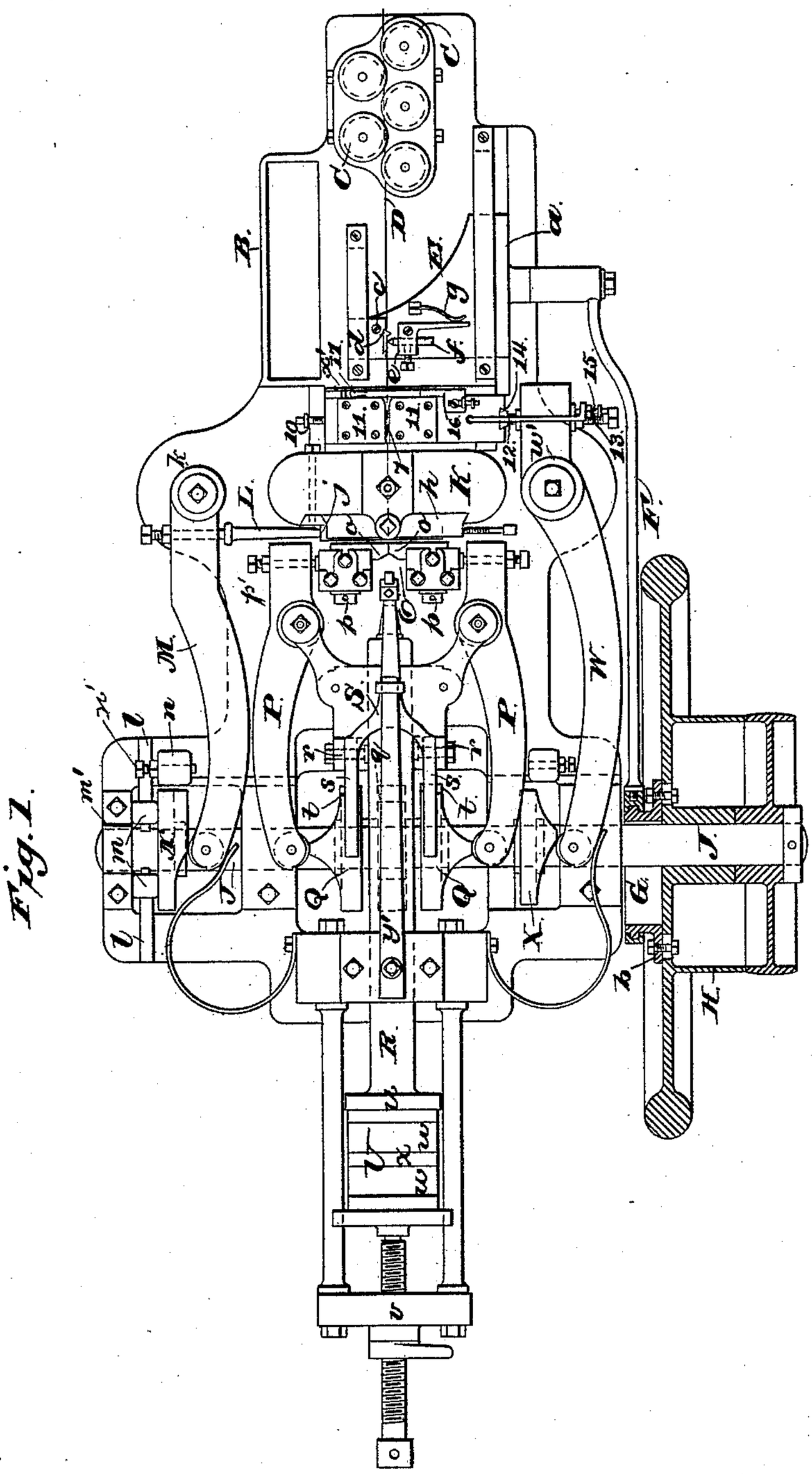

Fig. 1.

WITNESSES:

C. F. Hoyer

P. H. Hagfeld,

INVENTOR:

John M. Schiltz

BY John A. Wiedersheim

ATTORNEY.

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J. M. SCHILTZ.

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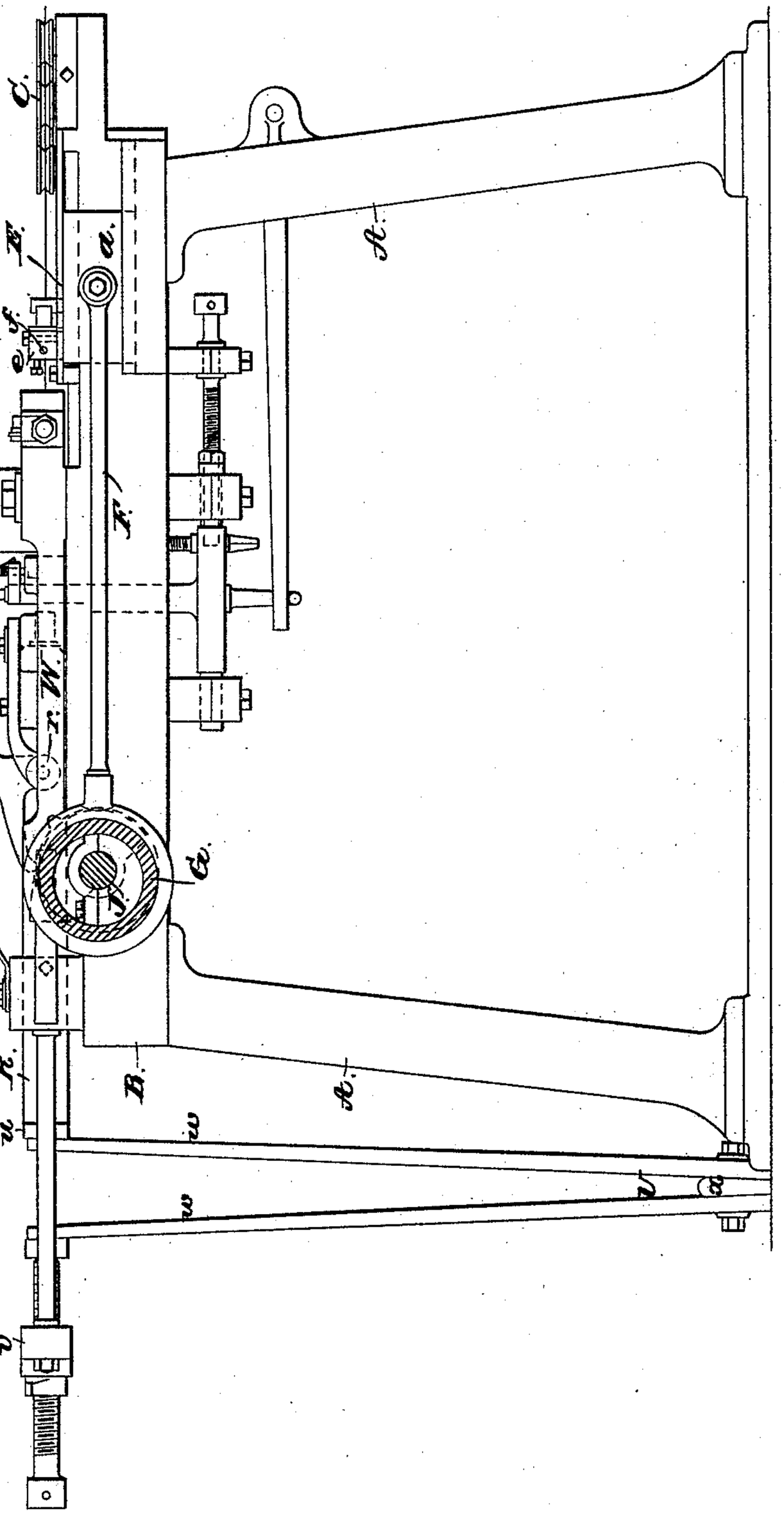

Fig. 2.

WITNESSES:

C. S. Hoyer

P. F. Dagle

INVENTOR:

John M. Schiltz

BY John Wedderburn

ATTORNEY.

(No Model.) 3 Sheets—Sheet 3.

J. M. SCHILTZ.

MACHINE FOR BARBING WIRE NAILS.

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Fig. 3.

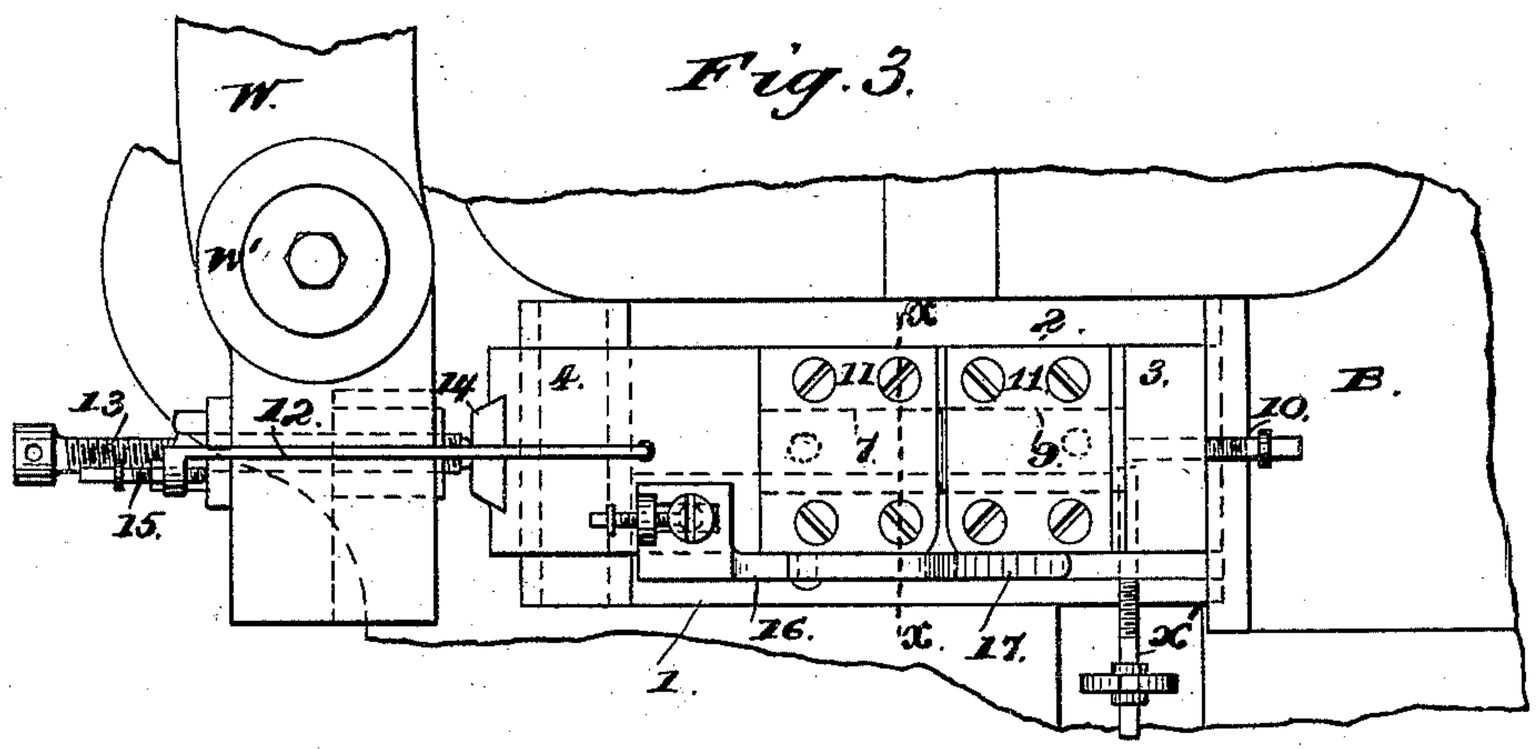


Fig. 4.

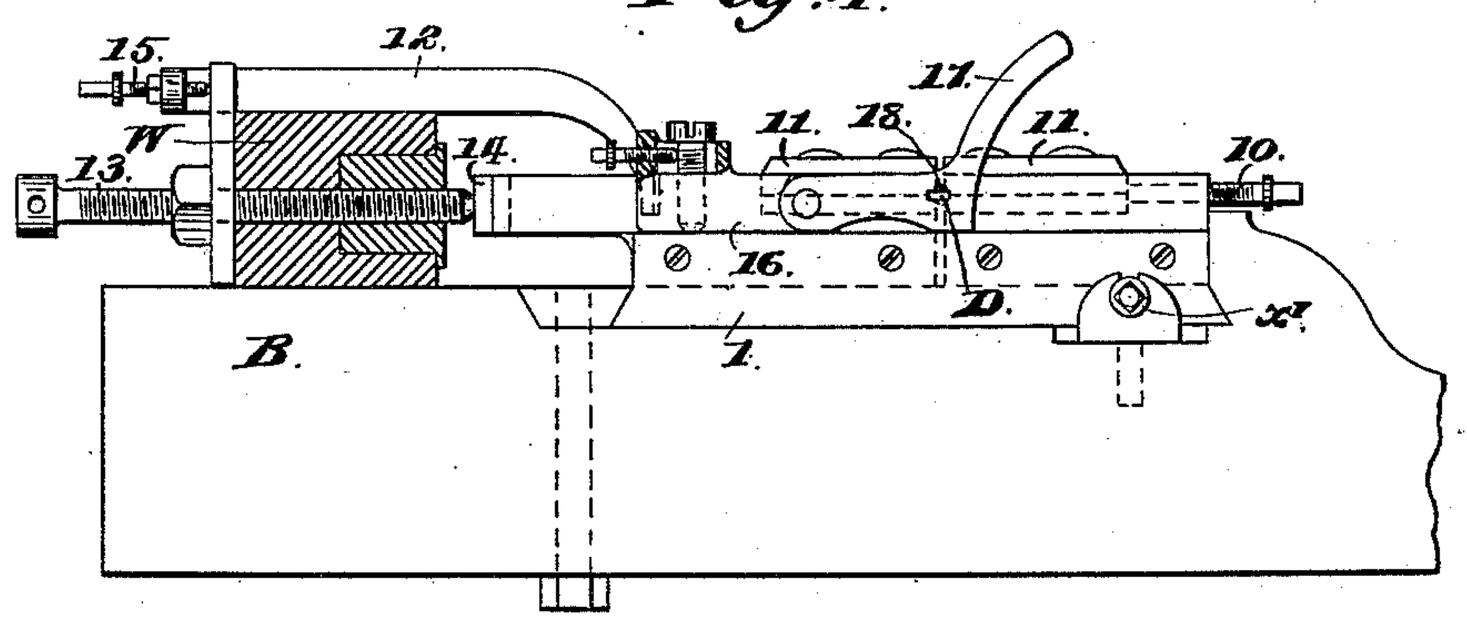


Fig. 5.

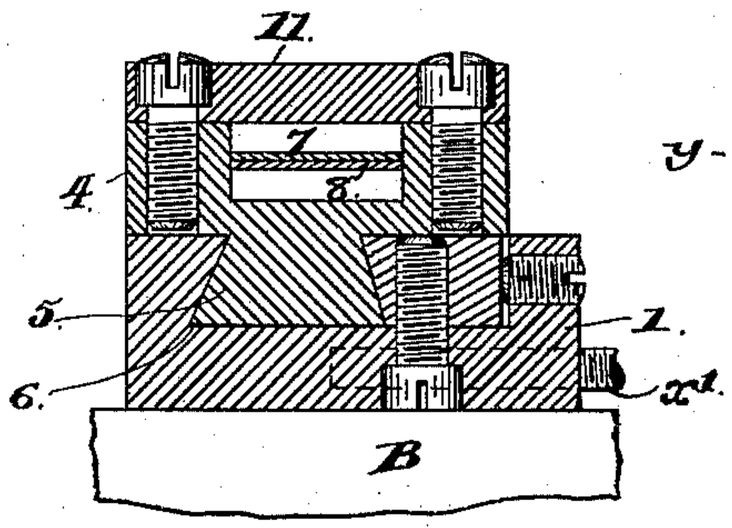


Fig. 6.

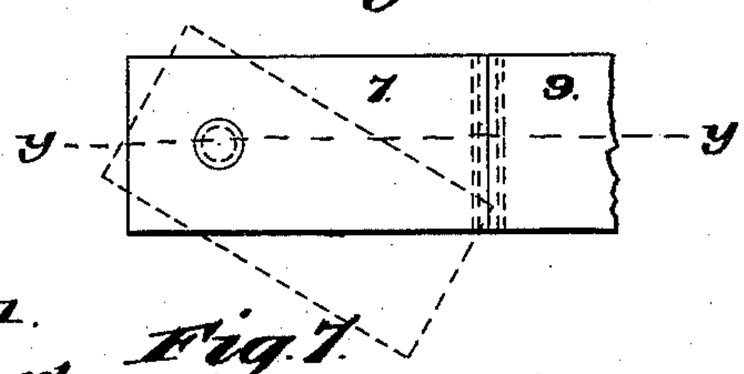
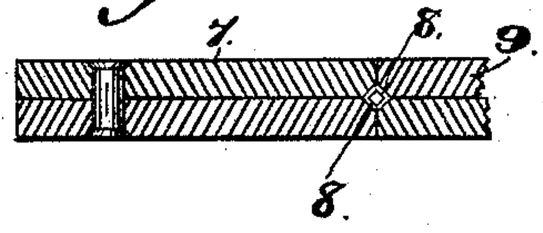


Fig. 7.



WITNESSES:

C. S. Hoyer

P. H. Eagles.

INVENTOR:

John M. Schiltz

BY John Wiedersheim

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN M. SCHILTZ, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR BARBING WIRE NAILS.

SPECIFICATION forming part of Letters Patent No. 424,227, dated March 25, 1890.

Application filed October 4, 1889. Serial No. 325,976. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. SCHILTZ, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Barbing Wire Nails, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in nail-making machines; and it consists, first, of an attachment for forming barbs on the nail; next, of means of adjustment, and, finally, of details of construction and arrangement, as will be more fully hereinafter set forth.

Figure 1 represents a plan view, partly in section, of a nail-making machine embodying my invention. Fig. 2 represents a side elevation of the same. Fig. 3 represents a top plan view of a portion of the frame and my improved barbing attachment. Fig. 4 represents a side elevation, partly in section, of said attachment. Fig. 5 represents a section on the line *x x*, Fig. 3. Fig. 6 represents a detail plan view of the barbing-plates, showing one of the same turned in position for sharpening. Fig. 7 represents a section on line *y y*, Fig. 6.

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

Referring to the drawings, A designates the stand or frame of a nail-making machine, on which rests the bed B, having thereon the rollers C, between which the wire D is fed to the machine by said rollers C giving tension to said wire.

E designates a sliding plate having suitable guideways attached to the bed B. The side portion *a* of the said plate, which has a downwardly-projecting flange parallel to and sliding against the side of the bed B, is suitably connected by a rod F to a yoke working on an eccentric G. The eccentric G consists of a hollow cylinder having a flanged portion *b*, by which it is attached eccentrically to the wheel H, revolving on shaft J.

On the slide E is a clamping device, consisting of the stationary jaw *c*, having an angular attachment *d* on its inner side, and the movable jaw *e*, having a pin or stud *f* projecting therefrom toward the said angular attachment *d*, the said pin and attachment being kept in proximity by means of a spring *g*.

K designates a holding device, consisting of a stationary jaw *h* and a movable one *j*, both of the said jaws having projections corresponding to the serrations desired on the nail. The movable jaw *j* is actuated or controlled by an attachment or adjustable arm L of the lever M. One end of the said lever M is pivoted, as at *k*, while the other end rides upon a cam N, rigidly secured to the shaft J.

Firmly secured to the frame of the machine are projections *l*, carrying friction-rollers *m*. An intermittently-threaded boss *n*, having a screw *n'*, is also secured to the said frame, the object of the adjustable screw *n'* being to limit the throw of the lever M and prevent its bearing against the cam N during a portion of the revolution of the said cam. The pressure upon the cam N by the lever M is also sustained by the block *m'*, securely attached to the frame and in contact with the friction-rollers *m*, thus releasing the other parts from a lateral strain caused by the said pressure of the lever M upon the cam N.

O designates the cutting device, consisting of two sliding knives or cutters *o*, which are secured to adjustable arms *p* of the pivoted levers P, and are so shaped as to form a point or sharpened end to the piece cut from the wire, the arms *p* being adjustable by means of screws *p'*, working in openings in the ends of the said levers P. The said levers P ride upon cams Q, secured to shaft J.

R designates a hammer, and *q* a wiper attached to the shaft J, for drawing back the said hammer after a blow has been given to the wire.

S designates a lever having arms pivotally secured on shaft *r*, provided with suitable bearings. The short arms *s* of the lever S ride upon collars or flanges on the shaft J, each of the said collars or flanges having on its periphery a projection *t*. Attached to the long arm of the said lever S is a cutting or trimming device projecting downward toward the wire. A spring *y'*, secured to a boss on the bed B, keeps the short arms *s* of the lever S in contact with the collars or flanges on the shaft J and the long arm carrying the trim-

ming device above and away from the wire until the projections *t* lift the short arms, forcing down the said trimming device.

Between the end *u* of the hammer R and the tail-block *v* a wooden spring U is placed, the said spring being formed of two strips of wood *w*, having between the lower ends a wedge-shaped block *x*, which strips and block are fastened together by a bolt passing through them, as shown in Fig. 2, or may be otherwise properly secured.

On a block 1, secured to the table B, ahead of the holder K, is mounted a barbing attachment 2, consisting of a stationary plate 3 and a sliding one 4. The said sliding plate 4 is formed with a dovetail flange 5, fitting in a corresponding groove 6 in said block 1. The block 1 is adjustably fitted in the table B, and may be longitudinally moved, when desired, by screw *x'*, in order to accommodate barbing of different lengths of nails.

To the inner end of sliding plate 4 is removably secured a part of the barb-cutters, consisting of a set of plates 7, pivotally connected to permit lateral movement thereof for the purpose of sharpening the cutting-edges 8, formed in said cutters 7. The stationary plate 3 supports a similar set of barb-cutters 9, which coact with said cutters 7, as shown in Figs. 6 and 7, said cutters 9 being adjustable by means of a screw 10. Cap-plates 11 are secured over said cutters 7 and 9 to hold the same in place. The sliding plate 4 of said barbing attachment is actuated or controlled by an adjustable arm 12 of a lever W. One end of the said lever W is pivoted, as at W', while the other end rides upon a cam X, rigidly secured to the shaft J.

To vary the stroke of the lever W an adjusting-screw 13 passes therethrough and bears against a head-block 14, secured to plate 4, and to sustain a proportionate adjustment the arm 12 is provided with an adjusting-screw 15.

To prevent the wire from sticking in the stationary barb-cutter 9, a stripper 16 is pivotally secured to the support of the sliding barb-cutter, said stripper comprising a pivoted arm 17, having an opening 18, through which the wire is fed to the barb-cutters. The pivotal connection of the arm 17 allows the same to be raised when extraneous manipulation of the barb-cutters is required.

The operation is as follows: The wire of which the nails are to be formed is drawn between the rollers C by the action of the plate E and the eccentric G. The clamping device on the said plate, owing to its peculiar construction, having gripped the same when the plate is slid inward or toward the body of the machine, the wire is guided into the barb-cutters 7 and 9, which are apart when the wire is brought forward by the feeding mechanism, and said wire is then guided or advanced to and through the holder K, the jaws of which are also apart. When the wire has been forwarded the desired length, which may be regulated by adjusting the eccentric G on the wheel H, the jaw *j*, actuated by the cam N, closes thereon, and the end thereof is struck by the hammer R, actuated by the wooden spring U, thus forming the head of the nail. A further rotation of the shaft J forces back the hammer R by means of the wiper *q* on the said shaft and causes the plate E to slide outward, and the barb-cutter 7 is forced inward on the wire which lies against cutter 9 by means of the arm 12 of lever W, the latter being actuated by cam X, to thereby form the barbs. The clamping device, owing to its form, is released from the wire, and when the plate E, having reached its outer limit, returns, the wire, being released by the holder K and gripped by the clamping device on the plate E, is forwarded or advanced another length. The cams Q now actuate the levers P, bringing together the cutters or knives *o*, thereby separating or cutting off the forward length of the said wire, thus making a partially-finished nail. Immediately thereafter the end of the lever S, having the cutting or trimming device, is forced downward, owing to the projection *t* on the collar of the shaft upon the end of the wire held fast by the holder K removing any burrs thereon, when it is immediately raised by the action of the spring *y*. The hammer R is now released from the control of the wiper *q*, and, being forced by the spring U, strikes upon the end of the wire, thus forming a head thereon. The cutters *o* and the trimming device on the lever S are operated by the cam-connections at each revolution of the shaft J. The wire is then forwarded, as before described, and a length according to the adjustment of the eccentric G is cut therefrom, the end of the remaining part being first trimmed and then headed, the operation described being as desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a nail-barbing machine, the combination of the frame having tension-rollers thereon, a sliding plate guided on said frame and provided with a clamping device, a holding device consisting of a stationary and a movable jaw, an adjustable barbing attachment, a driving-shaft with a yoke, a rod connecting said yoke with said sliding plate, and the mechanism set forth for operating the said holding device, substantially as described.

2. In a nail-barbing machine, the combination of the frame having tension-rollers thereon, a sliding plate guided on said frame and provided with a clamping device, a holding device consisting of a stationary and a movable jaw having serrating projections, a driving-shaft with a yoke, a rod connecting said yoke with said sliding plate, a barbing attachment consisting of a stationary and a sliding plate, an adjustable arm 12, and a le-

ver W, connected and actuated as set forth, substantially as described.

3. In a nail-barbing machine, the combination of the frame having tension-rollers thereon, a sliding plate guided on said frame and provided with a clamping device, a holding device consisting of a stationary and a movable jaw having serrating projections, a driving-shaft with a yoke, a rod connecting said yoke with said sliding plate, a barbing attachment consisting of a stationary and a sliding plate, a stripper in connection with said barbing attachment, an adjustable arm 12, and a lever W, connected and actuated substantially as described.

4. In a nail-making machine, the combination of the table B, the block 1, secured thereon, the stationary plate 3, sliding plate 4, the barb-cutters 7 and 9, pivoted in said plates 3 and 4, the arm 12, and cam-actuated lever W, substantially as described.

5. In a nail-barbing machine, a barbing attachment consisting of a stationary and a sliding plate, combined with an adjustable block, on which is mounted said barbing attachment, substantially as described.

6. In a nail-barbing machine, a barbing attachment consisting of a stationary and a sliding plate, combined with an adjustable block, on which is mounted said barbing attachment, and a stripper in connection with said barbing attachment, substantially as described.

7. In a nail-barbing machine, the combination of a barbing attachment consisting of a stationary and a sliding plate, an adjustable block, on which said attachment is mounted, the cutter proper consisting of pivotally-connected plates with sharpened edges, and the mechanism for operating said parts, substantially as described.

8. In a nail-barbing machine, a bed or frame holding cutting and trimming devices, combined with a barbing attachment consisting of a stationary and a sliding plate having the cutters pivotally connected thereto, mechanism connected to each of said devices for adjustment and operation, and a rotary shaft, whereby motion is communicated to each of said devices in proper succession, substantially as described.

9. In a nail-machine, the block 1 with a groove therein, the barbing attachment 2, mounted on said block and consisting of a stationary plate 3 and sliding plate 4, the said sliding plate having the dovetail flange 5 fitting in the said groove of the block 1, and pivotal barbing-cutters in said stationary and sliding plates, said parts being combined substantially as described.

10. In a nail-machine, a bed, a holding device thereon, an adjustable block secured to the bed ahead of the holding device and having a barbing attachment thereon provided with fixed and movable plates, the latter sliding in ways on the said block, a pivoted lever with adjustable arm, and a driving-shaft with a cam thereon, said parts being combined substantially as described.

11. In a nail-machine, the stripper 16, consisting of the pivoted arm 17, with the opening 18, substantially as described.

JOHN M. SCHILTZ.

Witnesses:
JOHN A. WIEDERSHEIM,
A. P. JENNINGS.