(No Model.) 2 Sheets—Sheet 1.

D. M. REDMOND.

MACHINE FOR INSERTING PINS OR RIVETS IN UMBRELLA FRAMES.

No. 282,668. Patented Aug. 7, 1883.

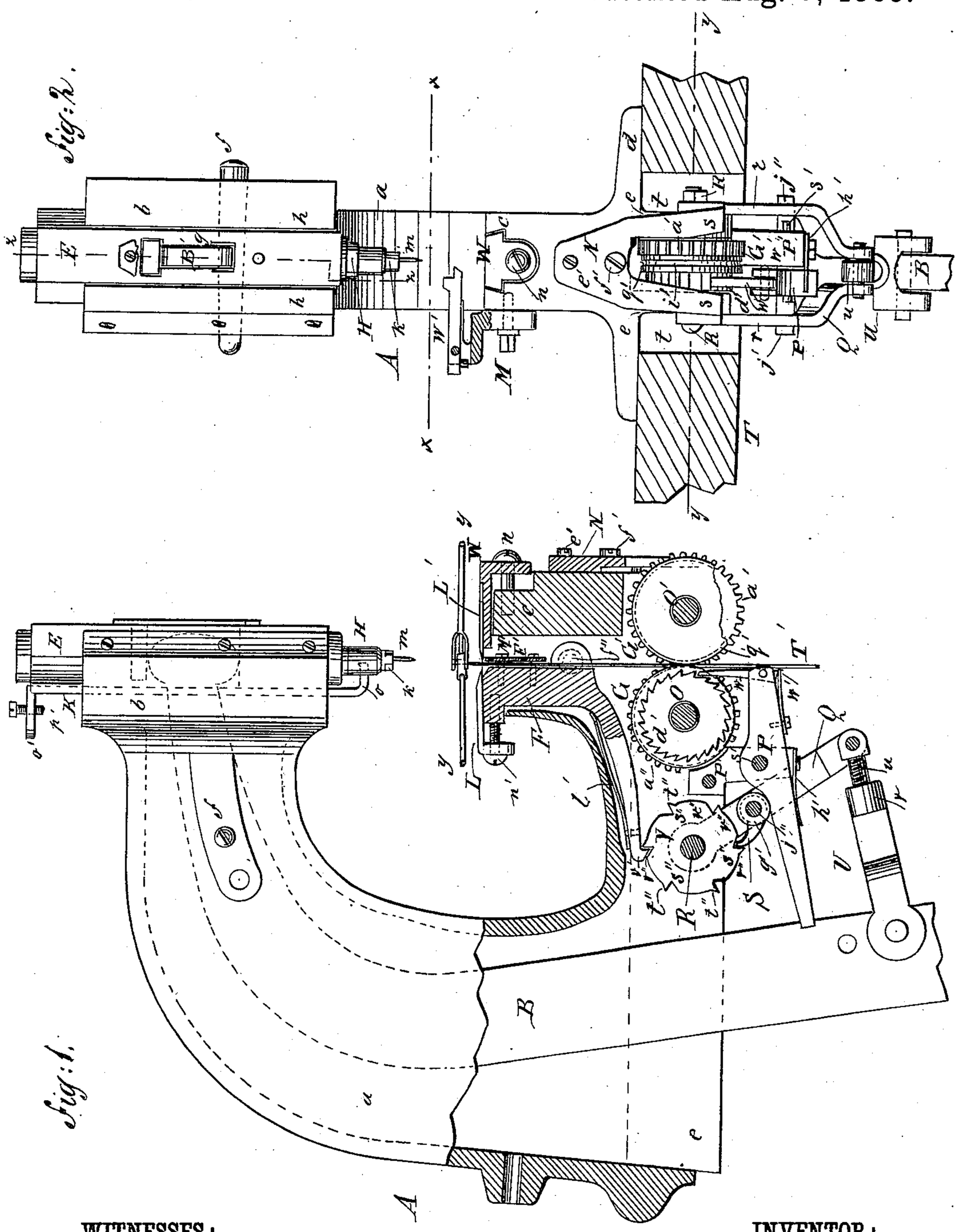

Fig: 1.

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Fig. 3.

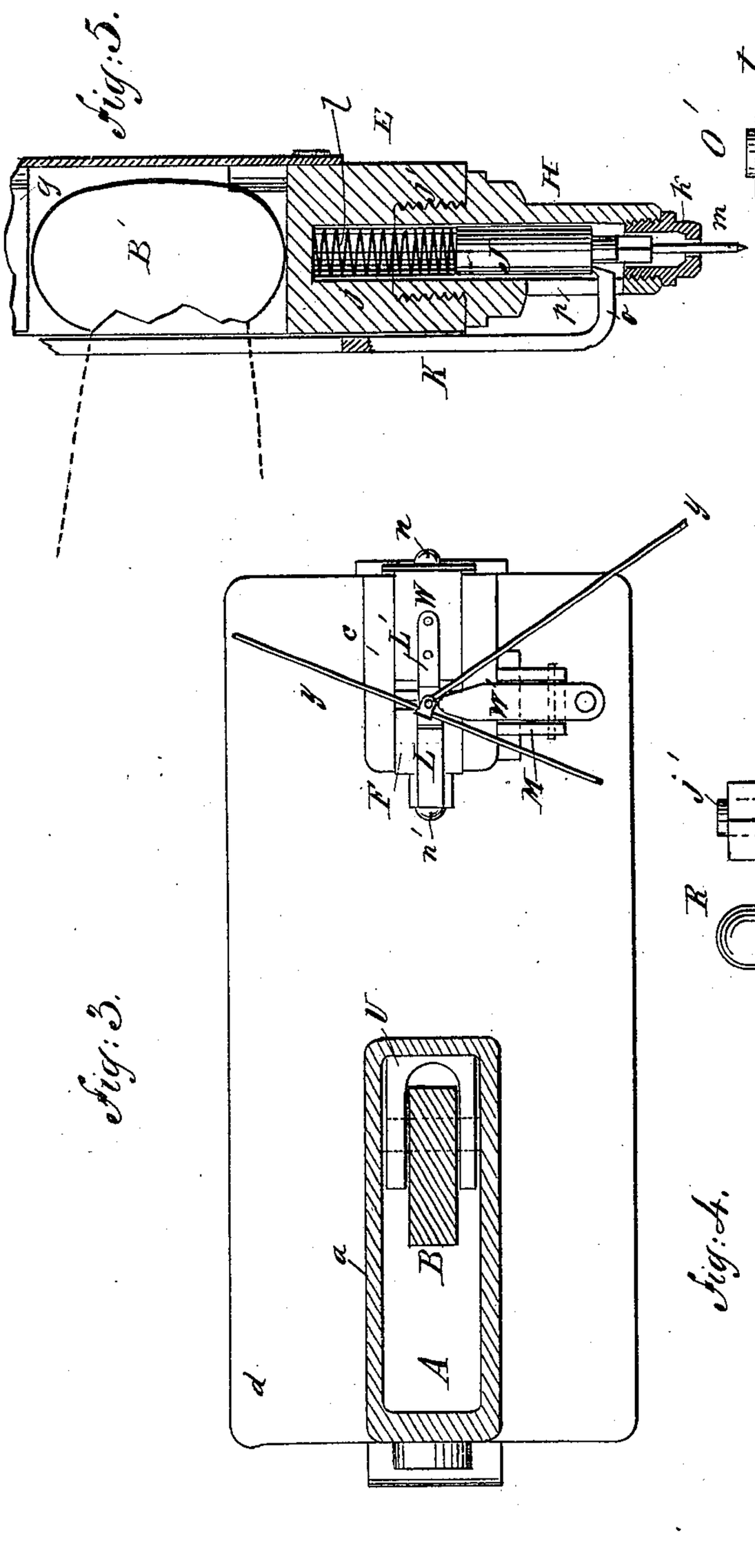
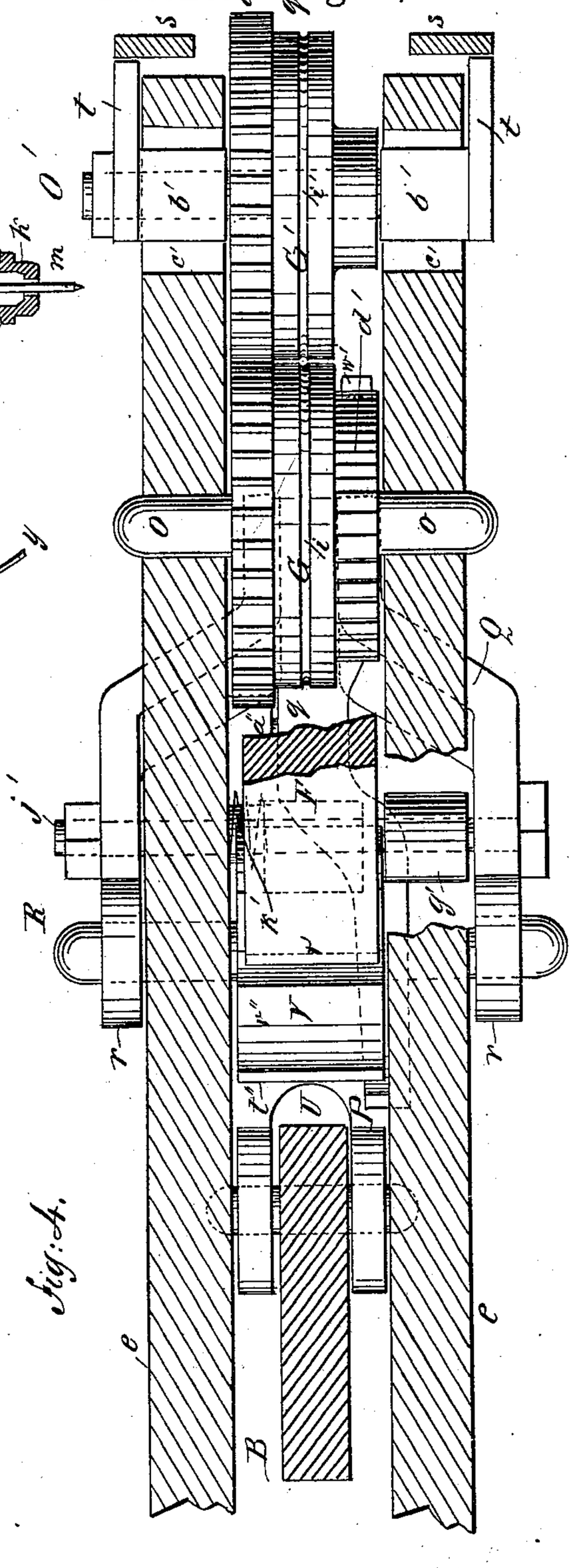


Fig. 4.



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UNITED STATES PATENT OFFICE.

DANIEL M. REDMOND, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR INSERTING PINS OR RIVETS IN UMBRELLA-FRAMES.

SPECIFICATION forming part of Letters Patent No. 282,668, dated August 7, 1883.

Application filed June 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, DANIEL M. REDMOND, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and Improved Machine for Inserting Pins or Rivets in Umbrella-Frames, of which the following is a full, clear, and exact description.

This machine is more especially intended for entering and also cutting the rivets or pins used in making umbrella-frames.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of my invention. Fig. 2 is a front elevation, showing the machine mounted upon the table T, show in section. Fig. 3 is sectional plan view, taken on the line *x x* of Fig. 2, and showing the manner of holding the frame to receive the rivet. Fig. 4 is also a sectional plan view, taken on the line *y y* of Fig. 2; and Fig. 5 is a detailed sectional elevation of the plunger, taken on the line *z z* of Fig. 2.

A represents the frame of the machine which is cast with the neck *a*, head *b*, table *c*, base *d*, and downwardly-projecting flanges *e e*.

Pivoted at *f* in the neck *a* of the frame is the main operating bent lever B, by and through which the plunger E, knife-stock F, and feed-rolls G G′ are operated.

The forward end of the lever B is, by preference, enlarged to form the circular head B′, shown in Figs. 2 and 5, and the plunger is made with the central passage or recess *g* to receive the said head, as shown in said figures, so that when the lever is moved upon its pivot the plunger will be reciprocated in the ways *h h* formed in the head *b* of the frame in which it is held.

The lower end of the plunger E is recessed, as shown at *j*, and screw-tapped, as shown at *j′*, Fig. 5, to receive the screw-threaded sleeve H, which is closed at its lower end by the cap *k*.

In the recess *j* is placed the coiled spring *l*, which rests upon the upper end of the bolt J in the sleeve H. In the lower end of this bolt J is secured the centering point or tool *m*, which protrudes the proper distance from the orifice of the cap *k*. The spring *l* holds the bolt J down with considerable force upon the arm *o* of the bar K. When the tool *m* comes against the pin or rivet which is being inserted in the frames, the spring *l* allows it to give, and the advantage of this tool is that it centers the hole in the umbrella-frame in the direct line of upward movement of the wire or rivet.

The arm *o* of the bar K enters the sleeve H through the slot *p*, and from thence the bar extends upward along the rear face of the plunger near to the top of the plunger, where it is bent outward away from the plunger to form the arm *o′*, which arm is provided with the screw *p′*, which is adapted to come upon the upper end of the head *b* of the frame, and may be adjusted for regulating the distance of downward movement of the bolt J and tool *m*, according to the length of the rivets or pins being inserted, and this screw coming in contact with the head *b* prevents the centering-tool *m* from overlapping the wire T′ and wedging in the hole.

The wire or rod T′, from which the rivets or pins are cut, is fed up between the knives L L′ the proper distance to form the right length of rivets at each operation of the lever B by the feed-rollers G G′, between the bearing-faces *q q′* of which the wire is held as shown in Figs. 1 and 2. These bearing-surfaces are by preference guttered, as shown in *i i′*, Figs. 2 and 4, to hold the wire against all danger of lateral movement. The wheel G′ is formed with the cogs *a′* and is journaled in the blocks *b′ b′*, which are placed in the slots *c′ c′* formed in the flanges *e e* of the frame. The wheel G is formed with the cogs *a″*, which mesh with the cogs *a′* of the wheel G′, and is formed also with the ratchet-teeth *d′*, and the wheel is journaled in fixed bearings formed in the flanges *e e* of the frame, as shown at O in Fig. 4.

The series of cogs *a′ a″* are made of considerable length, so that the wheel G′ may be adjusted to and from the wheel G to vary the contiguity of the bearing-surfaces *q q′* of the wheels to suit wires or rods of different sizes. This adjustment is accomplished by the forked plate N secured to the front of the frame of the machine, the members *s s* of which bear against the outer ends of the plates *t t*, formed or secured upon the axle O′ of the wheel G′, as shown clearly in Fig. 4.

The plate N is attached loosely to the frame

by means of the screw e', and is adapted to have its lower end moved to suit the size of the wire by screw f'.

It will be understood that intermittent movement is imparted to the feed-wheels G G′ for feeding the wire. This motion is produced by the pawl-lever P, which is operated from the main operating-lever B through the reciprocating-yoke Q and connecting-rod U, the pawl w of the lever being held in contact with the ratchet d' of the wheel G by means of the spring w', shown clearly in Fig. 1. This pawl-lever P is fulcrumed on the pin or bolt s', which passes through the block P′, bolted between the flanges e e of the frame of the machine, and its rear end is pressed upward against the friction-roller g', placed upon the bolt j'' of the yoke Q, by the spring h', secured to the lower end of the block P′, as shown in Figs. 1 and 2.

The yoke Q is forked, as shown, and is pivoted upon the bolt R, which passes through the flanges e e of the frame and the members r r of the yoke, as shown in Fig. 4. The bolt j'' also carries the pawl S, (shown in Fig. 1,) which is constantly held upward against the cam V, (shown in Figs. 1 and 4,) by the coiled spring k', (shown in the last-mentioned figure.) This cam V is placed upon the bolt R, between the flanges e e of the frame of the machine, and when the yoke Q is reciprocated is revolved intermittently upon the said bolt by the pawl S for operating the knife-stock F, as hereinafter described. In this construction the yoke Q is reciprocated, as above mentioned, by the main operating-lever B through the connecting-rod U, and this movement of the yoke, besides giving intermittent rotary movement to the cam V, also rocks the lever P upon its pivot for imparting intermittent rotary motion to the feed-wheels G G′, as above mentioned, the roller g' being carried forward by the forward movement of the yoke in the arc of a circle, and coming in contact with the upper side or edge of the lever, as will be understood from Fig. 1.

The length of the connecting-rod U is made adjustable by means of the screw-threaded coupling-rod u, which enters the internally-screw-threaded collar v, as shown in Fig. 1, so that the movement of the yoke may be varied for increasing or diminishing the feed of the rollers G G′, as circumstances require.

The cam V is formed with the series of deep notches s'', the series of lips or outward projections, t'', and the series of intermediate plane surfaces, v'', and the knife-stock F is pivoted in the throat F′ of the table part c of the frame of the machine upon the pin f'', and its rear end, v', reaches back in the frame and over the cam, and is held in contact with the surface of the cam by means of spring l', as clearly shown in Fig. 1.

Thus constructed, the operation and use of the machine will be as follows: When the main operating-lever B is carried back, at or about the time it reaches the limit of its backward movement, the rear end, v', of the knife-stock will pass over one of the lips t'' of the cam and drop into one of the deep notches s''. In this position the knife-stock will hold the knife L away from the edge of the stationary knife L′, leaving a free passage for the upward movement of the rod or wire T′. Upon the main lever being carried forward, the rod T′ will be fed up between the knives by the movement of the feed-rollers, and about the time the lever reaches the limit of its forward movement, the pawl S will be lifted by its spring into one of the deep notches s'' on the lower side of the cam. At this time the umbrella-frames y y (or whatever is to receive the rivet or pin) are put together and placed over the upper end of the rod or wire T′, as shown in Fig. 1. The lever B is now to be forced backward. This movement will simultaneously lower the plunger E and turn the cam V. The first movement of the cam will cause the rear end, v', of the knife-stock to be raised out of the deep notch s'' in which it had dropped, and to rest upon one of the plain intermediate surfaces v'' of the cam. This will cause the knife-stock to carry the knife L forward a sufficient distance to firmly grasp the rod or wire T′ between it and the edge of the stationary knife L′. The rivets used in umbrella-frames being always slightly larger than the holes in which they are to be placed, the insertion of them by hand is slow and difficult. On the other hand, the tool m is smaller than the rivet-holes, so that it may pass readily through them and enable the attendant to hold the umbrella-frames steadily over the wire as the latter is pressed up through them. The guide W′ is a valuable auxiliary; but it is not sufficient to prevent the frames from wabbling. Hence I have found it necessary to employ the centering-tool m. While the knives are thus grasping the wire or rod the plunger E descends and performs its work—that of pressing or forcing the umbrella-frames (or other object) upon the end of the wire or rod. At this time the point m serves as a centering-tool for entering the orifices in the parts of the frames, and brings them in line over the upper end of the rod or wire. At the time the plunger completes it descent one of the lips or projections t'' of the cam V will have passed under the end v' of the knife-stock, causing the same to be raised and the upper end of the stock to be carried forward, causing the knives to completely sever the rivet or pin from the wire or rod. The rear end of the knife-stock now drops into the next deep notch of the cam, putting the parts of the machine in their original position ready for repeating the operation.

The stationary knife L′ may be held in the table c in any suitable manner. It is by preference secured by means of screws, rivets, or other means upon the plate W, which is fitted in a dovetailed recess formed in the said table, as shown in Figs. 1, 2, and 3, and this plate is made adjustable in said recess by the screw n,

for adjusting the knife, as clearly shown in said figures.

The knife L is, by preference, held in place in the upper end of the knife-stock F by means of a dovetailed slot formed in the upper end of the said stock, as shown in Fig. 3, and this knife is made adjustable by means of the screw *n'*, as shown clearly in Figs. 1 and 3.

W', Figs. 2 and 3, represents a guide-finger secured in the bracket M, bolted to one side of the table *c* of the frame, for assisting the attendant in holding the frames to be riveted upon the upper end of the wire, as indicated in Fig. 3. Against the guide-finger W' the attendant holds the frames which are to receive the pins or rivets, so as to steady them upon the upper end of the wire. This guide-finger W' is pivoted and a spring placed under it, as shown in Fig. 2, so that it may move downwardly when the plunger E comes down upon it; and M' is a guide-plate, secured by means of screws to the front face of the knife-stock F, in the throat F' of the frame, for guiding the upper end of the wire T', as shown in Fig. 1, as it is fed upward between the knives.

The lever B may be operated by foot, steam, or other power.

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

1. The combination of the yoke Q, having a bolt, *j''*, carrying a pawl, S, with the cam V, the lever P carrying the pawl *w*, and the feed-rollers G G', substantially as shown and described.

2. The plunger E, recessed and screw-tapped, as described, in combination with the slotted sleeve H, provided with a screw fitting said recess, the cup *k*, screwing into the lower end of said sleeve, the coiled spring *l*, the bolt J, and the stop-bar K, having bent arm O, whereby the tool *m* may be operated, as described.

3. The combination, with the stop-bar K, having arm *o'* at the upper end, of the screw *p'* and the frame having head *b*, whereby the centering-tool is prevented from overlapping the wire, as described.

4. The feed-rolls G G', cogged at *a' a''*, in combination with the forked plate N, having the members *s s*, the plates *t* on axle O' of roll G', and the screws *e' f'*, whereby the rolls may be adjusted to the size of the wire, as described.

5. The combination, with the ratchet *d'* on wheel G, of the lever P, having pawl *w*, the springs *h' w'*, the forked pivoted reciprocating yoke Q, the pivoted rod U, and the lever B, whereby the wire is fed intermittently, as described.

6. The combination, with the pivoted knife-stock F, having the spring-pressed hook end *v'*, of the notched cam V, having projections *t''* and faces *v''*, the yoke Q carrying spring-pawl S on bolt *j''*, the pivoted rod U, and the lever B, whereby the knife-stock will be operated, as described.

7. The yoke Q, provided with the pawl S and friction-roller *g'*, in combination with the connecting-rod U, lever B, cam V, and the pawl-lever P, substantially as described.

8. The plunger E, having the spring-pressed bolt J, in combination with the bent bar K, having the adjusting-screw *p'* for regulating the distance of downward movement of the centering-tool with the plunger, as and for the purposes set forth.

9. In a rivet-press, the plunger E, provided with a sleeve, H, having a cap, *k*, in combination with the bolt J, and centering-tool *m*.

10. The rivet-press, herein shown and described, consisting of a main operating-lever, B, and plunger E, in combination with feed-rollers G G', knife-stock F, knives L L', cam V, yoke Q, lever P, and connecting-rod U, as and for the purposes set forth.

DANIEL M. REDMOND.

Witnesses:
FRED. A. MYERS,
SAML. B. S. BARTH.