No. 752,305.

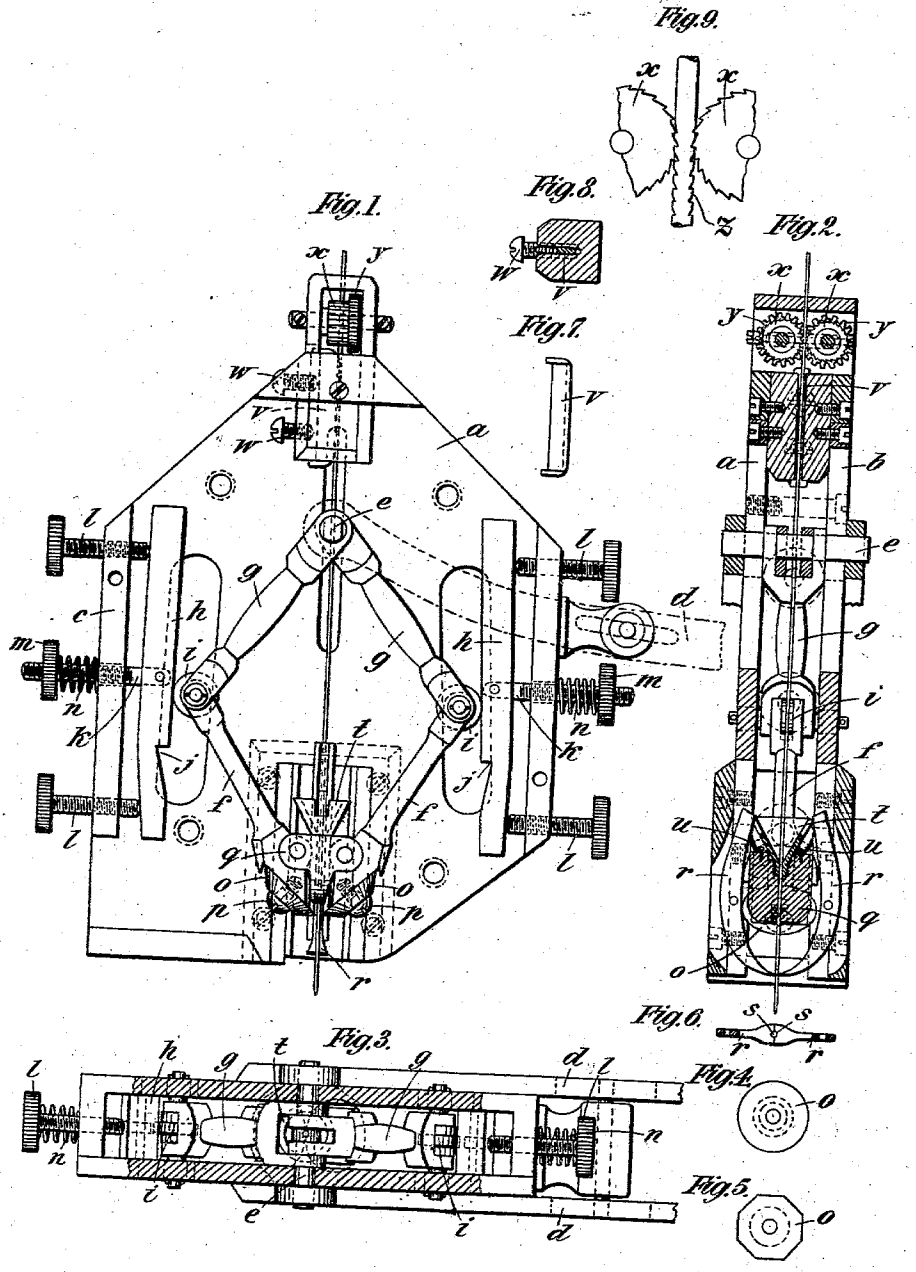
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M. SCHUBERT.

APPARATUS FOR MAKING AND SIMULTANEOUSLY DRIVING NAILS OF WIRE.

APPLICATION FILED DEC. 19, 1901.

NO MODEL.



WITNESSES:

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No. 752,305. Patented February 16, 1904.

UNITED STATES PATENT OFFICE.

MAX SCHUBERT, OF COTTBUS, GERMANY.

APPARATUS FOR MAKING AND SIMULTANEOUSLY DRIVING NAILS OF WIRE.

SPECIFICATION forming part of Letters Patent No. 752,305, dated February 16, 1904.

Application filed December 19, 1901. Serial No. 86,570. (No model.)

To all whom it may concern:

Be it known that I, MAX SCHUBERT, a subject of the King of Prussia, German Emperor, and a resident of Cottbus, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Apparatus for Making and Simultaneously Driving Nails of Wire, of which the following is a full, clear, and exact description.

The present invention relates to improvements in an apparatus for making and simultaneously driving nails of wire, in which a pair of nippers draw the continuous and unprepared wire through a stretching and straightening device and simultaneously drive the same a certain distance down into the wood or the like to be nailed, whereupon the nippers cut off the nail from the wire and then drive the nail completely home.

The improvements consist in adjustable guides for the toggle-arms of the nippers which allow the use of the apparatus for wire of different thicknesses and for cutting said wire into nails of different lengths; further, in changeable nipper-jaws, by means of which the usefulness of the apparatus will be increased; in a special guide for the free wire end for the purpose of preventing the same from being displaced; in an arrangement to provide the nails with notches by means of which the loosening of the nails being driven will be prevented; in the arrangement of the stretching, straightening, and brake device for the wire arranged at the top of the apparatus instead of inside of the rectangle of toggle-arms, whereby the construction, control, and eventual repair of the apparatus is facilitated; in a device for easily introducing the wire into the pivoted block of the nipper-jaws, and in the arrangement of a sliding spring attached to the pivoted block, by means of which the necessary friction at the movement of this block will be permanently maintained.

In the accompanying drawings, in which this improved apparatus is represented, Figure 1 shows in a side view the internal parts of the apparatus after removal of one side wall of the framework. Fig. 2 is a vertical central section of the apparatus; Fig. 3, an upper plan view of the apparatus, partially in section. The remaining figures represent details.

The framework of the apparatus consists of two side walls *a* and *b*, which are connected together by means of transverse bolts or the like. One side wall *a* carries cross-pieces *c c*, which keep apart the two side walls *a* and *b*. Within this framework the four arms having joint connection—namely, the two toggle-arms *f f* of the nippers and the two guiding-arms *g g*—move up and down. To the upper joint or pivot *e* the driving-lever *d* for the said rectangle is attached. The side joints of the latter are provided with rollers *i i*, which run along the guide-rails *h h*, the latter being pivoted to bolts *k k*, adjustably mounted on the cross-pieces *c c* of the framework. Above and below the bolts *k* set-screws *l* for the rails *h* are provided on the said cross-pieces *c c*. By means of these set-screws *l* the rails *h* obtain their relative position, which is inclined inwardly toward their upper ends. By means of a spring *n*, bearing against a nut *m*, screwed on each bolt *k*, the rails *h* are held against the set-screws *l*. By adjusting the nuts *m* on the bolts *k* the tension of the springs *n* may be regulated.

According as by the adjustment of the set-screws *l* the rails *h* are drawn nearer toward one another or kept at a greater distance from one another and according to the more or less inclined position of the said rails imparted to the latter by means of the said set-screws *l* the side joints *i i* of the toggle-arms *f f g g* will more or less separate, so that the toggle-arms will be adjusted for a thicker or a thinner wire. By adjusting the inclined position of the rails *h* the nippers may be made to engage the wire sooner or later in the stroke of the toggle-frame, and thus the length of the wire to be cut off in forming the nail may be varied. The rails *h* are provided with notches *j*, by means of which the rectangle of toggle-arms *f f g g* when the same is pressed farther down will further separate, so that the jaws are caused to completely penetrate the wire, thus cutting off the nail from the latter.

The jaws of the nipper-arms *f* consist of disks *o*, which may be made circular, Fig. 4, or polygonal, Fig. 5, and fixed to the arms *f*

by means of centrally-arranged screws *p* or the like. In case the said jaws are worn out by use or damaged on a certain point they may be adjusted by turning them around their fastening-screws *p*, whereupon the apparatus is at once again ready for use. Therefore by means of the said adjustable nipper-jaws the apparatus can be employed for a long time without any renewal of the jaws.

At both sides of the pivoted block *q* of the toggle-arms *f* and within slots of the side walls *a b* of the frame double armed and curved levers *r r*, Fig. 2, are pivoted to the latter. The lower ends of the said levers are provided with notches *s*, Fig. 6. As soon as the same touch each other a guide for the lower free wire end is formed. Without such a special guide of the lower wire end it may happen that the latter becomes deviated in consequence of the action of the nipper-jaws upon the wire. In the position shown in Fig. 2, in which the levers of said wire-guide are closed, the levers *r* are held by the pivoted block *q*, situated higher up, in which position the block *q* keeps the upper arms of the levers *r* apart. When the block *q* is pressed down, it separates the lower arms of the levers *r*, thus making a free passage. When the block *q* moves upward, it will separate the upper lever ends, thus closing the lower ends of the said levers to bring the notches *s s* together to form the guide-aperture for the wire. The block *q* is arranged to move between the side plates *a b* on suitable guides, and to this block the lower portions of the toggle-arms *f f* are pivotally secured.

For the purpose of easily introducing the wire into the bore of the block *q* a funnel *t* is mounted upon the latter. Furthermore, sliding springs *u u* are attached to the block *q*, which bear against the side walls *a b* of the framework. These springs place the block *q* under frictional restraint, so that the block will not fall by gravity, but will move only by the action of the arms *f f*.

Above the rectangle of toggle-arms *f f g g* the stretching, straightening, and brake device for the wire is provided, consisting of a friction-rail V, Figs. 7 and 8, which is pressed on by means of screws *w*, thus pressing the wire into the guide-groove of the device. The operation of this device is facilitated by being arranged outside of the rectangle of toggle-arms *f f g g*. Above the said device another device is arranged, by means of which the wire to be worked into nails may be provided with notches of such kind as to prevent the driven nail from being loosened. This device consists of two toothed wheels *x x*, situated at both sides of the wire and provided with sharp teeth, between which the wire passes and rotates said wheels, so that the teeth of the wheels *x* press the required notches into the wire. (See Fig. 9.) In order to cause a uniform rotation of the wheels *x*, they are brought into gear with each other by means of special cog-wheels *y y*. Said cog-wheels are connected each with one of the wheels *x*. By the notches pressed into the wire, Fig. 9, barbs *z* are formed, which do not prevent the nails from being driven, but hinder any opposite movement of the nails.

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

1. In an apparatus for making and simultaneously driving nails of wire the combination with toggle-arms and the nippers for seizing, driving and cutting off the wire, of adjustable guide-rails *h* for the toggle-arms of the nipper-jaws pivoted to bolts *k* being under the action of springs and adjustably mounted on the framework and of stops *l* being adjustably attached to the framework for the purpose of adjusting the movement of the nippers for wire of different thickness and for nails of different length.

2. In combination, a movable block *q*, means for moving the same, nippers for cutting and driving the wire carried by said block and guide means below the nippers and block, said guide means consisting of curved levers *r* one on each side of the wire, said levers being pivotally supported to be separated from each other as the block *q* moves downwardly and to be moved toward each other as the block moves upwardly, the said block engaging with the arms of said guides below and above the pivots, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

MAX SCHUBERT.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.