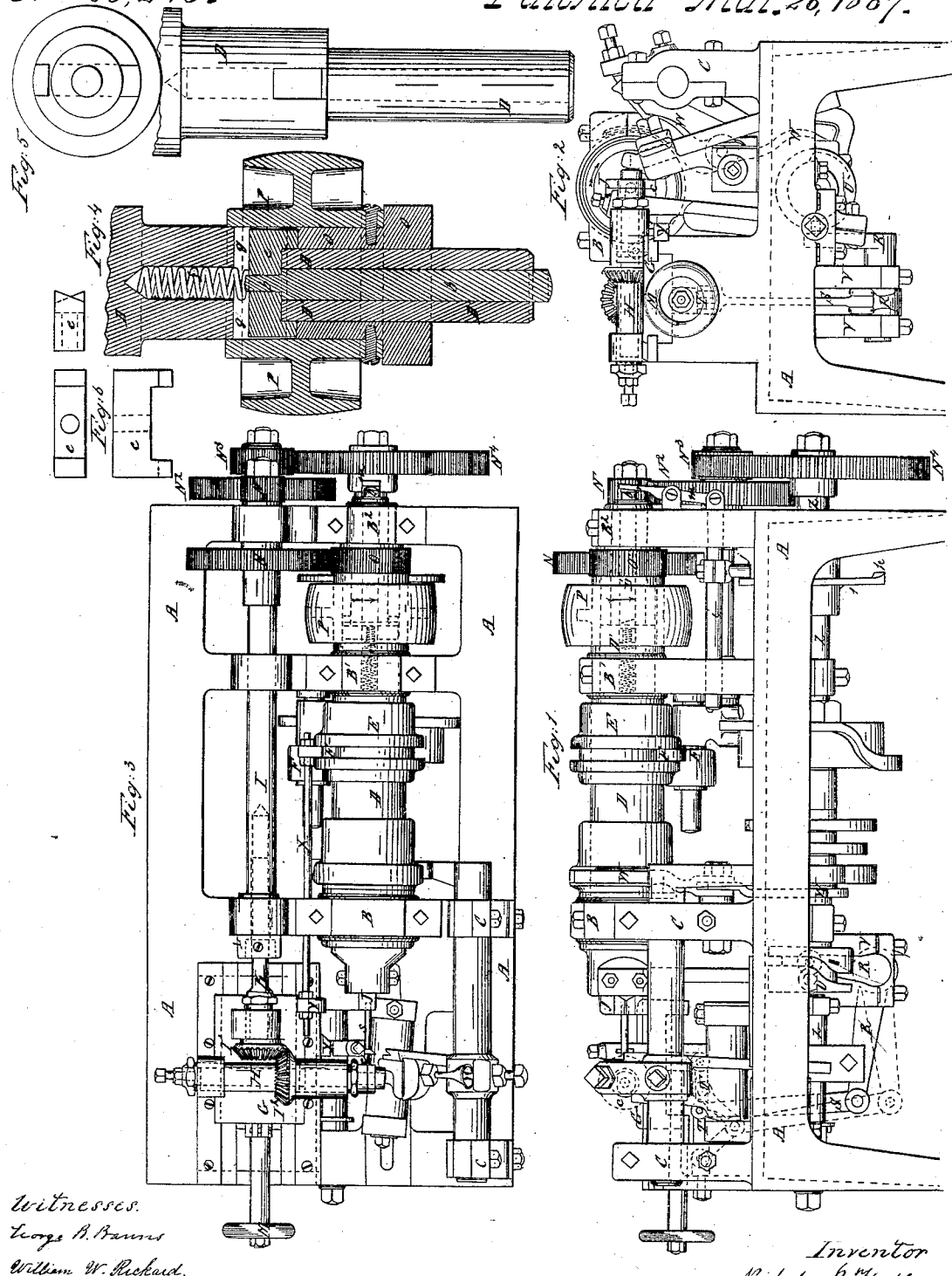
N. B. Hadley,

Making Wood Screws,

No. 63,243. Patented Mar. 26, 1867.



Witnesses.
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NICHOLAS B. HADLEY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE INTERNATIONAL SCREW COMPANY.

Letters Patent No. 63,243, *dated March* 26, 1867.

IMPROVEMENT IN MACHINERY FOR NICKING SCREWS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NICHOLAS B. HADLEY, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Nicking and Dressing the Heads of Screw-Blanks; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a side elevation of a machine for shaving, nicking, and reshaving the heads of screw-blanks.

Figure 2 is an end elevation.

Figure 3 is a plan.

Figure 4 is a longitudinal section, particularly showing the improvement to which this patent relates.

Figures 5 and 6 are details of the same.

The invention which is the subject of this patent is applicable to that class of machines for making screws which combine a nicker and a shaver in one. The drawings represent the full machine which I employ, and which contains certain features of construction and operation which are common to many other machines for similar purposes. The invention herein described consists in the means employed for causing the spindle, in the jaws of which the screw-blank is griped, to be alternately rotated and brought to a state of rest, to comply with the necessary conditions under which such screw-blank must be shaved, nicked, and reshaved. As, however, this part of my invention may be used independently of any other improvements existing in the machine, and may be also applied to any other screw machine of this class, I shall confine myself, in the present specification, to a description of so much of the machine as I deem necessary to communicate a clear understanding of the particular invention herein claimed.

In other machines for performing the operations of shaving and nicking the head of a screw-blank, two driving-pulleys are commonly used, one of which is connected with the spindle, to rotate it, and also to put into action the mechanism for shaving the head of the blank, while the other is connected with and operates the mechanism for cutting the nick in such head; the driving-belt being shifted from one pulley to the other when the changes are to be made.

One of the chief objections which has been expressed against such combined machines is, that the proper relative operation of these two sets of mechanism to each other cannot be relied upon with certainty, inasmuch as the same is dependent upon the question whether the belt shifts promptly and without slippage from one pulley to the other.

In the accompanying drawings, A is the bed which gives support to the various parts of the machine. Motion is given to the pulley P, in the direction of the arrow, by means of a belt passing around the same, and from which all the various movements of the machine are derived. D is the spindle, mounted in suitable bearings, B B^1, and, so far as the means are concerned for griping the blank, is not unlike the spindles in common use in other machines. It is, however, peculiar in this, that it is connected with the shaft D′, driven by the pulley P, (figs. 1 and 4,) by means of a spring-latch, so that at the proper times, when the two are united, the spindle D will turn with the shaft D′, but when the two are unlatched the spindle will be left at rest. The arrangement is shown more clearly in fig. 4, where it will be seen that the axes of the spindle D and the shaft D′ are coincident. The toothed wheel, O, (figs. 1, 2, 3,) which communicates motion, in a way hereinafter to be referred to, to the principal cam-shaft governing the unlatching of the spindle, the opening and closing of the griping jaws, and the bringing up of the nicking saw to the head of the blank, and which also drives the shaft H, upon which the nicking saw is mounted in this instance, is provided with a sleeve, O′, (fig. 4,) to which the hub of the pulley P is secured. The end of this sleeve is made with a ratchet face, or is provided with equivalent notches, to receive the latch which is connected with the spindle D. The rear end of the spindle also enters the hub of the pulley, but fits so loosely as to create no friction between its surface and the inner surface of the hub. The rear end of the spindle D is provided with a transverse slot, *g*, in which is fitted a movable latch, *e*, the slot being of sufficient depth to allow such latch to be entirely sheathed in the spindle when the spring *f*, which tends to force it outward, is compressed. So long as the spring *f* is permitted to act, the latch *e* will be engaged with a notch or notches in the end of the sleeve, and the spindle will partake of its

motion; but when the latch is pushed into the slot *g* so far that its face does not protrude beyond the end of the spindle, all connection between the spindle and the parts in motion will be broken, and the spindle will rest in its bearings. In order to break this connection at the proper time in the operation of the machine, the following devices and combinations are in this instance employed: The axis of the shaft D′ is made hollow, and is fitted with a rod, *b*, (fig. 4.) The forward end of this rod is connected with the latch *e* in any convenient way, so that, by the application of pressure to the rear end of it which protrudes beyond the shaft D′, (as shown in fig. 1,) the latch will be forced further into the slot *g*, and the connection between the spindle and the driving power be broken.

The precise arrangement of the parts as here described is not essential. Various ways may be employed for performing the same result, but so long as they involve the use of a movable latch, or its equivalent, they will be within the principle which characterizes my invention.

In the organized machine, as I have arranged it, the connection between the spindle D and its moving power is broken by the following means:

In fig. 1, Z is the shaft upon which the various cams for effecting the different changes of movement are mounted. This shaft is so timed that it will revolve once for every thirty-two revolutions of the driving-gear, O, and it carries a wheel, *l*, which has a projecting piece, *h*, upon its side. There is also attached to the side of the standard B^2 a fulcrum, to which is pivoted the lever *m*, the face of which, near its upper extremity, bears against the end of the rod *b*, and its lower end is hinged to the shaft *i*, which is fitted to slide endwise in bearings made in the standards B^1 and B^2 of the frame. The shaft *i* carries a projecting arm or stud, *j*, against the surface of which the projection *h* on the cam-wheel *l* acts, in the course of the revolution of the latter, and causes thereby the lever *m* to perform its function as above described. So long as the face of the stud *i* continues in contact with the projecting surface of *h*, the spindle D will be at rest; but so soon as the same, in the course of the revolution of the shaft Z, is moved away from the stud-pin, the spring *f* will act to re-establish the connection between the spindle and the driving power. It will thus be seen that, while the operation of shaving the head of the screw-blank is to be performed, the spindle D will be revolved; but that when the saw is called into action to cut the nick, the spindle will be at rest, but will recommence its rotation so soon as the saw is withdrawn and the cutter approaches to reshave the head, and this will be done while the driving-pulley is revolving continuously.

It is obvious that the arrangement here shown for operating the latch *e* through the rod *b* may be greatly varied, and that the same result can be produced by combining the rod *b* with any portion of the machine which has a motion at the time when the connection is desired to be broken, as, for instance, with the rocker-shaft which carries the shaving tool, or with the moving carriage which carries the nicking saw, and so arranged, by a suitable system of connecting levers, that as the cutter retreats, or as the saw advances, the rod *b* will be cotemporaneously moved in the proper direction to effect the disconnection. The arrangement which I have shown, however, I consider to be the best and simplest for the purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

Uniting the spindle D with its driving power by means of the movable latch connection *e*, or its equivalent, arranged and operating substantially as described for the purposes specified.

NICHOLAS B. HADLEY.

Witnesses:

GEORGE B. BARROWS,
WILLIAM W. RICKARD.