(No Model.) 2 Sheets—Sheet 1.

A. KNOWLTON.

NAILING MACHINE.

No. 280,190. Patented June 26, 1883.

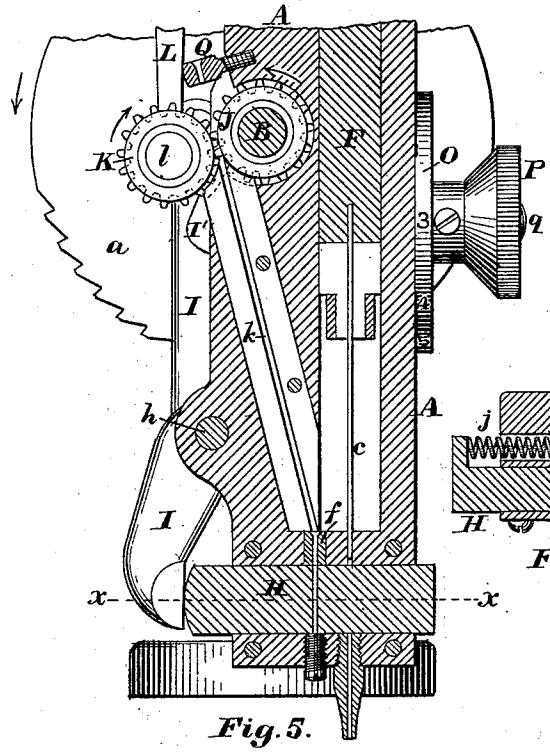


Fig. 5.

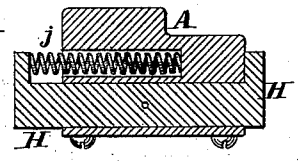


Fig. 6.

Fig. 1.

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Inventor:
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(No Model.) 2 Sheets—Sheet 2.

A. KNOWLTON.

NAILING MACHINE.

No. 280,190. Patented June 26, 1883.

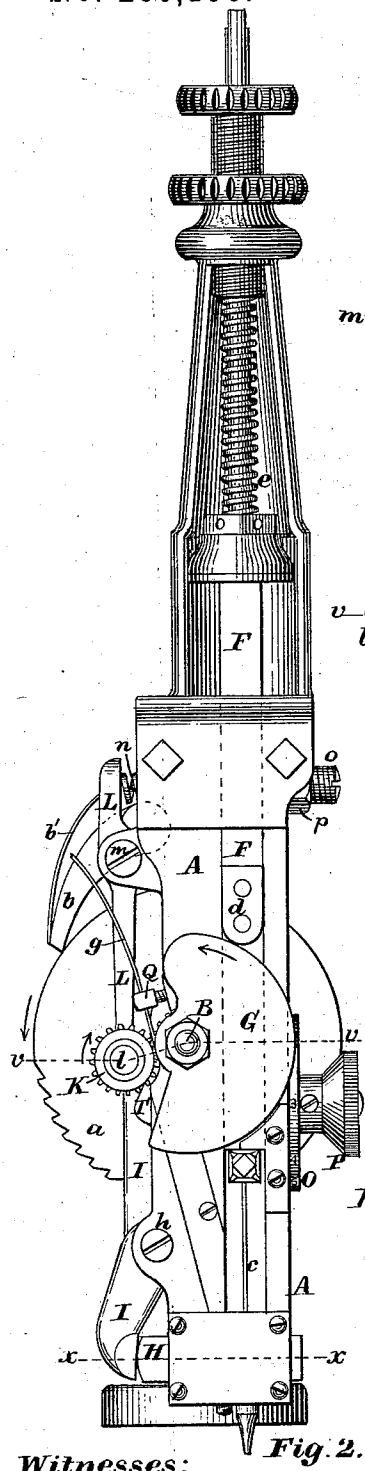


Fig. 2.

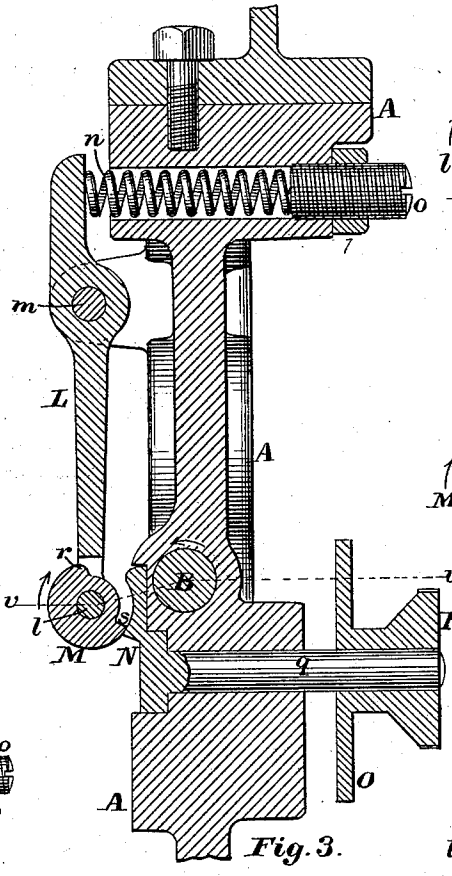


Fig. 3.

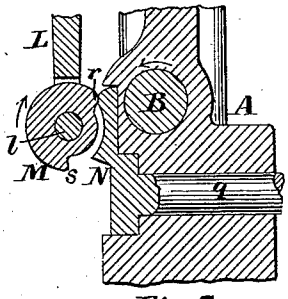


Fig. 7.

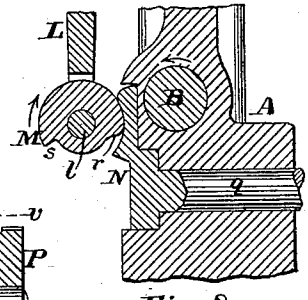


Fig. 8.

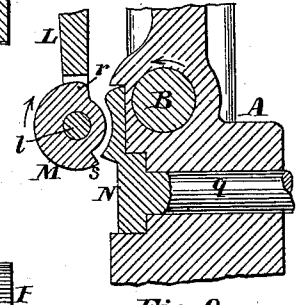


Fig. 9.

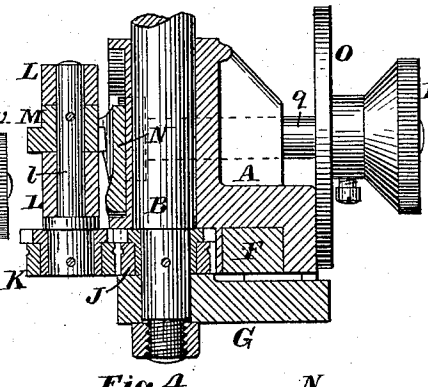


Fig. 4.

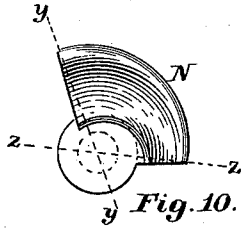


Fig. 10.

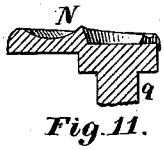


Fig. 11.

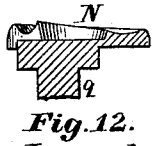


Fig. 12.

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UNITED STATES PATENT OFFICE.

ALBION KNOWLTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO WALDO B. BRIGHAM AND WILBAR F. BRIGHAM, BOTH OF HUDSON, MASSACHUSETTS.

NAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,190, dated June 26, 1883.

Application filed August 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALBION KNOWLTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Nailing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of nailing-machines in which the nail is cut from a continuous wire and then driven, and especially to those machines in which the length of the nail is controlled by the alternate gripping and releasing of the wire by the feed-rolls; and it consists in a novel method of controlling the action of the feed-rolls so that they may be adjusted to feed nails of different lengths as may be desired, which invention will be best understood by reference to the following description of the drawings.

In the drawings, Figure 1 is a side elevation of a nailing-machine embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section on line *u u* on Fig. 1. Fig. 4 is a horizontal section on line *v v* on Figs. 2 and 3. Fig. 5 is a vertical section on line *w w* on Fig. 1. Fig. 6 is a horizontal section on line *x x* on Figs. 1, 2, and 5. Figs. 7, 8, and 9 are partial sections on line *u u* on Fig. 1 corresponding to Fig. 3 and showing different positions of the parts. Fig. 10 is an elevation of my improved adjustable wedge for controlling the action of the feed-rolls. Fig. 11 is a section of the same on line *y y* on Fig. 10, and Fig. 12 is a section of the same on line *z z* on Fig. 10.

A is the frame of the machine, provided with suitable bearings, in which is mounted the driving-shaft B, having secured upon it at its rear end the friction-clutch C. A driving-pulley, D, is mounted loosely upon the shaft B, and may be thrown into or out of gear with the clutch C for starting or stopping the machine by means of the bell-crank lever E, connected to a suitable treadle. (Not shown.) A ratchet, *a*, provided with a sufficient number of teeth, is secured upon the shaft B, and a pawl, *b*, pivoted to the frame A, is held in contact with the ratchet *a* by a spring, *b'*, and serves to prevent the shaft B from being turned backward when the machine is stopped. F is the driver-bar having the driver *c* secured in its lower end, and adapted to reciprocate vertically in a groove in the frame A, it being raised by the cam G upon the forward end of the driving-shaft B acting upon a lug, *d*, upon said driver-bar, and forced downward by the spring *e*, Fig. 2, all in a well-known manner.

H is the cutting-off die, adapted to slide in a suitable horizontal groove in the frame A, and operates in conjunction with the stationary die *f*, Fig. 5, to sever a nail from the wire *g* and carry it into a position under and in line with the driver *c*. The die H is moved in the proper direction to sever the wire and carry it under the driver *c* by means of the lever I, pivoted upon the pin *h*, the lower arm of said lever bearing upon the end of the die H, while the upper arm of the lever is provided with an anti-friction roll bearing upon a cam, I', secured upon the driving-shaft B. Thus motion in one direction is imparted to the lever I and die H, while the reverse motion is effected by the spring *j*, as shown in Fig. 6.

The machine as thus far described presents no novel features and constitutes no part of my present invention, which invention, however, will now be described.

J and K are a pair of feed-rolls adapted to grip the wire *g* and feed it at proper intervals down the groove *k*, Fig. 5, and through the stationary die *f* into the cutting-off die H. Each of the feed-rolls J and K is provided with a groove for the reception of the wire *g*, and also with a series of teeth, as shown, by which they are geared together and made to revolve in unison. The roll J is secured upon the driving-shaft B, and imparts motion to the roll K, which is secured upon one end of the short shaft *l*, mounted in the lower end of the lever L, which is pivoted by the pin *m* to the frame A. The upper end of the lever L is pressed outward by the force of the spring *n*, located in a hole in the frame A, thus causing the feed-roll K to press toward the roll J and grip the wire with sufficient force to feed it downward as the rolls revolve. The pressure of the spring *n* may be readily

adjusted by means of the screw *o*, provided with the check-nut *p*, as shown in Fig. 3.

Upon the shaft *l*, near the middle of its length, is secured the cam M, said cam consisting, substantially, of a concentric disk cut away upon one side for a certain portion of its circumference, the remaining portion being adapted during a certain part of its revolution to come in contact with and bear against the concave portion of the curved wedge N. (Shown in detail in Figs. 10, 11, and 12.) The wedge N is shown as being made in the shape of a sector, tapering gradually from the wider to the narrower end, as seen in Fig. 10, and is formed upon or secured to the end of a shaft, *q*, which passes through the frame A, having its bearing therein, and has secured upon its opposite end a disk or index-wheel, O, and a suitable handle or knob, P, by which it may be turned. As the cam M revolves the rounded corner *r* of said cam comes in contact with the wedge N, as shown in Fig. 7, and the lower end of the lever L is moved outward, slightly compressing the spring *n*, and carrying the feed-roll K slightly away from the feed-roll J, thus releasing their hold upon the wire *g*, which will remain stationary until the corner *s* of the cam M passes off from the wedge N, when the spring *n* will force the cam M and feed-roll K inward, and cause the feed-rolls to again grip the wire and feed it downward.

It will be obvious that the width of the wedge N determines the length of the nail to be driven. Thus, if it is desired to use the longest nail which the machine is adapted to drive, the operator will, by means of the knob P, turn the wedge N so that its narrowest portion will be uppermost or in position for contact with the cam M, so that said cam will be in contact with the wedge N for a lesser portion of its revolution, thus allowing the feed-rolls J and K to grip and feed a greater length of wire. If it is desired to use the shortest nail, the widest portion of the wedge N is turned into position for contact with the cam-M, and said cam will remain in contact with the wedge N for a greater portion of its revolution, thus allowing the feed-rolls to feed a much shorter length of wire. Any medium length of nail between the longest and the shortest may be obtained simply by setting the wedge N in the proper position, and for convenience in so doing a graduated scale may be cut upon the edge of the index-wheel O, or figures stamped thereon, as shown in Figs. 2 and 5, to indicate the lengths of nails it may be desired to drive.

Q is a pin screwed into the frame A, as shown, and having a hole in its head through which the wire *g* passes, said pin serving as a guide to the wire as it passes to the feed-rolls.

For convenience of operation, I have shown the wedge N as being made in a curved form and adapted to be adjusted about the axis of the shaft *q;* but said wedge might be made straight and adjusted by sliding it in a horizontal direction along the side of the frame A and still preserve the principle of my invention.

Instead of mounting the shaft *l* of the feed-roll K upon a leaf-spring secured to the frame A, as has previously been the practice, I prefer to use the lever L and adjustable spring *n*, as it works better, is less liable to get out of order, and is less expensive in construction.

What I claim as new, and desire to secure by Letters Patent of the United States, is as follows:

1. In a nailing-machine, the combination of a pair of feed-rolls mounted, one in a fixed bearing and the other in a movable bearing, the cam M, mounted upon and revolving with the shaft of said movable roll, and a wedge adjustably mounted upon some fixed portion of the machine and co-operating with said cam to cause said feed-roll to alternately grip and release the nail-wire, substantially as and for the purposes described.

2. In a nailing-machine provided with a pair of feed-rolls, one of which is mounted in a movable bearing, the combination of the cam M, and the longitudinally curved and pivoted adjustable wedge N, co-operating with said cam to cause the feed-rolls to alternately grip and release the wire, substantially as and for the purposes described.

3. In a nailing-machine, the combination of the feed-rolls J and K, the lever L, spring *n*, and means of imparting to the feed-roll K an intermittent but regular and positive motion toward and from the feed-roll J independently of the revolutions of said rolls about their axes, substantially as and for the purposes described.

4. In a nailing-machine, the combination of the feed-rolls J and K, cam M, lever L, spring *n*, and the longitudinally curved and pivoted adjustable wedge N, substantially as and for the purposes described.

5. In a nailing-machine provided with a pair of feed-rolls, one of which is mounted in a movable bearing, the combination of the cam M, the longitudinally-curved adjustable wedge N, and the shaft *q*, provided with the index-wheel O, all arranged and adapted to operate substantially as and for the purposes described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22d day of August, A. D. 1882.

ALBION KNOWLTON.

Witnesses:
I. B. HOITT,
J. F. COTTON.