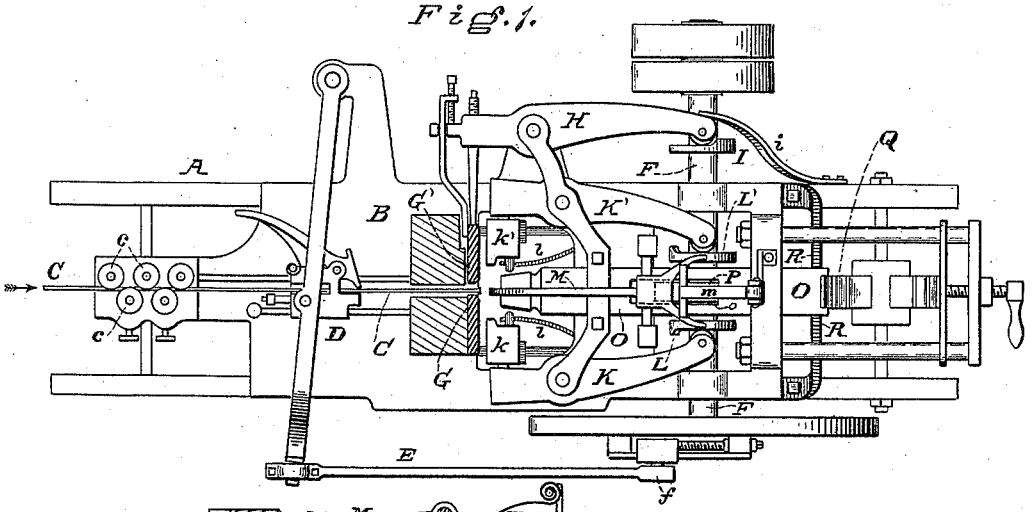
(No Model.)

B. H. GEDGE.

WIRE NAIL MACHINE.

No. 342,001. Patented May 18, 1886.

Fig. 1.



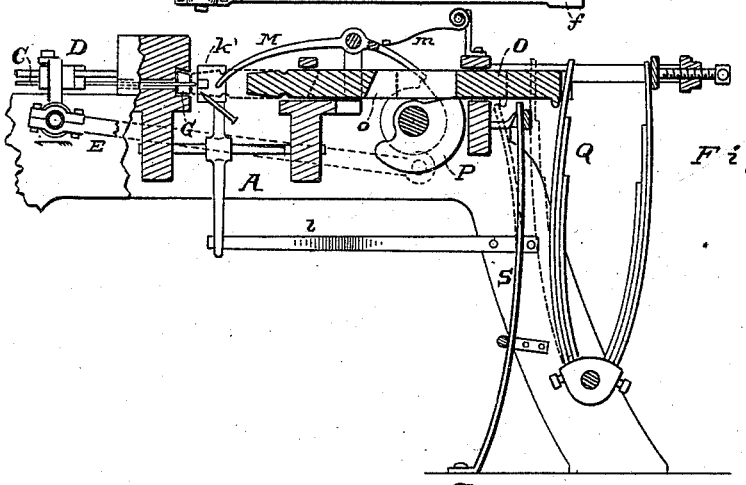


Fig. 2.

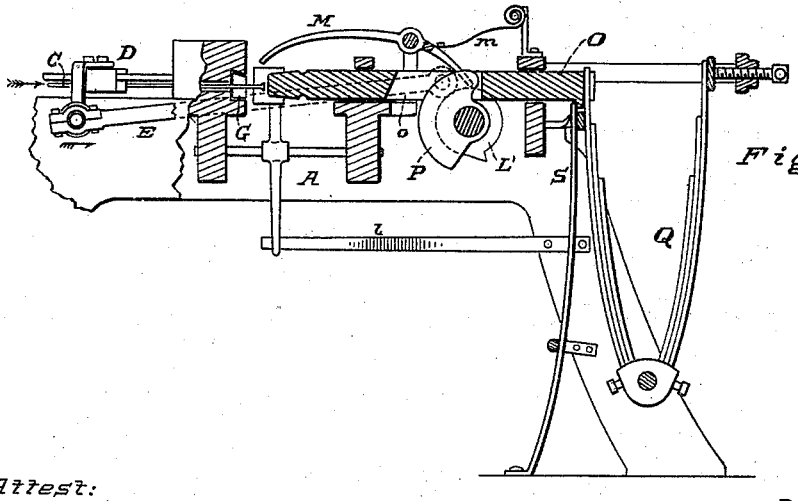


Fig. 3.

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UNITED STATES PATENT OFFICE.

BURTON H. GEDGE, OF COVINGTON, KENTUCKY.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,001, dated May 18, 1886.

Application filed March 13, 1886. Serial No. 195,131. (No model.)

To all whom it may concern:

Be it known that I, BURTON H. GEDGE, of Covington, Kenton county, Kentucky, have invented certain new and useful Improvements in Wire-Nail Machines, of which the following is a specification.

My invention relates to improvements in those wire nail machines whose action in forming the nail is as follows: The wire is gripped between a pair of strong jaws beyond which its end slightly projects, and this projecting portion is struck by a hammer, so as to be flattened against the jaws and form the head of the nail. As the hammer is retracted, the jaws open, and the wire is fed out. A pair of nippers then pinch the wire, so as to form the point of the nail, and the thus partially severed nail is knocked off by a finger. The wire is left projecting slightly beyond the jaws, as before, and being again gripped is ready for another stroke of the hammer. The feed mechanism is driven by a crank on the power-receiving shaft, and the movable-gripping jaw, the nippers, and the finger are operated by cams on said shaft and by return-springs, so that by speeding up said shaft and tightening said springs the movements of all these parts could be accelerated. The hammer is retracted by a cam on the aforesaid shaft, and is thrown or protracted by a spring. When the machine is running at its normal speed, the hammer is retracted by its cam immediately after impact against the jaws, so that the wire will not be fed against it. The force of percussion of the hammer, and therefore the time required for its protraction, depend on the character of the nail which is to be made, and is invariable for any particular kind and size of nail-head. Thus if the other parts are accelerated above the normal speed, the hammer will not be able to reach the jaws before it is caught and thrown back by the cam, and thus headless nails will be formed. By cutting back the catching portion of the cam this difficulty could be obviated, and by cutting back the releasing portion of the cam the hammer could be enabled to reach the jaws while the wire is gripped. If means were then provided for retracting the hammer immediately after impact, so as to compensate for the cutting back of the catching portion of the cam, said means being such as would not prevent complete protraction of the hammer, the hammer could be made to keep up with the other parts when they are run at the greatest possible speed.

To provide such means is the object of my invention.

In the accompanying drawings, Figure 1 is a top view of a wire-nail machine provided with my improvements, the gripping-jaws and the anvil-block supporting them being shown in section. Figs. 2 and 3 are partial vertical sections of the said machine in the plane of the hammer, showing the machine in different conditions.

The machine is mounted on a frame, A, partly covered by a table, B. The wire C passes between guiding-rollers *c*, and is fed out between jaws G G′ by a clutch-feed, D, operated by a connecting-rod, E, attached to a crank, *f*, on a driving-shaft, F, which is journaled in the frame A, and carries a fly-wheel and fast and lose pulleys that receive a driving-belt. The jaw G′ is alternately closed upon and withdrawn from the jaw G by a lever, H, which is operated by a cam, I, on the shaft F, and by a return-spring, *i*, so as to grip the wire while the head is being formed, but to release it when it is to be fed out. Two levers, K K′, carrying nippers *k k′*, are operated by the sides of cams L L′ on shaft F, and by return-springs *l*, so as to pinch the wire after it is fed out and thus form the nail-point. A pivoted finger, M, is operated by the peripheries of the cams L L′, and by a return-spring, *m*, so as to knock off the nail after it is partially severed by the nippers.

O is the sliding hammer-bar or hammer, which runs in guides and has a slot, *o*, against whose rear wall engages a cam, P, on the shaft F. This cam retracts the hammer, and, as shown by strong lines in Fig. 2, in so doing bends a spring, Q, which, when the hammer is released by the cam, throws it toward the jaws G G′. Said spring is however arrested by a stop, R, before the hammer reaches the jaws, and the hammer completes its stroke, as shown by dotted lines in Fig. 2, by its acquired momentum, and in so doing bends a spring, S, with which it engages on leaving the spring Q. The hammer having struck

and headed the wire is retracted by its elastic rebound and by the tension of spring S until it reaches the spring Q, against which the spring S firmly holds it, as shown in Fig. 3. This immediate partial retraction of the hammer draws it out of the way of the headed wire, which is fed out after it. Before the end of the wire reaches the hammer the latter is struck by the cam P, which completes its retraction, the spring S being prevented from following the hammer by a stop, which may be the same stop R that limits the relaxation of the spring Q. This stop may consist of a bar rigidly secured to the frame A and extending across the paths of motion of both springs, so as to be struck on its rear side by the spring Q, and on its front side by the spring S.

For short nails (except molding or finishing nails, whose heads being but slightly flattened require a light stroke of the hammer,) the spring S may be omitted, the elastic rebound of the hammer being sufficient to retract it out of the way of the advancing wire, which is fed more slowly with a short than with a long nail; but even with such short nails the spring S is useful in preventing re coil of the hammer from the spring Q.

To increase the capacity of the machine, it is merely necessary to cut back the catching and releasing portions of the cam P, tighten up the springs *i*, *l*, *m*, Q, and S and speed up the driving-shaft.

It is found possible by the improvements hereinbefore described to increase the capacity of the old machines seventy to eighty-five per cent.

I claim as new and of my invention—

1. In a wire-nail machine, the combination, with the hammer-throwing spring Q, of the stop R, arranged to arrest the motion of said spring before the hammer completes its protractile stroke, substantially as and for the purpose explained.

2. In a wire-nail machine, the combination of the hammer O, the hammer-throwing spring Q, a stop, R, for arresting the motion of said spring, a spring, S, which brings the hammer back to the spring Q, but is prevented from following it farther by a stop, and a cam which completes the retraction of the hammer, substantially as and for the purposes set forth.

3. The combination, in a wire-nail machine, of the hammer O, hammer retracting cam P, hammer protracing and retracting springs Q S, and a stop, R, limiting the relaxation of both of said springs, substantially as set forth.

In testimony of which invention I hereunto set my hand.

BURTON H. GEDGE.

Attest:
E. M. WILLIAMS,
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