U. S. WOLFF.

FEEDING APPARATUS FOR NAIL MACHINES.

No. 102,073. Patented Apr. 19, 1870.

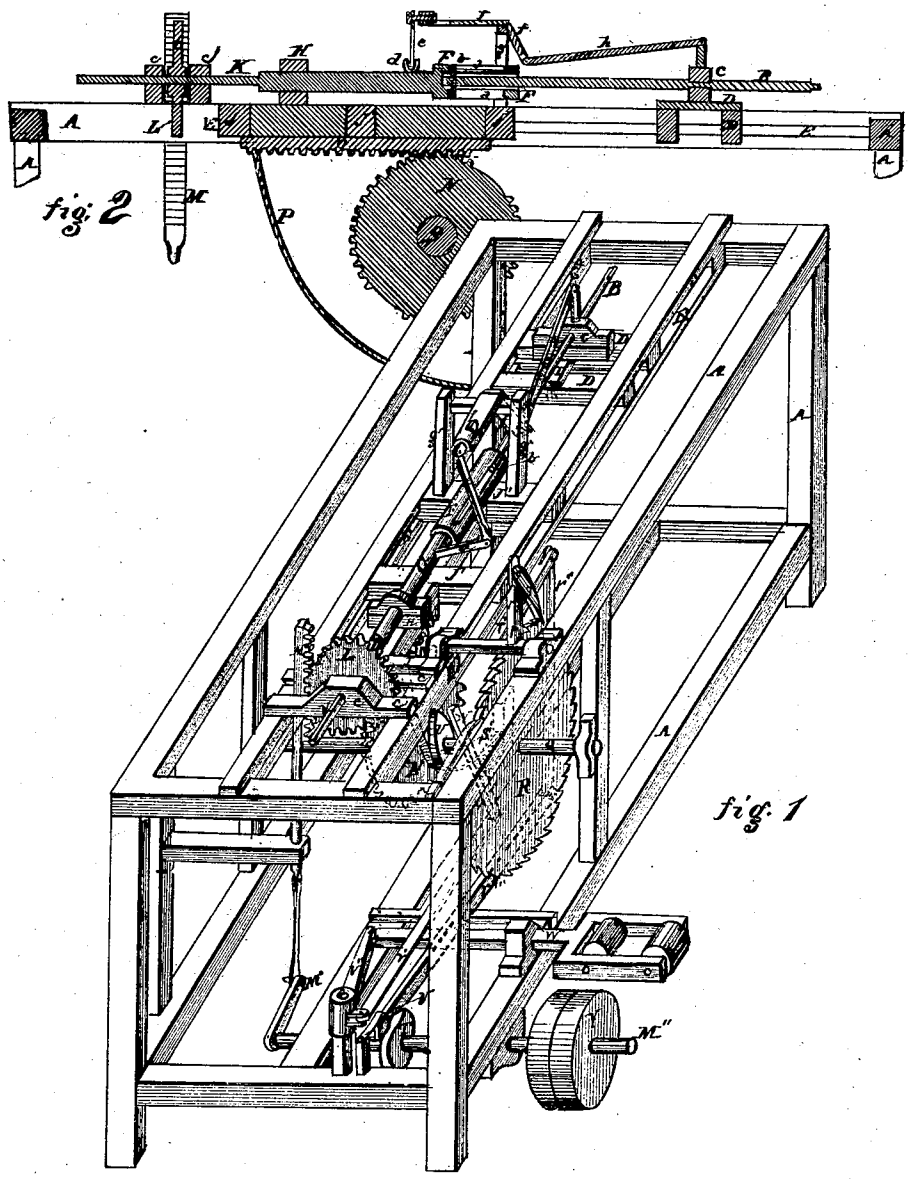

fig. 2

fig. 1

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Inventor: Uriah S. Wolff, By Francis L. Clark

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United States Patent Office.

URIAH S. WOLFF, OF BURREL TOWNSHIP, PENNSYLVANIA.

Letters Patent No. 102,073, *dated April* 19, 1870.

IMPROVED FEEDING-APPARATUS FOR NAIL-MACHINE.

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, URIAH S. WOLFF, of Burrel Township, in the county of Armstrong and State of Pennsylvania, have invented an Automatic Nail-Machine Feeder; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, in which—

Figure 1 is a perspective view, and

Figure 2, a section of a part of the upper portion of my machine.

My invention is comprised in an improved feeding apparatus for nail-cutting machines, and consists in certain improved combinations of devices, to be hereinafter described, for advancing, withdrawing, and turning the nail-plate, and for making and breaking the connection of the machine with the motor mechanism.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A′, &c., is the frame on which the machinery rests, which is made of wood or iron, of the shape shown, or of such other shape as is found most convenient.

The plate from which the nails are cut is held in a pair of claws attached to the end of the rod B.

This rod passes through the box C, in which it turns freely.

The rod B is turned down where it rests in the box C, forming a collar on each side of the box, which keeps the rod from moving back and forth in the box.

The box C rests on the cross-head D, which moves in the guides E E.

The back end of the rod B fits into the cylinder F.

In this cylinder are two slots, *a*, only one of which is seen in the drawing.

A key, *b*, passes through these slots and through the end of the rod B. This arrangement allows the rod B to slide backward and forward the length of the slot *a*, but prevents it from turning, except when the cylinder turns. Then the rod B turns with it.

The cylinder F forms a part of the rod G, which rests in the box H, which is supported by the cross-heads J J′ J″, which move in the guides E E.

The rod G terminates in the square rod K, on which the small cog-wheel L fits.

This wheel is held in place by the cross-pieces *c c*.

The rod K moves back and forward through the wheel freely, but turns with the wheel L when it is turned by the rack M, which is worked by means of the crank M′ on the end of the main shaft M″. Every half revolution of the crank M′ gives to the rod B and to the plate attached to its end a corresponding half turn.

While the plate is turning it is also being drawn back and then pushed forward by means of the combined movements of the arm *d*, which projects from the rod G, the connecting-rod *e*, which is jointed to it and to the swivel on the double lever *f*, (which is supported by the standards *g′ g′* on the cross-head J″,) and the connecting-rod *h*, which connects the other arm of the lever *f* with the box in which the rod B rests.

This gives to the plate a motion analogous to that given by the workman when feeding the machine by hand, which motion turns the plate and withdraws it, that the nail may drop from under the cutter.

A second forward motion, which is the real feed-motion, is given to the plate by means of the cog-wheel N, which works into the rack O on the lower side of the cross-heads J J′ J″. There are two blank spaces opposite each other in this wheel where there are no cogs.

When these blank spaces reach the rack, the cross-heads, not being held by the cogs, are thrown back to the end of the guides E E by the spring P.

Every half revolution of the wheel N throws the cross-heads, and with them the machinery they carry and the plate, forward the length of the nail-plate.

The shaft Q passes through the wheel N, which is secured to it.

The shaft is driven by the ratchet-wheel R, which is turned by means of the ratchets S and S′. The teeth on the wheel are so graduated that the turning of the wheel the space of one tooth shoves the plate forward the width of one nail.

The ratchet S is worked by means of the levers and connecting-rods *r r′ r″* and *t*.

The lever *t* is thrown up by the cam T on the main shaft, and is thrown down by the pressure of the spring U. This movement draws the ratchet S back one tooth, and after it has dropped behind the tooth pushes it forward, carrying the wheel around the width of one tooth. The ratchet S′ prevents the wheel from turning back while the ratchet S is moving back.

When the plate is all worked up, the cam V, on the shaft of the ratchet-wheel, presses against the lever *v*, which, acting through the connecting-rods *v′ v″ v‴*, throws the frame W, in which the driving-belt runs, to one side, carrying the belt onto the loose pulley Y, and stopping the machine. The band is thrown back by a hand-lever, not shown.

All the movements here described are derived, either directly or through each other, from the main shaft, and are therefore perfectly at unison with each other. They also correspond with the motions of the cutting-machine with which they are geared, turning and feeding the plate up between each cut of the machine.

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

1. The combination of the rods B and G and cylin-

der F with the sliding cross-heads D and J, all arranged and operating substantially as described.

2. In combination with the subject-matter of the first clause of claim, the racks and pinions M O L N and spring P, or its equivalent, as and for the purposes set forth.

3. The combination of the rod G and arm *d* with the connecting-rod *e*, swivel and double lever *f*, and rod *h*, for the purpose described.

4. In combination with the subject-matter of the third clause of claims, the cross-head D, rod B, cylinder F, and rack and pinion M L, substantially as set forth.

5. The rack O on the cross-heads J J′, and the cog-wheel N driven by the ratchet-wheel R, in combination with the ratchets S S′, lever *t*, connecting-rods *r* *r′* *r″*, cam T, and spring U, for giving the feed-motion, as described.

6. The system of levers for operating the belt-shifting device, in combination with the cam V, all arranged substantially as set forth.

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Witnesses:

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