M. McMANUS.

NAIL MACHINE.

No. 43,324. Patented June 28, 1864.

Fig: 3.

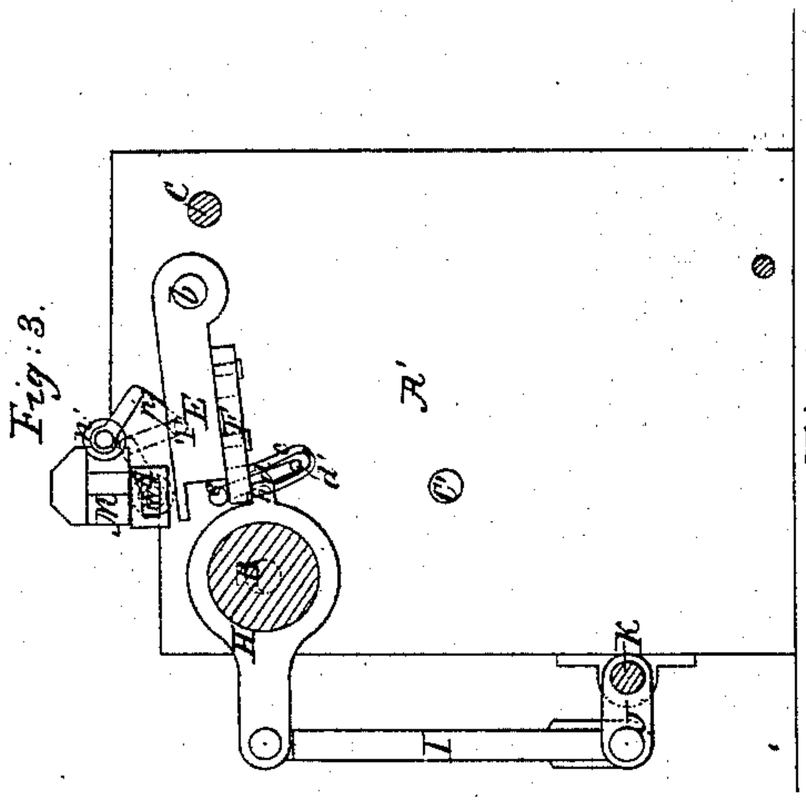


Fig: 4.

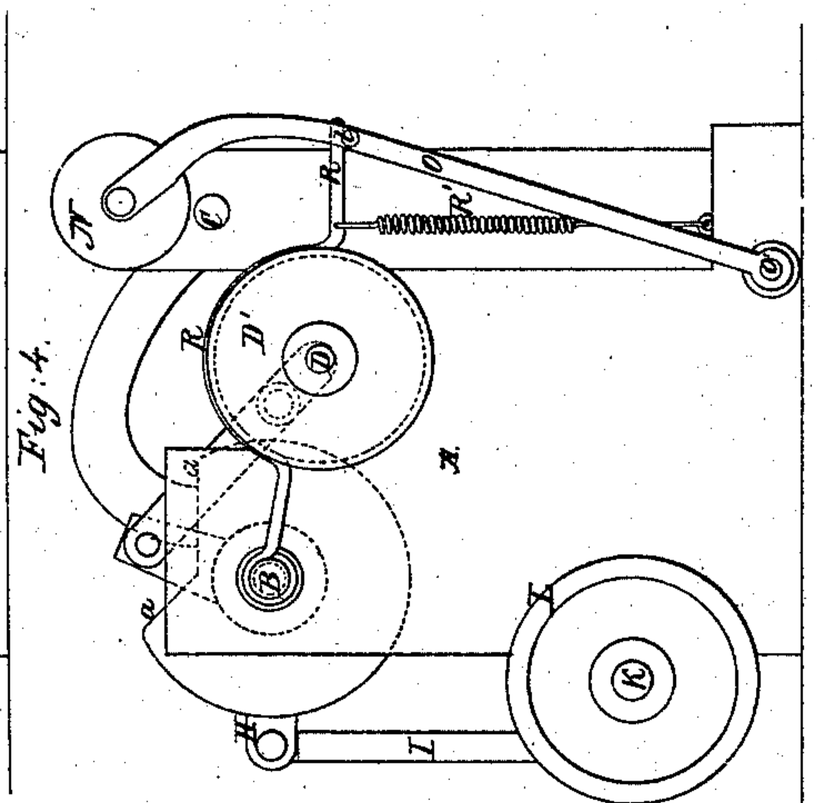


Fig: 1.

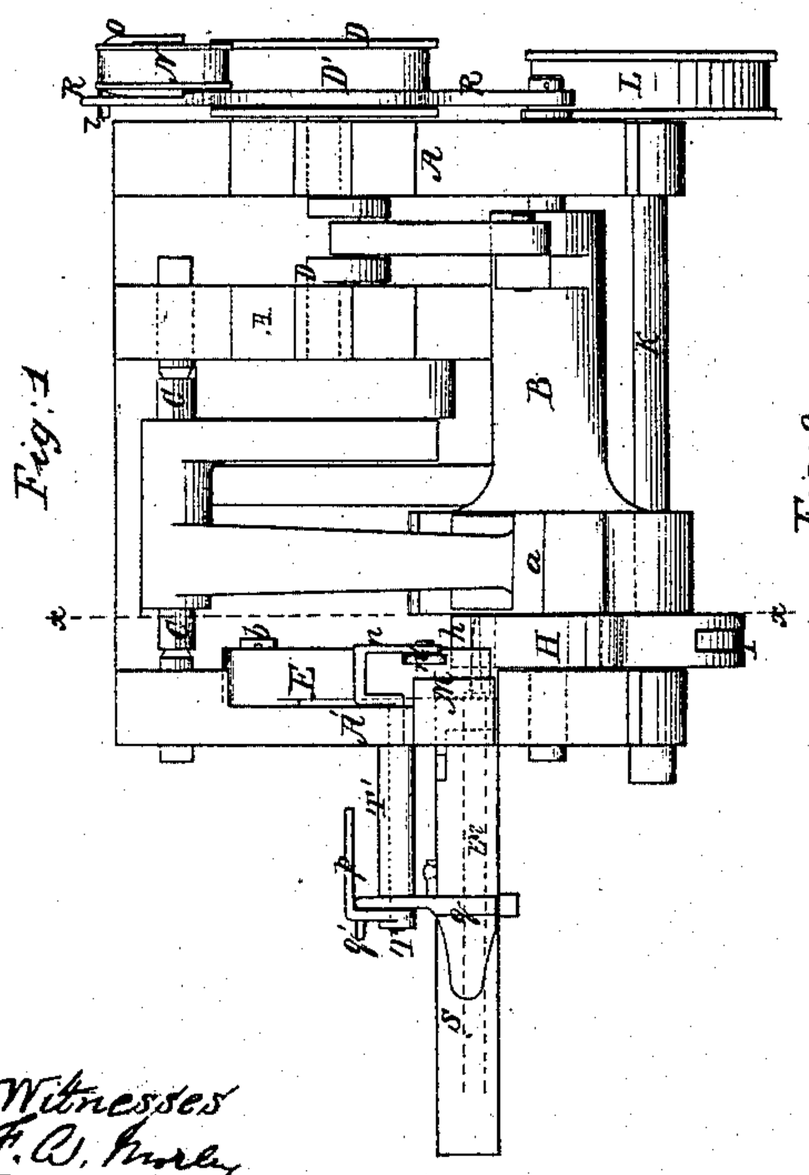
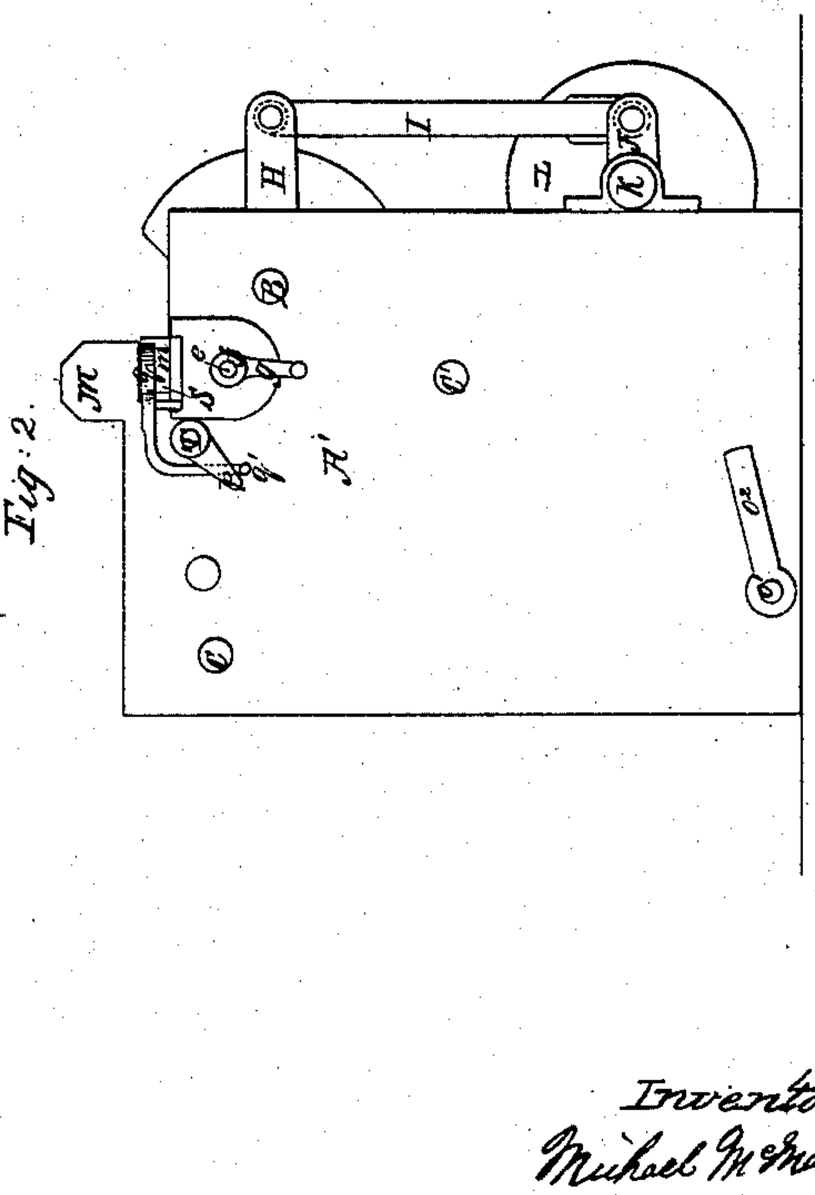


Fig: 2.



Witnesses
F. A. Lowe
Geo. W. Reed

Inventor;
Michael McManus

UNITED STATES PATENT OFFICE.

MICHAEL McMANUS, OF BROOKLYN, NEW YORK.

IMPROVED NAIL-MACHINE.

Specification forming part of Letters Patent No. **43,324**, dated June 28, 1864.

To all whom it may concern:

Be it known that I, MICHAEL MCMANUS, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machinery for Forging Nails and other Articles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of a machine. Fig. 2 is a front view of the same. Fig. 3 is a transverse vertical section of the same in the plane indicated by the line *x x*, Fig. 1. Fig. 4 is a back view of the same.

Similar letters of reference indicate like parts.

This invention relates more particularly to that kind of nail-machine which is the subject of Letters Patent No. 17,941, granted to John M. Hood, as assignee of Samuel J. Seely, but may be applicable to other nail-machines.

The first part of the invention relates to the apparatus for cutting off the nails or other articles from the rod or bar.

In Hood's machine, above mentioned, and in other machines, the cutters and the hammers are driven from the same shaft or in such manner that the hammers are in operation while the nails or other articles are being cut off, and there being at that time nothing interposed between the anvil and hammers both are liable to much breakage and injury by the striking of the hammers against the anvil.

The object of this part of the invention is to remedy this evil; and to this end it consists in operating the cutting-off mechanism independently of the rest of the machine by a separate driving-belt, so that before the nail or work is removed from between the anvil and hammers to be cut off the action of the hammers may be stopped while the cutter or cutters still remain in operation.

It also consists in the application to the shaft which gives motion to the hammers, of a friction-brake which is thrown out of operation by means of the lever which carries a tightening-pulley for tightening a belt which drives the said shaft when the said tightening-pulley is brought into operation to start the hammers, and which is allowed by the said lever to be brought into operation by a spring to stop the machine when the said pulley is thrown out of operation.

Another part of the invention consists in a novel mode of applying a gage in combination with the rod-holder for gaging the proper length of rod to form a nail or other article.

A A′ is the framing of the machine; B, the oscillating anvil-shaft; C C′, the oscillating hammer-shafts; and D, the rotating shaft from which the shafts B C C′ severally derive motion. These parts are constructed, arranged, and operated substantially as in Hood's machine.

E is the cutter-bar, to which the movable cutter is attached, arranged to oscillate upon a fixed pin, *b*, secured in the back of the front standard, A′, of the framing of the machine, and situated a short distance in front of the anvil faces *a a*. The movable cutter operates in combination with a stationary cutter placed in a stock, M, attached to the standard A, but not shown in the drawings, as it forms no part of my invention and is not necessary to illustrate it.

The cutter-bar E has attached to its lower part a sliding lifter, F, (see Fig. 3,) to the bottom of which there is attached rigidly a slotted piece, *c*, which receives in its slot the wrist *d′* of a crank, *d*, attached to the rear end of a short shaft, *e*, which works in a socket-bearing, *f*, secured to the front standard. This shaft has at its front end a hand-crank, *g*, (see Fig. 2,) by which to turn it for the purpose of making the wrist *d′* move the sliding lifter F to bring it within or out of range of the short arm *h* of the independent lever H, which is fitted to work freely on the front part of the anvil rock-shaft as upon a fulcrum. A longer arm of the lever H is connected by a rod, I, with a crank, J, on a horizontal shaft, K, which is furnished with a pulley, L, to receive rotary motion from a belt separate and distinct from that which drives the shaft D, which imparts motion to the hammers and anvil rock-shaft, thereby making the operation of the cutter-bar C entirely independent of the hammers and anvil, and permitting the operation of the cutter to be suspended in the interval between the completion of the hammering and drawing out of one nail or other forged article and the reintroduction of the rod or bar to commence the forging of an-

other, during which interval the cutting off is effected.

The operation of the shaft K and lever H is perfectly continuous, but during the operation of the hammers the sliding lifter F is drawn out of range of the arm *h* of the lever H, and the cutter-bar E is not brought into operation until the operation of the hammers has been suspended and the rod or bar drawn back from between the hammers and anvil, when the operator, who stands in front of the machine, turns the crank *g*, Fig. 2, in a direction to make the crank *d* project the lifter F beyond the end of the bar E and within range of the arm *h*, which then comes into operation on the said lifter, and so produces the necessary upward movement of the cutter-bar to cut off the nail or other article.

The shaft D, from which the other parts of the machine derive motion, receives its motion from a belt through a pulley, D′, on its rear end, and this belt runs slack, except when tightened by the pressure of the tightening-pulley N, which is attached to a lever, O, carried by a horizontal rock shaft, O′, which works in bearings in the lower part of the framing. On the front end of this rock-shaft, in the front of the framing, there a treadle, O^2, upon which the operator, standing in front of the machine, presses his foot to bring and keep the tightening-pulley against the belt, and so make it drive the pulley D′ and shaft D. When the operator removes his foot from the treadle, the belt becomes slack and ceases to drive the pulley D′; but as the shaft would still continue to run by the momentum acquired by its connected parts were not some means of stopping it provided, I apply to the pulley D′ a friction-brake lever, R, which is brought into action by a spiral spring, R′. (See Fig. 4.) This brake works upon the end of the shaft B, or on one of the center-screws, which holds the same in place. A pin, *l*, attached to the lever O, is so arranged that when the said lever is brought into a position to bring the tightening-pulley into operation, it (the pin *l*) comes into action upon the brake-lever R and lifts it from the pulley D′, but that when the said lever O is allowed to fall back to throw the tight-ening-pulley out of operation it (the pin *l*) passes out of contact with the brake lever, and so permits the spring R′ to bring it into operation and at once stop the pulley.

S is the rod-holder, in which the rod *m* is held during the forging and cutting-off operations. This holder is of well-known construction, and slides through an opening in the standard A′. By the side of and parallel with the said holder there is arranged a horizontal shaft, T, which turns freely in a long tubular bearing, T′, secured to the standard A, and to this shaft, on the inner side of the standard A′, there is attached by an arm, *n*, a gage plate, *n′*, which serves to gage the proper length of rod or bar to make the nail or other article. To the outer end of this shaft there is attached a crank, *p*, the weight and arrangement of which are intended to be such that it will hold up the gage-plate out of the way of the holder, as shown in Fig. 3 in black outline. This crank is so arranged, as shown in Figs. 1 and 2, relatively to a hook, *q′*, which is attached to the movable portion or clamp *q* of the rod-holder that when the said clamp is raised up to liberate the rod or bar the said hook comes in contact with the said crank and moves it upward, thereby depressing the gage-arm *n′*, or gage proper, opposite the holder S. The opening of the clamp *p* is effected while the holder S is drawn back against the usual stop, and the gage is arranged at such a distance from the inner end of the holder as to gage exactly the necessary length which the rod or bar is required to be fed forward. When the rod or bar has been fed in, the clamp *p* is closed, and, in the act of closing the arm *q*, permits the crank *p* to descend and lift the gage out of the way of the rod or bar *m* and holder S, to allow them to be moved forward to the proper position relatively to the hammers and anvil for the performance of the forging operation.

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

1. The combination, with the lever H *h* and the cutter E, of the sliding lifter F, slotted arm *c*, and crank *d*, whereby the cutter is thrown into and out of gear at the will of the operator.

2. The friction-brake R and belt-tightening lever O, combined with each other and with the hammering or shaping mechanism of a forging-machine which has its cutting mechism driven independently, substantially as herein specified.

3. The gage T *n n′ p*, combined with clamp *q* of the rod-holder, substantially as and for the purpose herein specified.

MICHAEL McMANUS.

Witnesses:
J. P. HALL,
GEO. W. REED.