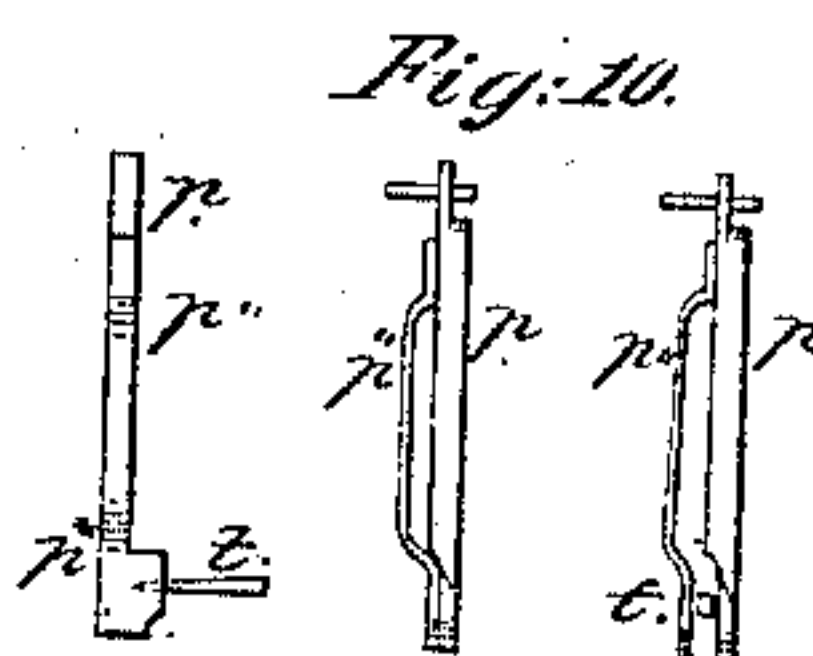
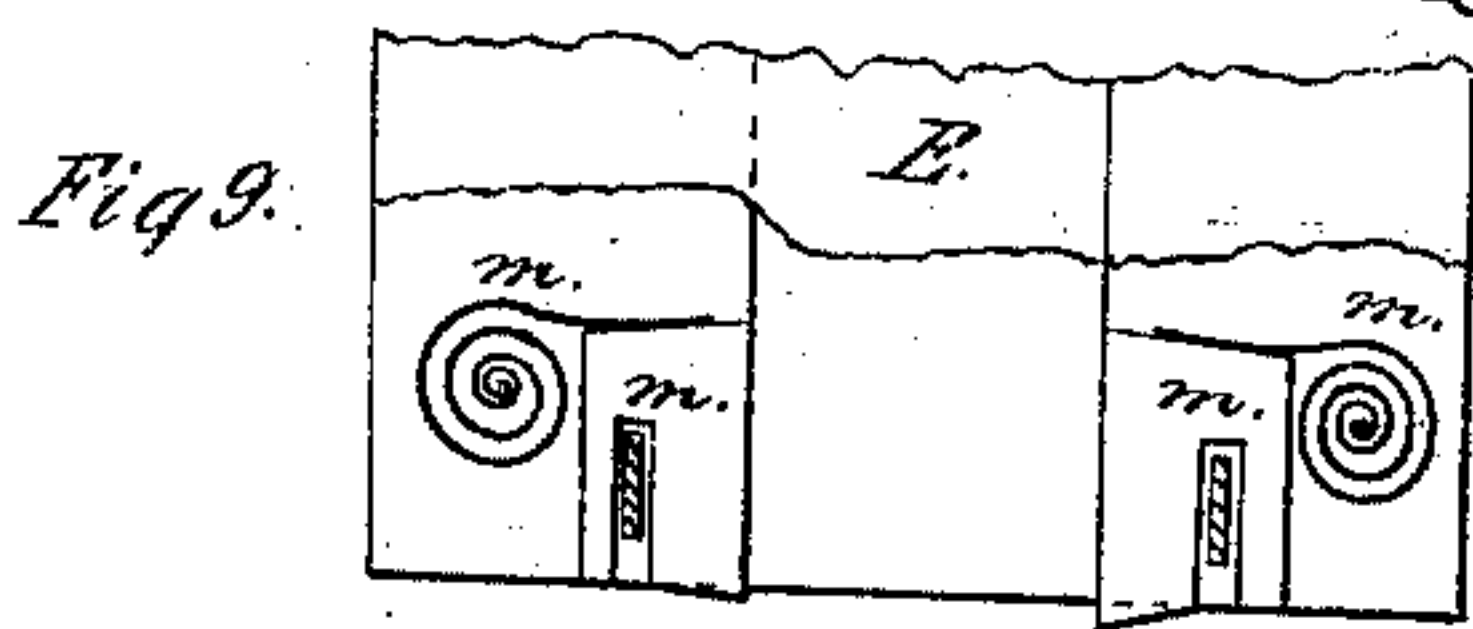
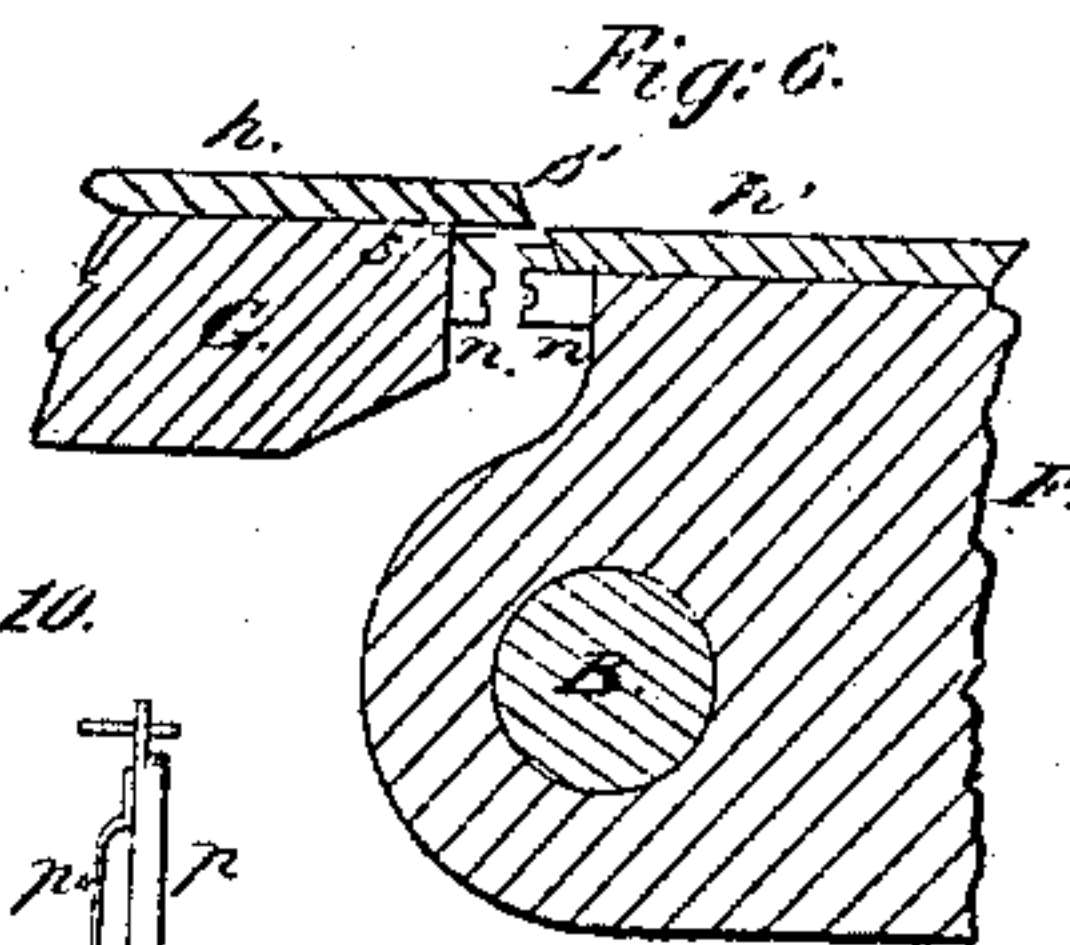
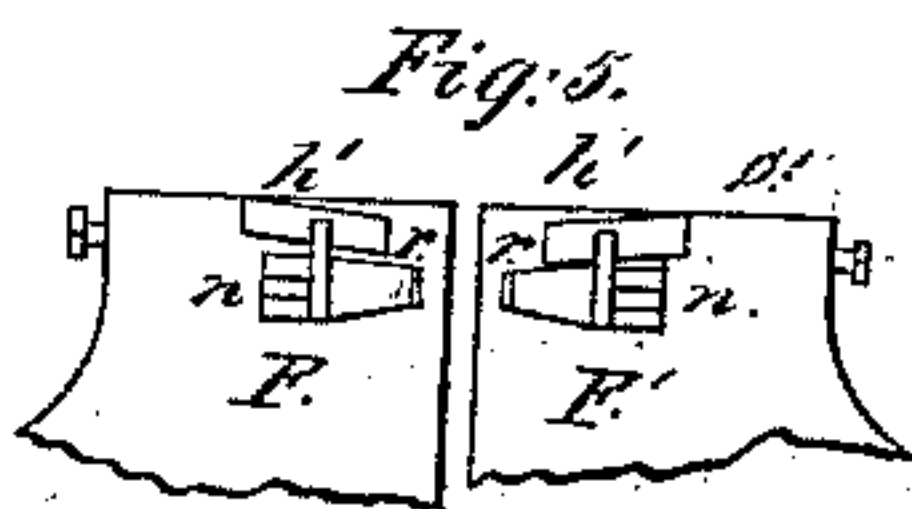
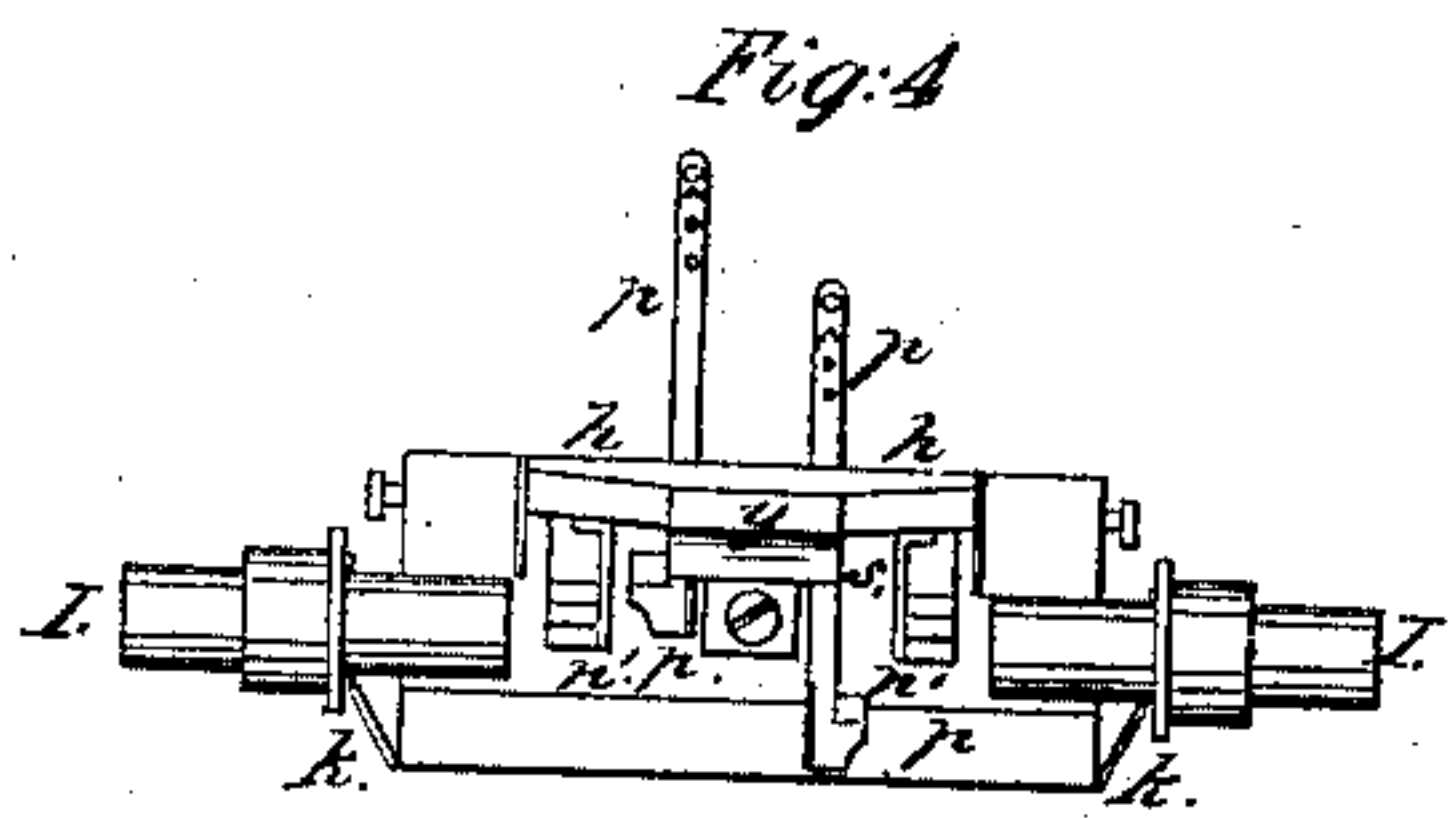
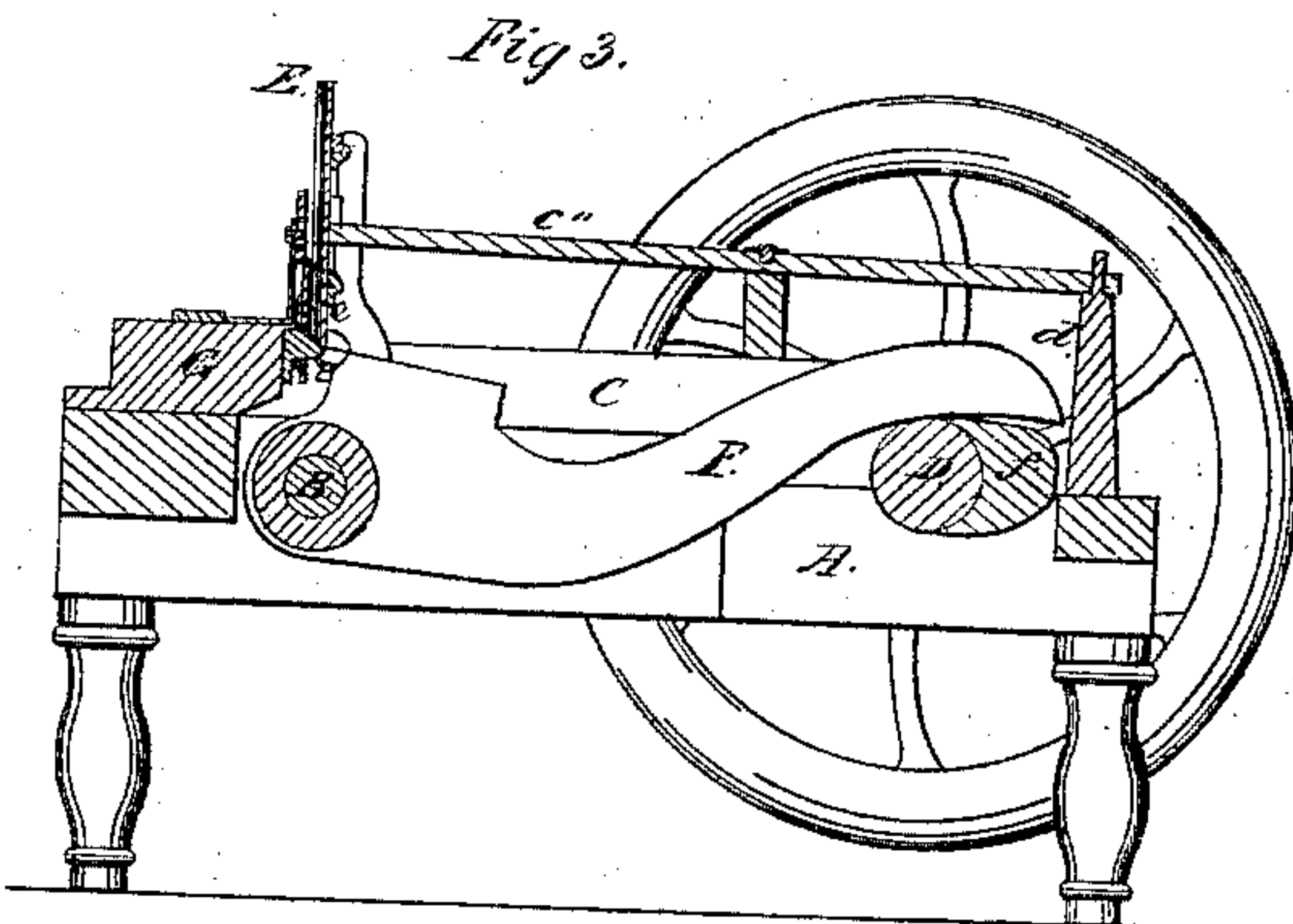
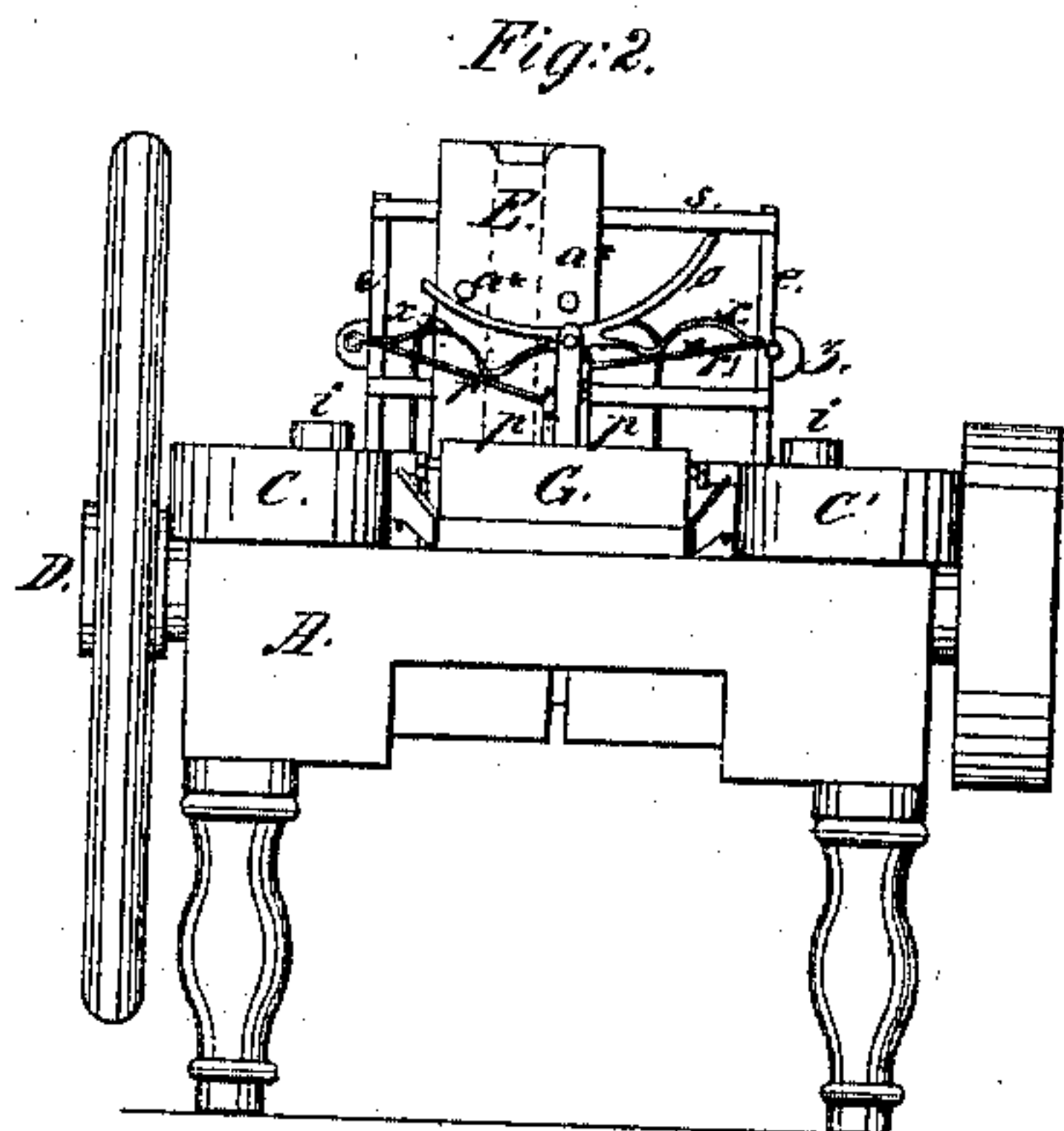
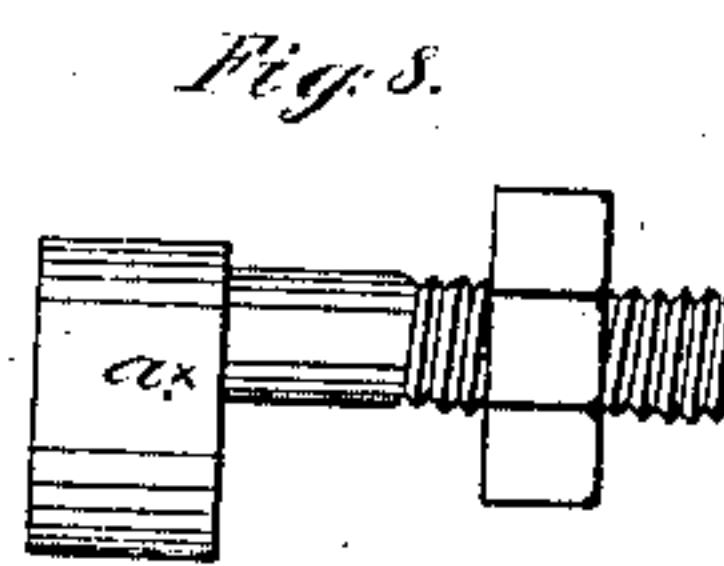
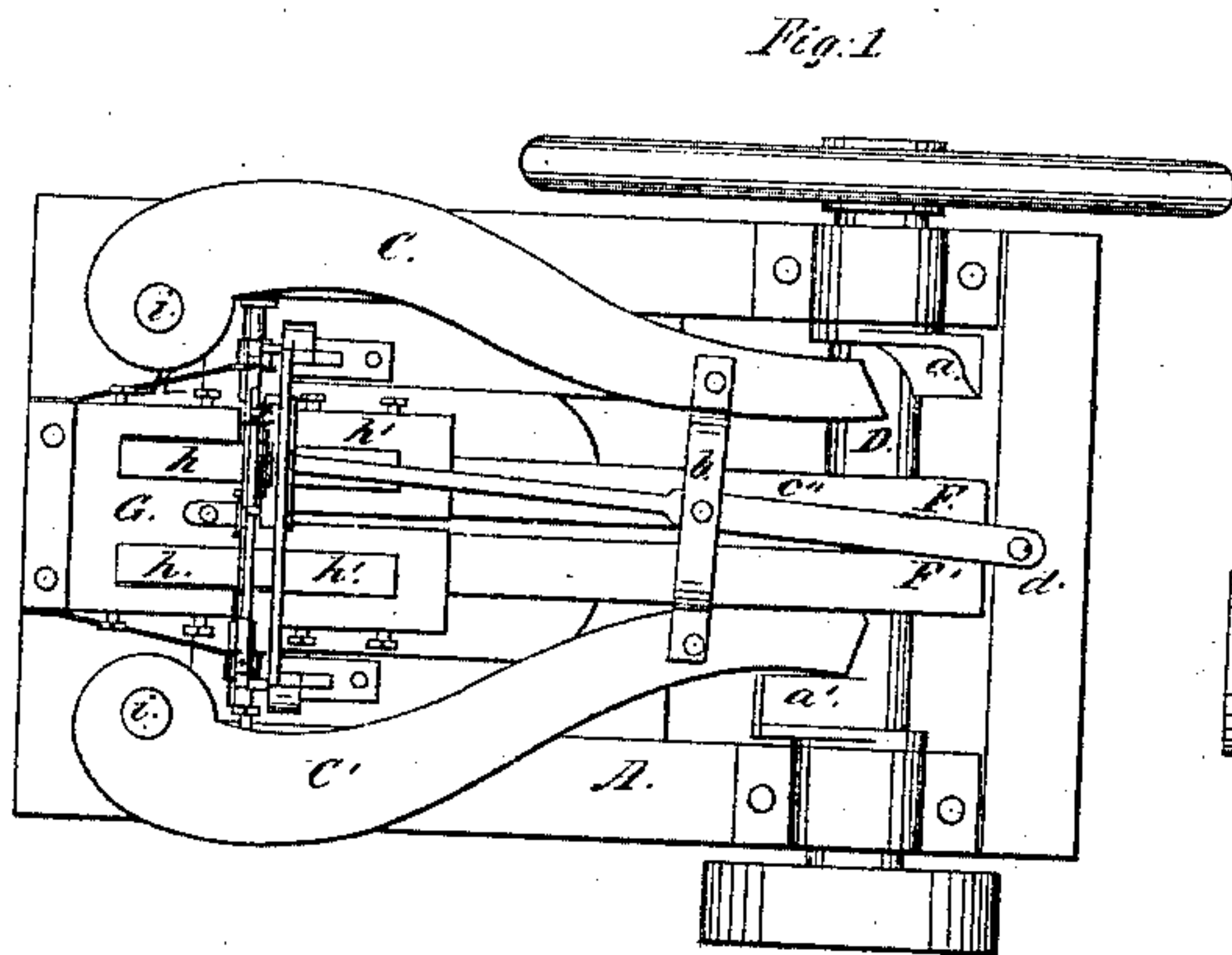
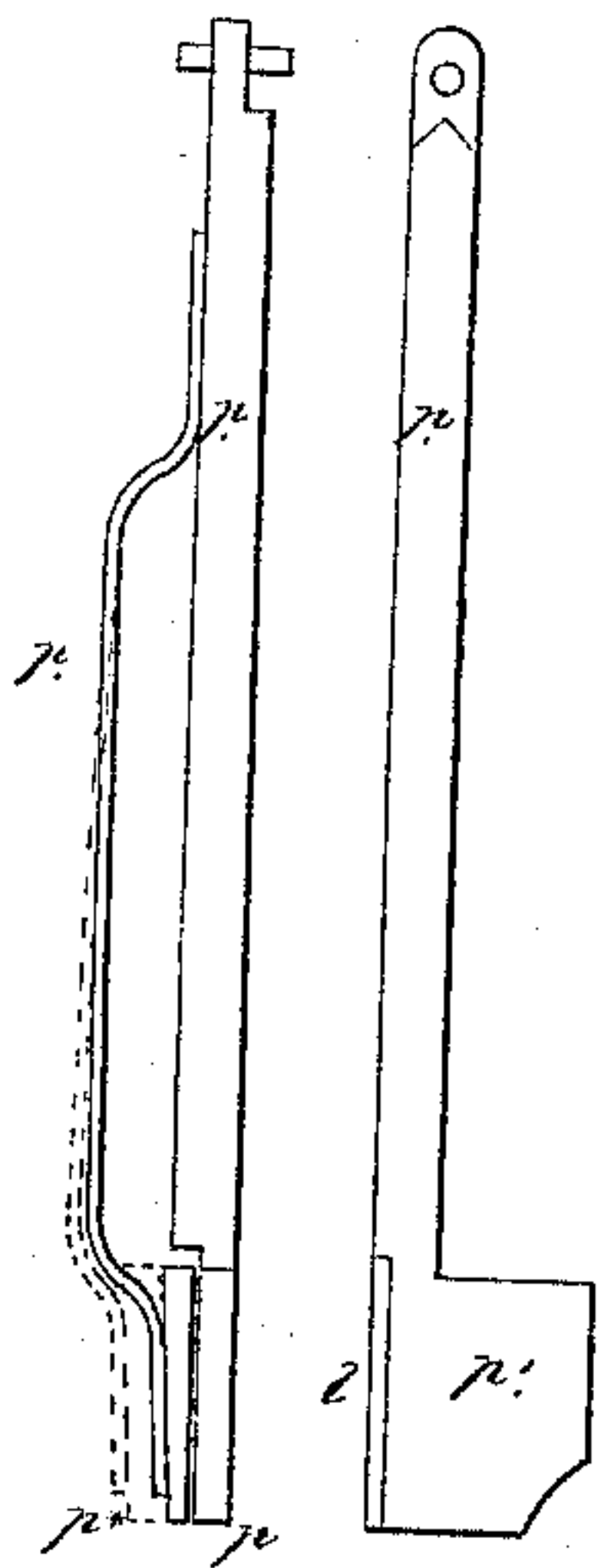


C. H. Merrick, Making Cut Nails,

No. 49,906-
Fig. 7.

Patented Sep. 12, 1865.



Witnesses:

W. H. Burridge
Attd. M. J. Leland

Inventor:

C. H. Merrick

UNITED STATES PATENT OFFICE.

CYRUS HENRY MERRICK, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR MAKING NAILS.

Specification forming part of Letters Patent No. 49,906, dated September 12, 1865.

To all whom it may concern:

Be it known that I, CYRUS HENRY MERRICK, of Pittsburg, county of Allegheny, and State of Pennsylvania, have invented a new and Improved Machine for Manufacturing Cut-Nails, which is automatic in its operation and has a perfect and continuous feed, each plate being cut entirely into nails and followed by another plate without interval, the only assistance required from the attendant being the insertion of the end of each nail-plate into the feeding apparatus of the machine, which can be done without checking its speed.

The following is a description of my invention for the benefit of those skilled in the art, reference being made to the accompanying drawings, which make part of this specification, and to the letters of reference marked thereon, similar letters indicating the same parts of the machine wherever they occur in the drawings.

Figure 1 is a top or plan view; Fig. 2, a front elevation; Fig. 3, a longitudinal vertical section; and Figs. 4, 5, 6, 7, 8, and 9, views of different detached portions of the machine, which will be referred to and described hereinafter.

A is the frame of the machine, which may be of any requisite size or form, and D a revolving (driving) shaft crossing the frame near its rear end.

F and F' are two levers, alike in form and size, placed side by side within the frame, and pivoted on a common journal or bearing, B, which extends across the machine near its front end. The rear ends of these levers rest upon the driving-shaft and are operated by cams upon it, one to each lever. These cams are of the form shown at *f*, Fig. 3, and, being on opposite sides of the shaft, operate the levers alternately. To the upper surface and front end of each lever is attached a cutter, *h' h'*, and underneath each cutter a die.

To the head-block G, and directly opposite *h' h'*, are attached complementary cutters *h h*, and underneath each of these cutters is also a die. The relative position of the cutters and dies is shown in Fig. 6, *h* and *n'* representing the stationary cutters and dies, which are attached to the head-block, and *h'* and *n* the working cutters and dies attached to the le-

vers, *o'* representing the gage (fastened in front of the cutter and moving with it) on which the plate rests when inserted into the cutters, and *s* a stop, whose office will be apparent hereafter.

Fig. 5 is an end view of the levers F and F', in which it will be seen that the cutters *h'* and *h'* are not placed with their cutting-edges in a horizontal position, but have a bevel or inclination, and in Fig. 4 it is shown that the stationary cutters *h* and *h* have a corresponding bevel, the design of this being to give to the nail the desired taper or bevel.

By examining and comparing Figs. 3 and 6 it will be seen that the revolution of the shaft D and the consequent action of the cam *f* upon the lever F communicates to the cutter *h'* a horizontal forward stroke underneath the stationary cutter, thus bringing into action the cutting apparatus of the machine, and that the same movement closes the dies, which are grooved or scored on their faces as in the ordinary machine, thus forming the gripe.

I and I are the heading-punches, attached to the frame by the springs *k k* or by a hinge-joint and arm. They receive their stroke from the levers C and C', with which their outer ends are in contact. The levers C and C' are pivoted to the surface of the frame at *i i*, and, extending back to the driving-shaft, are operated by the side face-cams, *a* and *a'*. These cams being also on opposite sides of the shaft, and the rear ends of the levers C and C' connected by the cross-bar *b*, it follows that they communicate motion to the heading-punches I and I alternately.

E is the feeding-head, having through it vertically an opening of sufficient size to permit free passage to the nail-plate. This opening (represented by the dotted lines) is directly above the openings of the cutters. E rests on the frame *e e*, and slides back and forth from one to the other set of cutters, the motion being derived from the heading-levers C and C' through the lever C'', which, extending back from E, is pivoted to the frame of the machine at *d* and also to the cross-bar *b*.

In Figs. 7 and 10 are seen the spring-nippers which convey the blanks from the cutters to the heading-dies *n n'*, Figs. 4, 5, and 6. One limb of the pinchers *p* is made thin and flexible, as shown at *p''*, Figs. 7 and 10, and has

attached to its lower end a flange or lip, p^* , with a corresponding flange or lip, p' , on the rigid arm or limb, for the purpose of seizing and holding the blank t , Fig. 10, while being carried to the heading-dies. The rigid arm or limb of the pinchers has a recess, l , on one edge, as seen in Fig. 7, at its lower end, which permits a projecting point, r' , attached to the front end of the levers F and F' directly below the blades h' , (see Fig. 5,) to project past the rigid arm, and pressing against the elastic arm p'' , opposite to the lip p^* , thus forcing the pinchers open as the cutters advance, ready to receive the blank that has been cut at the previous movement of the cutters. The grasping-point of the nippers is at the upper edge of the lips or jaws $p' p^*$. It will be seen that the flanges or lips $p^* p'$ (jaws) of the nippers, of which there are two pairs, one to each set of cutters, project under the inner end of each stationary cutter and in a line parallel to their cutting-edges, and that they have a vertical movement, sliding in recesses in each side of the block y , which bridges or fills the space between the stationary cutters. Their movements are alternate, one rising as the other is depressed, and are caused by the vibration of the feeding-head E through a contrivance shown in Fig. 2, from which it will be seen that the nippers are connected at their upper ends with the arms r , pivoted at z . These arms are held up by springs x against the lower or short arms of a rocking frame, o , which, in its turn, is pivoted to a standard rising from G , directly in front of E . The studs a^* , which project from the front of E , striking the upper or long arms of o , rock or oscillate it, and thus raise and depress the nippers as E vibrates. The nippers are opened and the nail released from their grasp by the point r' , Fig. 3, which, coming forward with the cutters and dies, passes the rigid limb of the nippers through the recess l , Fig. 7, and strikes their flexible limb.

Fig. 8 is a detached and enlarged view of the stud a^* inserted into the feeding-head E upon each side about half-way from the bottom to the top, as shown in Fig. 2. This stud, as the feeding-head moves from one cutter to the other, is brought into contact with the arms o , depressing one pair of nippers and at the same time elevating the other pair. By adjusting the eccentric head of this stud, which is secured in any desired position by a screw-nut, the degree or distance through which the nippers rise and fall is governed. They can thus be caused to carry the nail-blank to the exact position for forming the head.

Fig. 9 is an enlarged view of the lower end of the feeder-head E , which is furnished at each lower corner with a movable block or sweeper, $m m$. These pieces have a free vertical movement in the feeder-head E , and are kept pressed down upon the upper face of the movable cutters and the bridge y , that spans the space between the stationary cutters, with a constant

and uniform pressure by means of the springs $m' m'$, thus being brought in constant contact with the surfaces above named as the feeding-head E vibrates, and sweeping off any scale or splinter, even to the last fragment of the nail-plate, and thereby insuring a uniform and continuous feed.

The operation of the machine is as follows: The feeding-head E being over one set of cutters and the nippers belonging to that set depressed by the action of the stud a^* upon the rocking-frame o , a nail-plate is inserted, and, descending by its own weight into the cutters, rests upon the gage o' . The machine being set in motion, the revolution of the shaft causes the cam f to act upon the lever F , gives stroke to the cutter h' , and, cutting from the plate a piece or blank suitable for a nail, carries it forward to a position directly above the nippers, where it is held by the stop s . The same movement which closes the cutters also closes the dies, and, bringing the point r' forward against the flexible limb of the nippers, opens them. The cam a now strikes the lever C , moves it horizontally, and through it gives stroke to the punch I , but in this instance without effect, no blank having as yet passed into the dies or gripe, and also shifts the feeding-head E to the other set of cutters. This vibration of E oscillates o and elevates the nippers (still held open by the pressure of the point r' on their elastic limb, which slides on r' as they rise) until they reach and inclose the blank. The action of cam f , which has continued to this time, now ceases, the cutters and dies open, the nippers, relieved from the pressure of the point r' , close by their own elasticity, grasping the blank and holding it suspended in a horizontal position, the gage o' having been removed from beneath it by the same movement that opened the cutters, &c. The continuing revolution of the shaft now brings the levers F' and C' into play, a second nail is cut in reverse bevel to the first, and the feeding-head returned to point from whence it started. As it returns it again oscillates the tumbler o , depressing the nippers and blank to the line of the dies. The second revolution of the shaft now brings the lever F a second time into action, a third blank is cut similar to the first, but in reverse bevel to the second, and the first is released from the nippers and grasped firmly by the dies, which hold the cam a , operating through the lever C , again giving stroke to the heading-punch, forcing it against the outer end of the blank thus held, forming the head and completing the nail, and also again vibrating the feeding-head to the other set of cutters, where the fourth nail is cut and the second finished, and so on continuously, each finished nail dropping into a receptacle beneath the machine as the dies open to receive the one next succeeding. The nail-plate feeding by its own weight, it will be readily perceived that as it is shortened by cutting from its lower end another may

be placed in the feeding-head above it, thus making the feed continuous.

Believing the novelty of my machine to consist in the manner of feeding the plate, and also in the method or combination of movements by which the feeding, cutting, gripping, and heading are effected,

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

The combination of devices by which this is effected, substantially as herein described and set forth.

CYRUS HENRY MERRICK.

Witnesses:

J. LEONARD,
A. W. McCLELLAN.