

J. S. Fisk,

Making Cut Nails,

N^o 39,105.

Patented June 30, 1863.

Fig. 2.

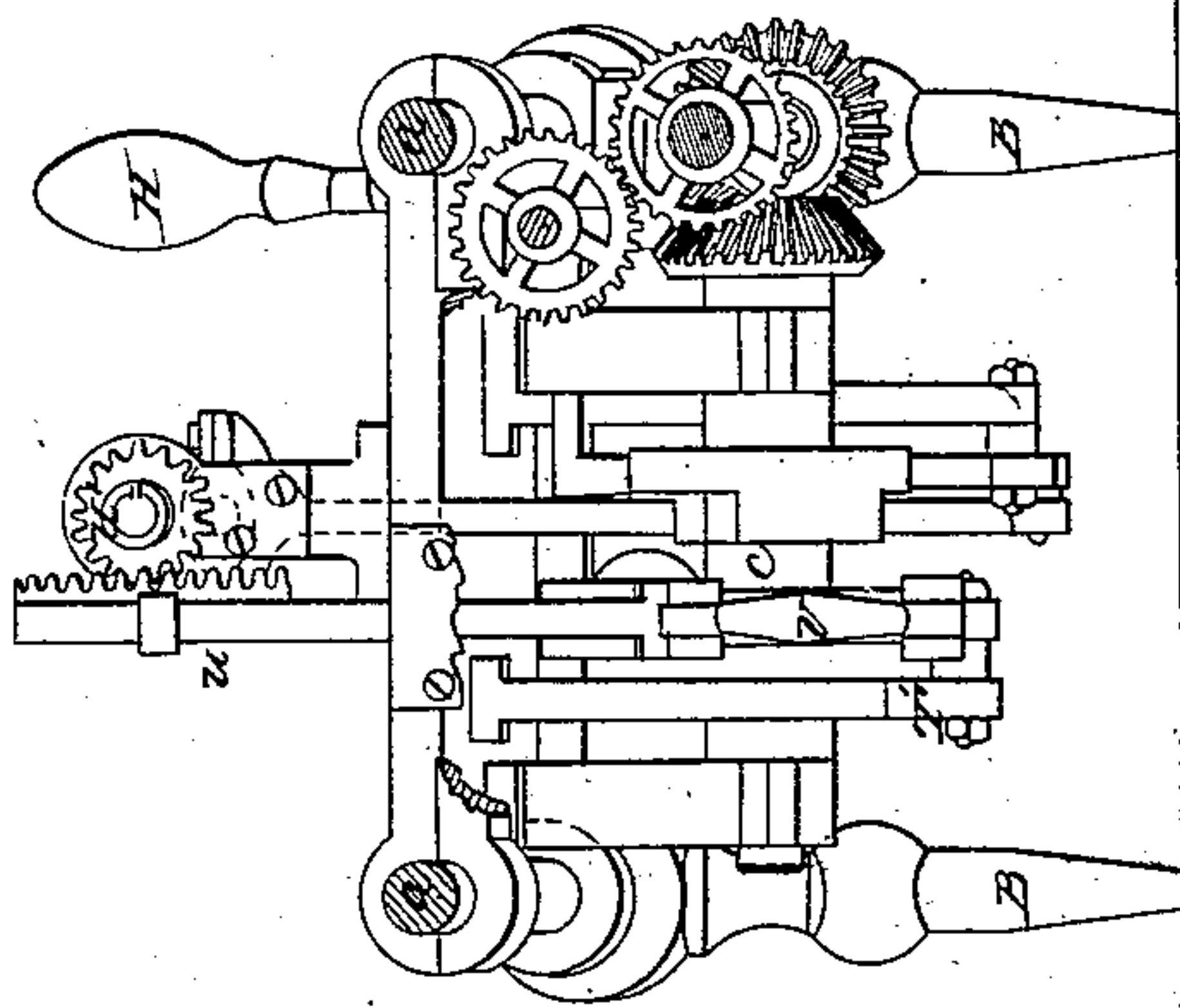


Fig. 4.

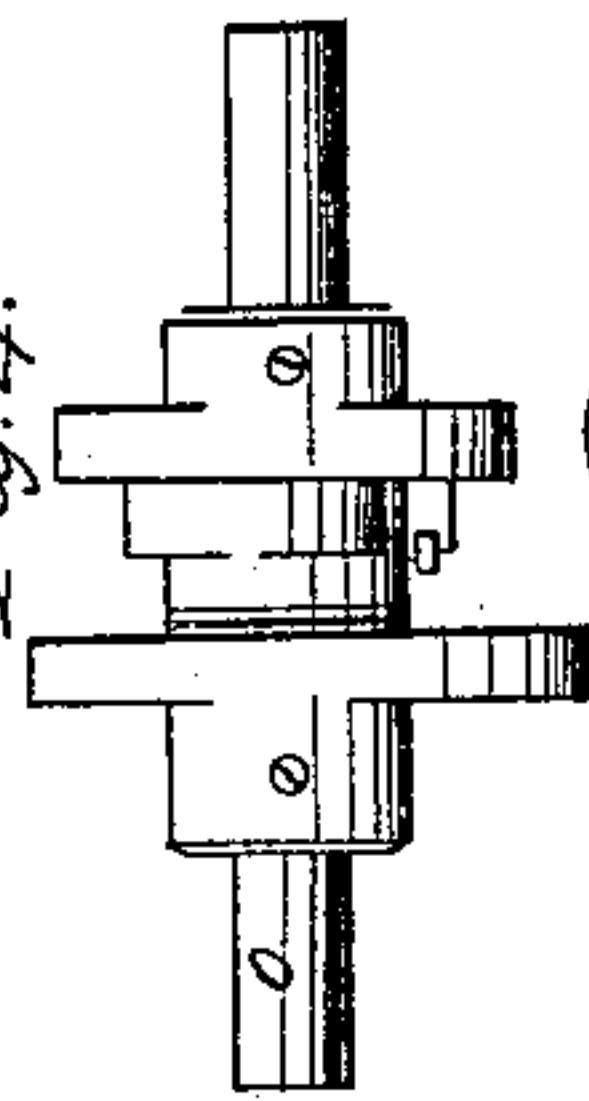


Fig. 5.

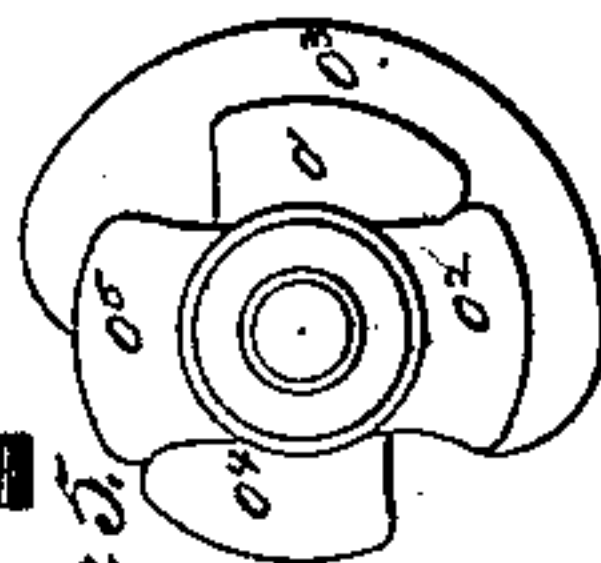


Fig. 1.

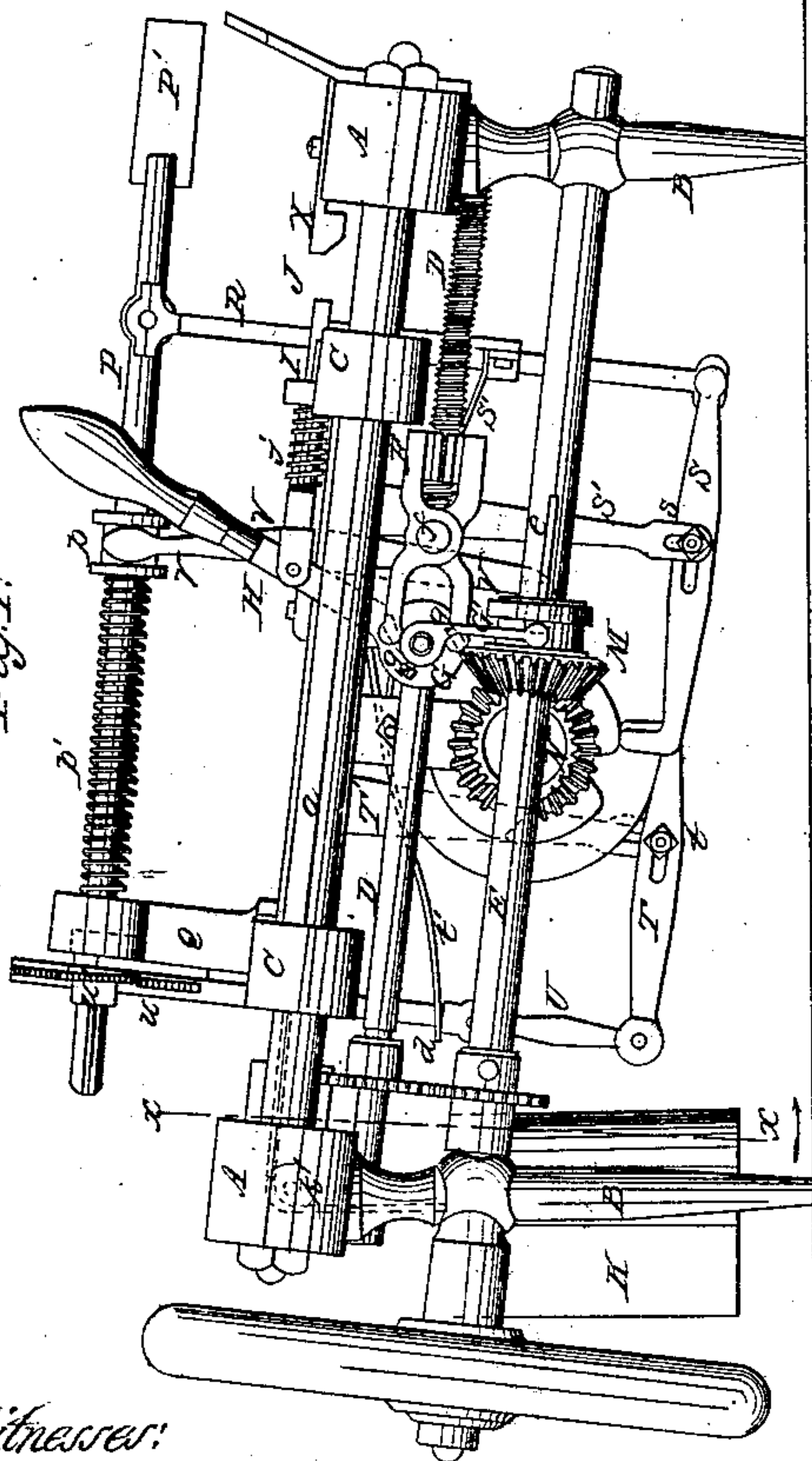
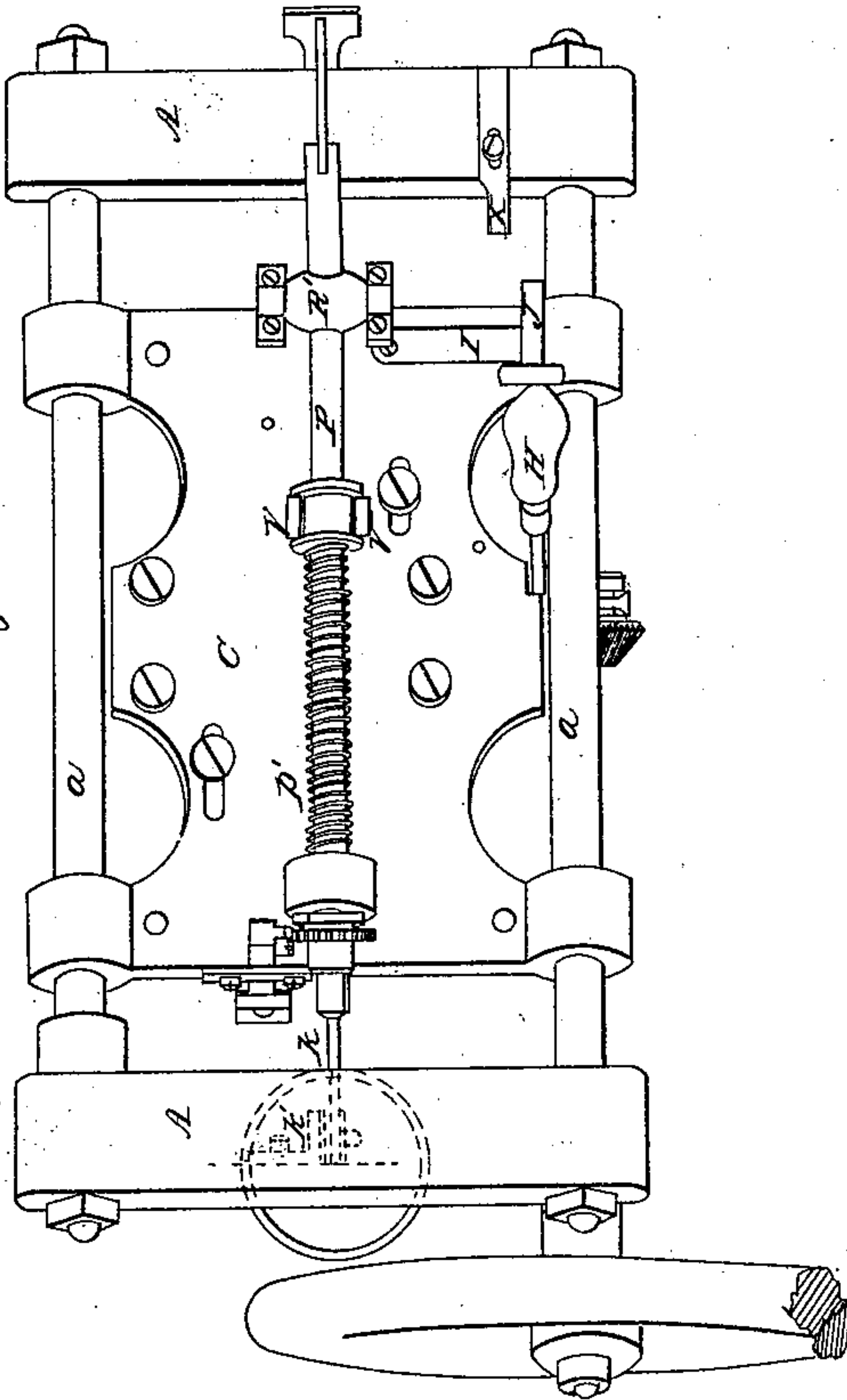


Fig. 3.



Witnesses:
J. Schuttler
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UNITED STATES PATENT OFFICE.

JOHN S. FISK, OF YOUNGSTOWN, OHIO.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. 39,105, dated June 30, 1863.

To all whom it may concern:

Be it known that I, JOHN S. FISK, of Youngstown, in the county of Mahoning and State of Ohio, have invented a new and Improved Automatic Feeder for Nail-Machines; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of the said machine. Fig. 2 is a vertical transverse section at *x x*. Fig. 3 is a plan or top view. Figs. 4 and 5 are side and end views of cams hereinafter described.

Similar letters of reference indicate corresponding parts in the several views.

The subject of my invention is an automatic machine by which the nail-plate is fed forward, at proper intervals, to a distance equal to the width of a nail, and after each feed-motion is retracted and elevated so as to turn the plate without interfering with the shears or any other part of the machine.

The invention particularly consists, first, in mechanism for retracting the plate preparatory to turning; second, in mechanism for raising the plate preparatory to turning; third, in mechanism for inverting the plate; fourth, in devices for retracting the carriage and throwing the working parts out of gear when the plate is exhausted.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

A A represent various parts of a stationary frame, which may be supported on legs B B, or one end may be bolted to the frame of the nail-machine.

C is a carriage working on guideways *a a* on the main frame and moved forward by an endless screw, D, which may receive continuous motion from the main driving-shaft E, through the medium of gearing *d*.

F' is a hinged nut, consisting of a pair of jaws pivoted at *f* to a hanger depending from the carriage C, and claspings the endless screw D. The said nut is held in gear with the screw by eccentric slots *g* on a disk, G, which may be turned by a lever, H, so as to contract the jaws. The lever is held in this

position by a spring-catch, I, taking into a horizontal rod, J, which is pivoted to the lever.

j is a spiral spring, acting to retract the lever H when the rod J is released by the spring catch, as hereinafter explained. The jaws F are thus opened, disconnecting the carriage from the endless screw, and the carriage is then drawn back to its rearmost position by a weight, K, attached to the end of a cord or chain, *k*, passing over a pulley *k'*.

M is a bevel-pinion sliding on a feather, *e*, on the driving-shaft E, and moved in either direction by an arm, G', projecting downward from the hub of the slotted disk G so as to throw the said pinion into or out of gear with a second bevel-pinion, N, on the end of a transverse shaft, O, on which shaft a series of cams, *o'* *o*² *o*³ *o*⁴ *o*⁵, are adjustably secured. The rod P, which carries the nail-plate, is supported at its rear end by a standard, Q, on the carriage C, within which standard it is free to slide and turn. In front it is supported in a rocking box, R', on the upper end of a vertical rod, R, pivoted at its lower end to the end of a lever, S, which is fulcrumed adjustably at *s* to a hanger, S', depending from the carriage C.

T is a second lever, fulcrumed adjustably at *t* to a hanger, T', also depending from the carriage C. From the outer end of the last-named lever rises a rod, U, having at its upper end a rack, *u*, which is constantly in gear with a pinion, *u'*, working over a groove on the plate-rod P, and provided with a tongue or key fitting in the said groove so as to permit the rod P to move within it longitudinally, but impart rotation thereto at proper periods. The inner end of the lever S is depressed at intervals by the cams *o*² *o*⁵, and the lever T by the cam *o*³, and when released by the said cams their outer ends are depressed by the springs *s'* *t'*.

V is a vertical lever, fulcrumed at its center in the carriage C, and forked at its upper end to fit over a grooved collar, *p*, on the plate-rod P. The cams *o'* *o*⁴ act upon the lever V, retract the rod P, and when released by the said cams it is restored to its former position by a spiral spring, *p'*.

P' may represent the nail-plate, which may be held to the rod by any customary means.

X represents an inclined stationary cam, by which the spring-catch I is automatically re-

tracted from the rod J, so as to release the latter when the carriage reaches its forward position.

The operation is as follows: The nut F being in gear with screw D, and bevel-pinion M being in gear with pinion N, as shown in the drawings, rotation is imparted to the shaft E by any suitable means. This communicating through the gearing d to the screw-shaft D, working within the nut F, advances the carriage C at a regular speed. When a nail-blank has been severed, the cam o' , bearing against the lower end of the lever V, restores the plate-rod P to its lower and forward position, the motion of the carriage having in the meantime advanced the plate far enough for the separation of another blank. While this is being effected the continued pressure of the cam o^3 upon the lever T holds the rack stationary, and thus keeps the plate from turning, and it is so held until the cams o^4 o^5 again act upon the levers S and V so as to elevate and retract the plate-rod, as before explained. This done, the cam o^3 releases the lever T and the spring t , depressing its outer or rear end draws down the rack and thus again inverts the plate and so holds it until it has been again restored to a position for cutting and another blank severed, after which the work proceeds as before explained. When the carriage reaches its forward position and a nail-plate has been exhausted, the spring-catch I, passing under the stationary cam X, is retracted from the rod J, upon which the spring j throws back the lever H, which opens the hinged nut F, and permits the weight K to draw the carriage C back, and at the same time throws the bevel-pinion M out of gear with the bevel-pinion N. The machine then remains at rest until a new plate has been supplied to the rod P and the lever restored to its forward position, which throws the whole apparatus into gear and the work proceeds as before.

The drawings represent the plate retracted, elevated, and in the act of turning.

The cams o' , o^2 , o^3 o^4 , o^5 , and X, lever G, and other parts where it is needful, are secured to their shafts by set-screws, so as to be adjustable thereon, to regulate the periods and extent of motion of the various parts, as may be required.

Various modifications may be made in this

machine without changing its essential characteristics. For instance, the bevel-pinions M N may be constantly in gear with each other, the latter turning loosely on its shaft, but thrown into and out of gear therewith by a suitable sliding clutch, worked automatically or otherwise.

The inversion of the nail-plate P' may be effected by a segment-cogged wheel, instead of by the rack u .

The levers S, T, and V may, if preferred, be fulcrumed at their ends and moved by cams bearing on their central parts.

The cutting-shears are not here represented, and may be in any of the known forms.

The driving-shaft E may be geared by bevel-cog wheels to that of the nail-machine proper, so as to work in connection therewith.

The variation in the motion of the carriage to adapt the machine for the cutting of larger or smaller nails may be effected either by the use of screws D of different pitch or by changing the gears d , or by other suitable means.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent, is—

1. Retracting the nail plate, preparatory to turning the same, by means of one or more cams, o' o^4 , and a lever, V, and afterward restoring it by means of a spring, p' , all substantially as described.
2. The combination of one or more cams, o^2 o^5 , lever S, and rod R, for raising the plate, substantially as described.
3. The rocking-box R', employed in the described combination with the plate-rod P and elevating-rod R.
4. The combination of the lever T, rack u , and pinion u' , or their described equivalents, for inverting the plate.
5. The hinged nut F, employed in the described combination with the endless screw D and carriage C, to advance the latter and permit its retraction.
6. The combination of the levers H G', rod J, spring-catch, I, stationary cam X, and spring j , operating substantially as and for the purpose set forth.

JOHN S. FISK.

Witnesses:

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WM. M. IRWIN.