W. J. NAPHEY.

CUTTING, PIERCING, AND MARKING PEN MACHINE.

APPLICATION FILED APR. 14, 1908.

914,600. **Patented Mar. 9, 1909.**

2 SHEETS—SHEET 1.

Fig. 1.

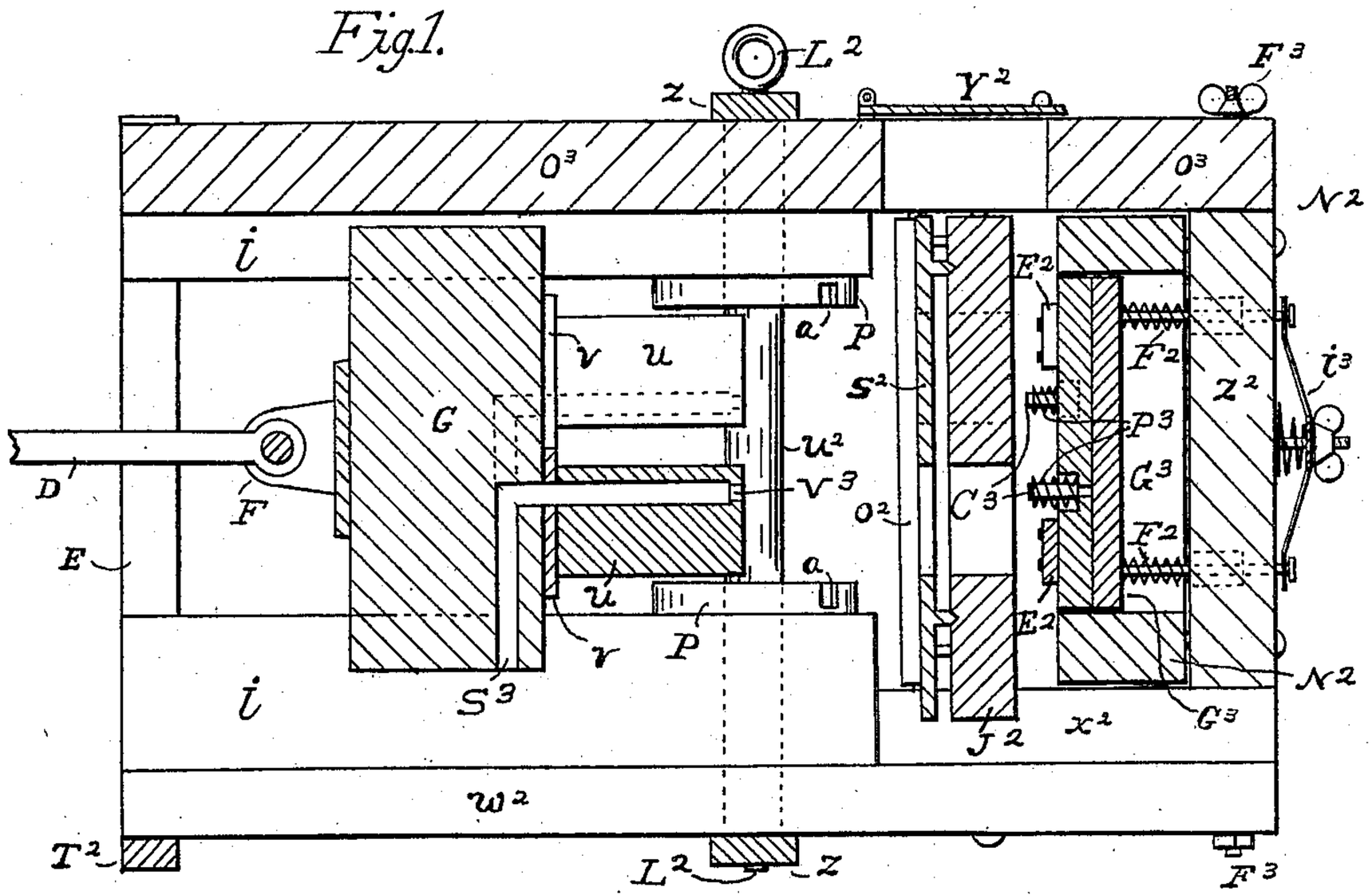
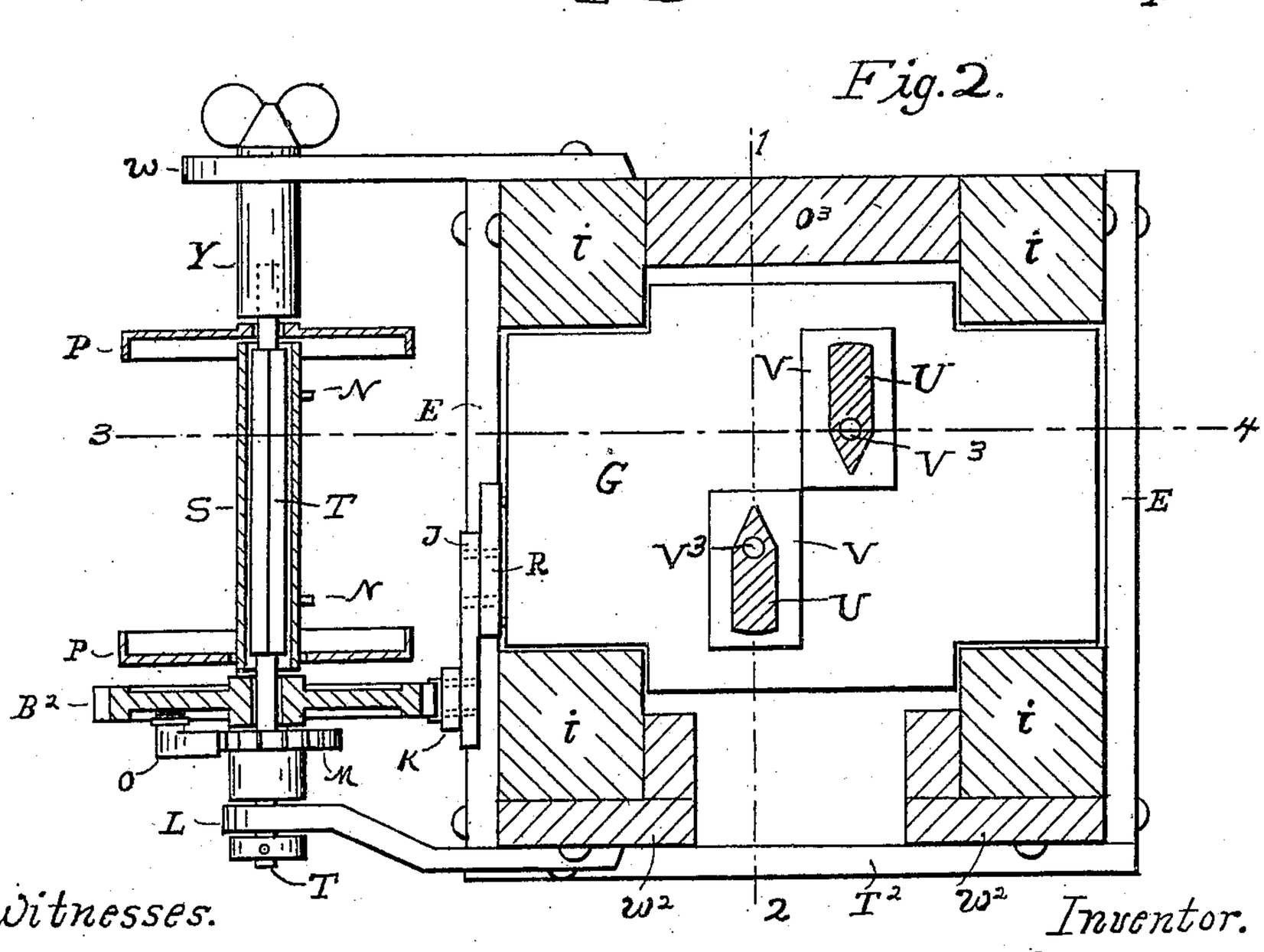


Fig. 2.



Witnesses.

E. L. Hutchinson

H. Clyde Morton.

Inventor.

Wm. J. Naphey

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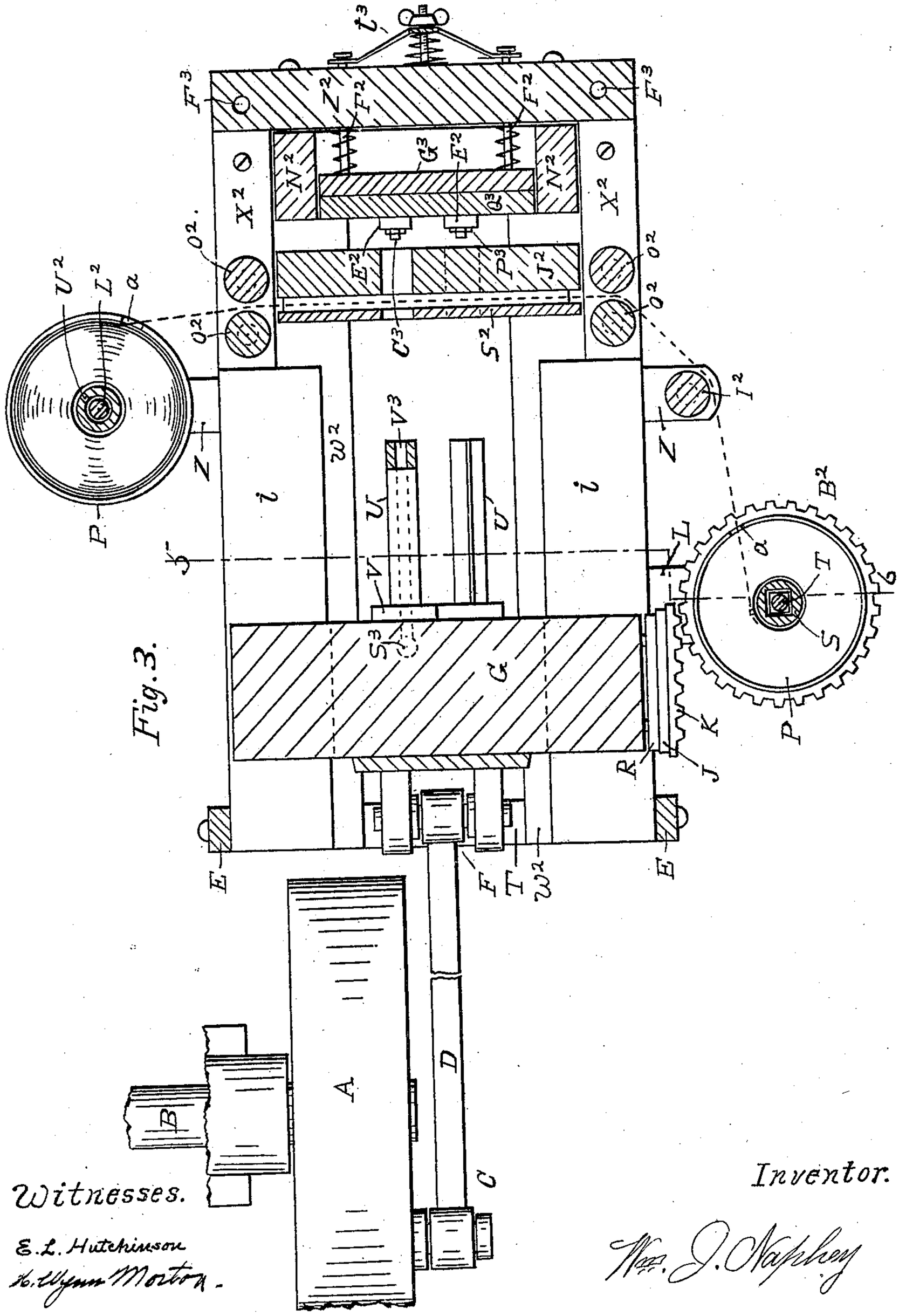

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM J. NAPHEY, OF CAMDEN, NEW JERSEY.

CUTTING, PIERCING, AND MARKING PEN-MACHINE.

No. 914,600. Specification of Letters Patent. Patented March 9, 1909.

Application filed April 14, 1908. Serial No. 427,084.

To all whom it may concern:

Be it known that I, WILLIAM J. NAPHEY, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented a new and useful Cutting, Piercing, and Marking Pen-Machine, of which the following is a specification.

My invention relates to improvements in the art of manufacturing pens, and specifically to that sub-process of said art wherein the cutting of pen blanks, from a sheet of pen metal and piercing and marking said blanks, is performed; and the object of my improvements is, to provide means to combine and automatically execute said art so as to produce a plurality of pierced and marked pen blanks in one machine and in one operation or step of the art, whereby I may attain a new and cheaper result. I attain these objects by mechanism illustrated in accompanying drawings, in which—

Figure 1 is a vertical section of the entire machine on the line 1 2, Fig. 2; Fig. 2, a vertical section on the line 5 6, Fig. 3; and Fig. 3, a horizontal section on line 3 4, Fig. 2, excepting the parts A B C D F which connect driving shaft B to crosshead G which are shown in full, and the upper punch U which is only partly in section.

Similar characters refer to similar parts throughout the several views.

The four guide ways *i*, the two lower supports W^2, the cover O^3, the two standards E^2, the back Z^2, the guide N^2, the foot T^2, the hangers W L, and the hangers E are all secured together and constitute the framework of the machine.

The crosshead G, reciprocated on the four ways I by the shaft B, is provided by a hanger R J and rack K secured thereto, the rack K engages gear wheel B^2 to actuate the feeding driving and winding mechanism.

The blank pen die plate J^2, with its stripper plate S^2 secured thereto, is removably secured to the frame work of the machine, the guide N^2, which supports and guides the spring slide G^3, is secured to back Z^2, and is removable therefrom by removing bolts F^3.

The spring slide G^3 has four guides F^2, and die plate Q^3 rigidly secured thereto, the guides F^2 extend back through and have sliding bearing in back Z^2, and each guide F^2 is surrounded by a coil spring located between G^3 and Z^2, the function of said springs being to press said slide forward from Z^2 to die plate J^2.

The plate Q^3 carries a plurality of piercing punches C^3, and a plurality of pen markers E^2, a plurality of kick off coil springs P^3 are grouped and secured on said plate so as to engage and push the pen blanks off from said markers and piercers when in operation.

The adjusting spring i^3 consists of two crosspieces secured at their ends to guides F^2, and at the center to a threaded bolt which passes loosely through them and is secured to back Z^2, said bolt is surrounded by a coil spring located between Z^2 and said crosspieces and adjustable by a nut mounted on said bolt, the function of i^3 is to regulate slide G^3.

The rollers O^2, which guide the ribbon of pen metal as it is fed through the machine, are journaled in bearings X^2 secured to framework, I^2 is a guide roller journaled in hangers Z to guide said ribbon of metal.

In the feeding member, the idle roller V^2 and its caps P P, each having a side opening *a* (*q*), are mounted on side hangers Z by pin L^2 on which said roller rotates, but the said caps remain nearly stationary when the machine is in operation.

The drawing and winding member consists of a driving and holding shaft T journaled to rotate in hangers W L, said shaft has its central part squared to fit loosely in and drive winding roller S, which is mounted thereon, said roller is provided with pins N N by which the ribbon of pen metal is secured to said roller, the upper enlarged journal Y is removably secured on shaft T to hold in position and permit of quickly removing caps P P, and roller S, also gear wheel B^2, said parts being loosely mounted on said shaft as shown. Ratchet wheel M is securely mounted on shaft T, spring ratchet O is mounted on gear wheel B^2 to actuate said ratchet wheel and winder S to feed and wind the pen metal ribbon by the engagement of gear wheel B^2 with rack K when on the return throw of said crosshead and its rack K, and after said ribbon has been stripped from punches U.

To the crosshead G is also secured a plurality of punch cutters U each having the shape of a pen blank and being provided with a base V whereby it may be firmly secured to said crosshead to form a group of punches for cutting the blank pens out of the pen

metal ribbon, each punch cutter of said group has formed in its cutting face a pen piercing die V^3, its opening being extended back into the crosshead vertical channel S^3, which channel extends down through the crosshead and is used to discharge the piercings or slugs from the machine.

When the machine is in operation the forward throw of crosshead G carries the group of punch cutters U successively through a group of stripper openings in plate S^2, through the ribbon of pen metal into a group of cutting dies in plate J^2, cutting a plurality of pen blanks from said ribbon and pushing said blanks on through said cutting dies into contact with a group of piercing punches C^3, on plate Q^3 of slide G^3, causing said slide to recede before the advancing punches U until it reaches back Z^2, at which stage the springs P^3 are depressed and the piercing punches C^3 driven through said pen blanks into piercing dies V^3 of the punches U, these slugs entering channels S^3 and dropping from the machine, while the blank pens are passed on to markers E^2, where the desired name and number is pressed into them by the advancing punches U, this last operation completing the forward throw of said punches, and the cutting piercing and marking of the pen blanks. Now with the return movement of crosshead G and punches U, the slide G^3 is actuated by its coil springs to recede until it reaches a point near the back of plate J^2, where the tension of said springs is balanced by the tension of adjusting spring i^3, causing G^3 to come to a rest, when the retreating punches U release kick off springs P^3 and said springs push the completed blank pens off from the markers E^2 and from the piercing punches C^3, so that the said blanks fall by gravity down from the machine.

In preparing my machine for operation I proceed as follows: A ribbon of sheet pen metal, having been previously prepared in the usual way practiced in the art, by reducing the metal to the width and thickness required for the pens, is put into the condition of a roll held by a binding wire, and mounted on roller U^2, between caps P P, which caps support and prevent the roll from spreading beyond proper bounds, the said mounting being effected by withdrawing pin L^2, placing the roll as stated and replacing pin L^2 into its bearings, said binding wire is now cut from the roll, and the outer end of the ribbon, previously provided with two drawing holes, is threaded between cap openings *a a*, guide rollers O^2 O^2, die plate J^2 and stripper plate S^2, the second set of guide rollers O^2 O^2, over the guide roller i^2, through guide openings *a a*, and thence to the drawing and winding roller S, to which the ribbon is secured ready for operation, by passing side pins N N through the end holes of the ribbon. The above threaded course is indicated in the drawings by a heavy dotted line shown in Fig. 3 as passing from *a* on one side of the machine to S on the opposite side. Now it will be seen that the crosshead G, with its punches U and its rack K, is reciprocated by shaft B to automatically feed a ribbon of pen metal through the machine and to cut, pierce, and mark a plurality of pen blanks made therefrom, and then to push said completed pen blanks from the machine and reduce the scrap ribbon to a roll which may be tied by wire and removed, and a new roll inserted for a continuation of the manufacture.

While I have shown herein but two sets of cutting, piercing, and marking dies, in practice I prefer to operate with six sets of said dies, so as to produce six completed pen blanks, as shown, at each forward and return throw of said crosshead. With the completion of said step in the manufacture the blanks may then be heated and annealed and the pens completed in the way well known to the art.

I claim as my invention—

1. In a machine for cutting piercing and marking pens the combination, of a plurality of pen blank cutting punches, a plurality of pen piercing punches, a plurality of pen marking punches, and means for disengaging the pierced and marked pens from the punches.

2. The combination, in a machine for cutting pen blanks from a ribbon of pen metal and piercing and marking said blanks, of a frame-work having a cross-head mounted to reciprocate thereon, a plurality of open blank cutter sets mounted on said frame-work and cross-head, a plurality of pen blank piercing punches mounted on said frame-work and cross-head, a plurality of pen markers located on a spring slide mounted on said frame-work, and a plurality of kick off springs located on said spring slide to kick off the completed pen blanks from said piercing punches and markers.

3. The combination, in a machine for cutting pen blanks from a ribbon of pen metal and piercing and marking said blanks, of a frame-work having a cross-head mounted to reciprocate thereon, a plurality of pen blank cutting sets mounted on said frame-work and cross-head, a plurality of pen blank piercing punches mounted on said frame-work and cross-head, a plurality of pen markers located on a spring slide mounted on said frame-work, a plurality of kick off springs located on said spring slide to kick off the completed pen blanks from said piercing punches and markers, and means for supporting feeding and winding said ribbon.

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Witnesses:
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