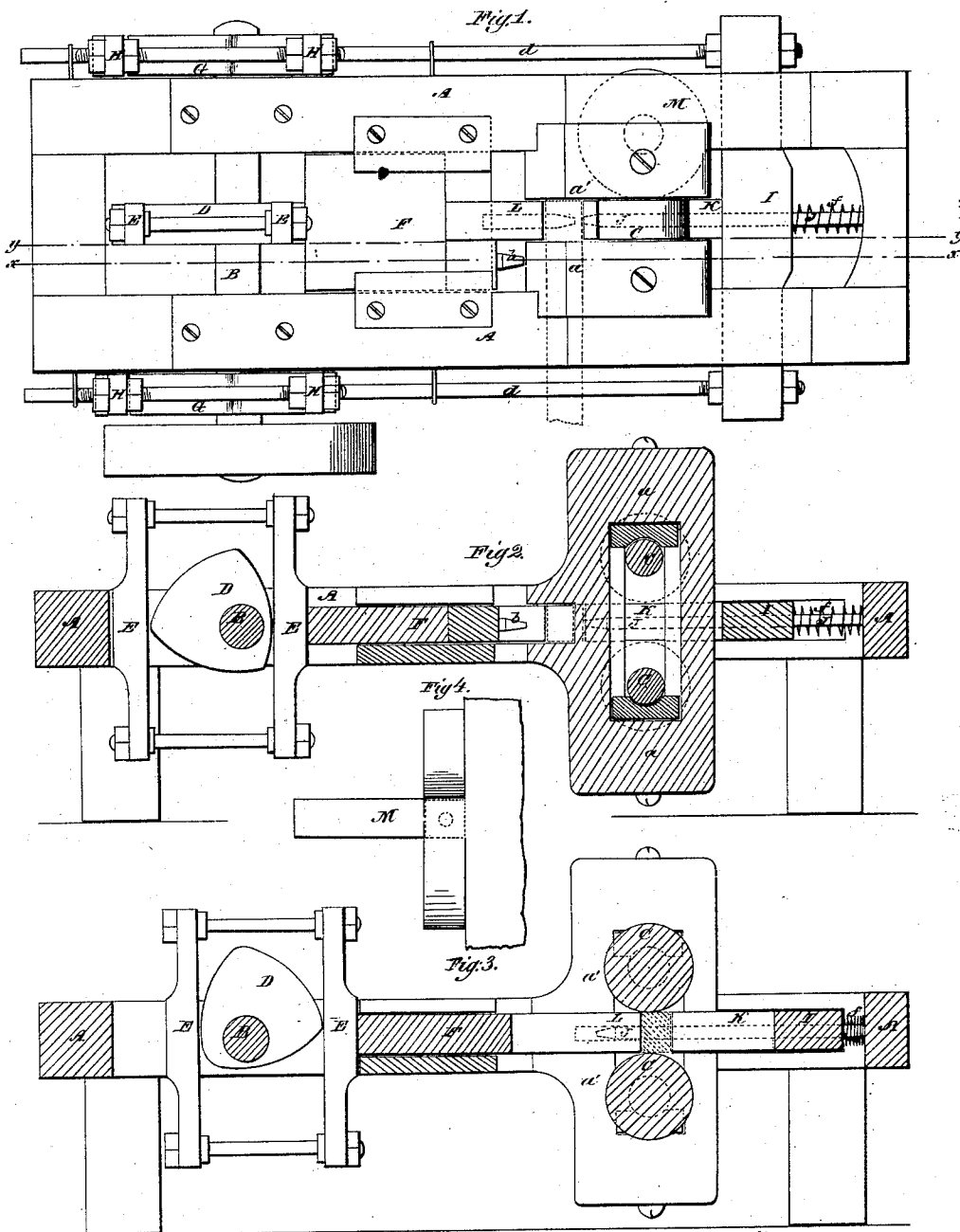


S. H. Whitaker.

Nut and Washer Machine.

N^o 17,534.

Patented Jun. 9, 1857.



UNITED STATES PATENT OFFICE.

SAML. H. WHITAKER, OF CINCINNATI, OHIO.

NUT-MACHINE.

Specification of Letters Patent No. 17,534, dated June 9, 1857.

To all whom it may concern:

Be it known that I, SAMUEL H. WHITAKER, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machinery for Making Hot-Pressed Nuts and Washers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of a machine with my improvements. Fig. 2 is a longitudinal vertical section, in the line *x, x*, Fig. 1. Fig. 3 is a longitudinal vertical section, in the line *y, y*, Fig. 1. Fig. 4 is a transverse vertical section of the same, taken in front of the shaping rollers.

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

This invention consists in the employment, for the making of the holes in nuts or washers, of a taper punch, a taper pointed cylindrical mandrel, and a hollow plunger or its equivalent, combined and operating as hereinafter described so as to avoid all waste from cores or burs.

It also consists in a certain arrangement of rollers constituting three sides of a die, in combination with the mandrel above mentioned which finishes the hole, and the hollow plunger, for the purpose of finishing the exterior of the nut or washer.

It further consists in a hollow sleeve applied to the mandrel above-mentioned, operating in combination with the before-mentioned hollow plunger to hold the nuts or washers during the operation of finishing the holes and exteriors of the nuts or washers, and accommodating itself to the increased thickness that is given to the nuts and washers by the punching and finishing operations.

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

A, is the framing of the machine, containing the bearings for the horizontal main shaft B, and having erected upon it or cast with it the housings *a, a'*, for a pair of rollers C, C, which stand parallel with the shaft B.

D is a cam on the main shaft B, working in a yoke E, attached to a horizontal slide F, and giving a reciprocating motion to the

said slide. The slide carries the taper punch *b*, and the hollow plunger L, arranged side by side.

J, is the mandrel, arranged in line with the hollow plunger L, parallel with the punch but at a distance out of line thereof equal to the width of a nut; said mandrel being rigidly secured in the end of the framing A. This mandrel is tapered at the extremity nearly to a point, but with the exception of this it is cylindrical and of the intended size of the finished holes in the nuts or washers.

G, G, are two cams precisely similar to each other on the shaft B working in yokes H, H, which are connected by rods *d, d*, with a cross-head I, at the opposite end of the machine. This cross-head carries the sleeve K, which fits to slide on the mandrel; said sleeve as well as the hollow plunger L having a transverse section corresponding to the intended form of the nut. The mandrel J, stands midway between the rollers C, C, and the hollow sleeve K, and plunger L, work between them.

M is a third roller arranged with its axis vertical in suitable bearings, and forming the third side of a hollow die of which C, C, form two sides; the housing *a* forming the fourth side.

The motion received by the cross-head I, and sleeve K, from the cams G, G, is exactly the same as that which is received by the punch *b*, and plunger L, from the cam D, except that a little play is allowed to the cam C, or to those G, G, in their yoke or yokes to enable the plunger L, and sleeve K, between which the nut or washer is held during the finishing operation, to adapt themselves to the increased thickness of the nut or washer produced by squaring or finishing its exterior. To insure the nut being firmly held between the plunger and the end of the sleeve, a spring F, is applied behind the sleeve to force it up, and this spring accommodates itself to the thickness of the nut or washer.

The operation of making the nuts or washers is as follows: A bar or strip of iron of the proper width and thickness, having been properly heated, is fed by hand through an opening in the side of the framing next the punch *b*; and on the punch coming forward, a taper hole is punched through or nearly through it without forcing out any core; the bar being forced by

the punch against the solid metal of the housing *a*. When the punch retreats, it is, owing to the shape of the cam *D*, for a short time stationary, and the bar is then pushed in till it is stopped by coming in contact with the inside of the housing *a*¹, and on the next advance of the slide a piece sufficient for a nut or washer is cut off by the edge of the plunger *L*, which acts in conjunction with a stationary edge on or attached to the housing *a*, in the manner of a pair of shears. The plunger *L*, at the same time that it cuts off the piece, forces it forward upon the mandrel *J*, which enters the smallest portion of the hole formed by the punch *b*, and gradually enlarges it, and passes entirely through it, making it parallel and of the required size; and when the piece has been forced on to the mandrel, it is brought by the further continued movement of the plunger, between the two rollers *C*, *C*, and between the roller *M* and the inside of the housing *a*, by which the exterior, which has been swelled out by the punching operation, is reduced to the proper shape; the piece being still upon the mandrel, which now enters some distance up the hollow plunger *L*. The rollers *C*, *C*, and *M*, are caused to rotate by the friction of the piece passing them. The retreat of the plunger *L* is followed closely by the return of the hollow sleeve *K* along the mandrel; and the latter forces the now completed nut or washer from the mandrel. When the nut or washer leaves the mandrel it is liberated from between the plunger *L* and sleeve *K* by a properly regulated movement of the cams, and allowed to fall from the machine.

Figs. 1 and 2 represent the bar (which is shown in red outline) in condition to receive the punch; and Fig. 1 shows, in front of the plunger *L*, the part which has been already punched and is about to be cut off by the plunger *L*; and in this part the hole that has been made by the punch *b*, is shown in red dotted outline. Fig. 3 shows the nut or washer on the mandrel and between the shaping rollers.

It will be understood that one nut or washer is being finished on the mandrel *J*, while another is being punched by the punch *b*; and these operations both taking place at every revolution of the shaft and cams, (excepting only the first revolution after a new bar is introduced, when only the punching is effected,) a nut or washer is completed at each revolution, till the whole length of a bar is used up.

The rollers *C*, *C*, and *M*, may have their peripheries formed to produce any desired form on the exterior of the nuts and washers, as square, octagonal, hexagonal, or circular.

I do not claim the employment of two

punches entering the nut or washer from opposite sides, as I am aware that such a contrivance is described in the patent of Richard Coles; such punches, however, being parallel-sided and arranged in line, and operating differently to my taper punch and mandrel. But

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

1. The employment of a taper punch *b*, a hollow plunger *L*, or its equivalent, and a taper-pointed mandrel *J*, combined and arranged to operate substantially as herein set forth.

2. The combination of the hollow sleeve *K*, and the plunger and cutter *L*, with the forming rollers *C*, *C*, *M*, substantially as described, for the purpose of carrying the nut or washer blanks to and from the said roller.

SAML. H. WHITAKER.

Witnesses:

HENRY T. BROWN,
W. TUSCH.

DISCLAIMER.

Know all men by these presents: That the undersigned, SAMUEL C. TATUM, of the city of Cincinnati, Ohio, being the owner of the whole interest in a certain patent originally issued by the United States to S. H. Whitaker, dated on the ninth day of June, A. D. 1857, being No. 17,534, for an improvement in nut machines, the same having been fully vested in me by various assignments from the said Whitaker duly recorded in the Patent Office of the United States, does hereby declare that the said S. H. Whitaker by inadvertence made his specification of claim in said patent too broad, claiming more than that of which he was the original and first inventor in this, to wit:

In claiming the taper punch marked *b* on the drafts annexed to said patent or taper pointed mandrel marked *J*, and a hollow plunger combined and operating as described in said specification on opposite sides of the bar of iron so as to avoid waste from cores or burs; and I acknowledge that punch is the proper name for the tool and that the word mandrel is a mere colorable change therefrom; and that the taper pointed punch is a mere colorable change from the parallel sided punch;

In claiming the spring *f* alone or in combination with the hollow sleeve *K*, by which the sleeve *K* is forced up and made to accommodate itself to the thickness of the nut or washer;

In claiming the arrangement of the cams *C* and *G*, *G*, in their yoke or yokes by which

the plunger L, and sleeve K are enabled to accommodate themselves to the increased thickness of the nut or washer produced by squaring or finishing its exterior;

5 In claiming the use of the taper punch *b*, to punch a taper hole through or nearly through the blank without forcing out any core;

10 In claiming the use of the mandrel J in entering the smallest portion of the hole formed by the punch *b*, and gradually enlarging it and passing entirely through it making it parallel and of the required size;

15 In ~~claiming~~ the employment of two punches entering the nut or washer from opposite side; the taper form and side by side arrangement of the punch *b* and mandrel J, being mere colorable changes from the parallel sided punches and the arrange-
20 ment in line;

In claiming the employment of a taper punch *b*, and a hollow plunger L or its equivalent and a taper pointed mandrel J,

combined and arranged substantially as in said specification set forth;

25 In claiming an improvement in the art of making hot pressed nuts and washers by avoiding all waste from cores or burs by forcing the same into the substance of the nut or washer.

30 And I do hereby disclaim all the foregoing claims contained in said specification in order that the same may be entered of record in the Patent Office of the United States and be taken, held, and deemed as a part of the said original specification and amendatory thereof. 35

In witness whereof I have hereunto set my hand and seal at Cincinnati, Ohio, on this the fourteenth day of June, A. D. 1859. 40

SAML. C. TATUM. [L. s.]

Signed, sealed, and acknowledged in presence of—

S. R. M. MATTHEWS,
FRED C. JONES.