

(No Model.)

S. VANSTONE.
MACHINE FOR MAKING NUTS.

No. 550,208.

Patented Nov. 19, 1895.

Fig. 1.

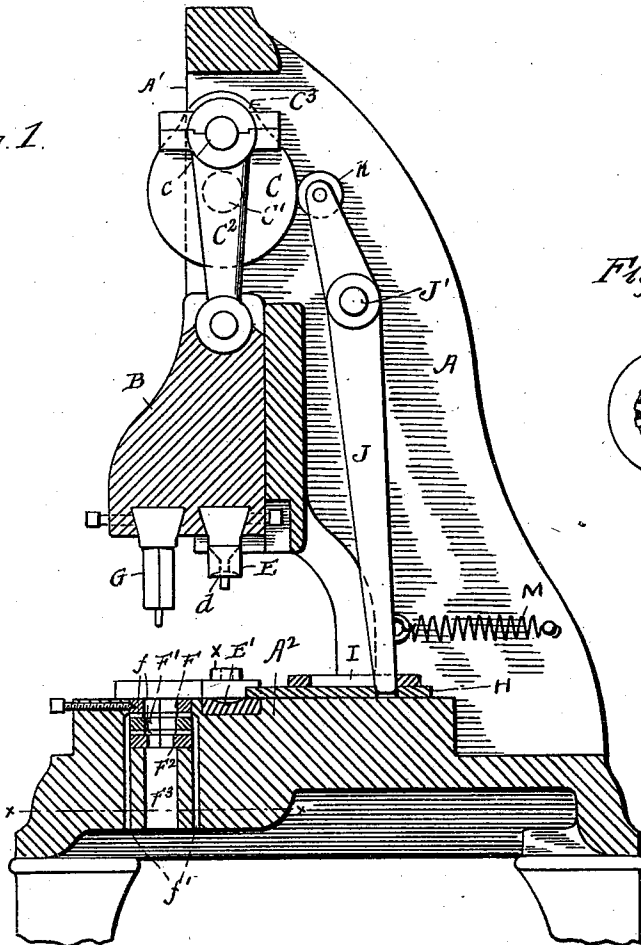


Fig. 6.

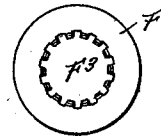


Fig. 3.

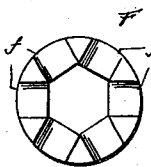


Fig. 4.



Fig. 2.

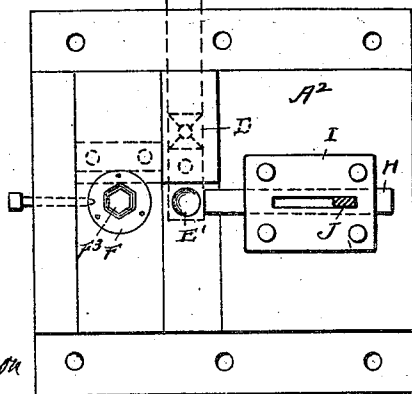
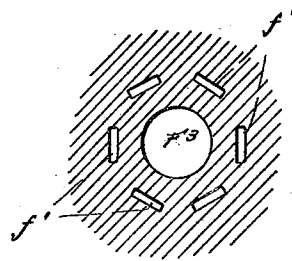


Fig. 5.



WITNESSES

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SAMUEL VANSTONE, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR MAKING NUTS.

SPECIFICATION forming part of Letters Patent No. 550,208, dated November 19, 1895.

Application filed May 31, 1895. Serial No. 551,174. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL VANSTONE, a citizen of the United States, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Making Nuts and other Articles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In the drawings, Figure 1 is a vertical section of a machine embodying my invention. Fig. 2 is a plan view of the same with the overhanging arm A' and its adjuncts removed and lever J in section. Fig. 3 is a plan view of die F. Fig. 4 is a side view of the same. Fig. 5 is a sectional view on the line *x x*, Fig. 1, and Fig. 6 is a plan view of a modified form of die F.

This invention has relation to the manufacture of nuts and other articles, and is designed to provide means for forming such articles whereby they are finished by the action of the dies instead of by milling, as has been usual heretofore.

With this object in view the invention consists in the novel process of manufacture and in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

In the accompanying drawings I have shown the invention as embodied in a machine designed for the manufacture of nuts, and the following description will be chiefly confined thereto. I desire it to be understood, however, that by changing the contour of the die, which is hereinafter termed the "broaching-die," I may by a similar process perform other work.

In carrying out my invention as applied to the manufacture of nuts the stock or bar from which the nuts are to be formed after being properly punched is moved forward, or is carried to a second punch or die having a concave cutting-face and working in conjunction with a concave stationary die. This punch and die not only cut the blank from the bar or stock, but also crown such blank

on both the upper and lower faces. The blanks are then moved forward and are forced through a series of dies placed one behind the other and of progressively-decreasing diameter, and which act upon the blanks to trim them and produce a perfectly-finished nut.

In the accompanying drawings I have shown and I will now proceed to describe the machine shown in the drawings, and which I have found to be capable of successfully carrying out the above-described operation.

In the drawings, the letter A designates the frame of the press, having an overhanging arm A' and table A².

B designates a reciprocating punch and die carrier, which moves in vertical guides of the arm A' and is actuated by means of any suitable gear, such as the disk C, carried by a shaft C' and having a crank-pin *c*, on which is journaled a link C², which is connected to the upper portion of the said carrier. D is a punch on the under side of said carrier, which makes the perforations in the bar or stock, (indicated at *x*.)

E is the second punch or die, which has a concave face *d*, and which acts in conjunction with a stationary concave die-plate E' to make the crown upon the two faces of the blank and to cut or sever said blanks from the bar or stock.

F F' F² designate a series of three dies or die parts, which are seated horizontally in a vertical opening F³ through the table, one above another. The first die or die part F of the series has an opening which is of the form of the nut and which is a trifle smaller than the nut. The opening of the second die or die part F' is slightly smaller than that of the second. The under face of the parts or plates F and F' are formed with a series of radial grooves *f*, which communicate with vertical openings in channels *f'* in the table around the opening F³. The grooves and channels are for the purpose of permitting the escape of the "trimmings" or chips cut from the blank as they are forced through the dies, whereby the latter are prevented from clogging and are made self-clearing.

G designates the punch or movable die which forces the blanks through the stationary dies and which is carried by the carrier

B. This punch is designed to fit the opening in the middle die into which it descends to about one thirty-second of an inch from the bottom thereof, so as to keep the last die sharp. The succeeding blank forces the first blank into the last die and nearly through it.

Although I have referred to three dies F F' F², they may be more properly referred to as forming one die, of which they constitute different parts. This die I term the "broaching-die." I do not, however, wish to confine myself to the use of the three dies or die parts, as two or more may be employed.

For the purpose of carrying the blanks from the punch E to the broaching-dies a slide H may be provided, which works underneath a slotted plate I and which is actuated by a lever J, which is fulcrumed at J', a short distance from its upper end, to the arm A'. Said lever at its upper end has journaled thereto a friction-roller K, which travels in contact with the periphery of the disk C, being actuated to operate the lever J and slide H by means of a cam projection C³ of the said disk. A spring M, attached to the lever and to the frame, returns said slide and lever to their first positions as soon as the roller K is freed by the projection C³.

Other suitable means for feeding the blanks may, however, be employed.

It will be observed that the nuts formed as above described are perfectly reversible, being crowned upon both sides. Should it be desired to crown them upon one side only, one of the dies E E' may be made flat instead of concave.

It will be obvious that by changing the form of the broaching-die or by forming internal projections therein, as shown in Fig. 6, such die may be employed for other work.

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

1. In a machine for the purposes described, the combination with a broaching die consisting of two or more superposed dies or die parts

having openings therethrough of progressively increasing diameter, and provided with outwardly extending grooves or passages which communicate with escape openings which are independent of the openings through the dies or die parts, of a reciprocating punch or die arranged to force the blanks through the said dies or die parts, substantially as specified.

2. In a machine for the manufacture of nuts and other articles, the broaching die consisting of a series of two or more superposed dies or die parts having openings therethrough of progressively decreasing diameters, said dies or die parts, with the exception of the lower one having each a series of outwardly extending radial grooves which communicate with channels in the die supporting part, substantially as specified.

3. The combination of a reciprocating punch and die carrier having a perforating punch, a crowning and cutting die, and a forcing die or punch, of stationary dies or die plates which co-operate respectively with said perforating punch and with the crowning and cutting die, and a broaching die made up of two or more parts through which the blanks are designed to be forced by the forcing die or punch, the openings in said parts being of progressively decreasing diameters, together with means for actuating said punch and die carrier and for carrying the blanks from the crowning and cutting die to the broaching die, substantially as specified.

4. A broaching die having two or more parts, the openings of which are of progressively decreasing size, and having also clearance openings or channels which communicate with the die openings but are independent thereof, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL VANSTONE.

Witnesses:

LUTHER C. CROSSMAN,
MICHAEL O'DAY.