No. 828,682. PATENTED AUG. 14, 1906.

R. J. RODD.

FEEDING DEVICE.

APPLICATION FILED APR. 5, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

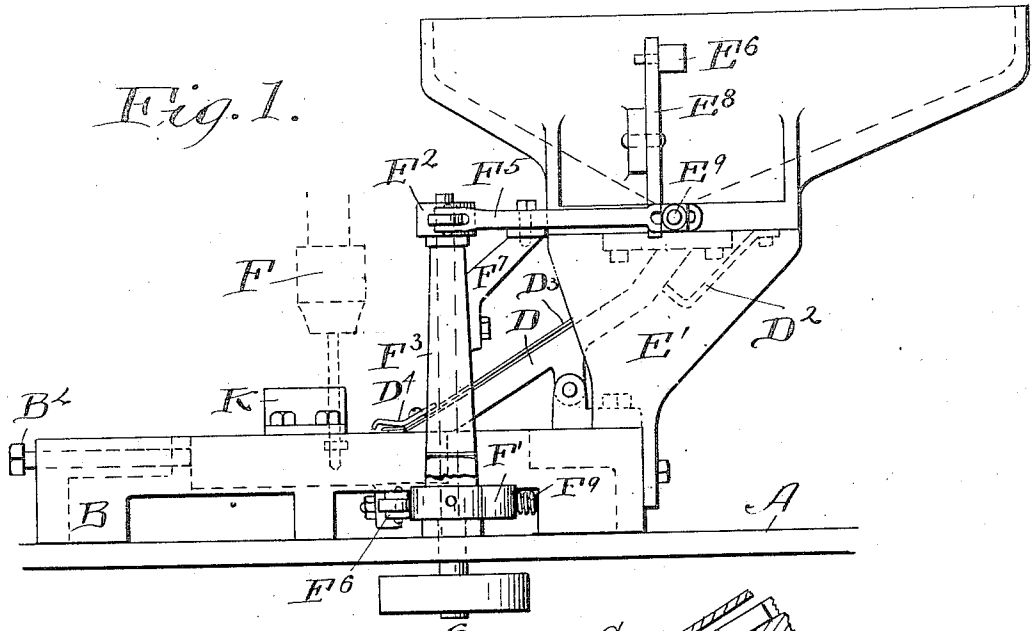


Fig. 2.

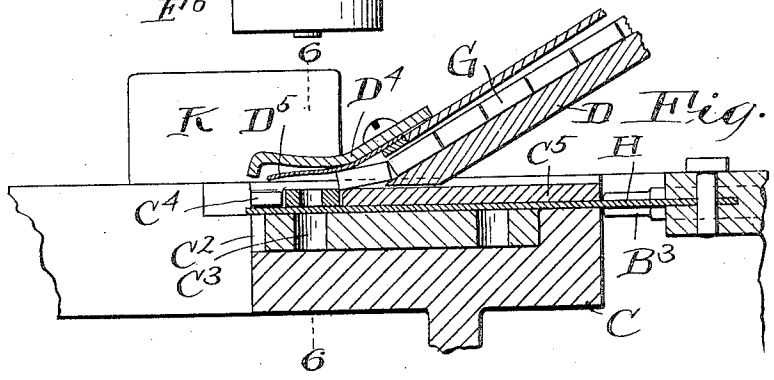
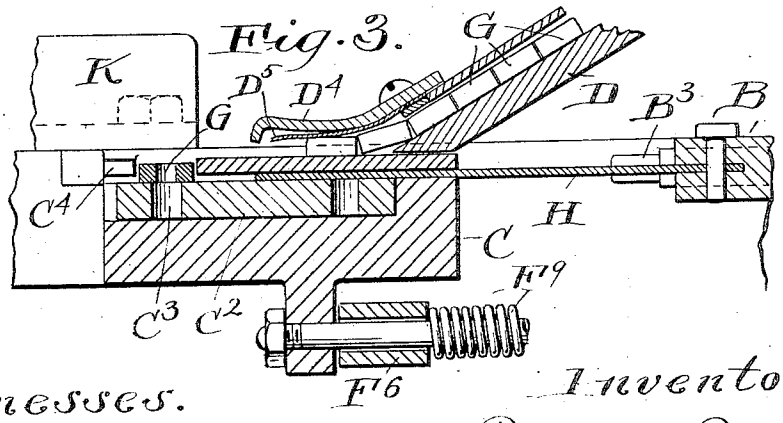


Fig. 3.



Witnesses.
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3 SHEETS—SHEET 2.

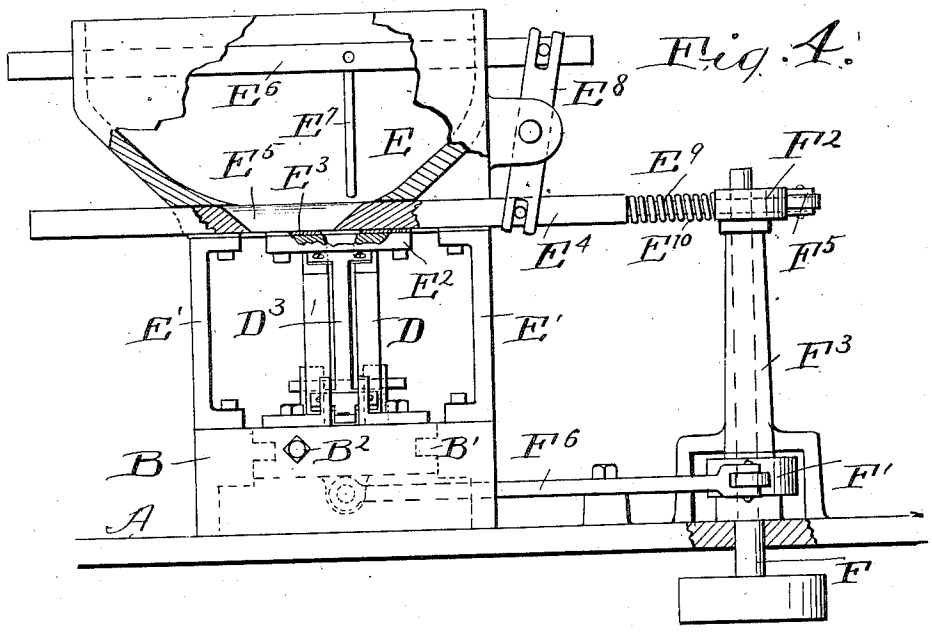


Fig. 4.

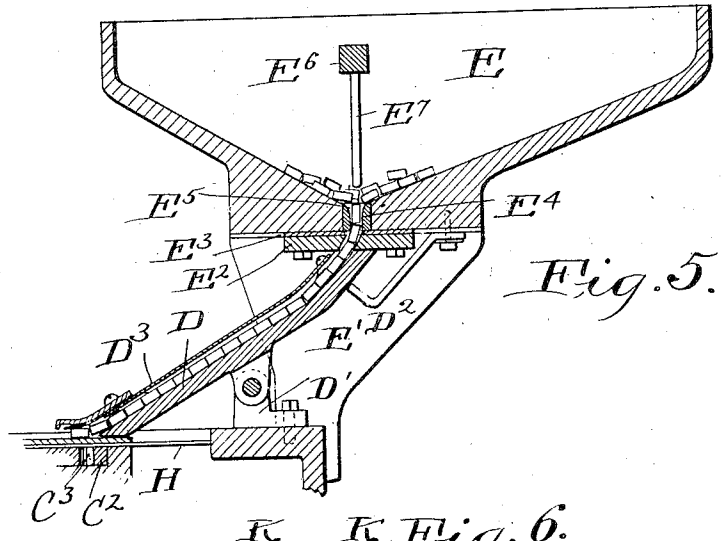


Fig. 5.

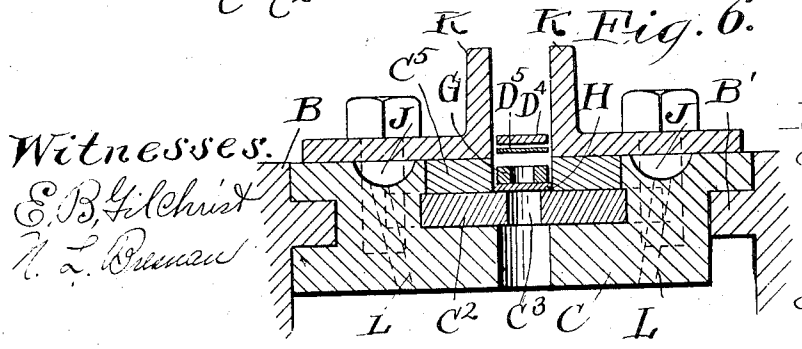


Fig. 6.

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3 SHEETS—SHEET 3.

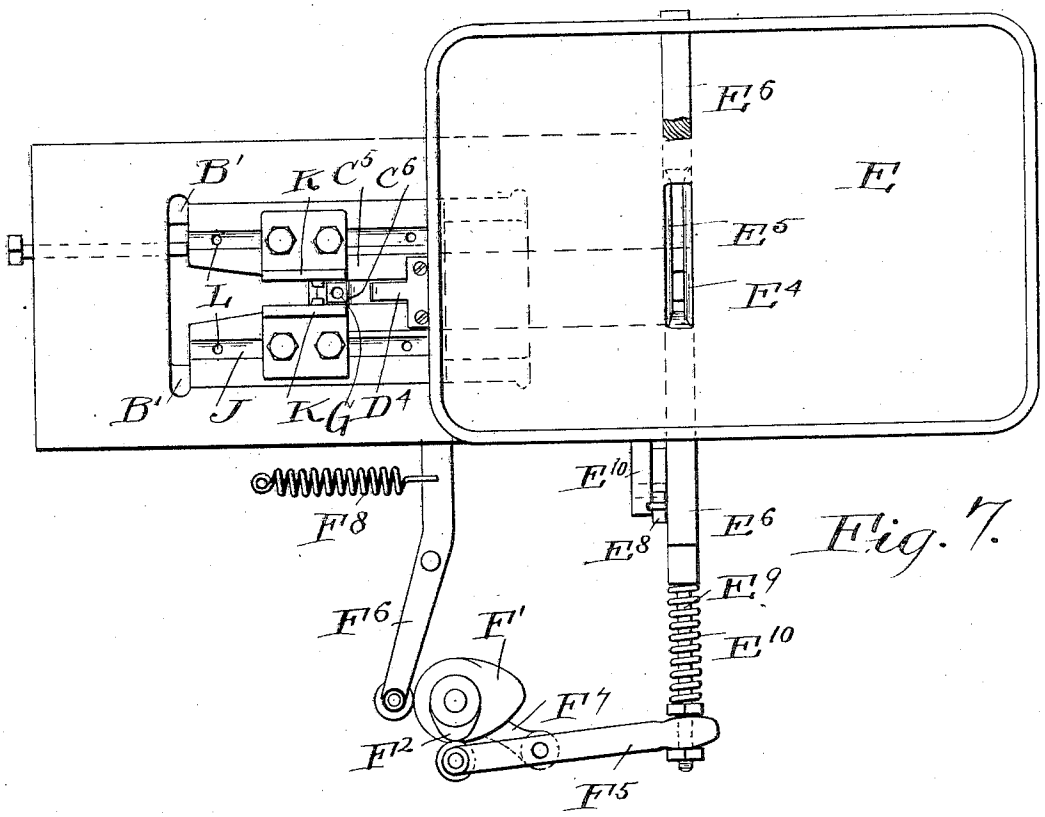
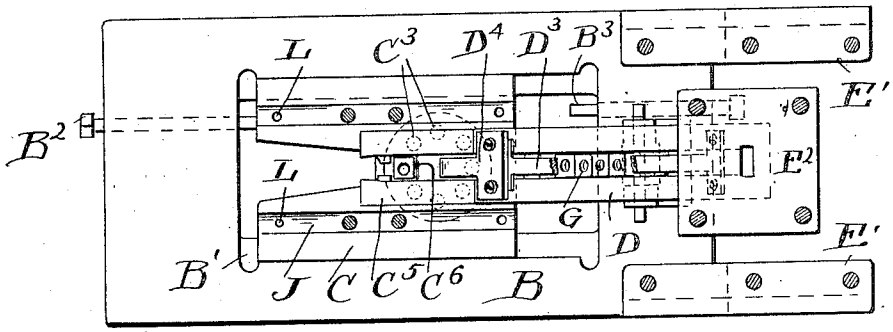


Fig. 7.

Fig. 8.



Witnesses.
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UNITED STATES PATENT OFFICE.

ROBERT J. RODD, OF CUYAHOGA FALLS, OHIO.

FEEDING DEVICE.

No. 828,682. Specification of Letters Patent. Patented Aug. 14, 1906.

Application filed April 5, 1905. Serial No. 253,991.

To all whom it may concern:

Be it known that I, ROBERT J. RODD, a citizen of the United States, residing at Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Feeding Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of the invention which forms the subject of this application is to provide an efficient hopper and feeding means for the purpose of supplying blanks to an operating-tool.

In the embodiment of my invention illustrated in the accompanying drawings and described in the following specification nut-blanks are fed to a tapping-tool and the arrangement of parts is such as to insure constant and uniform feeding action, to provide improved means for removing the nuts from the tapper, and to attain other desirable advantages. In machines of this character it has been found that owing to the chips accumulating about the seat upon which the nut-blank rests the latter does not seat evenly, thereby destroying the accuracy of the tapping operation. Further, the plate upon which the blank rests must in such machines be provided with an opening with which the opening in the blank may register for the purpose of allowing the tapping-tool to play therein after having passed through the blank. This opening in the supporting-plate must of course not be large enough to allow the nut to fall through or to cause it to assume an uneven position thereover, yet owing to inaccuracy or loose fitting of the parts it frequently happens that the tapping-tool cuts away the side walls of the hole and it becomes thereupon necessary to replace the plate. Also it has been found in machines of this character when the tapping-tool is retracted and reversed in its rotary movement for the purpose of removing the nut with the coöperating of a stationary wrench the nut sometimes sticks in the walls of the stationary wrench and does not fall out in sufficient time to clear the reciprocating carrier. This and many other similar disadvantages my invention is designed to obviate by means and mechanisms fully set out and described.

Referring to the accompanying drawings, Figure 1 is a side elevation of my machine, showing the tapping-tool and certain detailed parts in dotted lines. Fig. 2 is a vertical sectional detail showing the feeding-carriage in its retracted position. Fig. 3 is a vertical sectional detail showing the feeding-carriage in its advanced position. Fig. 4 is a front elevation, partly in section. Fig. 5 is a vertical sectional detail showing the feed-chute. Fig. 6 is a detail cross-section taken on the line 6 6 of Fig. 2. Fig. 7 is a plan view of the machine, showing the carriage in its advanced position. Fig. 8 is a plan view of the machine with the hopper and the angle-pieces, which operate to withdraw the nut from the tapper, removed.

In the various figures, A represents the supporting-floor, upon which the machine rests.

B represents the bed-plate, in which the carrier C reciprocates back and forth between the tapping-tool F and the mouth of a chute D, leading from a hopper E, containing the blanks.

The reciprocating carriage C rides on flanges B′ in the bed-plate and may be limited in its forward and backward movements by the adjustable stops B^2 B^3. The carriage is channeled out in proper manner to receive a disk plate C^2, which is provided with a number of holes C^3, arranged on different radii about its periphery. These holes C^3 are of suitable size to receive the tapping-tool after it has passed through the nut-blanks G.

Arranged above the disk C^2 and likewise fitting in the channeled portion of the carriage C is a holding-block C^5. The block C^5 acts as a retainer to hold the disk in place and is constructed with a positioning-socket C^6 in its forward central portion, by means of which the blanks are held on the disk C^2 and over the hole C^3 while the tapping-tool is at work.

The holding-socket, as shown in the structure, is provided on the forward side with retaining-lugs C^4 in order to prevent too great a forward movement by the blank when the latter is fed thereinto. The holding-block C^5 is provided with a central longitudinal groove on its upper face, which serves to act as a guide for the blanks being fed from the chute D into the positioning-socket, and is likewise provided on its under face with a longitudinal central groove for the purpose of receiving a cleaning-blade H, hereinafter to be described.

The chute D is preferably pivotally sup-

ported upon a bracket D′ and held at its upper end against the exit-orifice of the hopper by means of any suitable support, such as the horizontally-swinging spring-arm D^2. In front of the channel of the chute is a retaining-strip D^3, suitably secured thereto in any preferred manner, while at the lower end of the chute is a curved guiding-tongue D^4, beneath which is a retaining-spring D^5. By having the chute pivoted it may be swung away from both the hopper and the carriage for cleaning and to remove any chips or other obstructions tending to clog the passage-way.

The hopper E, from which the blanks are fed into the chute, is suitably supported upon side frames E′ E′ and has a bottom plate E^2, secured beneath the exit-orifice. Between the plate E^2 and the bottom of the hopper is a thin wearing-plate E^3, across which travels the sliding gate E^4, provided with a slot E^5, controlling the exit-orifice aforesaid. In the upper part of the hopper is a reciprocating bar E^6, from which depends a stirring-rod E^7, designed to agitate the blanks and cause their continuous feed through the slotted opening E^5.

The bar E^6 and the gate E^4 extend beyond the hopper and are operated by any suitable means, such as the rocking arm E^8. (Shown in Fig. 4.) One of these parts, either the bar or, as in the machine shown, the gate E^4, is provided with an extension E^9, suitably connected so as to be operated by some positively-driven mechanism, such as the revolving shaft F. The same positively-driven mechanism may also be utilized for operating the reciprocating carriage C. As shown, this shaft F operates within a post F^3, suitably arched at its base to permit the rotation of a cam F′. At the upper end of the shaft F and above the post F^3 is another cam F^2. Projecting from the side of the post, as shown in Fig. 1, is a bracket F^7, the upper end of which forms a fulcrum for the lever F^5, one end of which is provided with an anti-friction-roller held against the cam F^2 by means of the spring F^4. The other end of the lever F^5 is connected with the extension-rod E^9, so that the operation of the cam F^2 tends to throw this said rod inwardly toward the hopper through the medium of a cushioning-spring E^{10}, provided between the end of the lever F^5 and a shoulder on the extension-rod E^9. The lower cam F′ operates on the fulcrum-lever F^6 and tends to retract the carriage beneath the feed-chute. One end of the lever F^6 is provided with an antifriction-roller and is held against the cam by a tension-spring F^8. The other end of said lever is provided with a yoke fitting over a bolt or similar projection extending from the carriage C and bearing against a cushioned spring F^9. These cushioned springs E^{10} and F^9 are interposed between the cam and the operating parts for the purpose of affording a yielding connection to prevent breaking should the moving parts for any reason become jammed.

Mounted upon the carriage C and moving therewith are angle-pieces K, overlapping the block C^5 and serving to hold the same, together with the disk C^2, firmly in position upon the carriage. This detail arrangement enables me to use fewer bolts or securing means than would otherwise be necessary. These angle-pieces are so placed that the inner walls of the vertical portions shall be spaced from each other substantially the width of the nut-blanks being operated upon. Their length should be sufficient to enable them to coöperate with the tapping-tool at either extreme of their position for the purpose of removing the nut from said tool. They also serve the purpose of guides for feeding the nut from the chute D to the positioning-socket when the carriage is in its retracted position.

The carriage C is provided with oil-channels J and draining-holes L, which are necessary in machines of this character owing to the fact that oil is constantly fed to the tapping-tool.

From the above description it will be seen that through the operation of the shaft F, upon which is the cam F^2, an intermittent motion is transmitted to the reciprocating gate in the hopper and to the stirring-rod, and thus tends to provide a regular feed of blanks through the channel, at the mouth of which their feed is stopped by the combined resistance of the upper surface of the block C^5 and the spring D^5. Through the action of the cam F′ the carriage is reciprocated until the upper surface of the block recedes from under the mouth of the chute, so as to expose the receiving-socket in the forward end of the holding-block. At this point a blank will fall into the socket upon the cleaning-blade H and be retained therein by the lugs C^4. The tension-spring F^8 will pull the carriage forward when the cam F′ ceases to act. The nut-blank will slip off the cleaning-blade H onto the disk in a favorable position to be operated upon. When the carriage has reached its forward limit of movement, the tapping-tool F is lowered by suitable automatic mechanism and passes through the nut, forming the thread therein, and in so doing enters the hole C^3 of the supporting-disk beneath the nut. The tool is then given a simultaneous upward movement and reverse rotation, thereby lifting the threaded nut G from its seat and clearing the carriage C, so as to permit the reciprocation of the latter. The end of the tool carrying the threaded nut being confined between the walls of the angle-pieces K, the nut will not be able to turn upon the reverse rotation of the tool and will consequently be unscrewed therefrom, while the

movement of the walls K prevents the nut from sticking after it has passed off the end of the tool. Upon the retraction of the carriage C it will be noticed that the cleaning-blade H passes over the supporting-disk C^2 at the portion where the nuts are to be seated and scrapes all of the turnings or chips from the seat, so as to insure that the next succeeding nut-blank shall be supported in a perfectly true position. The cleaning-blade or wiper H has other functions. After it cleans the chips off the tapping-disk it remains in position long enough for the nut-blank to fall from the chute onto its surface, and upon the forward motion of the carriage the nut slips onto the disk in a favorable position to be operated upon. Further, it will be noted in the event that the nut being operated upon should have an opening too large to receive threads such a blank will not be lifted from the carriage upon the elevation of the tool, but will remain in the holding-socket. Also in case the nut-blank should have no hole for the tap to work in, or should the blank be in any wise imperfect, so that it would be impossible for the tool to operate thereon and lift it from the socket, or should the tap or tool break or refuse to perform its proper functions, in all these instances the blank will remain in the socket, and in such event the device H will render it impossible to continue the feeding of the blanks so long as the imperfect blank is not removed. This follows from the fact upon the retraction of the carriage such a blank would strike against the cleaning-blade H and block the mechanism against further retraction, since the lever F^6 would then merely compress the cushioning-spring F^9 and not retract the carriage further. Such a checking of movement on the part of the mechanism would be immediately noticed by the workman, who would thereupon be enabled to pick out the defective blank and allow the operation to resume. It will be seen that should the hole C^3 of the supporting-disk become enlarged or in any way defective a new and perfect hole may be turned into position with readiness and without removing the supporting-disk.

The above arrangement of parts avoids the defects and annoyances referred to in the statement of the object of my invention and provides an efficient and simple mechanism for accomplishing the results sought.

It will be obvious that many alterations of detail and substitutions of mechanical equivalents may be made without departing from the spirit of my invention or altering the character thereof.

Having described my invention, I claim—

1. In a machine for feeding articles to a tool, the combination of a carriage, a seat-plate supported thereby, means for reciprocating the carriage, and means automatically moving over the seat during such reciprocation to clean it.

2. In a machine for feeding articles to a tool, a reciprocable carriage provided with a seat for the articles to be carried to the tool, and a cleaning device secured to the frame in which the carriage slides in such manner as to pass over the seat when the carriage is withdrawn from the tool.

3. In combination, a bed-plate, a carriage reciprocable therein, a supporting-plate in said carriage, a block over said supporting-plate, and a wiper fixed to the frame of the bed-plate and adapted to pass between the seat-plate and the block upon the reciprocation of the carriage.

4. In combination, a frame, a carriage reciprocable therein, a disk supported in said carriage, a block over said disk provided with a supporting-socket, holes in the disk adapted to be brought in successive registration with the socket, a wiping-strip attached to the frame and adapted to pass beneath the block and over the portion of the disk beneath the socket.

5. In a machine of the character described, a reciprocating carriage having a receiving-socket for presenting an article to an operating-tool and a device adapted to project into said socket when the carriage is retracted, whereby an article in said socket will limit the retraction.

6. In a machine of the character described, a carriage having a receiving-socket for presenting an article to a tool, yielding means for reciprocating the carriage and means adapted to strike the article and check the retraction of the carriage should the article remain in the socket upon such retraction.

7. Mechanism for feeding material to an operating-tool comprising a hopper, a feed-chute, a reciprocating carriage adapted to move between the chute and the operating-tool and comprising a receiving-socket for the material to be operated upon, and a supporting-plate adapted to be shifted so as to present a fresh surface without removal from the machine.

8. Mechanism for feeding articles to a tool, comprising a hopper, a chute and a reciprocating carriage, a positioning-socket in the carriage, means for supporting the articles within the socket consisting of a disk rotatably held in the carriage to present a fresh supporting-surface to the socket.

9. In a machine of the character described, a reciprocating carriage, a movable supporting-plate carried thereby and provided with several seats any of which is adapted to be brought successively into supporting position.

10. In a machine of the character described, the combination of a reciprocating carriage, a round supporting member rotata-

bly held in a corresponding socket in the carriage, there being a series of holes in the supporting member and a socket for the article to be operated upon, adapted to hold such article in relation to one of said holes.

11. In a reciprocating carriage, a supporting-plate held by the carriage in such manner as to be shiftable therein without removal therefrom, a block fitted over said plate and provided with a positioning-socket.

12. A reciprocating carriage having a seat-plate surmounted by a block, a positioning-socket in said block, holes in said plate adapted to be brought successively in register with said socket.

13. The combination with a tapping-tool of mechanism for feeding nut-blanks thereto, comprising a carriage provided with a positioning-socket, means for reciprocating the carriage laterally of the tool, pieces having vertical walls secured to the carriage and about the socket and of such length as to inclose the tapping-tool during the reciprocation of the carriage.

14. In mechanism for feeding blanks to a tapping-tool, a reciprocating carriage, a positioning-socket in said carriage, pieces having vertical walls secured to the carriage and at each side of said socket, the vertical walls of said pieces being of such length as to embrace the end of the tapping-tool when the carriage is in its advanced and its retracted position.

15. In a mechanism for feeding blanks to a tapping-tool, a reciprocating carriage, a supporting-plate in said carriage, a positioning-block over said plate, and angle-pieces overlapping such block in such manner that the securing means of the angle-pieces shall assist in firmly holding the block and plate in position, the projecting portions of such angle-pieces preventing the nut turning when the tap screws out.

16. In a machine for feeding articles to a tool, a hopper, a reciprocating carriage, and a chute between the hopper and the carriage pivotally supported in such manner as to be swung away from both the hopper and the carriage, and means for retaining the chute in operative position.

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

ROBERT J. RODD.

Witnesses:
ALBERT H. BATES,
N. L. BRESNAN.