J. B. RIEHL.

UMBRELLA NOTCH MAKING MACHINE.

APPLICATION FILED APR. 26, 1909.

953,232.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

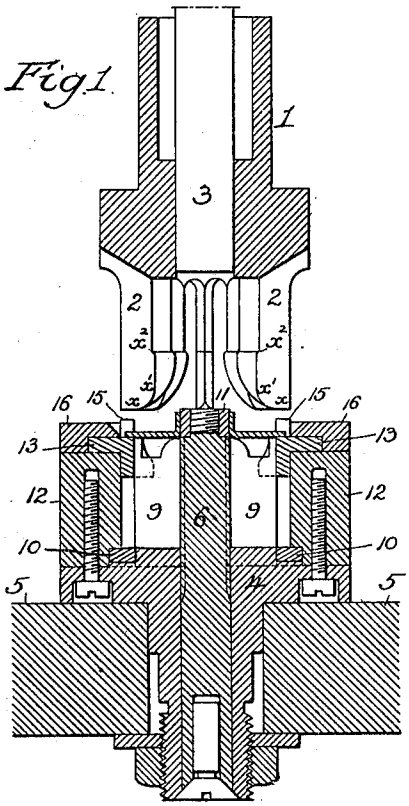


Fig. 2.

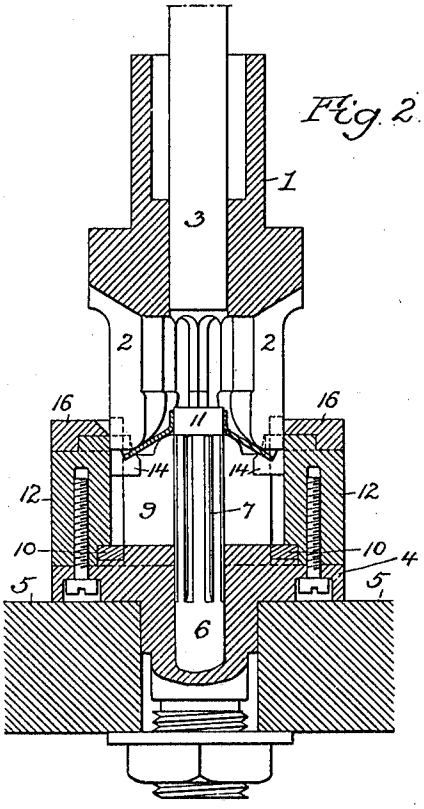


Fig. 3.

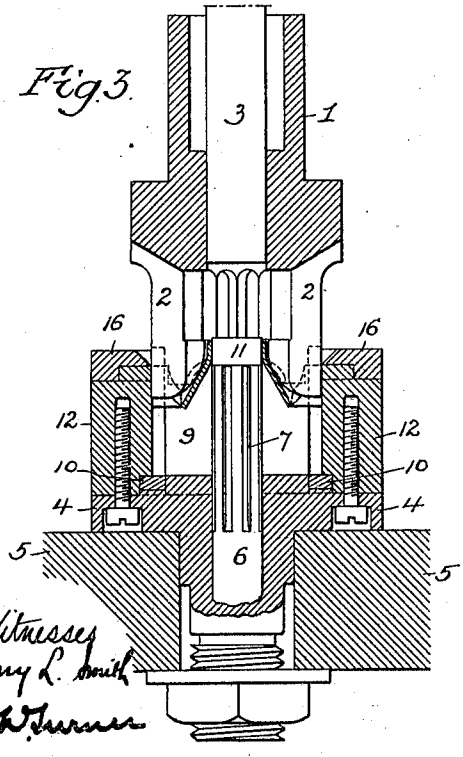
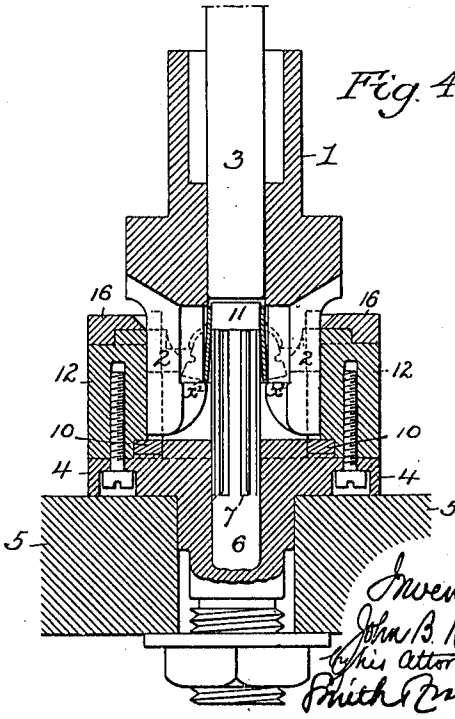


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5

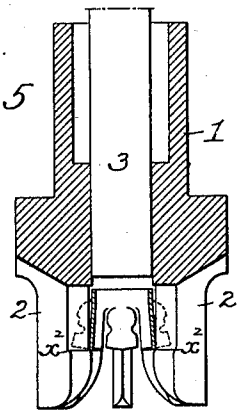


Fig. 6

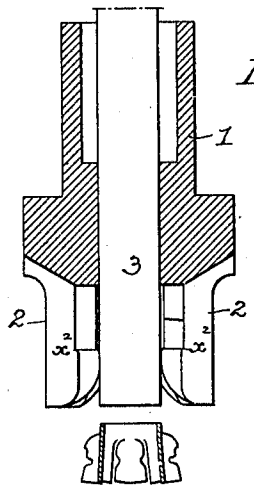


Fig. 7

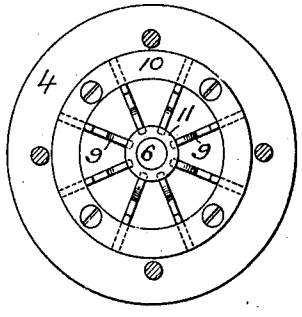


Fig. 8

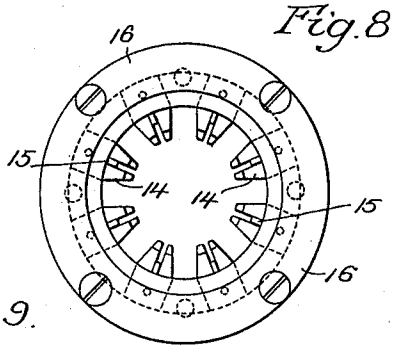


Fig. 9

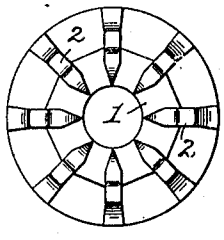


Fig. 10

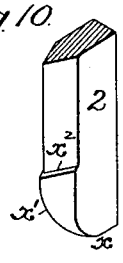


Fig. 13

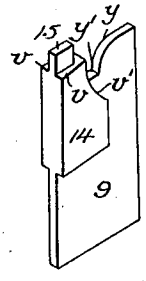


Fig. 14

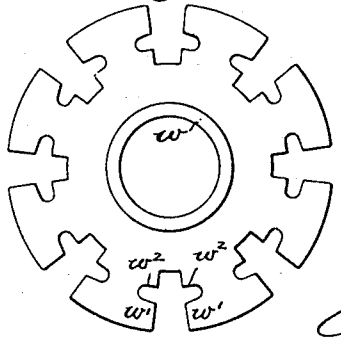


Fig. 11

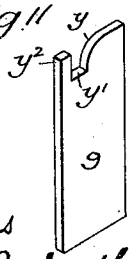
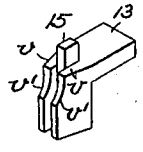


Fig. 12



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UNITED STATES PATENT OFFICE.

JOHN B. RIEHL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO AMERICAN SPECIALTY MANUFACTURING COMPANY, OF DOVER, DELAWARE, A CORPORATION OF DELAWARE.

UMBRELLA-NOTCH-MAKING MACHINE.

953,232. Specification of Letters Patent. **Patented Mar. 29, 1910.**

Application filed April 26, 1909. Serial No. 492,152.

To all whom it may concern:

Be it known that I, JOHN B. RIEHL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Umbrella-Notch-Making Machines, of which the following is a specification.

This invention consists of certain improvements in the machine for making a notch or runner head for umbrellas or parasols (hereinafter, for convenience, termed a "notch") which forms the subject of my application for patent filed September 10th, 1908, Serial No. 452,352, the objects of my present invention being to improve the construction of the dies whereby the notch is pressed, to render said dies exact in operation, and to insure the release of the notch from the dies after the pressing operation has been completed. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figures 1, 2, 3 and 4 are views, illustrating, in different positions, the dies whereby the notch is produced; Figs. 5 and 6 are views illustrating the upper die and ejector in different positions; Fig. 7 is a top view of the lower die; Fig. 8 is a top view of the outer die; Fig. 9 is a bottom view of the upper die; Figs. 10, 11 and 12 are enlarged perspective views of members of the different dies; Fig. 13 is a view illustrating a modified construction comprising a combined lower and outer die, and Fig. 14 is an enlarged view of the blank from which the notch is made.

The machine is similar in its general construction and operation to that forming the subject of my above mentioned prior application, my present invention comprising certain details in the construction and arrangement of the various dies employed in the machine.

The upper die consists of a tubular plunger 1 with depending fingers 2 which, in the present case, constitute an integral part of the plunger, although those features of my present invention which relate to this upper die may be embodied as well in an upper die having fingers separate from but secured thereto as before.

Guided within the tubular plunger 1 is an ejector rod 3. Each of the depending fingers 2 has its inner portion of tapering or V-shaped cross section and presents a horizontal bottom face x and a rounded inner face x' terminating at the top in a recess x^2, as shown in Fig. 10.

The lower die consists of a base block 4 secured in any suitable manner to the bed plate 5 of the machine and having a central upwardly projecting post 6 in whose outer face are a number of equi-distantly disposed vertical slots 7, to which are fitted the inner portions of a corresponding series of radially projecting bits 9, whose lower portions are adapted to fit radial slots in the base block 4 and are surrounded by a ring 10 let into a recess in said base block so as to radially confine the lower portions of said bits.

The upper portion of the post 6 is reduced in diameter and threaded for the reception of a nut 11 which bears upon the tops of the bits 9 and serves to retain the same vertically in position.

Mounted upon the base block 5 is an outer die comprising a ring 12 secured to said base block and having, in its upper portion, radial slots for the reception of tongues 13 projecting outwardly from bits 14 which are slotted so as to embrace the bits 9 of the lower die, the outer portions of said bits bearing against the bases of the slots, as shown in Fig. 1, so that said bits 14 also serve to radially retain the upper ends of the bits 9.

The bits 14 have upwardly projecting lugs 15 and the tongues 13 of said bits are retained in place vertically by means of a ring 16 secured to the top of the ring 12.

Each of the bits 9 of the lower die has a curved face y from which extends outwardly a horizontal shoulder y' and beyond the latter is an upwardly projecting lug y^2, as shown in Fig. 11.

The bits 14 of the outer die present horizontal shoulders v, one on each side of the projecting lug 15 and these side portions of the bits project inwardly beyond the lugs and have curved inner faces v', as shown in Fig. 12, the lugs y^2 on the bits 9 projecting up to the level of the shoulders v of the bits 14, as shown in Fig. 1, so as to prevent any collapse of the projecting side wings of said bits 14 by side pressure upon them.

In the operation of the machine the tubu-

lar neck w of the blank shown in Fig. 14 is first slipped over the projecting upper end of the post 6, the blank being properly disposed in respect to the fingers 2 of the upper die, the bits 9 of the lower die and the bits 14 of the outer die by reason of the entrance of the lugs 15 of said outer die into the outer ends of the radial slots formed in the blank. Tongues w' on the opposite sides of each of these slots rest upon the shoulders of the bits 14 and, as the fingers 2 descend, and act upon the metal of the blank at points midway between the slots therein, the first effect of the depression of these portions of the blank is to turn up the wings w' by reason of their contact with the shoulders of the bits 14 and bend down over the curved ends y of the bits 9, the metal between the inner ends of the slots and the central neck w of the blank. Notches are formed in the opposite sides of the slots in the blank and as the operation proceeds the shoulders w^2 at the inner sides of these notches engage the curved faces v' of the bits 14 and are guided thereby until the bending operation has so far progressed as to carry them beyond the limits of the bits 14, as shown in Fig. 3. As the upper die continues to descend the metal upon which the fingers 2 act will be gradually forced downwardly and inwardly between the bits 9 of the lower die until the operation is fully completed, as shown in Fig. 4, hollow ribs being formed by bending the metal over the bits 9 and the bases of the grooves between said hollow ribs being forced into line with the neck w. During the pressing operation the outer faces of the fingers 2 of the upper die contact with the inner face of the ring 12 of the lower die, as shown in Figs. 1 to 4, and any outward spring of the fingers under the pressure to which they are subjected is thereby effectually prevented. When the upper die reaches the limit of its downward movement as shown in Fig. 4, the lower ends of the recesses x^2 in the fingers 2 will be below the lower edge of the pressed notch and the metal at the bases of the grooves in said notch will spring outwardly into said recesses, as shown in Fig. 4, to such an extent that as the upper die is raised, the fingers 2 will strip the notch from the bits 9 of the lower die and will lift said notch clear of said lower die, as shown in Fig. 5, the upper portion of the notch finally coming into contact with the lower end of the ejector rod 3 whereupon further upward movement of the upper die or downward movement of the ejector rod in respect thereto will cause the finished notch to be ejected from said upper die, as shown in Fig. 6, the engaging portions of the notch and of the shoulders at the bottoms of the recesses x^2 being sufficiently beveled or the hold of one upon the other being so slight that it will be released upon the application of the pressure of the ejector rod so as to permit of the discharge of the notch from the die.

Instead of being formed upon the outer die the bits 14 and lugs 15 may, in some cases, be formed upon the bits 9 of the lower die, as shown, for instance, in Fig. 13, although the construction shown in Figs. 1, 2, 3, and 4 is preferred.

It will, of course, be understood that the terms "upper" "lower" and "vertical" are relative terms, used simply for convenience since the disposition of the dies may be such that what is termed the "upper" die may move either downwardly, horizontally, diagonally or upwardly, in acting upon the metal of the blank, and the die 2 may be a fixed die, and other dies may be movable dies, if desired, without affecting the performance by them of their respective functions.

It will be evident also that the bits 9 of the lower die may be formed integral with the post 6 if desired, and that the bits 14 of the outer die may be formed integral with the ring 12.

I claim:—

1. In a machine of the character described, the combination of a lower die having radially projecting bits and an upper die having downwardly projecting fingers operating between said bits, said fingers having recesses for engaging portions of the pressed notch and stripping the latter from the lower die.

2. In a machine of the character described, the combination of a lower die having radially projecting bits, an upper die having downwardly projecting fingers operating between said bits, said fingers having recesses for engaging portions of the pressed notch and stripping the latter from the lower die, and an ejector rod for releasing the notch from the fingers.

3. In a machine of the character described, the combination of the lower die having projecting bits, the upper die having depending fingers operating between said bits, and an outer die for engaging said fingers and preventing outward spring of the same during the pressing operation.

4. In a machine of the character described, the lower die consisting of a slotted base block with slotted central post, bits fitted to the slots of the base block and post, a ring on the base block for retaining the bits in position radially, and a ring on the post for retaining the bits in position vertically.

5. In a machine of the character described, the combination of the lower die having radially projecting bits, the upper die having depending fingers operating between said bits of the lower die, and an outer die having radially projecting bits for engaging tongues on the blank and bending the same

upwardly alongside of the fingers of the upper die.

6. In a machine of the character described, the combination of the lower die having radially projecting bits, an upper die having depending fingers operating between said bits, and an outer die having shoulders terminating in inner curved faces.

7. In a machine of the character described, the combination of the lower die having radially projecting bits, an upper die having projecting fingers operating between said bits, and an outer die having radially projecting bits with upper shoulders, the bits of the lower die having curved faces, shoulders at the base of the same, and outer lugs adapted to enter the slots of the outer bits and extending up to the level of the shoulders thereof.

8. In a machine of the character described, the combination of the lower die having radially projecting bits, an upper die having projecting fingers operating between said bits, and an outer die having radially projecting bits with upper shoulders, and curved inner faces, the bits of the lower die having curved faces, shoulders at the base of the same, and outer lugs adapted to enter the slots of the outer bits and extending up to the level of the shoulders thereof.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN B. RIEHL.

Witnesses:
HAMILTON D. TURNER,
KATE A. BEADLE.