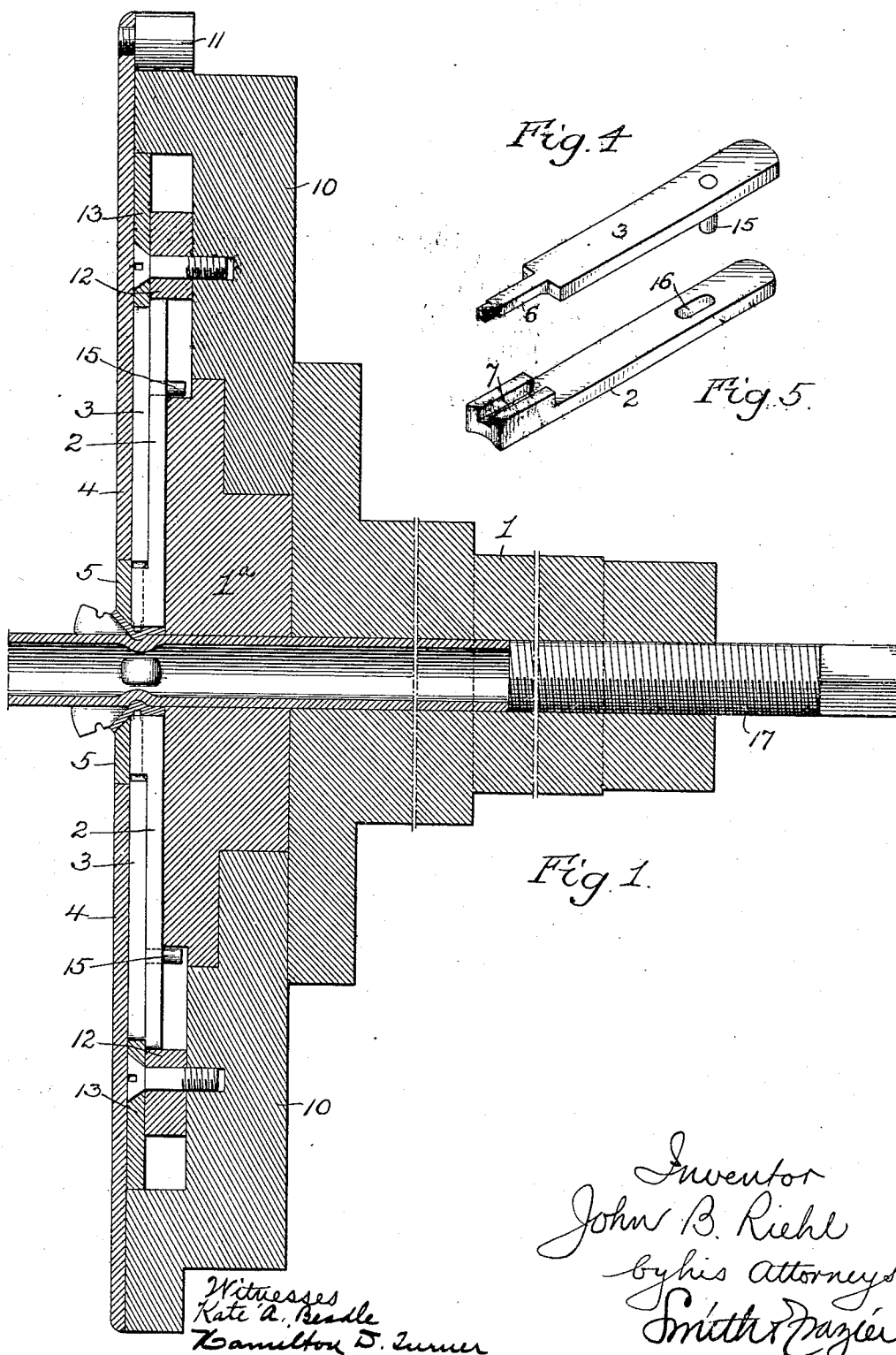


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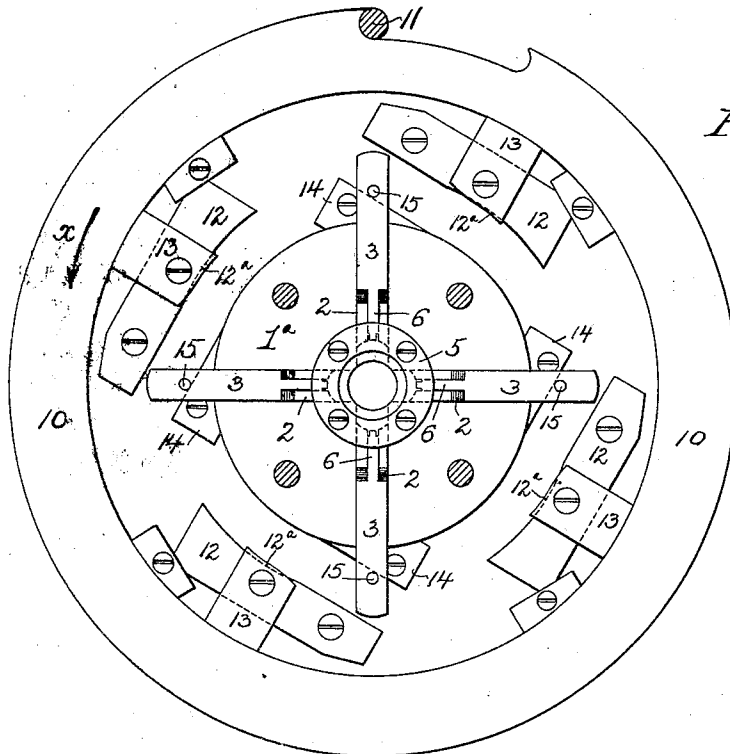


Fig. 2.

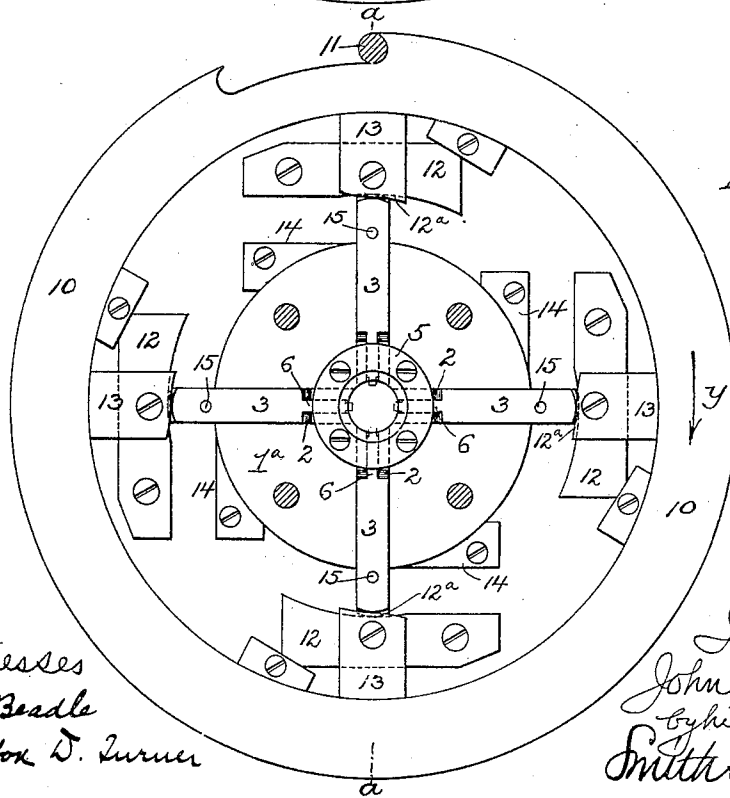


Fig. 3.

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UNITED STATES PATENT OFFICE.

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

MACHINE FOR SECURING NOTCHES TO UMBRELLA-STICKS.

936,166.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed August 10, 1908. Serial No. 447,853.

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 Machines for Securing Notches to Umbrella-Sticks, of which the following is a specification.

The object of my invention is to provide means for securing notches to the sticks of umbrellas or parasols by indenting the metal of which the notch is composed and also the metal of the stick, when the latter consists of a metallic tube. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which—

Figure 1 is a vertical sectional view on the line *a—a*, Fig. 3, of a notch-securing device constructed in accordance with my invention; Figs. 2 and 3 are face views of the same with the cover plate removed and showing the operative parts in different positions, and Figs. 4 and 5 are enlarged perspective views of the dies employed.

In Fig. 1 of the drawing, 1 represents a hollow mandrel having a bore of sufficient diameter to receive the stick to which the notch is to be secured, this bore being enlarged in diameter at one end to an extent sufficient to receive the flange or collar of the notch.

The mandrel has an enlarged head 1^a at one end, and in said enlarged head are formed a series of radial slots, four in the present instance, each of these slots being adapted for the reception and guidance of a pair of dies 2 and 3, which are retained in place in the slots by means of a cap or cover plate 4 secured to the enlarged head of the mandrel and having a central detachable section 5 with beveled opening for receiving and centering the notch, as shown in Fig. 1.

The die 3 contacts with the outer face of the die 2, and has a contracted tongue 6 sliding in a slot 7 in the enlarged inner end of said die 2, said tongue being, by preference, slightly contracted at its inner end. (See Figs. 4 and 5).

The inner ends of the dies 2 are concave, and when said dies are projected or moved inwardly these concave ends conform to the external surface of the collar of the notch and firmly clamp the same to the stick, in order not only to hold the notch firmly in

place during the subsequent indenting operation but also to prevent displacement of the metal in any direction other than inwardly under the action of the dies 3, which, after the dies 2 have been fully projected, are projected to a further extent so as to cause their contracted ends to indent the metal of the notch and also the metal of the stick when the latter consists of a metallic tube. (See Fig. 1).

The dies are operated by means of cams mounted in a ring 10, which is free to turn to a limited extent on the enlarged head of the mandrel, its movement being limited by means of a stop pin 11 which occupies a segmental slot in the outer portion of the cam ring, as shown in Figs. 2 and 3.

For each set of dies the cam ring is provided with three cams 12, 13 and 14, the cams 12 being adapted to act upon the outer ends of the dies 2; the cams 13 acting upon the outer ends of the dies 3, and the cams 14 acting upon pins 15 which project downwardly from the dies 3 and through elongated slots 16 (Fig. 5) in the die 2.

When the dies are fully retracted the umbrella stick is passed through the bore of the mandrel 1 to the proper extent and the notch, which has been previously slipped over the stick, is brought into position in contact with the central section 5 of the cover plate, and the cam ring 10 is then turned in the direction of the arrow *x*, Fig. 2, so as to cause the cams 12 to project the dies 2 and force their inner ends into clamping contact with the collar of the notch, the dies 3 being carried inward with the dies 2, owing to the contact of the pins 15 on the dies 3 with the outer ends of the slots 16 in the dies 2. The cams 13 then act upon the dies 3 and further project the same so as to cause them to indent the collar of the notch or both the collar and stick as shown in Figs. 1 and 3, there being no further forward movement of the dies 2 during this indenting action owing to the fact that when the cams 13 are acting upon the dies 3 the outer ends of the dies 2 are traveling upon a concentric portion 12^a of each of the cams 12, and the pins 15 are traveling forward in the slots 16. The operation being completed, the direction of movement of the cam ring is reversed, as indicated by the arrow *y* in Fig. 3, and the pins 15 of the dies 3 are

acted upon by the cams 14 so as to first withdraw the dies 3 until the pins strike the outer ends of the slots 16 in the dies 2, whereupon both dies will be withdrawn together.

The bore of the mandrel may, if desired, be provided with a screw plug 17, by adjustment of which the position of the notch in respect to the end of the stick may be varied as desired.

I have described the cam ring as being the rotative element of the machine, but it will be evident that the said cam ring may be fixed and the mandrel may rotate, if desired, and although I have shown, and prefer to use, a series of sets of dies equidistantly disposed around the head of the mandrel but one set of dies with corresponding cams may be used, a single indentation being relied upon to secure the notch to the stick instead of a series of equidistantly disposed indentations, and the device may be used for securing ferrules to sticks or for securing a plug to a stick by indenting the metal of the stick and plug at one or more points.

I claim:—

1. In a machine of the character described, the combination of a hollow mandrel and a cam carrier, one susceptible of movement in respect to the other, a pair of superposed dies one guided on the other and both guided on said mandrel, and cams on the cam carrier for moving said dies inwardly on the mandrel independently of each other.

2. In a machine of the character described, the combination of a hollow mandrel and a cam carrier one susceptible of movement in respect to the other, a pair of superposed dies one guided on the other and both guided on said mandrel, a pair of cams on the cam carrier for moving the dies inwardly, independent of each other, and a cam on the cam carrier for retracting the dies.

3. In a machine of the character described, the combination of a hollow mandrel, a pair of dies thereon, one a clamping die and the other an indenting die, means for projecting the clamping die and retaining it in the pro-

jected position, and means for subsequently projecting the indenting die beyond the face of the clamping die.

4. In a machine of the character described, the combination of the guiding mandrel with a clamping die an indenting die having a portion projecting through the engaging portion of said clamping die, and means for independently projecting said dies.

5. In a machine of the character described, the combination of a guiding mandrel, a plurality of clamping dies engaging the periphery of the object to be indented, a plurality of indenting dies, each having a member adapted to a slotted portion of a clamping die and projecting beyond the engaging face of said clamping die, and means for first projecting the clamping dies and then further projecting the indenting dies.

6. In a machine of the character described, the combination of a guiding mandrel with a plurality of clamping dies engaging the periphery of the object to be indented, a plurality of indenting dies, each having a member adapted to a slotted portion of a clamping die and projecting beyond the engaging face of said clamping die, means for first projecting the clamping dies and then further projecting the indenting dies, and means including a lost motion connection between the dies for effecting retraction of the same.

7. In a machine of the character described, the combination of a guiding mandrel, with a plurality of clamping dies each having a slot therein, a plurality of indenting dies each mounted upon one of the clamping dies and each having a pin adapted to the slot in its corresponding clamping die, and means acting on said pins for first retracting the indenting dies and then retracting the clamping dies by contact of said pins therewith.

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.