D. P. FITZGERALD.

METAL SPINNING MACHINE.

APPLICATION FILED JUNE 19, 1911.

1,004,763. Patented Oct. 3, 1911.

Fig. 1.

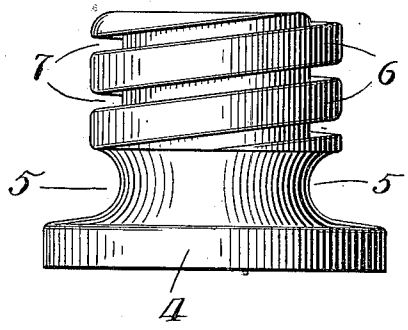


Fig. 2.

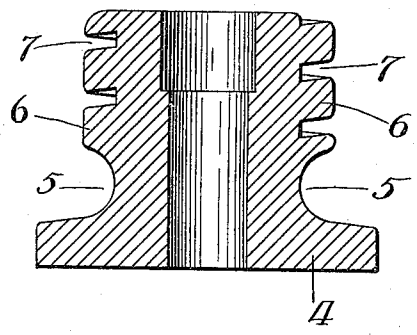
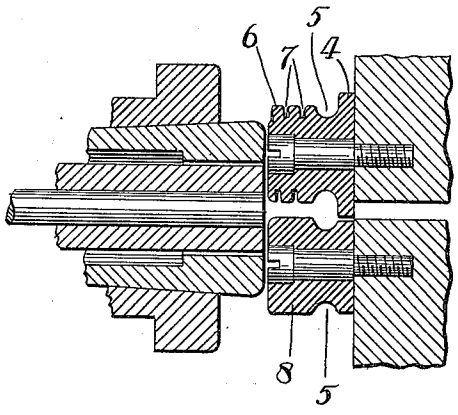


Fig. 3.



INVENTOR

Daniel P. Fitzgerald

WITNESSES

E. F. Randle.

D. P. Fitzgerald Jr.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DANIEL P. FITZGERALD, OF NEWARK, NEW JERSEY.

METAL-SPINNING MACHINE.

1,004,763. Specification of Letters Patent. Patented Oct. 3, 1911.

Application filed June 19, 1911. Serial No. 634,124.

To all whom it may concern:

Be it known that I, DANIEL P. FITZGERALD, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Metal-Spinning Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevational view enlarged of a roller for metal spinning machine, embodying my invention. Fig. 2 is a cross sectional view of the same, and Fig. 3 is a front elevational view of a pair of rollers and such auxiliary parts as are necessary for those skilled in the art to understand the present invention.

My invention has relation to the construction and arrangement of a roller for use in machines, designed to reduce or form, by a spinning operation, a cup-shaped blank into the required article, such, for instance, as a collar-button, cartridge or the like.

As is well known in the art, in machines of this character, a roller or pair of rollers were used to spin down the blank in one or several operations.

In such machines as heretofore constructed the pressure of the rollers upon the blank, during the spinning operation, has been in one direction only, namely at right angles to the longitudinal axis of the blank. The successful manufacture of many of the articles produced by any spinning process, has depended very largely upon the skill of the operator—the human factor being of prime importance. Efforts to substitute the machine for manual labor have been only partially successful and applicable principally to small articles made from the baser and more ductile metals.

In hand spinning, the blank is revolved by means of a chuck and its interior is supported by a core or mandrel. The tool in the hand of the operator was applied to the blank so as to press in two directions upon said blank, namely at right angles to the longitudinal axis of the blank and parallel with said axis. By reason of this difference between hand and machine manipulation of the blank, it has been heretofore deemed impossible to spin or draw down, in a machine, blanks of relatively pure ductile metal of variable fineness, known commonly as gold, silver or the like.

The object of my present invention is to provide in a machine for spinning metal, a roller or plurality of rollers whereby in the spinning of the blank, the forming roller or rollers exert pressure upon the blank in two directions as in the manual operation, that is to say,—the roller not only compresses the metal blank in a direction at right angles to the longitudinal axis of the blank, but also draws out the metal, with a burnishing operation, in a direction parallel with said axis. I have thus broadened the field of operations and by the use of one or more rolls of a novel and special form of construction and operated in pairs or otherwise as circumstances may require, permit of the manufacture of articles from metals heretofore deemed unavailable because of a less degree of ductility than that of those metals now generally used.

Referring now to the drawings, 4 represents the base of one of the rollers; 5 the neck, which, as the rollers revolve, forms the head of the collar button or similar article; and 6 represents the body designed to form or spin the stem or post of the article. The periphery of the body portion 6 of the roller is provided with a spiral thread 7, all the edges of which are slightly rounded off. This spiral groove 7 is designed, during the spinning operation, to "take" into the metal blank and to force the metal in a direction parallel with the longitudinal axis of the blank. The "take" of the spirally formed body 6 of the roller is only sufficient to properly burnish the blank during the spinning operation.

As shown at Figs. 1 and 2 of the drawings, the groove 7 is helical and preferably spaced so that there are eight threads or turns to the inch. In Fig. 3 of the drawings the spiral groove is similarly wound. It may be readily understood that the groove 7 may vary according to the shape of the stem of the article to be formed, and that the number of turns to the inch of the groove 7 may likewise vary from one to any desired number. A convenient method of preparing these rolls is by cutting a screw with the thread of proper form and of any desired pitch, either regular or variable and with either single or multiple thread. Again, in the pair of rollers illustrated in Fig. 3, but one roller may be spirally grooved, the other roller having a plane body 8. Or if desired, both rollers may be grooved according to the work to be done.

In the operation, when the rollers are

forced down upon the blank, the peripheries of the rollers force the blank inward toward the longitudinal axis. The rotation of the rollers, while thus forcing the wall of the blank inward, will also draw said wall in a direction parallel with said longitudinal axis with a burnishing operation.

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

1. In a machine for spinning metal, a roller having on its periphery a means for drawing the metal of the blank in a direction parallel to the longitudinal axis of said blank.

2. In a machine of the character described, a roller having a plane base and neck portion adapted to compress the blank in a direction at right angles to the longitudinal axis of the blank and a spirally grooved body portion adapted to both compress the blank and to draw the same in a direction parallel to the longitudinal axis of the blank.

3. In a machine of the character described, a roller having a base, neck and body portion, the periphery of said base and neck being plane and the body portion being spirally grooved, substantially as described.

4. In a machine of the character described, a means comprising a plurality of rollers, adapted to compress the blank in a direction at right angles to the longitudinal axis of the blank and to simultaneously draw the blank in a direction parallel to its longitudinal axis.

DANIEL P. FITZGERALD.

Witnesses:

AUGUST ROEMMELE,

D. P. FITZ GERALD, JR.