

Z. T. FURBISH.

APPARATUS FOR MAKING RIBBED SLEEVES OR WHEELS.

(Application filed Aug. 27, 1898.)

(No Model.)

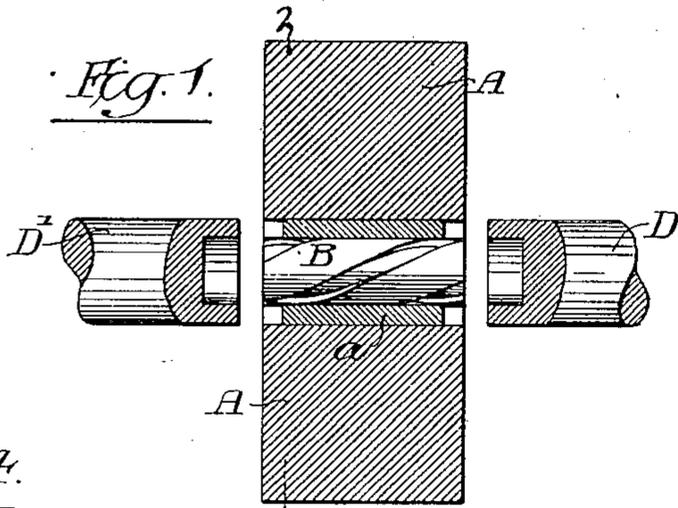


Fig. 4.

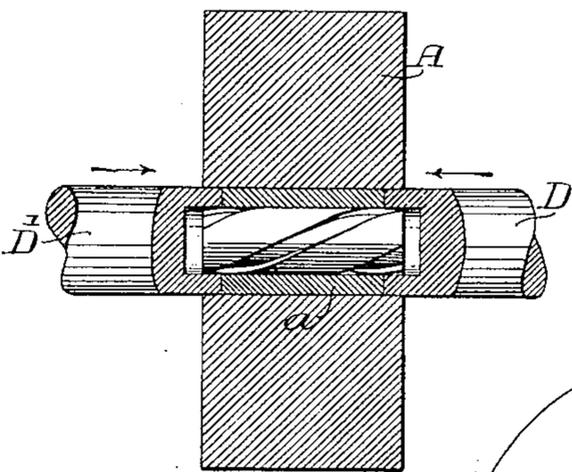


Fig. 5.

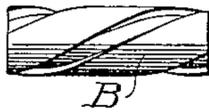


Fig. 5.

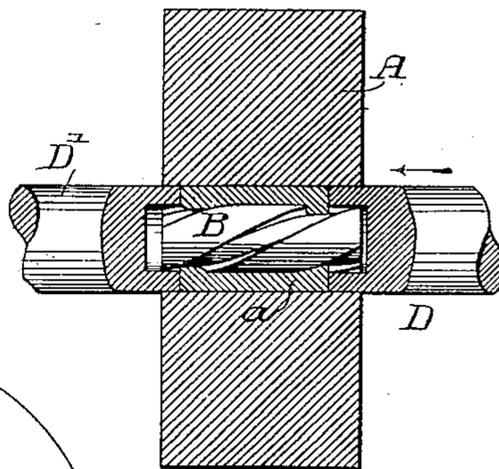


Fig. 2.

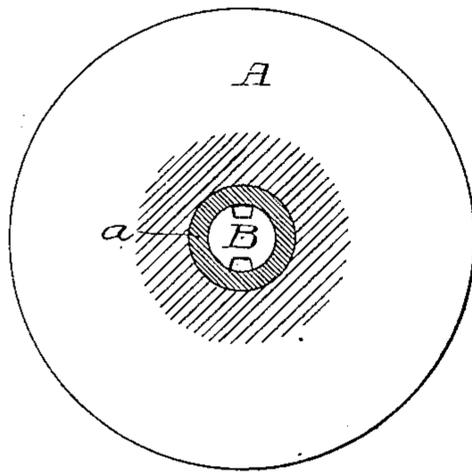


Fig. 6.

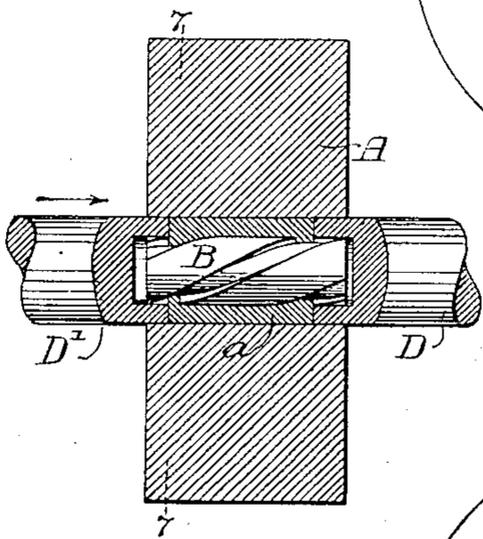
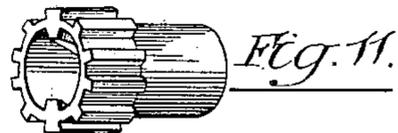
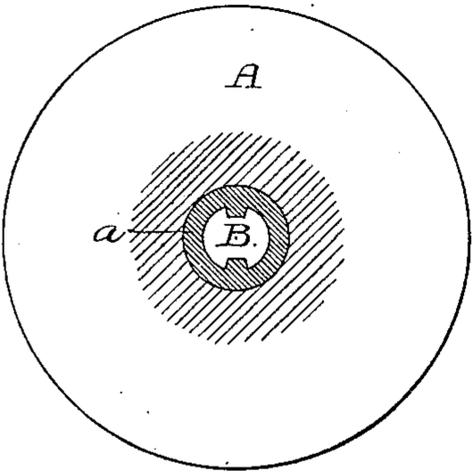


Fig. 7.



Witnesses:-

Frank M. Graham.

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by his Attorneys:-

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UNITED STATES PATENT OFFICE.

ZACHRY T. FURBISH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE NORTH BROTHERS MANUFACTURING COMPANY, OF SAME PLACE.

APPARATUS FOR MAKING RIBBED SLEEVES OR WHEELS.

SPECIFICATION forming part of Letters Patent No. 659,522, dated October 9, 1900.

Application filed August 27, 1898. Serial No. 689,694. (No model.)

To all whom it may concern:

Be it known that I, ZACHRY T. FURBISH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Apparatus for Making Ribbed Sleeves or Wheels, of which the following is a specification.

The object of my invention is to rapidly and accurately manufacture articles of tubular form having internal ribs or splines formed thereon, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a sectional view showing the first step of my improved method of making sleeves with internal ribs. Fig. 2 is a section on the line 2 2, Fig. 1. Fig. 3 is a view of the spiral mandrel. Figs. 4, 5, and 6 are views showing different steps of the method. Fig. 7 is a section on the line 7 7, Fig. 6. Fig. 8 is a
20 sectional view of the blank. Fig. 9 is a sectional view showing the blank pressed to form the internal ribs, and Figs. 10 and 11 are views of a finished ratchet-wheel for a spiral ratchet drill or screw-driver.

25 In the manufacture of ratchet-wheels for spiral ratchet screw-drivers or drills it is essential that the spiral splines or internal ribs of the ratchet-wheel which travel in the spiral grooves of the stem shall be made accurately and of sufficient strength to withstand the pressure exerted upon the tool. To form these ribs by casting is not satisfactory. By my improved method I can form the ribs cheaply and rapidly. At the same time they
35 will accurately fit the spiral stem and owing to the fact that the metal forming the ribs is pressed from the tube and condensed the metal is toughened and is much finer and the spline or rib is much stronger than when
40 the spline is cast in the wheel.

Referring to the drawings, A is a die adapted to fit a power-press.

B is a mandrel having two spiral grooves therein in the present instance.

45 D D' are two plungers adapted to snugly fit in the opening of the die, and each plunger is recessed to fit over the mandrel. The plungers D D' are mounted on suitable heads operated by the mechanism of the power-press.
50 (Not shown.) Any suitable press may be used.

a is the blank—in the present instance a short section of brass tubing, Fig. 8. This blank is driven into the die A, and the mandrel is preferably driven into the blank so as to insure a snug fit.

In making heavy splines or ribs on comparatively-long tubes the two plungers D D' are first moved into contact with the ends of the blank, Fig. 4. The plunger D is then forced forward, while the plunger D' remains
60 stationary, Fig. 5; thus forcing the majority of the metal of the blank into the spiral groove of the mandrel. The other plunger D' is then forced against the blank, while the plunger D remains stationary, Fig. 6, com-
65 pleting the formation of the ribs and making a rib that will accurately fit the grooves in the mandrel, as shown in Fig. 9. The finished blank is shown in Fig. 9, and this blank can be turned down and ratchet-teeth cut
70 therein, if necessary, as shown in Figs. 10 and 11.

It will be understood that other than spiral ribs may be formed on the interior of the tube; but I have shown the spiral form, as it is especially adapted for use in the manufacture of splined nuts for ratchet-tools.

I claim as my invention—

1. The combination of a die, a grooved mandrel, the mandrel and die being so proportioned that the tube to be acted upon can be inserted between the two, with plungers adapted to act on each end of the tube and compress the same, the metal displaced by the compression entering the groove in the
80 mandrel, substantially as described.

2. The combination in a die adapted to receive a tubular blank, a mandrel having a groove therein adapted to be mounted in the blank, two plungers adapted to act on the
90 ends of the blank and compress it longitudinally, with means for first moving one plunger to displace a portion of the tube and then moving the other plunger to complete the displacement, substantially as described.

3. The combination of a die adapted to receive a tubular blank, a mandrel having a spiral groove therein adapted to the tubular blank within the die, two annular plungers adapted to press against the ends of the tu-
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bular blank, with means for moving one
plunger while the other is stationary so as to
partially form a spiral rib on the interior of
the blank and then moving the other plunger
5 while the first-mentioned plunger is station-
ary so as to complete the formation of the rib,
substantially as described.

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

ZACHRY T. FURBISH.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.