A. HAUSER AND M. T. LOTHROP.

ROTARY STAMPING DEVICE.

APPLICATION FILED JAN. 13, 1922.

1,429,944. Patented Sept. 26, 1922.

Fig. 1.

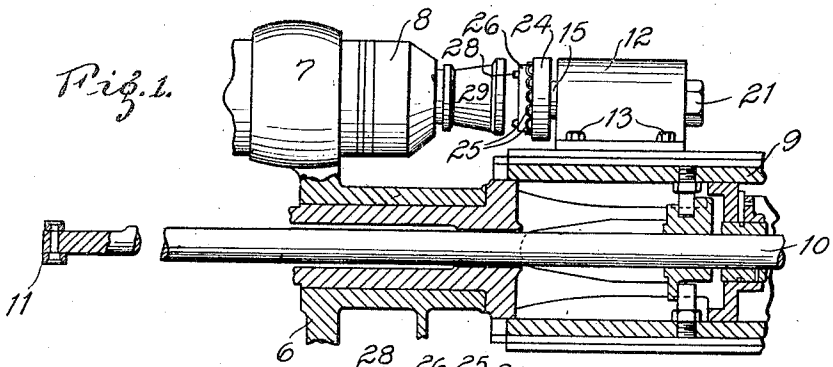


Fig. 2.

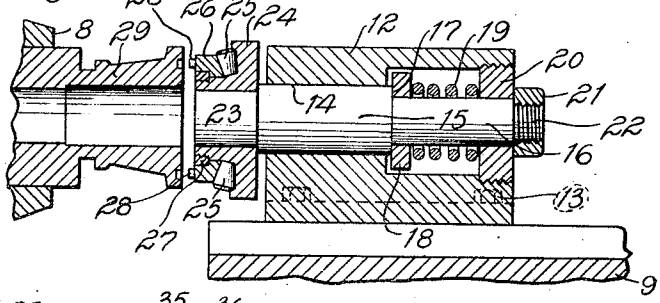


Fig. 3.

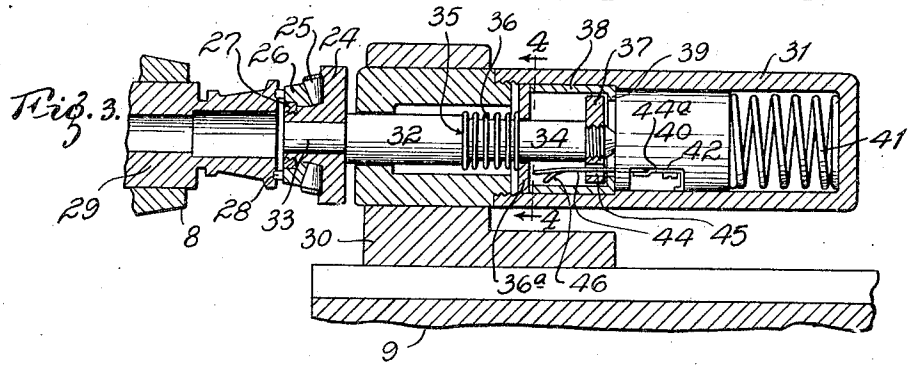


Fig. 4.

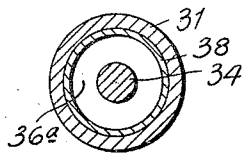
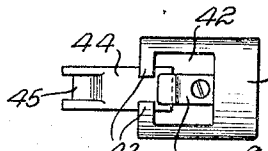


Fig. 5.



Inventors:
Alois Hauser,
and M. T. Lothrop,
by Cameron & Cameron,
their Attorneys

Patented Sept. 26, 1922.

1,429,944

UNITED STATES PATENT OFFICE.

ALOIS HAUSER AND MARCUS T. LOTHROP, OF CANTON, OHIO, ASSIGNORS TO THE TIMKEN ROLLER BEARING COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

ROTARY STAMPING DEVICE.

Application filed January 13, 1922. Serial No. 528,924.

To all whom it may concern:

Be it known that we, ALOIS HAUSER and MARCUS T. LOTHROP, citizens of the United States, and residents of the city of Canton, county of Stark, and State of Ohio, have invented a new and useful Improvement in Rotary Stamping Devices, of which the following is the specification.

This invention relates to stamping devices for impressing a mark of identification upon an article of manufacture, such for instance as the inner and outer bearing members of roller bearings. One of the principal objects of the present invention is to impress a mark in the surface of an article while it is still rotating on the shaft on which it is made. Another object is to produce a simple and efficient stamping device which can be readily attached to lathes of the ordinary type and which can be engaged with or disengaged from the work at proper time intervals by the operating parts of the lathe. Another object is to provide means for engaging the work with a gradually increasing pressure. Another object is to provide means for imparting a sudden pressure to the stamp after its engagement with the work. Another object is to rotatably support the stamping device, whereby said device upon engaging the work is free to rotate therewith, thereby preventing distortion of the marks. The invention consists principally in rotatably supporting the stamp whereby the same is free to rotate with the work while in engagement therewith; it also consists in means for gradually forcing the stamp into engagement with the work; it also consists in means for suddenly forcing the stamp into the work after the same has been brought into contact therewith; and it also consists in the combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a fragmentary side view, partly in vertical section, of a portion of a lathe, showing the work mounted in the work-holding spindle and a stamping device embodying our invention secured to the main tool-slide of the lathe;

Fig. 2 is an enlarged vertical central longitudinal section through the work-spindle stamping device and main tool-slide;

Fig. 3 is a section similar to Fig. 2 showing a modified form of stamping actuating device;

Fig. 4 is a vertical cross-section on the line 4—4 in Fig. 3; and

Fig. 5 is a detail bottom plan view of the hammer-plunger shown in Fig. 3.

Referring to Fig. 1 of the accompanying drawings, a stamping device embodying our invention is shown in connection with a single-spindle automatic turret lathe comprising a suitable supporting frame 6 having a bearing 7 in which is journaled a work-supporting spindle 8. The lathe is provided with a main tool slide 9 which is movable to and from the work spindle 8 by means of a cam rod 10. The cam rod is provided at one end with a cam roller 11 adapted to fit the cam groove of a drum (not shown), whereby the cam rod 10 is given a longitudinal reciprocating motion.

The stamping device shown in Figs. 1 and 2 of the drawings comprises a supporting casing or bracket 12, which is removably secured to the slide 9 of the lathe by means of bolts 13. Journaled in the reduced forward end of a bore 14, which extends horizontally through the supporting bracket 12 in axial alinement with the work spindle 8, is a plunger rod 15. The plunger rod projects beyond the front end of the supporting bracket 12 and has a reduced rear end portion 16, which forms an annular shoulder 17 at a point located substantially midway of the length of said plunger rod. Sleeved on the reduced portion 16 of the plunger rod 15 is a washer 18 which is held in engagement with the shoulder 16 by means of a coil spring 19 that surrounds the reduced portion 16 of said plunger rod. The rear portion of the bore in the bracket member 12 is enlarged to accommodate the bearing washer 18 and coil spring 19, and said enlarged portion is closed by means of an externally threaded disk or washer 20. The washer 20 has a central circular opening extending

therethrough, through which projects the reduced rear end portion 16 of the plunger rod 15. Forward movement plunger rod is limited by means of a nut 21, which is threaded on a reduced threaded end 22 of the plunger rod and bears against the annular washer or closure 20. The plunger rod is normally held in its forward position by means of the spring 19 which bears at one end against the washer 18 and at the other end against the bore closure 20.

Mounted on a reduced outer end portion 23 of the plunger rod 15 is a stamp supporting member or ring 24 of angular section comprising a central hub portion and a radially flanged portion which bears against the shoulder formed by the reduced forward end portion 23 of the plunger rod 15. The front face of the radial flange of the stamp supporting member 24 is shaped to form a circular raceway for a series of conical or tapered bearing rollers 25. Sleeved on the forwardly projecting hub portion of the member 24 is a circular stamp ring 26, whose inner face is beveled to conform to the taper of the bearing rollers 25. The ring 26 is held in position by means of an internally threaded lock ring 27, which is threaded on the hub portion of the member 24 and fits within an annular recess formed in the inner surface of the stamp ring and bears against the annular shoulder formed by said recess. The front face of the stamp ring is provided with suitable lugs or projections 28 which form the stamping elements. In the drawings, the stock, such for instance as a cylindrical tube whose outer end has been shaped by means of suitable forming tools to form an inner bearing cone 29 for a tapered roller bearing, is shown mounted in the work spindle 8, such cone being shown completed, but prior to its removal from the stock by a suitable cut-off tool.

The operation of the stamping device shown in Figs. 1 and 2 is as follows: The forward movement of the slide 9 carries the stamping device towards the work and causes the marking lugs 28 to be brought into contact with the end of said work. Further movement of this direction causes the bearing block 12 to move forward independently of the plunger and compress the spring 19 between the bore closure 20 and the washer 18, whereby the pressure of said spring on the plunger rod is gradually increased and initial imprint made by the marking lugs is gradually deepened. By the arrangement described, the stamp is applied to the rotating work with a gradually increasing pressure and is free to rotate with said work, thereby preventing distortion of the impressions formed therein. With this arrangement, the stamp can be made to impress the work while the work is still rotating with the spindle instead of waiting for the rotation to stop.

The modified stamp device shown in Figs. 3 to 5, inclusive, comprises a supporting bracket 30, which is bolted or otherwise secured to the reciprocating slide 9 of the lathe and is provided with an upstanding lug having a circular bore extending horizontally therethrough in axial alinement with the work spindle 8. Mounted in the bore of the supporting bracket 30 is a two piece tubular casing 31. Slidably mounted in a circular bore in a forward end of the casing 31 is a plunger rod 32, whose projecting outer end portion is reduced as at 33 to receive the hereinbefore described stamp supporting member 24 and the parts 25, 26, 27 and 28 associated therewith. The plunger rod 32 projects rearwardly into the casing 31 and has a reduced portion 34, forming a shoulder 35.

A coil spring 36 surrounds the reduced portion of the plunger rod and abuts at one end against the shoulder 35 and at the other end against a washer 36^a, which is sleeved on said reduced portion. A circular head 37 is threaded on to the rear end of the plunger rod and works in a cylindrical shell 38 located within the hollow casing 31 and arranged between a shouldered portion thereof and the washer 36^a. The rear end of the cylindrical shell 38 is provided with an inwardly extending annular flange 39. A cylindrical plunger or ram 40 is located within the casing 31 and is held with its forward end abutting against the adjacent end of the cylindrical sleeve 37 by means of a heavy coil spring 41 arranged between the ram 40 and the rear wall of the casing 31. The plunger or ram 40 is provided on its under side with a transverse channel 42; and the wall between said channel and the forward end of said ram is cut away to form oppositely disposed lugs 43. A flat metal pawl 44 has a narrow throat portion adapted to receive the oppositely disposed lugs 42, that form the front wall of the channel 42. The pawl 44 is held in position by means of a flat spring 44^a, which is secured to the bottom of the channel and laps the adjacent end of said pawl. The pawl 44 extends through a horizontal slot 45 formed in the head 37 of the plunger rod and is provided at its free end with a beveled tooth 46, which, in the normal position of the parts, bears against the rear face of the said head.

The operation of the stamp actuating device shown in Figs. 3 to 5 is as follows: The marking elements 28 are brought into engagement with the end of the work during the movement of the reciprocating slide 9 in the direction thereof. Continued

movement of the slide in this direction forces the plunger 32 rearwardly against the pressure of the spring 36 into the casing 31, which movement causes the inner end of said rod to force the ram 40 rearwardly against the pressure of the heavy spring 41. This movement continues until the beveled tooth 46 of the pawl 43 engages the flange 39 of the cylindrical sleeve 38 and is disengaged thereby from the plunger head 37, whereupon the ram 40 is released and strikes the inner end of the plunger rod and drives the stamping element deeper into the work. This arrangement is similar to the arrangement shown in Figs. 1 and 2 except that the stamp, after engaging the work with a gradually increasing pressure, is given an additional hammer blow. With the arrangement described, the stamp is perfectly free to rotate with the work and the pressure is applied to the work parallel with the axis thereof. The antifriction members interposed between the stamp and the support therefor reduced the friction between the stamp and its supporting member and permit said stamp to rotate freely when in contact with the work.

Obviously, the hereinbefore described stamping device admits of considerable modification without departing from the invention; therefore, we do not wish to be limited to the exact stamp actuating means shown and described.

What we claim is:

1. A device for impressing a mark in the end of a rotating article, said device comprising a rotatably supported stamp adapted to be forced axially into engagement with the article.

2. A device for impressing a mark in the end of a rotating article while in process of manufacture, said device comprising a rotatably supported stamp, and means for forcing said stamp axially into engagement with the article.

3. A device for impressing a rotating article, said device comprising a rotatably mounted stamp adapted to be forced axially into engagement with the end of the article, and means for imparting a hammer-like blow to said stamp after the same has engaged the article and is rotating therewith.

4. A device for impressing a mark in the end of work while rotating with the stock from which it is made, said device comprising a rotatably supported stamp, means for forcing said stamp axially into engagement with the end of the work, and means for imparting a hammer-like blow to said stamp after its engagement with said work, thereby deepening the initial impression made by said stamp.

5. A device for impressing a mark in a rotating object, said device comprising a work holder, a stamp rotatably mounted concentrically with said holder and means for gradually forcing said stamp longitudinally into engagement with the work.

6. A device for impressing a mark in a rotating object, said device comprising a stamp rotatably mounted concentrically with said object and means yieldably engaging said work with said stamp.

7. A device for impressing a mark in a rotating article, said device comprising a stamp rotatably mounted concentrically with said article, means for forcing said stamp longitudinally into engagement with said article and means for gradually increasing the pressure of said stamp on said article.

8. A device for impressing a mark in the end of a rotating object, said device comprising a rotatably mounted stamp arranged for bodily movement axially of said object, means for gradually increasing the pressure of said stamp on said article, and means for imparting a hammer-like blow to said stamp during said pressure.

9. In a lathe comprising a rotary work spindle and a reciprocating slide movable to and from said work in directions longitudinally thereof, the combination of a rotatable stamping device secured to said slide in axial alinement with said work spindle, said stamping device being adapted to be brought into engagement with the rotating work to mark the end thereof during the movement of said slide towards the work.

10. In a lathe comprising a rotary work spindle, the combination of a reciprocating stamp movable axially of said spindle and adapted to engage the end of work supported therein, said stamp being rotatably mounted whereby said stamp is adapted for rotation with said work when engaged therewith.

11. In a lathe comprising a rotating work spindle and a reciprocating slide movable longitudinally thereof, the combination of a work stamping device rotatably mounted on said slide in axial alinement with said work spindle, said stamping device being adapted to be brought into engagement with the work during the movement of said slide towards the work spindle.

12. In a lathe comprising a rotating work spindle and a reciprocating slide movable longitudinally thereof, the combination of a work stamping device rotatably mounted on said slide in axial alinement with said work spindle, said stamping device being adapted to be brought into yielding engagement with the work during the movement of said slide in the direction of said spindle, and means for gradually increasing the pressure of said stamping device upon said work

13. In a lathe comprising a rotating work spindle and a reciprocating slide movable longitudinally thereof, the combination of a work stamping device rotatably mounted

on said slide in axial alinement with said work spindle, said stamping device being adapted to be brought into yielding engagement with the work during the movement of said slide in the direction of said spindle, a means for gradually increasing the pressure of said stamping device upon said work and means for terminating such pressure with a hammer-like blow on said stamping device.

Signed at Canton, Ohio, this 9th day of January, 1922.

ALOIS HAUSER.
MARCUS T. LOTHROP.