Jan. 6. 1925.

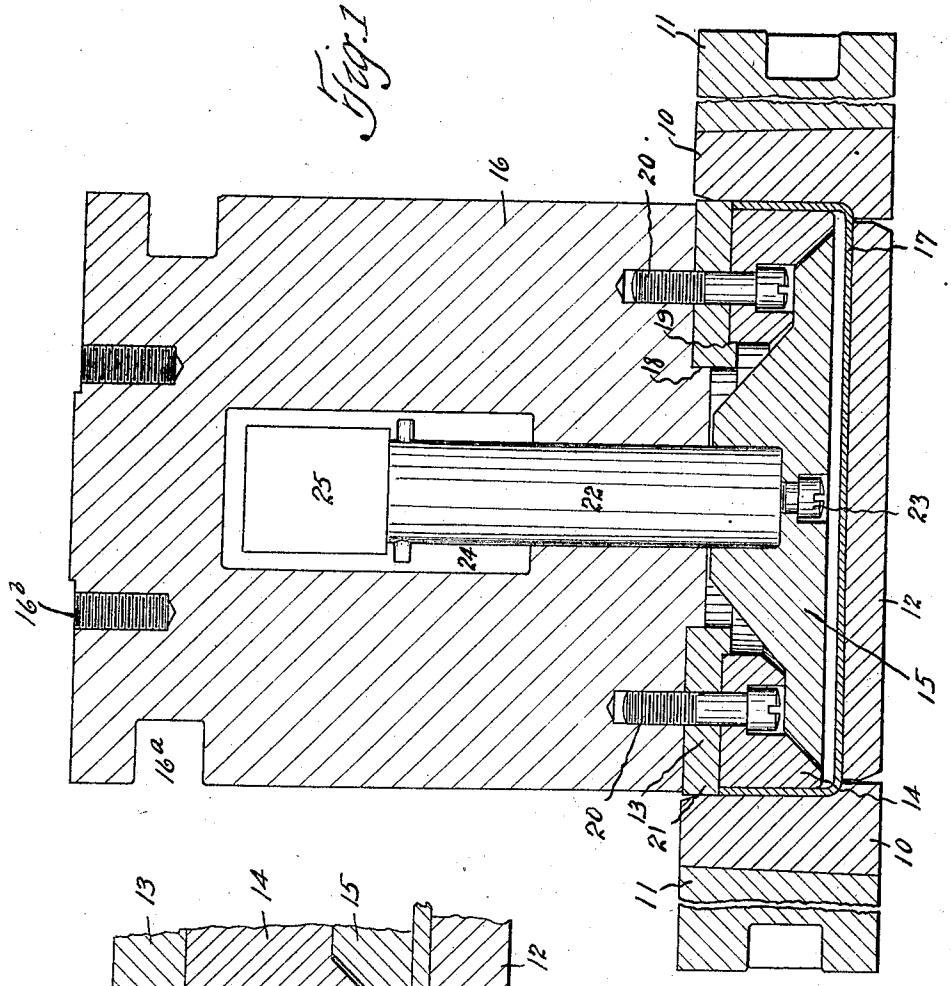
1,522,149

T. A. SINDELAR

APPARATUS FOR TRUING BRAKE DRUMS

Filed Sept. 11, 1920

Fig. 1



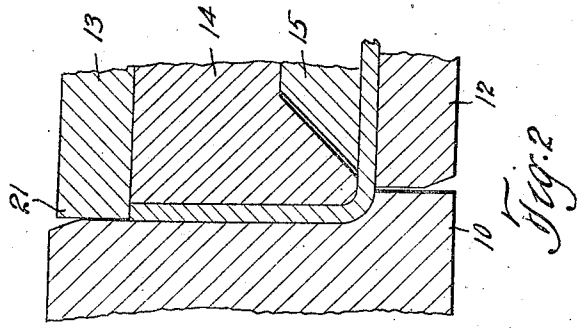


Fig. 2

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR TRUING BRAKE DRUMS.

Application filed September 11, 1920. Serial No. 409,742.

To all whom it may concern:

Be it known that I, THOMAS A. SINDELAR, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Apparatus for Truing Brake Drums, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates generally to punches and dies and more particularly to one intended for use in truing or shaping brake drums.

Sheet metal brake drums are punched up from a single circular disk of sheet metal and it sometimes happens that the drums as thus made are slightly irregular, which irregularity may be in the cylindrical portion or in the flat portion or the edge of the cylindrical portion may not be in a plane transverse to the axis of the drum and in the event of any of these irregularities being present it is desirable to correct them before the sheet metal brake drum is applied as a part of the rear wheel equipment in automobiles.

In employing the method of stamping brake drums briefly stated above, considerable loss is incurred by reason of the fact that often a relatively large percentage of the drums are rendered unfit for use by reason of the fact that they spring out of true or round when removed from the press, due to the unstable molecular conditions or inherent resiliency of the metal.

It is therefore with the idea of providing a simple and efficient apparatus for quickly and easily correcting these irregularities that the present apparatus has been devised, and a still further object is to provide a truing and shaping die and punch of such a character that the trued or corrected brake drum will be automatically ejected from the die and punch at completion of the truing and shaping operation. Another object of the invention is to provide for a more even distribution of the metal in the cylindrical portion of the drum. With these objects in view, the invention consists in the novel features of construction and combination more fully described and pointed out in the claims.

In the drawings forming a part of this specification, Fig. 1 is a vertical sectional view of a punch and die embodying my invention and showing the relative position of the parts at the commencement of the truing and shaping operation; and Fig. 2 is a detail sectional view showing the relative position of the parts at the completion of the operation.

In carrying out my invention I employ a die 10 arranged within die shoes 11 and provided with the usual or any approved type of knockout pad 12 in the bottom thereof. Cooperating with this die is a punch comprising an ironing or compression ring 13, a guiding and shaping ring 14 and a centrally disposed stripper 15 all of which parts constituting the punch are securely connected to the punch holder 16 as more fully explained hereafter. The punch holder 16 to a very large extent is of the conventional type having the annular groove 16^a near the top thereof and the threaded bores 16^b in the upper end thereof for the purpose of effecting the usual connections with the arm or plunger of the press. The sheet metal brake drum 17 is placed within the die 10 and the punch is then forced down into the same for the purpose of truing and shaping the said drum in all its parts.

As before stated the punch embodies as one of its parts an ironing or compressing ring 13, this ring being arranged upon the bottom of the punch holder and contacting at its inner edge against a shoulder 18, and directly beneath the ironing or compressing ring 13 is a guiding and shaping ring 14, the inner edge of this ring 14 contacting with a depending shoulder or rabbet 19 formed upon the ring 13, and bolts or screws 20 passing upwardly through the rings 14 and 13 securely connecting the same to the bottom of the punch holder. The stripper 15 is in the form of a double truncated cone, and the underside of the ring 14 is cut away as shown to accommodate this double truncated cone so that the stripper combined with the rings 14 and 13 will provide a complete punch which is adapted to be inserted and forced into the brake drum, and it will be noted that the ring 13 is slightly greater in diameter than the ring 14 and consequently the projecting portion 21 will engage the edge of the brake drum at the same time that the ring 14 is being forced into the cylindrical portion of the brake drum and when the base of the strip-

per 15 is approaching the flat portion of the drum, and as the punch completes its downward movement the pressure of the ring 13 upon the edge of the brake drum compresses the metal in the cylindrical portion of the drum and effects a redistribution thereof to a limited extent to cause the flange to take a set in its true cylindrical shape and overcome any tendency which the drum might have to spring out of round due to unequal tensions in different portions which are often present in such stampings, so that a perfectly uniform cylindrical portion is provided and also absolutely accurate edges for the brake drum, it being understood that the die and rings are so dimensioned with reference to each other as to effect these desired results, and as the base of the stripper approaches the bottom of the brake drum it will prevent any tendency to buckle or crimp and the ultimate pressure of the stripper upon the bottom of the brake drum will serve to properly flatten and correct any inaccuracies in said bottom that may be present.

The stripper 15 in reality constitutes the bottom of the punch. This stripper 15 is connected to the punch holder through the medium of a guide pin 22 which has its lower end fitting into a central recess produced in the upper face of the stripper, and a screw or bolt 23 is passed upwardly from the bottom of the stripper into the said guide pin effecting the connection between said pin and stripper. The upper end of this guide pin extends into the transverse opening 24 which is usual in punch holders of this type, and extending transversely through said opening is the usual construction of knockout bar 25 with which the upper end of the guide pin 22 contacts when the punch holder and punch is being raised and the continued upward movement of the punch holder causes the pin 22 to be held stationary while the punch as a whole moves upwardly thereby causing a relative movement of the stripper with reference to the punch and forcing a brake drum away from the punch rings in case it should adhere thereto as the punch is withdrawn, the knockout pad 12 serving to eject the same from the die, and the function of the stripper during the upward movement of the punch is to strip the drum from the punch. The ironing or compressing ring accurately shapes the edge of the drum and in connection with the walls of the die and guiding ring effects a uniform distribution of metal in the cylindrical portion of the drum so that after each complete operation of the punch a uniformly accurate and trued brake drum will be produced.

Having thus described my invention, what I claim is:

1. The combination with a die having a knockout pad of a punch holder carrying a compressing ring and a guiding ring at its lower end, and a stripper arranged within and below said compressing and guiding rings, a pin for actuating said stripper, and a fixed bar for engaging said pin.

2. The combination with a die of a punch comprising a compressing ring and a guiding ring, the edge of said compressing ring projecting beyond the edge of the guiding ring and the stripper arranged within and beneath the guiding ring, a guiding pin to which said stripper is connected, a punch holder to which the rings are connected and in which the guiding pin works and a bar with which the upper end of said pin is adapted to contact to effect a movement of the stripper.

In testimony whereof, I hereunto affix my signature.

THOMAS A. SINDELAR.