Feb. 2, 1937. I. COOPERSTEIN 2,069,356

LATHE ATTACHMENT

Filed Dec. 14, 1935

Fig. 1

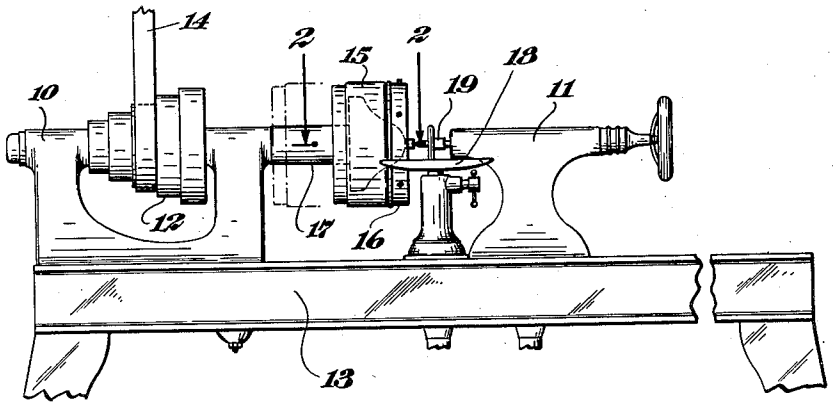


Fig. 2

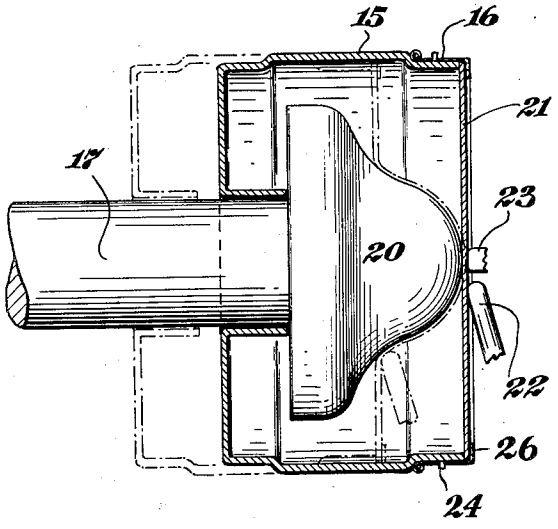
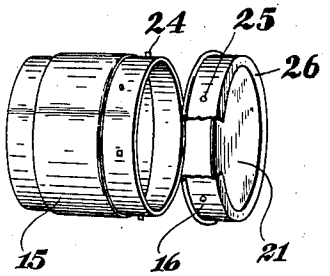


Fig. 3



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Patented Feb. 2, 1937

2,069,356

UNITED STATES PATENT OFFICE

2,069,356

LATHE ATTACHMENT

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Application December 14, 1935, Serial No. 54,402

5 Claims. (Cl. 113—52)

This invention relates to attachments for spinning lathes.

As is well known, there are two great dangers which confront the operator in using spinning lathes in accordance with present day practice; one is the liability of the rotating work blank to fly loose from the lathe, and the other is caused by the presence of irregular and jagged edges on the work blank which appear immediately after the shaping tool is applied to the blank. Accidents due to these dangers frequently cause death, while the loss of one or more fingers is a very common occurrence. Consequently spinning lathes require, for most operations, extremely skilled operators who are highly trained in the use of the shaping tool, and even such skilled operators cannot always avoid injury. In view of these dangers, as well as for other reasons, the shaping of a work blank on a spinning lathe requires greater care on the part of the operator than other types of work on other lathes, with a corresponding increase in the time it takes the operator to complete the work.

The present invention overcomes the foregoing disadvantages, and has for one of its objects to enable unskilled or semi-skilled labor to shape work blanks in spinning lathes with the same degree of skill as highly trained operators. Another object is to enable the working of blanks in spinning lathes with the maximum of safety by making it impossible for the blank to fly loose from the lathe while it is being driven by the shaft of the lathe. A further object of the invention is to reduce the time and cost of the spinning operation whereby blanks may be shaped in a more economical manner.

These objects are achieved, in brief, by providing a unit conprising a frame section and a door section for holding the work blank at its edge or border during the shaping operation. In the preferred embodiment, the unit entirely surrounds the edge of the blank thus preventing the blank from flying loose from the lathe and also safeguarding the fingers of the operator should they for any reason contact the blank during the shaping operation. In this way, even an unskilled operator need have no fear of accident. The unit of the invention enables easy centering and shaping of the blank and thus saves time in the spinning.

A detailed description of the invention follows in conjunction with drawing, wherein Fig. 1 illustrates a side view of the essential features of a spinner lathe equipped with the unit of the invention. Fig. 2 is a cross-sectional view of the unit and forming block along the lines 2—2 of Fig. 1, and Fig. 3 illustrates a perspective view of the frame and door with a portion cut away from the door to show more completely the manner in which the blank rests therein. Like parts throughout the figures are indicated by like reference numerals.

It is to be distinctly understood that the drawing is merely illustrative of the invention and not definitive thereof.

Referring to Fig. 1 there is shown a spinners lathe comprising, in general, a headstock 10 and a tailstock 11 both mounted on a bed 13. A cone pulley 12 driven by a belt 14 is used for driving the shaft 17 of the lathe. This belt may be moved to any one of the five pulleys shown in order to give a desired speed of rotation to the shaft. If desired, of course, the shaft of the lathe may be driven by any other suitable means such as a motor, instead of by belt. Attached to one end of the shaft, preferably by being screwed thereto, is a forming block 20 around which the work blank is shaped to the form of the block.

For holding the metal work blank 21 in position on the lathe there is provided a unit comprised of a frame section 15 and a door part 16 which when fastened together are slidably supported on shaft 17. The frame section or part 15 is a continuous enclosure substantially surrounding the forming block 20 except at the end to which the door part 16 is secured. Frame 15 is provided with pins 24 for insertion in holes 25 in door part 16 for fastening thereto. If desired, door 16 may be hinged to the frame 15. Both the frame and door are thus rotatable with rotation of shaft 17, and movable along the length of the shaft as the blank 21 is shaped to the form of forming block 20 by means of shaping tool 22 which is adapted to rest on tool support 18. A buffer 23, made of felt or other material, is placed between the blank 21 and the centering element 19 of tailstock 11 to prevent damage to the work blank as it is rotated and shaped to the form of the block 20.

The broken lines of Figs. 1 and 2 show the position which the frame 15, door 16 and blank 21 take during the shaping of the blank. It will be noted that the metal blank stretches and bends to the shape of the block while its border is still held firmly by the unit. This stretching of the work blank is characteristic of such metals as silver, gold, pewter, copper, aluminum, tin, brass and steel, to which the invention is especially

applicable, although it will be appreciated that other harder metals may also be used.

Fig. 3 shows a portion of the door 16 broken away to illustrate how the turned in lip 26 which overhangs the outer surface and extends entirely around the border of the blank prevents the blank from detaching itself from the door. When the parts 15 and 16 are fastened together, as shown in Figs. 1 and 2, the blank 21 is firmly held between one end portion of frame 15 and the turned in lip 26.

In the operation of the lathe, the frame 15 is mounted on the shaft after which the forming block is attached to the end of the shaft and the blank then placed in door 16 which is fastened to the frame 15. The shaft is caused to rotate and tailstock 11 brought up to the frame to aid in properly positioning the blank by means of centering element 19, first insuring that buffer 23 is in place. After centering the blank, shaping tool 22 is thrust against the blank and the latter shaped to the form of the block.

It is to be understood that the invention is not limited to the precise arrangements shown in the drawing since various modifications may be made without departing from the spirit and scope of the invention. For example, it is possible to eliminate door part 16 entirely and provide means to securely fasten the work blank directly to frame 15. This may be accomplished by providing a more or less continuous shoulder in the inner part of 15, placing the blank on this shoulder and fastening the blank firmly to the frame by means of a plurality of fingers or other fastening elements around the periphery of the frame. In this last example, a fastening element in the form of a turned lip simulating in appearance door 16 may be used in place of fingers. Another modification is to use a unit which is not supported by the lathe shaft but which may be movably mounted on the bed 13, like a carriage, between the head and tail stocks. Such a unit may be vertically adjustable, in suitable fashion, to provide the proper centering for the blank with respect to the forming block on the shaft, and should be rotatable.

By the term "border" as used in the specification and appended claims is meant that surface of the blank which is adjacent the edge thereof and commonly designated the margin.

What is claimed is:

1. The combination with a spinning lathe having a rotatable shaft, a forming block on said shaft, a frame substantially surrounding said forming block and having at one end thereof means for slidably supporting the same on said shaft, a door part adapted to be secured to the opposite end of said frame, means for securing said door part to said last frame end, said door part and said last frame end constituting means for securing a flat blank therebetween, the end of the frame adapted to receive said door part being in a plane perpendicular to the axis of said shaft.

2. The combination with a spinning lathe having a rotatable shaft, a forming block on said shaft, a frame substantially surrounding said forming block and having at one end thereof means for slidably supporting the same on said shaft, a door part adapted to be secured to the opposite end of said frame, means for securing said door part to said last frame end, said door part having a lip, said lip and last frame end constituting means for securing a flat blank therebetween, said lip being arranged to extend entirely around the border of said blank, the end of the frame adapted to receive said door part being in a plane perpendicular to the axis of said shaft.

3. The combination with a spinning lathe having a rotatable shaft, a forming block on said shaft, a frame substantially surrounding said forming block and having at one end thereof and integral therewith a turned in cylindrical portion for slidably supporting the same on said shaft, a door part adapted to be secured to the opposite end of said frame, means for securing said door part to said last frame end, said door part and last frame end constituting means for securing a flat blank therebetween, the end of the frame adapted to receive said door part being in a plane perpendicular to the axis of said shaft.

4. The combination with a spinning lathe having a rotatable shaft, a forming block on said shaft, a frame in the form of a box substantially surrounding said block and having at one end thereof integral therewith a turned in cylindrical portion adapted to slidably rest on said shaft for supporting said frame, the other end of said frame being in a plane perpendicular to the axis of said shaft, and means cooperating with said last end of said frame for securing a flat blank therebetween.

5. The combination with a spinning lathe having a rotatable shaft, a forming block on said shaft, a hollow box frame slidably supported with respect to said shaft and block and adapted to be moved over the length of said forming block, said frame having open ends, one of said ends having means cooperating therewith for securing therebetween a flat blank, said one end being in a plane perpendicular to the axis of said shaft.

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