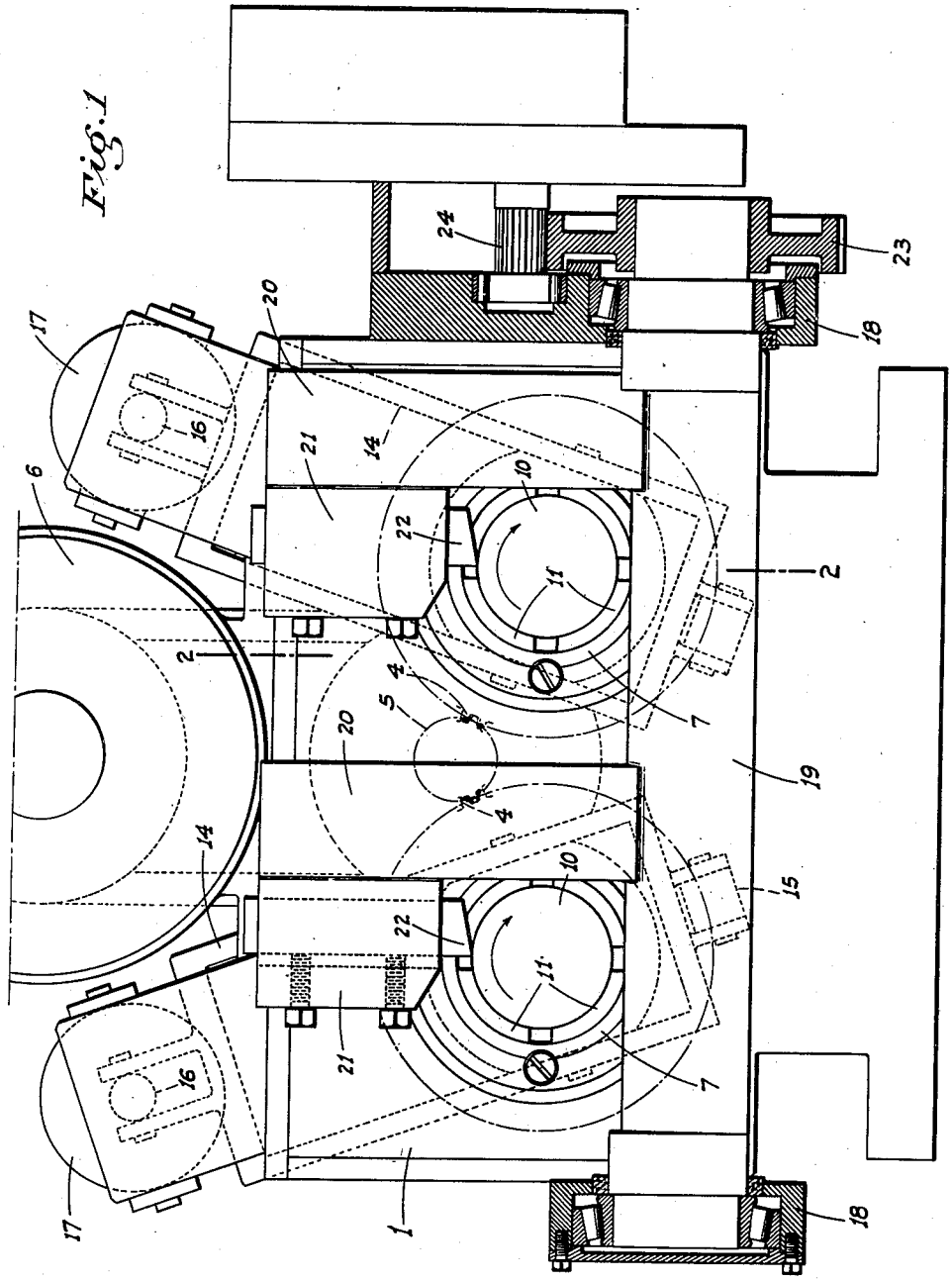
Oct. 10, 1944. R. G. LE TOURNEAU 2,360,001

SHELL NOSING LATHE

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Fig. 1



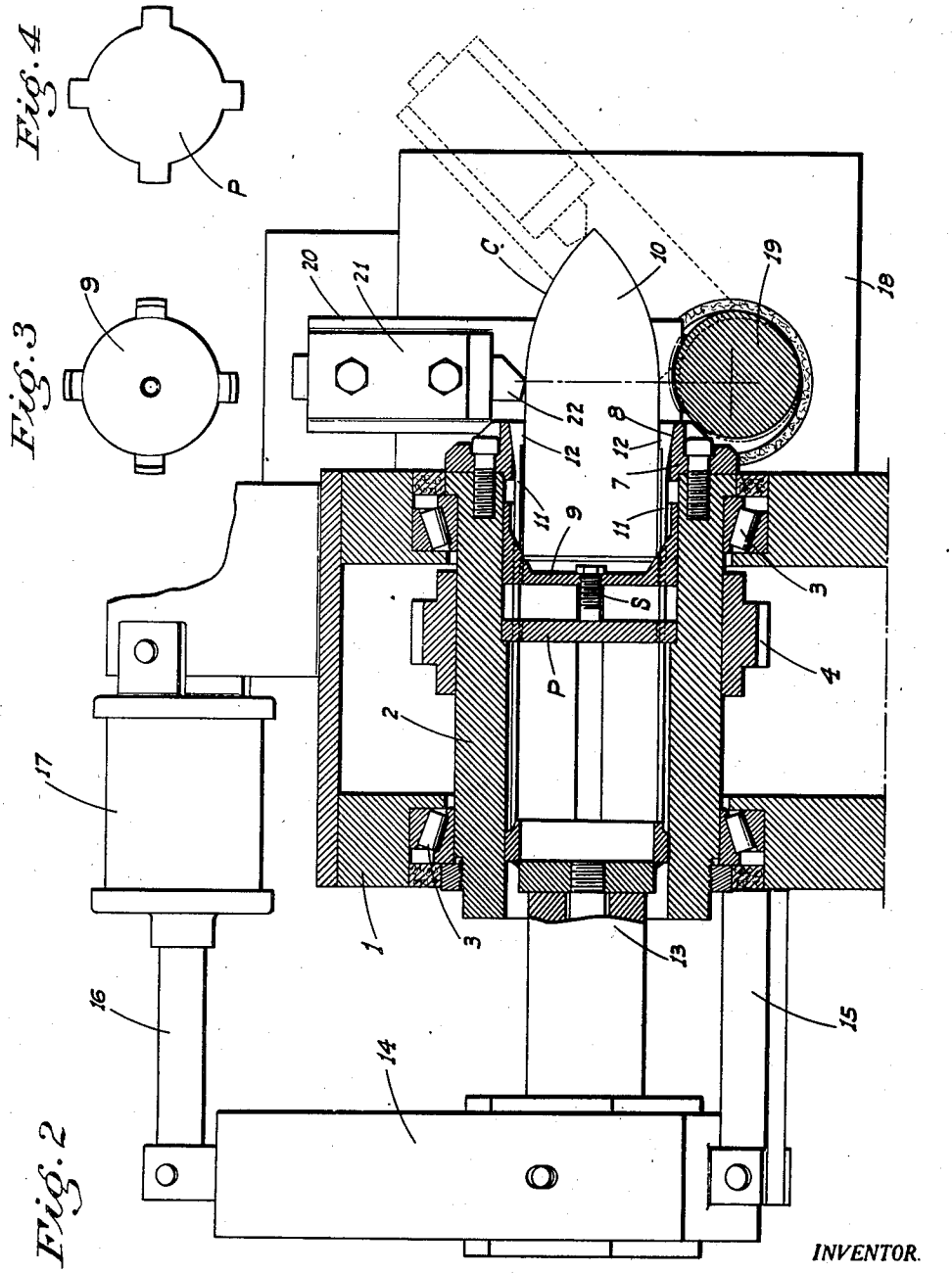
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Patented Oct. 10, 1944

2,360,001

UNITED STATES PATENT OFFICE

2,360,001

SHELL NOSING LATHE

Robert G. Le Tourneau, Peoria, Ill., assignor to R. G. Le Tourneau, Inc., Stockton, Calif., a corporation

Application July 11, 1942, Serial No. 450,558

1 Claim. (Cl. 82—40)

This invention relates to lathes, my main object being to provide a machine for finishing the rounded noses on ordnance shells, the machine being arranged to operate on two shells simultaneously, or which can be made to handle more if desired.

A further object is to provide a power actuated means for gripping each shell and holding it in proper operating position while it is being rotated.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a front elevation of the improved lathe, partly in section.

Figure 2 is a longitudinal section substantially on the line 2—2 of Fig. 1.

Figure 3 is a face view of the shell seating cup detached.

Figure 4 is a face view of the cup stop plate detached.

Referring now more particularly to the characters of reference on the drawings, the lathe comprises a headstock housing 1 having a pair of transversely spaced tubular spindles 2 journaled in the ends of the housing, as at 3. These spindles have gears 4 thereon within the housing and engaged by a driven pinion, this pinion being driven from an electric motor 6 mounted on top of the housing 1 in the same manner as shown in my co-pending application, Serial No. 441,289 filed May 1, 1942.

A collar 7 having an outwardly flaring bore 8 is removably secured on the forward end of the spindle, a seating cup or disc 9 for the base of the shell 10 to be nosed, being slidably disposed in the spindle rearwardly of the collar. The bore of the spindle, as well as that of the collar, are of course greater than the diameter of the shell.

Seated against movement in the spindle back of the cup 9 is a stop plate P; the cup being maintained in normally fixed but adjustably spaced relation to the plate by an adjustment screw S mounted in the cup.

Projecting rearwardly from ahead of the cup 9 are spring fingers 11 formed with jaws 12 at their forward end adapted to grip the shell about the outside and back of the nose portion, and being tapered on their outer sides to match the flare of the bore 8, as shown. The fingers are of curved form in section, concentric with the axis of the spindle, and the cup 9 and plate P are cut away peripherally as shown in Figs. 3 and 4 to clear and allow of sliding movement of the fingers relative thereto. The fingers extend rearwardly from the plate P for some distance, and at their rear end are connected to a plunger unit 13. This unit is slidable in the spindle and connected at its rear end, as shown in said copending application for patent, Serial No. 441,289, to a lever 14 which extends diametrally of the spindle and which straddles the plunger unit, as shown in Fig. 1. At its lower end each lever is anchored in connection with the housing 1, as at 15, and at its upper end is connected to the piston rod 16 of an air cylinder 17 swivelly supported from the top of the housing. The cylinders are spaced further apart than the spindles so as to leave ample space for the drive motor 6 therebetween, as shown in Fig. 1.

When the plunger is advanced, the fingers naturally spread and allow a shell to be inserted so that its base seats in cup 9. If the plunger and fingers are then pulled back, the taper of the fingers, engaging the taper bore of collar 7, will cause the jaws 12 to close about and firmly grip the shell. The shell then projects a predetermined distance from the collar.

The purpose of adjustably mounting the shell seating cup is to compensate for wear of the fingers, etc., as well as for any possible initial variation in machining operations on the lathe itself.

Turnably mounted in bosses 18 projecting horizontally from the housing at the sides and below the spindles is a transverse tool mounting bar or shaft 19 having a pair of upstanding radial arms 20 disposed to the sides of the shells. Each arm carries a socket 21 overhanging the corresponding shell to support a detachable tool 22. The axis of the shaft 19 in a vertical plane is disposed so as to intersect the shell at the point of tangency of the straight side portion of the shell with the curvature C of the nose portion; while the radial distance from said axis to the point of the tool is the same as the desired radius of curvature of said nose portion. An oscillating movement of the shaft, while the shell is rotating about the axis, will therefore mill the nose portion to the proper shape and size, the arc of movement of the point of the tool ultimately passing across the axis of the shell, as will be evident. The shaft 19 is thus oscillated through the necessary arc by any suit-

able power mechanism which includes a gear 23 on one end of the shaft, engaged by a driven reversing pinion 24.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

In a lathe, a work holding device comprising a housing, a spindle rotatable in the housing and having an enlarged axial bore at one end thereof, a separate stop plate removably mounted in such bore and normally seated against the bottom thereof, a separate work seating disc slidably mounted in said bore, an adjustment screw carried by the disc and adapted to abut against the stop plate, a separate collar removably secured to the spindle about the outer end of the bore, and having an inner-tapered surface, tapered jaws co-operating with the tapered surface of the collar to form a work grip, and means connected to the jaws to slide them relative to the tapered surface of the collar.

ROBERT G. LE TOURNEAU.