

Sept. 19, 1939.

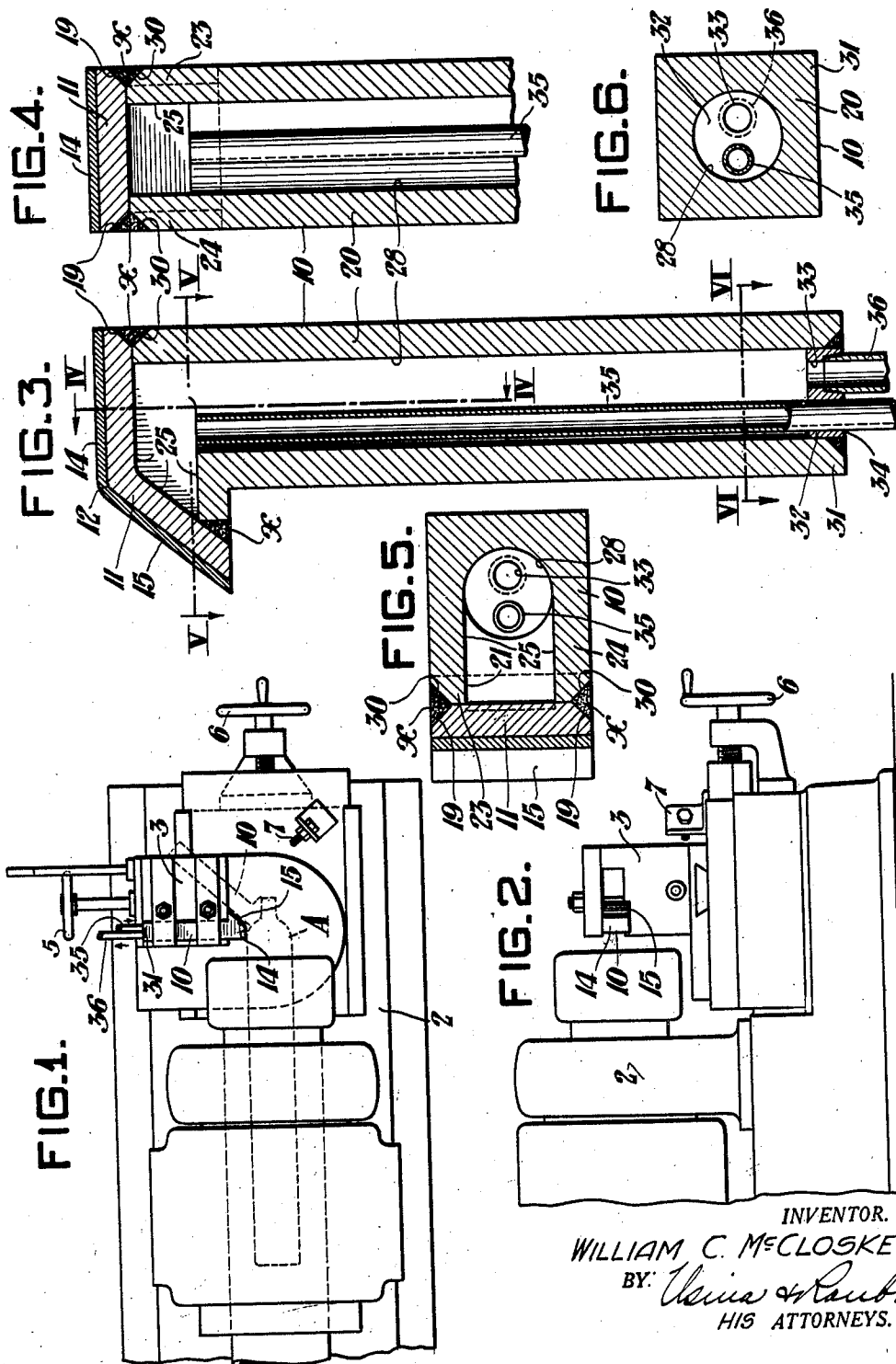
W. C. McCLOSKEY

2,173,759

SPINNING TOOL

Filed April 8, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 7.

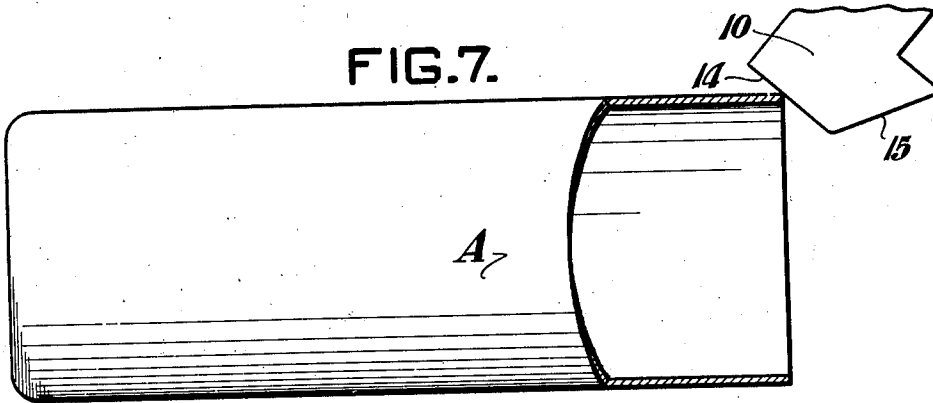


FIG. 8.

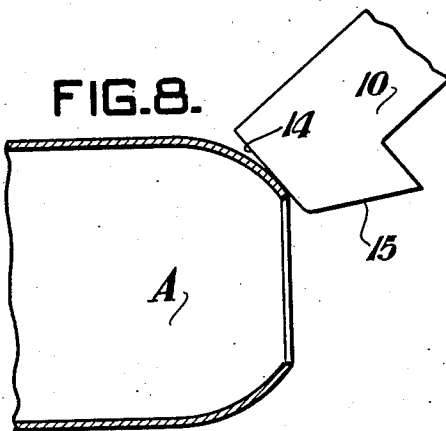


FIG. 9.

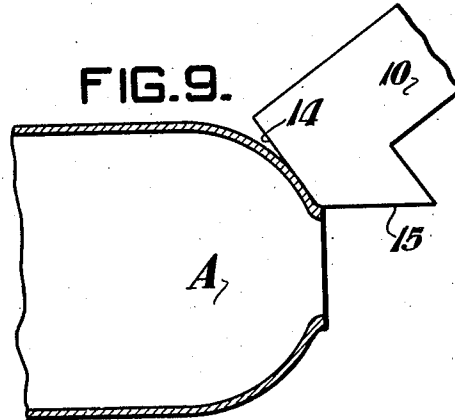


FIG. 10.

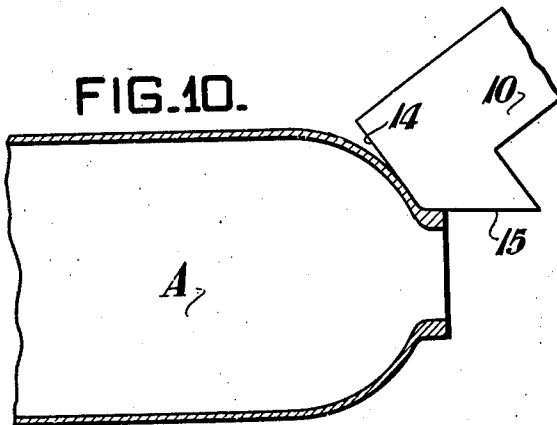
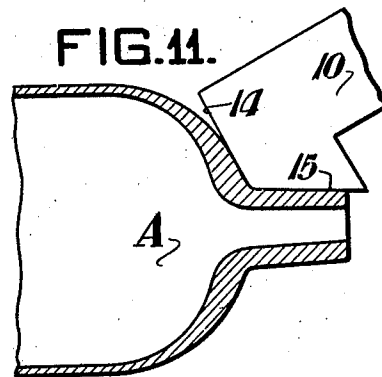


FIG. 11.



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UNITED STATES PATENT OFFICE

2,173,759

SPINNING TOOL

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Application April 8, 1937, Serial No. 135,804

3 Claims. (Cl. 113—52)

This invention relates to spinning apparatus and more particularly to a tool for spinning necks on cylinders.

So far as I am aware, no tool has heretofore been known for successfully spinning onto cylinders necks which have thicker walls than the walls of the cylinders themselves. In order to make the deep threads necessary for inserting valves in the necks of cylinders which are used as containers for gases held under high pressure, necks having relatively great thickness are required if the desired factors of safety are to be maintained.

It is accordingly among the objects of my invention to provide a novel tool for spinning necks on cylinders having a thicker wall section than that of the cylinder.

Another object of my invention is to provide a tool for spinning necks on cylinders wherein the transverse cross-sectional area of the neck at any point will be the same throughout the whole circumference.

A further object is to provide a tool for spinning thickened necks on cylinders whereby a necked-in portion of smooth and even interior and exterior surface is obtained.

The foregoing and further objects will be apparent after referring to the drawings, in which:

Figure 1 is a fragmentary plan of the apparatus of the invention;

Figure 2 is a fragmentary elevation of the apparatus of Figure 1;

Figure 3 is an enlarged sectional elevation of the tool of the apparatus of Figures 1 and 2;

Figure 4 is a sectional view on the line IV—IV of Figure 3;

Figure 5 is a sectional view on line V—V of Figure 3;

Figure 6 is a sectional view on the line VI—VI of Figure 3; and

Figures 7 through 11 are working diagrams illustrating the manner of operation of the apparatus.

Referring more particularly to the drawings, the numeral 2 designates a spinning machine of conventional design of the type shown in Patent No. 1,157,323, issued October 19, 1915, to Nicholson, having a pivotally mounted turret 3 which can be adjusted transversely of the work-piece A by a hand-wheel 5 and is positioned by a hand-wheel 6 with respect to the longitudinal axis of the cylindrical work-piece A. Swinging movement of the turret is limited by an adjustable stop member 7. Thus it will be seen that the diameter of the cylinder neck, as shown in Figure 8

of the drawings, is determined by the adjustment of the stop member 7 and the length is determined by the adjustment of the hand-wheel 6. The tool 10 of my invention is shown positioned in the turret 3 in Figure 1 in full lines in starting position, and its position at the end of a swing of the turret 3 is shown in dotted lines.

A preferred embodiment of the tool 10 of my invention is shown in Figures 3 and 4 of the drawings. It will be seen that the work engaging portion of the tool 10 is formed from a rectangular plate 11 bent across the width thereof, as at 12, to form two work engaging faces 14 and 15. The angle formed between the faces 14 and 15 is determined by the angle of curvature desired in the necked-in portion B of the cylindrical work-piece A, as shown in Figure 8. According to a preferred embodiment, this angle is between 50 degrees and 65 degrees. The work engaging surface of the faces 14 and 15 is formed of "stellite" or other suitable heat-and-wear resisting metal which is carried by the rectangular plate 11, whereby the latter acts as a backing member. The edges of the bottom side of the rectangular plate 11 are bevelled, as at 19, for a purpose to be later described.

The rectangular plate 11 is disposed on a tubular holding member 20 one end of which is U-shaped in section as shown at 21 in Figure 5. The U-shaped portion 21 provides arms 23 and 24, with an opening 25 formed therebetween. The plate 11 extends across the arms 23 and 24 of the U-shaped portion 21 of tubular holding member 20. The edges of the arms 23 and 24 are bevelled, as at 30, to cooperate with the bevelled edges 19 of the plate 11 and form a V-shaped groove therebetween; thus enabling the welding of the plate thereto, as shown at X.

The bore 28 of the outer end 31 of the tubular holding member 20 is closed by a circular plug 32 having two circular apertures 33 and 34 therein. A pipe 35 is disposed within the bore 28 and aperture 34 and extends to a point adjacent the back of the plate 11 so that cooling fluid delivered therethrough will flow thereonto. A return pipe 36 for the cooling fluid is secured to the plug 32 in the aperture 33. The plug 32 is secured within the bore 28 of the tubular holding member 20 and the pipe 35 is secured to the plug 32, as for instance by welding or other suitable means. Thus it will be seen that by circulating a cooling fluid through the pipes 35 and 36 the faces 14 and 15 of the tool 10 will be kept from overheating by their contact with the heated work-piece A and the friction therebetween.

In Figures 7 through 11 of the drawings there are shown the successive stages of forming a neck B on a cylindrical blank A on each swing of the turret 3 of Figures 1 and 2. It will be noted therefrom that the face 14 of the tool 10 serves to neck-down the cylinder wall, and to thicken the walls of the necked-down portion, while the face 15 forms the neck B. By the use of my improved tool I am enabled to spin a neck on a cylinder having a greater cross-sectional area than that of the cylinder wall from which it is formed, and also secure at the same time a necked-in portion and neck of smooth and even contour, both on the interior and exterior surfaces thereof.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined in the following claims.

I claim:

1. A tool for necking-down and thickening the wall of the end of a rotating metallic cylinder and drawing out an outwardly and longitudinally extending neck from the necked-down and thickened portion, said tool comprising a hollow body portion, and an angular plate secured to one end of said hollow body portion, said angular plate providing two connected flat work-engaging faces, one of said flat work-engaging faces occupying a plane which is at substantial right angles with respect to the major axis of said hollow body portion, the other of said flat work-engaging faces extending inwardly of said first-named flat work-engaging face and at less than right angles with respect thereto, said hollow body portion having fluid passages for enabling the cooling of the backs of the flat work-engaging faces of said angular plate.
2. A tool for necking-down and thickening the wall of the end of a rotating metallic cylinder

and drawing out an outwardly and longitudinally extending neck from the necked-down and thickened portion, said tool comprising a hollow body portion, and an angular plate secured to and closing one end of said hollow body portion, said angular plate providing two connected flat work-engaging faces, one of said flat work-engaging faces occupying a plane which is at substantial right angles with respect to the major axis of said hollow body portion, the other of said flat work-engaging faces extending inwardly of said first-named flat work-engaging face and at less than right angles with respect thereto, said hollow body portion having fluid passages for enabling the cooling of the backs of the flat work-engaging faces of said angular plate.

3. A tool for necking-down and thickening the wall of the end of a rotating metallic cylinder and drawing out an outwardly and longitudinally extending neck from the necked-down and thickened portion, said tool comprising a hollow body portion, said hollow body portion including a member which is U-shaped in section and a plate disposed across the open side of said member and secured thereto, said plate being extended from one end of said member to a position adjacent to but spaced from the other end thereof, and an angular plate secured to one end of said member and to the adjacent end of said plate, said angular plate providing two connected flat work-engaging faces, one of said flat work-engaging faces occupying a plane which is at substantial right angles with respect to the major axis of said hollow body portion, the other of said flat work-engaging faces extending inwardly of said first-named flat work-engaging face and at less than right angles with respect thereto, said hollow body portion having fluid passages for enabling the cooling of the backs of the flat work-engaging faces of said angular plate.

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