Nov. 28, 1944. W. L. BROCKWAY 2,363,940

SELF-CENTERING DEVICE

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Fig. 1.

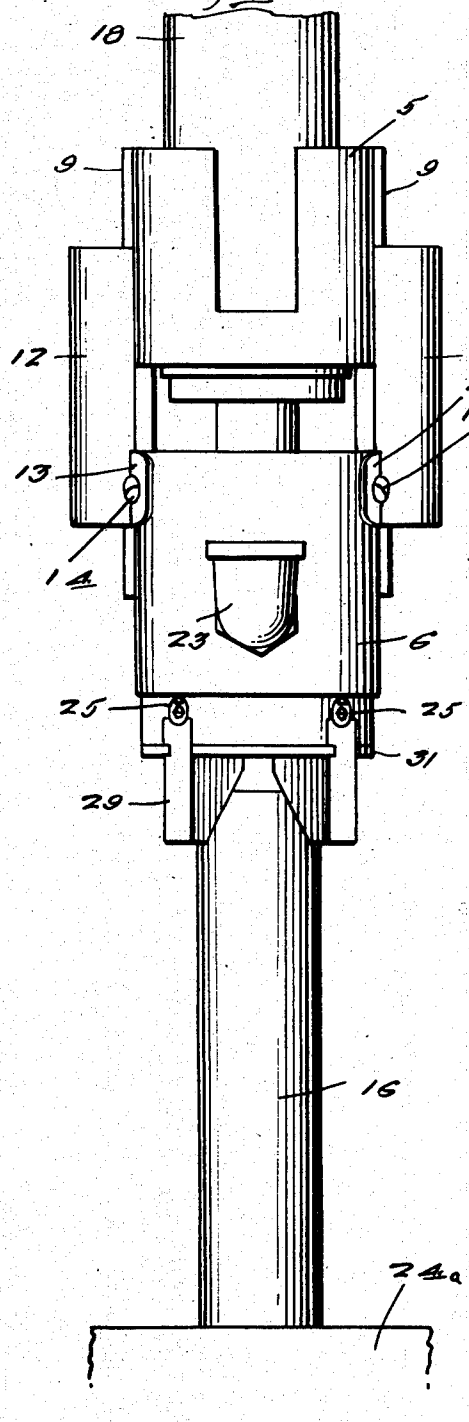


Fig. 2.

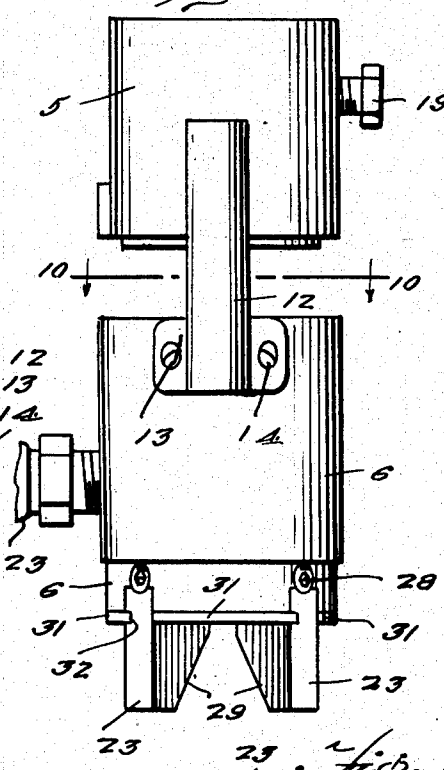
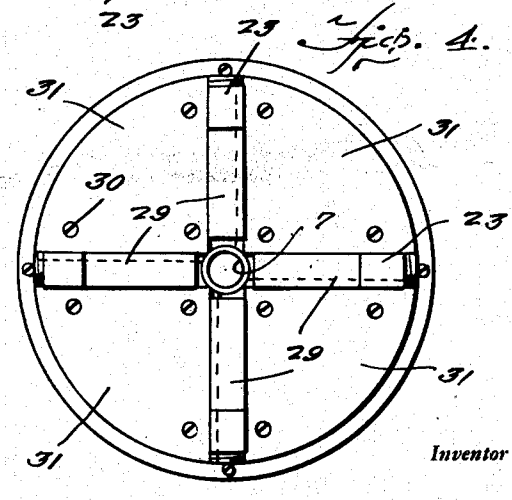


Fig. 4.



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Fig. 3.

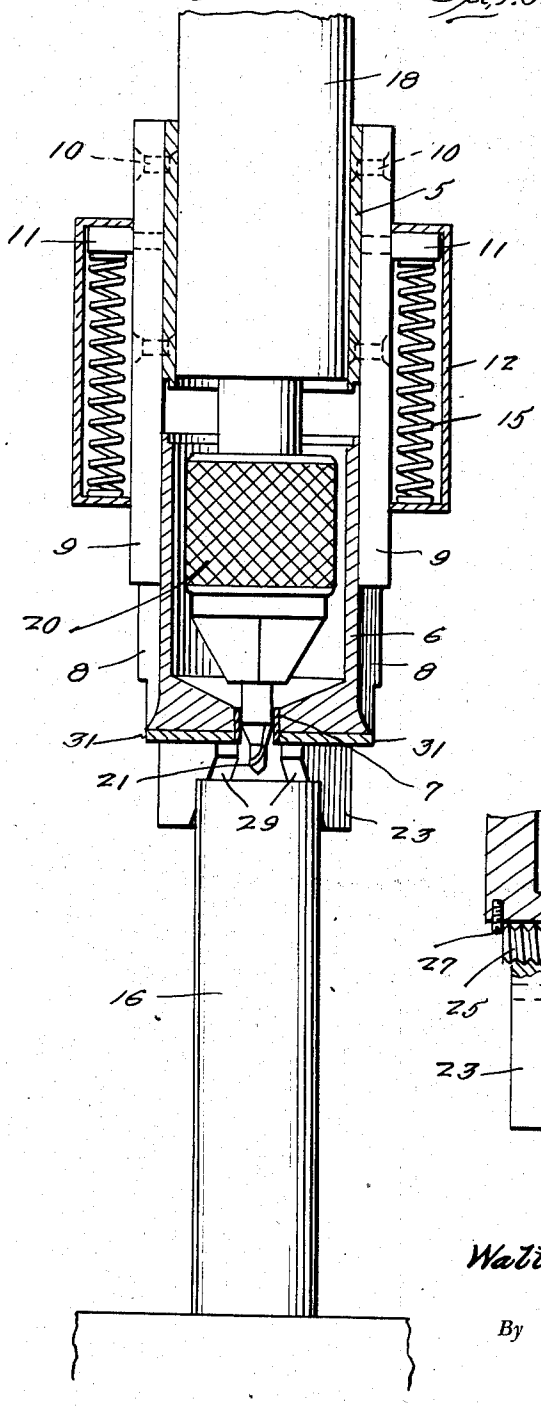
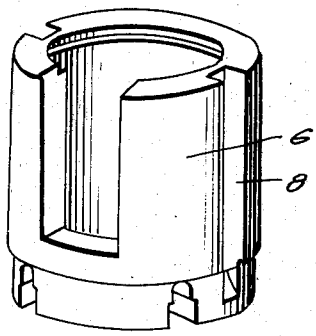


Fig. 5.



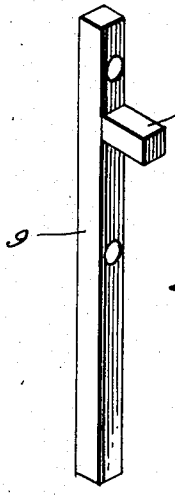


Fig. 6.

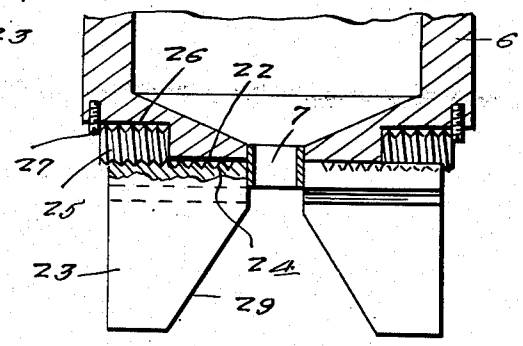


Fig. 7.

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Fig. 8.

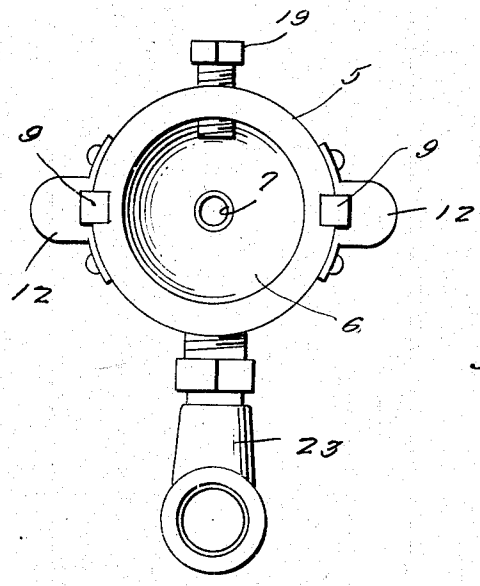


Fig. 9.

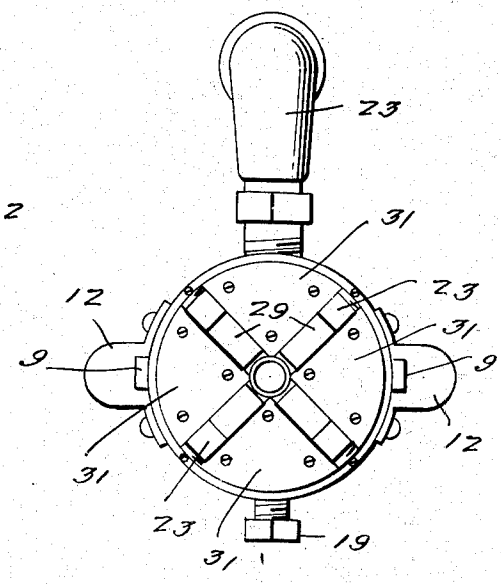


Fig. 10.

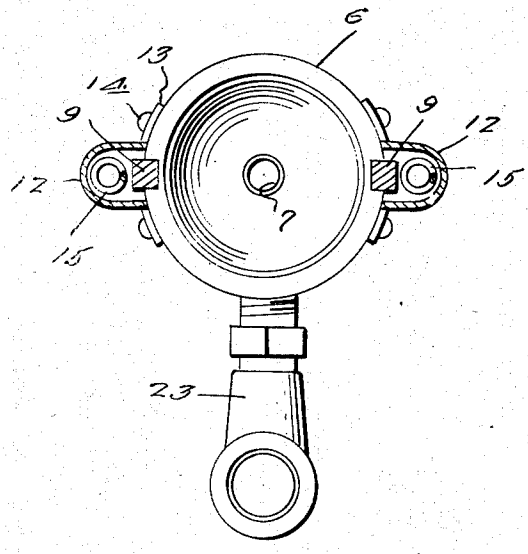
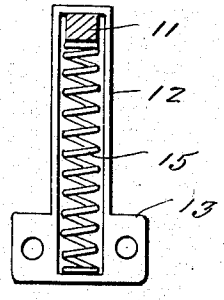


Fig. 11.



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UNITED STATES PATENT OFFICE

2,363,940

SELF-CENTERING DEVICE

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Application May 26, 1943, Serial No. 488,607

2 Claims. (Cl. 77—18)

This invention relates to new and useful improvements in centering devices, more particularly to a self-centering device, which has as its principal object to accurately center drill shafts and accomplish this in only a small fraction of the time taken when the center is found by the square, center punched and then centered on the drill press.

Another important object of the invention is to provide a self-centering device which can be quickly applied to a drill press which in use will be substantially foolproof and positive acting at all times.

A further object of the invention is to provide a centering device of the character stated wherein the elements employed for centering work can be readily adjusted to accommodate work of various sizes.

Other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings:

Figure 1 is a front elevational view of the device, showing the same applied to work.

Figure 2 is a fragmentary side elevational view.

Figure 3 is a vertical sectional view through the device shown applied to work.

Figure 4 is a bottom plan view of the device.

Figure 5 is a perspective view of the lower section of the device.

Figure 6 is a perspective view of one of the guides.

Figure 7 is a fragmentary sectional view through the lower portion of the lower section.

Figure 8 is a top plan view of the device.

Figure 9 is a bottom plan view of the device.

Figure 10 is a section on line 10—10 of Figure 2.

Figure 11 is a section on line 11—11 of Figure 3.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the device consists of an upper section 5 and a lower section 6, both being of cylindrical shape, the upper section 5 being open at both its top and bottom, while the lower section 6 is only fully open at its top and formed with a small opening 7 in the central portion of its bottom.

The lower section 6 has a pair of vertically disposed guide grooves, 8, 8 for receiving guide bars 9, 9 which are vertically disposed on the upper section 5 and depend a substantial distance below the same, these bars being secured to the upper section 5 by screws or rivets 10. Each guide bar 9 has a laterally disposed lug 11 which is disposed into the upper portion of a corresponding spring case 12. These cases 12 are secured by ears 13 and screws 14 to the lower case 6 and in each of these cases 12 is a coiled compression spring 15, the lower end of which rests on the bottom of the corresponding case 12 while its upper end is impinged against the under side of the corresponding lug 11. Thus it can be seen, that the springs 15 serve to maintain the lower section 6 urged downwardly and with the spring pressure against a piece of work such as a shaft 16 to be centered, that is, when the upper section 6 is suitably secured to the shank 18 of a drill press by set screw or the like 19.

Numeral 20 denotes a drill chuck in which a center drill 21 can be held and this drill depends through the opening 7 in the bottom of the section 6.

As is apparent in Figures 1, 2, and 7, the lower section 6 has a plurality of radial slots 22 in the bottom thereof to receive the upper portions of centering guides 23, each of which has transverse ribs or teeth 24 adapted to be engaged by rotary adjusting screws 25 seated in more than semi-cylindrical-shaped recesses 26. These adjusting screws 25 are simply rotatably mounted freely within the recesses 26 and are prevented from becoming displaced by small set screws 27 which block their displacement from the said recesses. The outer ends of the screws 25 have tool engageable sockets 28.

The inner edge portions of the centering guide 23 are beveled as at 29 to engage work 16 as adjusted in Figure 3.

Secured to the bottom of the section 6 by screws or the like 30 are four segmental shaped plates 31, each plate having one edge portion engaging into a groove 32 in one side of a corresponding centering guide 23, as is clearly shown in Figures 1 and 2 of the drawings. In other words, these edge portions of the segmental plates 31 serve to guide the centering guides 23 and prevent displacement thereof as they are adjusted by the screws 25 to accommodate work of various sizes.

Obviously, by pushing up on the lower section 6, work can be easily released and new work quickly inserted in place.

A fitting 23a for a sight lubricator can be provided for the lower section 6.

Numeral 24a denotes a table for the drill press.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, and materials may be resorted to without departing

from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. A self-centerng device for drills comprising a tubular upper section for fitting about a drill shank above a chuck and adapted to be detachably secured thereon, a cup-shaped lower section for fitting about the chuck in downwardly spaced relation to the upper section and formed at the center of its bottom with an opening to accommodate a bit carried by the chuck, the lower section being formed with vertically extending circumferentially spaced grooves, vertically disposed guide bars carried by the upper section and extending downwardly therefrom into said grooves, lugs projecting outwardly from upper portions of said bars, spring casings carried by the lower section and extending upwardly therefrom about said bars with said lugs in upper portions thereof, springs in said casings engaging said lugs and yieldably resisting upward movement of said lower section about the chuck, said bit projecting downwardly through the opening in the bottom of the lower section, and work-engaging guides extending downwardly from said lower section and shiftable radially across the bottom thereof toward and away from its central opening and having bevelled inner side edges for engaging work and centering the bit over the work.

2. A self-centering device for drills comprising a tubular upper section for fitting about a drill-shank above a chuck a cup-shaped lower section for fitting about the chuck and having its bottom formed with a central opening to accommodate a bit carried by the chuck, said lower section being shiftable vertically about the chuck to project the bit downwardly through the opening and yieldably held against upward movement, the bottom of said lower section being formed with grooves radiating from its central opening and having their upper portions formed with channels, screws rotatably mounted in said channels and adapted to be turned from their outer ends, work-engaging guides extending downwardly from said lower section and having their upper sides slidably engaged in said grooves and in threaded engagement with said screws for adjustment radially of the bit when the screws are turned, said guides being formed with side grooves near their upper ends, and plates detachably mounted against the under face of the bottom of the lower section with side edge portions engaged in grooves of the work-engaging guides to hold the guides in the grooves in which they operate.

WALTER LEROY BROCKWAY.