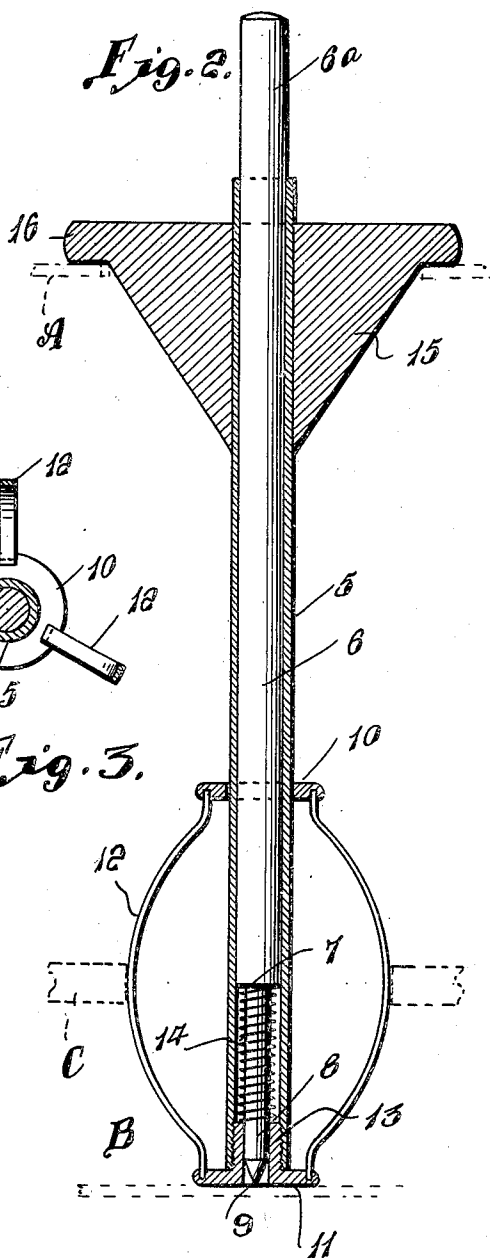


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CENTERING DEVICE



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CENTERING DEVICE

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4 Claims. (Cl. 33—191)

This invention relates to certain new and useful improvements in centering devices.

The primary object of the invention is to provide a centering device to facilitate reproduction and duplication of drill holes and openings in sheet metal works and the like, the centering device embodying a convexed leaf spring centering head interchangeable with centering heads of other sizes so that the centering device may be accommodated to different sized openings for the reproduction or duplication of such openings.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing:—

Figure 1 is a side elevational view of a centering device constructed in accordance with the present invention;

Figure 2 is a vertical sectional view of the centering device showing the tensioning retracting spring for the center punch and the interchangeable bowed leaf spring head; and

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 1.

Referring more in detail to the accompanying drawing, the reference character 5 designates an elongated guide tube for the center punch rod 6 that is of a length to occupy the entire length of the guide tube 5 and have its upper end 6a project upwardly of the tube. As shown in Fig. 2, the lower end of the center punch 6 is angularly reduced to provide an abutment shoulder 7 and a punch pin 8 that has a tapered pointed end 9.

A centering spring head is associated with the lower end of the guide tube 5 and includes top and bottom disks 10 and 11 connected together by outwardly bowed leaf springs 12 having their ends anchored to the disks 10 and 11. As shown in Fig. 2, the bottom disk 11 of the centering spring head carries an upwardly directed tubular boss 13 surrounding an opening in the disk 11, the boss 13 being externally threaded for engagement with internal threads on the lower end of the guide tube 5. A coil spring 14 surrounds the punch pin 8 between the abutment shoulder 7 on the centering punch 6 and the inner end of the tubular boss 13 for normally holding the centering punch at its limit of upward movement with the pointed end 9 of the punch 10 inwardly of the bottom face of the bot-

tom disk 11. The bottom disk 11 is adjustably anchored to the lower end of the guide tube 5 for assuring complete retraction of the pointed end 9 of the punch pin 8 into the guide tube while the upper disk 10 of the centering spring head is freely slidable on the guide tube 5.

A balancing conical head 15 having an outwardly directed annular base flange 16 is inverted and placed on the upper end of the guide tube 5 and constitutes a support for the upper end of the centering device.

The centering device is especially designed for centering openings, such as valve openings and bolt holes on built-up casing heads, gasoline engines, heavy sheet metal works, such as is used in oil field tank constructions and in any connection where it is desired to reproduce or duplicate openings. As shown in Fig. 2 of the drawing, the base flange 16 of the conical balancing head 15 rests upon the edge wall A of an opening illustrated by dotted lines while the bottom disk 11 of the centering spring head is in proximity of a plate B that is adapted to have an opening drilled or bored therein. The centering spring head passes through an opening in the wall C above the plate B, the outwardly bowed springs 12 of the centering spring head being engaged with the walls of the opening in the wall C for centering the punch 6. It is intended that centering spring heads of different sizes are to be interchangeably mounted upon the lower end of the guide tube 6 so that the centering spring head may be centered in openings of different sizes in the intermediate wall C.

From the above detailed description of the invention, it is believed that the construction and use thereof will at once be apparent and while there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:—

1. In a centering device of the class described, a guide tube, a center punch therein and a centering spring head removably attached to the lower end of the guide tube for centering the device, the centering spring head comprising a bottom disk detachably engaged with the guide tube, a top disk slidable on the guide tube and outwardly bowed leaf springs connecting the top and bottom disks.

2. In a centering device of the class described, a guide tube, a center punch therein and a centering spring head removably attached to the

- lower end of the guide tube for centering the device, a spring associated with the center punch and spring head for normally retaining the lower end of the center punch within the guide tube, the centering spring head comprising a bottom disk detachably engaged with the guide tube, a top disk slidable on the guide tube and outwardly bowed leaf springs connecting the top and bottom disks.
- 5 3. In a centering device of the class described, a guide tube, a center punch therein and a centering spring head removably attached to the lower end of the guide tube for centering the device, the centering spring head comprising a bottom disk detachably engaged with the guide tube, a top disk slidable on the guide tube and outwardly bowed leaf springs connecting the top and bottom disks, and a balancing inverted conical head on the upper end of the guide tube.
- 10 4. In a centering device of the class described, a guide tube, a center punch therein and a centering spring head removably attached to the lower end of the guide tube for centering the device, a spring associated with the center punch and spring head for normally retaining the lower end of the center punch within the guide tube, the centering spring head comprising a bottom disk detachably engaged with the guide tube, a top disk slidable on the guide tube and outwardly bowed leaf springs connecting the top and bottom disks; and a balancing inverted conical head on the upper end of the guide tube.
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