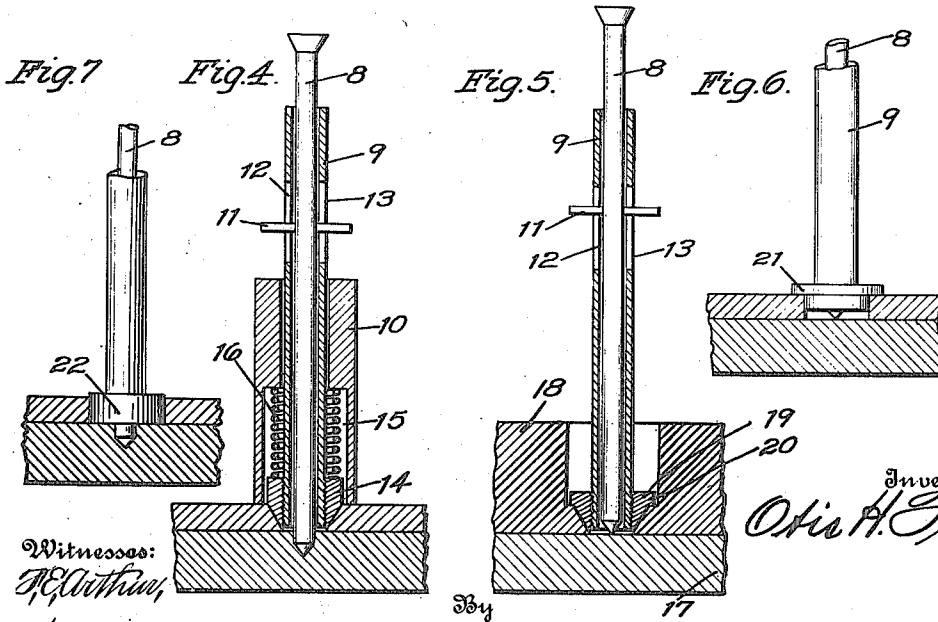
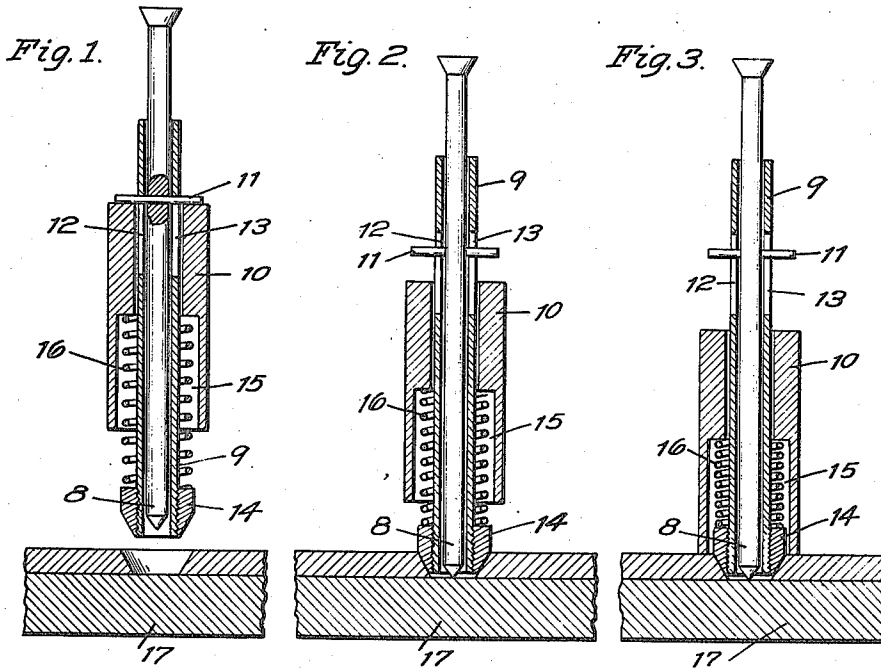


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 CENTER PUNCH.
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Witnesses:

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CENTER-PUNCH.

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To all whom it may concern:

Be it known that I, OTIS H. FISK, a citizen of the United States of America, and resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Center-Punches, of which the following is a specification.

This invention relates to an improved center punch and has for an object to produce a center punch for locating screws or other fastening devices in apertures in plates such as hinge plates, for securing the plates to work to which they are to be attached.

A further object of my invention is to produce a center punch adapted accurately to mark centers in the work and centrally of the apertures of plates to be secured thereto. These and other objects are attained in the center punch described in the following specification and illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal sectional elevation of a punch embodying my invention, the elements of the punch being shown in their normal positions, and being located ready for engagement with an aperture, the center of which is to be indicated on the work to which the plate is to be attached.

Fig. 2 is a similar view of the punch located in the aperture, certain of its elements having been moved to bring the punch pin into engagement with the surface to be marked.

Fig. 3 is a view similar to Figs. 1 and 2, with the punch elements set and ready for the punching operation.

Fig. 4 is a view similar to Fig. 3 but showing the punching operation completed.

Fig. 5 is a longitudinal sectional view of a modified form of punch embodying my invention.

Figs. 6 and 7 are fragmental elevational views of modified formations of punches embodying my invention.

The punch constituting the principal embodiment of my invention and illustrated in Figs. 1 to 4 inclusive, consists of a punching pin 8 carrying a reciprocally mounted inner sleeve 9 upon which is in turn reciprocally mounted an outer sleeve 10. The punch pin is provided at its top with a motion limiting pin 11 which coöperates with slots 12 and 13 formed in the sleeve 9 and located diametrically opposite one another.

These slots in coöperation with the pin permit of limited reciprocation of the sleeve 9 on the punch pin 8. At the lower end of the sleeve 9 and adapted to engage the apertures in the plates to be secured to the work, is a head 14. This head is preferably secured to the sleeve by means of the screw threads disclosed, or it may be integrally formed therewith. I preferably secure it in the manner disclosed for a purpose hereinafter to be more fully set forth. Sleeve 10 is provided with a centrally located opening which permits of reciprocation therein of the sleeve 9, an enlarged opening 15 communicating with the first mentioned opening and located at the lower end of the sleeve. This enlarged opening 15 is provided for the purpose of receiving a coil spring the lower end of which bears upon the head 14 and the upper end of which bears upon the shoulder formed between the enlarged opening 15 and the opening through which the sleeve 9 passes. The action of this spring is normally to maintain the parts in the position disclosed in Fig. 1 so that the spring 16 will cause the top of the outer sleeve 10 to engage the pin 11 and lift it and punch pin 8 until pin 11 engages the tops of slots 12 and 13. It will be seen that in this normal position the point of the punch pin 8 is located somewhat above the lower surface of the sleeve 9 and head 14.

In using my improved punch the sleeve 10 is grasped and the head 14 is located in the aperture of the plate to be secured. The head 14 is preferably formed with a tapered surface presenting the formation of the frustum of a cone. With the head located in the aperture the outer sleeve 10 is forced down against the pressure of the spring 16 so as to permit of the punch pin 8 engaging the surface of the work 17, the motion limiting pin 11 being released by such a movement of the outer sleeve. The outer sleeve is now moved to engage the surface of the plate as disclosed in Fig. 3, and because of the lower edge of its rim extending over a surface greater than that of the circumference of the aperture in which the head is located, the outer sleeve 10 will cause the punch to be vertically and firmly located with relation to the surface of the plate. This positively and firmly locates the point of the punch centrally in the aperture and causes it to mark the center of the aperture

correctly when driven in the position disclosed in Fig. 4.

Under some circumstances it may be desirable to eliminate the spring and the outer sleeve. This is true where an opening which is too small or too deep to receive sleeve 10, such as that disclosed in Fig. 5, is provided for receiving a screw in order to secure the plate 18 to the work. In order to overcome the objection to the presence of the outer sleeve in a case of this kind, the head 14 is removed from the sleeve 9 and a modified form of head 19 substituted therefor. This head 19 is provided with a tapered surface similar to the head 14, but at its upper edge a projecting flange 20 may be formed for the purpose of engaging the flat surface at each side of the aperture if the aperture provides such a surface. Where the aperture does not provide such a surface a head without a flange may be used. This flange 20 acts in the same manner that the sleeve 10 acts to locate the punch pin in a vertical position for the purpose of accurately locating the punch mark in the work to which the plate is to be secured. The modified formations of heads disclosed in Figs. 6 and 7 are designed to engage apertures having parallel sides instead of tapered sides, the head disclosed in Fig. 6 being particularly adapted to vertically aline the punch by means of a flange 21 extending therefrom, in the same manner that the flange 20 vertically alines the punch disclosed in Fig. 5. In Fig. 7 this flange 21 has been eliminated, the head 22 being a plain disk. Such a form is particularly desirable where the surface of the plate is irregular, as for example the irregular surfaces of hinge and escutcheon plates. Were a flange provided in this instance the irregularity would cause the punch to be thrown out of vertical alinement and thus cause the punch to miss the center of the aperture of the plate. The punch disclosed in Figs. 1 to 4 inclusive can also be used for irregular surfaces which have apertures for countersunk screws, by merely removing the outer sleeve 10 and spring 16, although their removal may not be necessary, in which case the punch would be used as disclosed in Fig. 2, the sleeve 10 thus being free of the surface. The punch may also be used on plain as well as irregular surfaces without utilization of sleeve 10 and spring 16.

In the commercial production of a center punch embodying my invention, the motion limiting pin 11 would be removably mounted in the punch pin and the punch would be supplied with a series of heads designed to take care of any work which the punch is capable of handling within the limits for which it is designed, thus providing for the removal of the outer sleeve and spring as well as for the substitution of various heads when necessary.

Having thus described my invention, what I claim is:

1. A center punch comprising a punch pin, a sleeve reciprocally mounted on the pin, and a second sleeve reciprocally mounted on the first mentioned sleeve, the first mentioned sleeve being adapted to guide the punch pin and the second mentioned sleeve being adapted to locate the punch pin vertically with relation to the surface of the work to be punched.

2. In a center punch for marking the centers of apertures of plates on work to which the plates are to be secured, the combination of a punch pin, a sleeve for guiding the punch pin and having a headed end adapted to engage said apertures and a second sleeve reciprocally mounted on the first mentioned sleeve, adapted to be brought to engage the surface of the plate adjacent to the edge of the aperture occupied by the headed end of the first mentioned sleeve.

3. In combination in a center punch for marking the centers of apertures of plates on work to which the plates are to be secured, the combination of a punch pin, a sleeve for guiding the punch pin and having a headed end adapted to engage said apertures, a second sleeve reciprocally mounted on the first mentioned sleeve, adapted to be brought to engage the surface of the plate adjacent to the edges of the aperture occupied by the headed end of the first mentioned sleeve, and a yielding means for maintaining the second mentioned sleeve normally out of engagement with the surface of the plate adjacent to the edges of the aperture occupied by the headed end of the first mentioned sleeve until pressed into engagement with said surface.

4. A center punch for marking the centers of apertures of plates on work to which the plates are to be secured, comprising a punch pin, a sleeve for guiding the punch pin, a head detachably mounted on the end of the sleeve, said head being adapted to engage said apertures, and a second sleeve reciprocally mounted on the first mentioned sleeve, adapted to be brought to engage the surface of the plate adjacent to the edges of the aperture occupied by the head.

5. In a center punch for marking the centers of apertures of plates on work to which the plates are to be secured, the combination of a punch pin, a sleeve for guiding the punch pin, a head detachably mounted on the sleeve and adapted to engage said apertures, a second sleeve reciprocally mounted on the first mentioned sleeve, adapted to be brought to engage the surface of the plate adjacent to the edges of the aperture occupied by the head, a yielding means for maintaining the second mentioned sleeve normally out of engagement

with the surface of the plate adjacent to the edges of the aperture occupied by the head until the first mentioned sleeve is moved to engage said aperture.

- 5 6. In combination in a center punch for marking the centers of apertures of plates on work to which the plates are to be secured, the combination of a punch pin, a sleeve for guiding the punch pin and
10 having a headed end adapted to engage said apertures, a second sleeve reciprocally mounted on the first mentioned sleeve, adapted to be brought to engage the surface of the plate adjacent to the edges of the
15 aperture occupied by the headed end of the first mentioned sleeve, a yielding means for maintaining the second mentioned sleeve normally out of engagement with the sur-

face of the plate adjacent to the edges of the aperture occupied by the headed end of the first mentioned sleeve until pressed into en- 20
gagement with said surface, and a motion limiting means mounted on the punch pin, adapted to limit the motion of the first mentioned sleeve and to be engaged by the 25
second mentioned sleeve to lift the punch pin from engagement with the surface to be marked when the second mentioned sleeve is in its normal position.

In testimony whereof, I have hereunto 30
subscribed my name this 6th day of July, 1916.

OTIS H. FISK.

Witnesses:

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A. KASSON.