

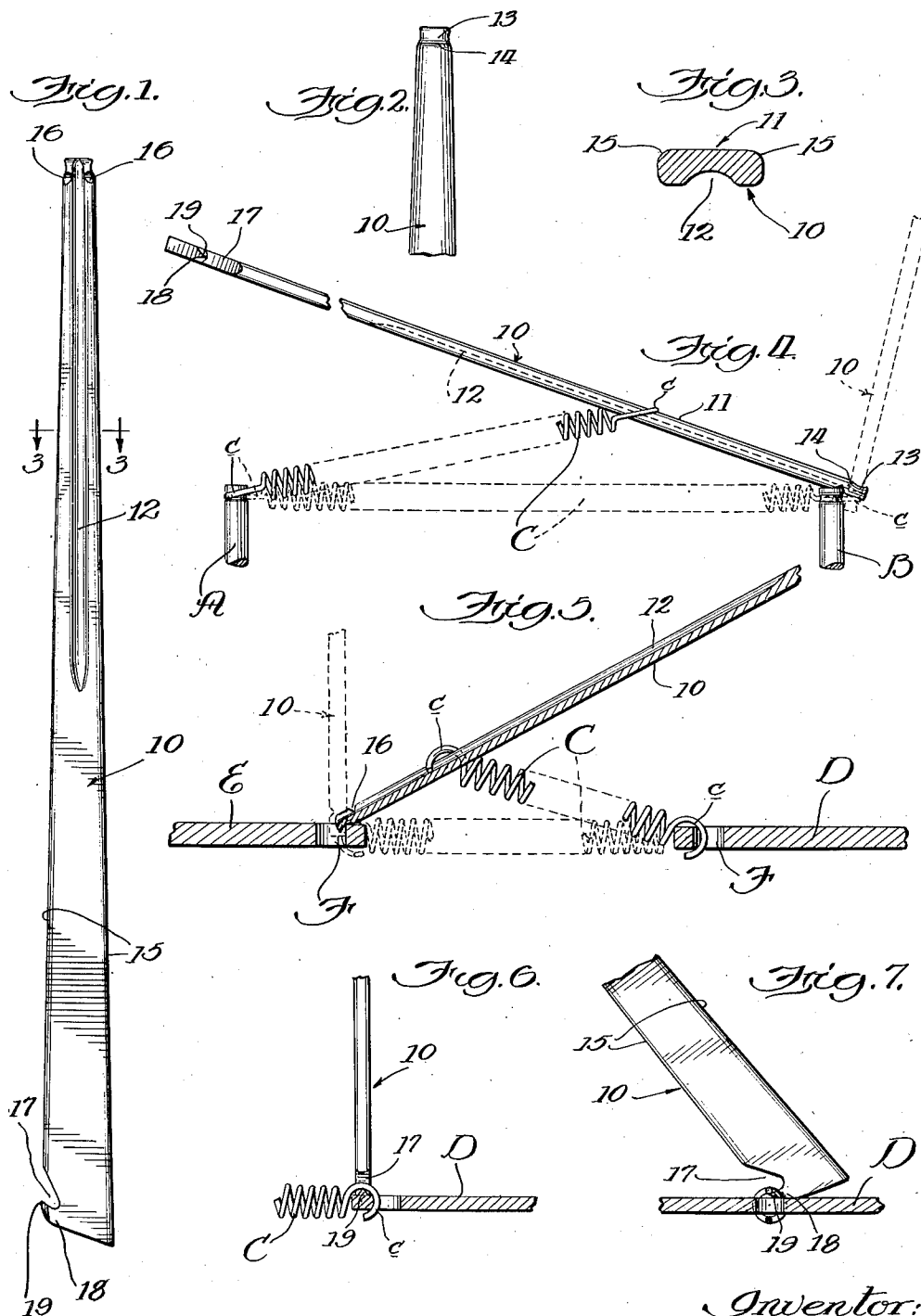
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SPRING INSTALLATION TOOL

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UNITED STATES PATENT OFFICE

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SPRING INSTALLATION TOOL

Application filed November 16, 1931. Serial No. 575,255.

My invention contemplates and provides a tool especially adapted for use in installing coiled tension springs in mechanical structures.

Referring first to Figs. 1, 2 and 3, the tool of my invention preferably consists of a single piece of initially flat steel stock, the lateral edges of the tool converging from a relatively wide end to a relatively narrow end. One face of the tool has been indicated by reference numeral 10 and the other by reference numeral 11.

One of the primary objects of the invention is to provide a tool by means of which the hooked end of a coiled spring under tension may be caused to engage around a pin or post.

Another primary object of the invention is to provide a tool by means of which the hooked end of a coiled spring under tension may be passed into an aperture in a plate, lug, flange or the like.

A secondary object of the invention is to provide a tool which facilitates the removal of coiled tension springs from mechanical structures in which they have been installed.

The tool of the present invention preferably consists of a single piece of metal, is devoid of any relatively moving parts, occupies but small space in a tool kit and may be manufactured economically.

Other features, objects and advantages of the invention will appear from the following detailed description, wherein reference is made to the accompanying drawing, in which

Fig. 1 is an elevational view of one face of my improved tool;

Fig. 2 is a fragmentary elevational view of the other face thereof;

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1;

Fig. 4 is an elevational view illustrating by full and dotted lines how the tool of my invention may be used to cause the hook end of a coiled spring under tension to lie around a post or pin designed to be engaged thereby;

Fig. 5 is a similar view illustrating how the tool may be employed to cause the hook end of a coiled spring under tension to engage in an aperture in a plate, lug, flange or the like; and

Figs. 6 and 7 are fragmentary detail views, taken at right angles to each other, illustrating how the tool may be used to remove a coiled tension spring from a machine whereon it is installed.

Similar characters of reference refer to similar parts throughout the several views.

In its face 10 the tool is provided with a groove 12 extending from the approximate middle of the tool to the extremity of the narrow end thereof. The tip 13 of the narrow end of the tool is of somewhat less width and thickness than is the proximate portion of such narrow end, to facilitate the insertion of said tip into a spring receiving aperture and to provide a shoulder 14 adapted to engage the edge of a spring receiving aperture,—as presently will be explained. That surface of the tip 13 which is visible in Fig. 2 preferably is semi-circular in transverse section, and if desired, may be hollow ground, as most clearly appears in Figs. 4 and 5.

The lateral edges of the face 11 preferably are somewhat rounded, as indicated at 15, 15, to facilitate slippage of the hooked end of a spring under tension while being placed into operative relation with its cooperating post,—as presently will be explained.

Notches 16, 16 are formed in the face 10 at the point where the body of the tool merges into its reduced tip 13, the notches 16, 16 in effect constituting a transverse groove intersecting the longitudinal groove 12.

The wide end of the tool may be notched at 17 to provide a hook 18 laterally beveled to a point 19, the adjacent end of the tool being oblique to its lateral edges as illustrated.

At A and B in Fig. 4 I have illustrated pins or posts of a kind found in many types of machines, these pins or posts being adapted to constitute abutments for a coiled tension spring C having the usual hooked end *c, c*. The posts may or may not be provided with annular grooves constituting seats for the spring ends.

In using my improved tool to apply the spring C to the pins or posts A and B, one hooked end *c* of the spring is engaged around

post A, the other end *c* of the spring being hooked over the face 11 of the tool, and the narrow end of the tool being applied to post B with one or both of the notches 16, 16 engaging the circular edge of the post. Thereupon, with the parts in the full line positions of Fig. 3 (the post B acting as a fulcrum, and the tension of spring C tending to hold notches 16, 16 in engagement with the circular end edge of post B) the tool is moved to the dotted line position of the same figure. As this occurs, the spring is stretched and the hooked end thereof engaging the tool slips toward and off of the small end of the tool into operative engagement with post B.

At D and E in Fig. 5 I have illustrated what may be regarded as plates, lugs, flanges or the like of a kind frequently provided to receive the ends of tension springs, the said elements D and E being provided with apertures F adapted to receive the hooked ends *c*, *c* of the tension spring C.

In installing the spring C in and between the apertured elements D and E one hooked end of the spring is inserted in the aperture of one of said elements, for instance element D, and the other hooked end of the spring is engaged in groove 12, while the tool tip 13 is inserted in the aperture of element E. Thereupon, with the parts in the full line positions of Fig. 5 (element E acting as a fulcrum and the tension of spring C tending to hold shoulder 14 in engagement with the edge of the aperture into which the tool tip is inserted) the tool is moved to the dotted line position of the same figure. When this occurs, the hooked end of the spring engaging the tool slips along the groove 12 toward and off of the tool tip into the aperture of element E.

Figs. 6 and 7 illustrate how the hook 18 of my improved tool may be employed to remove the hooked end of a tension spring from an apertured machine element D in which it engages. Other uses of the hook 18 will suggest themselves to mechanics using the tool.

Having thus illustrated and described a preferred embodiment of my invention, what I claim is new and desire to secure by Letters Patent of the United States is:

1. A tool for use in installing tension springs consisting of an elongated member having one end of a size adapted for insertion into the aperture of an apertured spring abutment, said member being provided on one face thereof with a longitudinal groove of substantial length extending to the herein-mentioned end of the tool, the other face of said member being provided adjacent said herein-mentioned end of the tool with a shoulder for engagement with a spring abutment into the aperture of which the said end of the tool is inserted.

2. A tool for use in installing tension

springs consisting of an elongated member having one end of a size adapted for insertion into the aperture of an apertured spring abutment, said member being provided on one face thereof with a longitudinal groove of substantial length extending to the herein-mentioned end of the tool, the grooved face of the tool being notched adjacent the herein-mentioned end of the tool.

3. A tool for use in installing tension springs consisting of an elongated member having one end of a size adapted for insertion into the aperture of an apertured spring abutment, said member being provided on one face thereof with a longitudinal groove of substantial length extending to the herein-mentioned end of the tool, the face of the tool providing with the longitudinal groove aforesaid also being provided with notches constituting a transverse groove intersecting the longitudinal groove at a point slightly removed from the herein-mentioned end of the tool.

4. A tool for use in installing tension springs consisting of an elongated member tapering to a relatively narrow end and provided on one face with a longitudinal groove of substantial length extending to the said narrow end of the tool, the other face of the tool being provided adjacent said narrow end of the tool with a transverse shoulder adapted for engagement with an apertured spring abutment into which said narrow end of the tool is inserted.

5. A tool for use in installing tension springs consisting of an elongated member tapering to a relatively narrow end and provided on one face with a longitudinal groove of substantial length extending to the said narrow end of the tool, the other face of the tool being conformed to provide a transverse shoulder adjacent the said narrow end.

6. A tool for use in installing tension springs consisting of an elongated member tapering to a relatively narrow end and provided on one face with a longitudinal groove of substantial length extending to the said narrow end of the tool, the face of said tool provided with said longitudinal groove also being provided with a transverse shoulder adjacent said narrow end.

7. A tool for use in installing tension springs consisting of an elongated member tapering to a relatively narrow end and provided on one face with a longitudinal groove of substantial length extending to the said narrow end of the tool, each face of the tool being provided with a transverse shoulder slightly spaced from said narrow end.

8. A tool for use in installing tension springs consisting of a single piece of metal which throughout its length is of greater width than thickness, the lateral edges of said tool converging toward a relatively narrow end, one face of said tool being provided with

a groove of substantial length extending to the narrow end aforesaid, the grooved face of the tool being provided with a transverse shoulder slightly spaced from said narrow end.

5 9. A tool for use in installing tension springs consisting of a single piece of metal which throughout its length is of greater width than thickness, the lateral edges of said
10 tool converging toward a relatively narrow end, one face of said tool being provided with a groove of substantial length extending to the narrow end aforesaid, the other face of
15 said tool being provided with a transverse shoulder slightly spaced from the said narrow end.

10. The method of installing a tension spring which consists in providing a tool including an elongated member having one end
20 of a size adapted for reception in the aperture of a spring abutment, and provided on one face with a longitudinal groove of substantial length extending to the aforesaid end of the tool, placing the aforesaid tool end in
25 the aperture of a first spring abutment, engaging in said groove the hooked end of a spring having its other end operatively associated with a second abutment, and moving said tool, about said first abutment as a ful-
30 crum, into substantial alignment with the axis of said aperture to tension said spring and cause its aforesaid hooked end to travel through said groove into said aperture.

In witness whereof, I hereunto subscribe
35 my name this 9th day of November, 1931.

CARLTON ANDERSON.

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