Sept. 14, 1943. H. C. CHRISTIAN 2,329,591

SPRING EXPANDER

Filed April 21, 1941

Fig. 1.

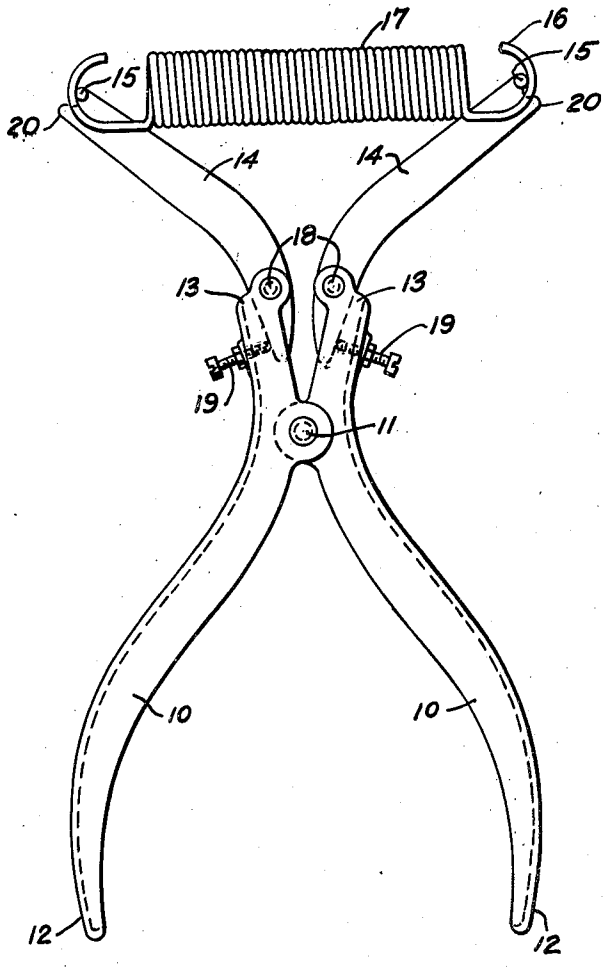
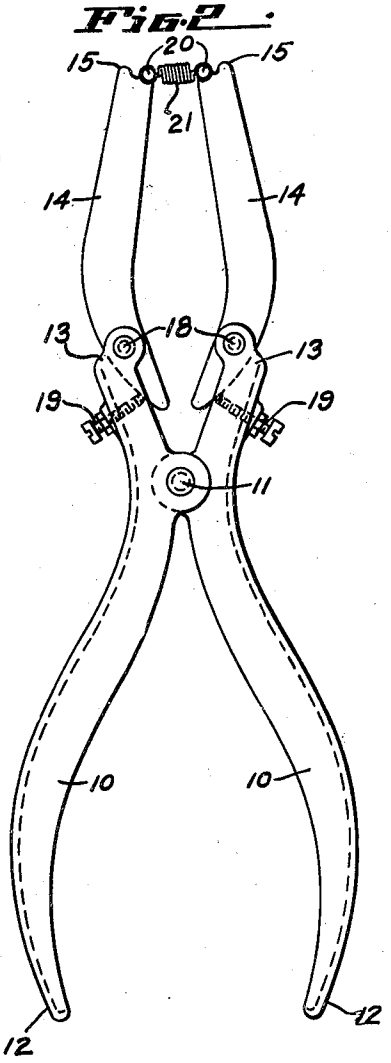


Fig. 2.



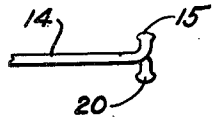


Fig. 3.

INVENTOR.
HENRY C. CHRISTIAN
BY
Castberg & Roemer
ATTORNEYS.

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SPRING EXPANDER

Henry C. Christian, Berkeley, Calif., assignor of one-half to Elmer W. Stryker, Albany, Calif.

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2 Claims. (Cl. 29—87.12)

The present invention relates to spring expanders, and particularly to devices for expanding and stretching contractile springs for the purpose of placing them in or removing them from their operative position between a pair of pins or other spring supporting members.

The device of the present invention is particularly adapted for use in the removal and replacement of springs on automobile brake shoes, although it is useful, as will appear from the description which follows, for expanding springs used for many other purposes.

It is the object of the present invention to provide an expander for coil springs which is simple and durable in construction and which will facilitate handling of the springs, particularly in placing them in and removing them from relatively inaccessible positions.

A further object of the invention is the provision of a spring expander which is readily adaptable to the expansion of springs of different sizes.

Further objects and advantages of the invention are made apparent in the following specification, wherein reference is made to the accompanying drawing illustrating one form which the invention may assume.

In the drawing—

Fig. 1 is a plan view of a spring expander embodying the present invention;

Fig. 2 is a similar view of the same device with parts arranged in different positions for the accommodation of smaller springs; and

Fig. 3 is an enlarged view in side elevation of a portion of one of the spring engaging fingers illustrated in Figs. 1 and 2.

As shown in the drawing, the spring expander of the present invention comprises a pair of lever arms 10 pivotally connected as at 11 so that compression of the outer ends 12 of the levers 10 will effect spreading of their inner ends 13. In order that a spring may be expanded by this spreading movement of the inner ends of the lever arms 10, there is secured to each of said arms a spring engaging finger 14. At their distal ends the fingers 14 are provided with upwardly turned pins 15, preferably having a slightly enlarged head, as indicated in Fig. 3, so as to engage and retain the hooked ends 16 of a spring indicated at 17. With the spring 17 held in the position illustrated in Fig. 1 between the pins 15, compression together of the outer ends 12 of the lever arms 10 will effect expansion of the spring so that its hooked ends 15 may be placed over any pair of spaced pins, not shown, with which the spring cooperates to perform its intended function.

In the case of return springs on automobile brake shoes, the present tool used in the manner described makes it possible to expand and place the spring on the pins which project from opposed shoes without the necessity of engaging any part of the brake shoe or lining thereof with the tool, which may mar or injure it. It is likewise possible to remove the spring from its position between such supporting pins by engaging the hooked ends 15 and then expanding the spring sufficiently to permit it to move freely away from the pins.

In order to adapt the spring expander to springs of slightly different lengths, the spring engaging fingers 14 are pivoted to the inner ends 13 of the lever arms 10 by means of pins 18. Adjusting screws 19 are threaded through the lever arms and engage the proximal ends of the fingers 14 which act as levers fulcrumed on the pins 18. Adjustment of the spacing between the distal ends of the spring fingers may therefore be made by adjustment of the screws 19 to adapt the spacing to the particular size of the spring to be expanded.

As it may be desired at times to expand springs considerably smaller than that illustrated in Fig. 1, and beyond the limits of the adjustment permitted by the screws 19, the spring engaging fingers 14 may be removed and reversed in position to assume the relative positions illustrated in Fig. 2. For this purpose the pins 18 may be made conveniently removable and may, if desired, be held against removal by nuts, cotter keys, or any such suitable means, not shown. As it is most convenient to engage the hooked ends of a spring with the pins arranged at the adjacent sides of the fingers, additional pins 20 are formed on the under sides of the fingers 14, as illustrated in Fig. 1, so that upon reversal of the fingers they occupy the position shown in Fig. 2. A suitable manner of forming the pins 15 and 20 at the outer ends of the fingers 14 is illustrated in Fig. 3.

In Fig. 2 a small spring 21 is shown as positioned between the pins 20, where it may be expanded by compression of the outer ends 12 of the lever arms 10, and adjustments between the arms 14 in this position to accommodate small springs of slightly different sizes may be made by means of adjusting screws 19 in the same manner as described in connection with Fig. 1.

With the invention herein described a simple durable tool of a size convenient to use in one

hand is made to handle springs varying from one to eight inches in length. Sufficient leverage is attained to expand the larger sizes even of heavy coil springs with ease, and through the reversibility of the spring engaging fingers together with the adjustment of spacing afforded by the adjusting screws 19 a complete range of sizes between the minimum and maximum are accommodated.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A spring expander comprising lever arms pivoted intermediate their ends to form handles and forward ends, said forward ends being separable upon compression of the handles, spring engaging fingers pivotally connected to said forward ends to form forward extensions thereof and adjustable means carried by said forward ends and engaging said fingers adjacent their rear ends to limit their pivotal movement.

2. A spring expander comprising lever arms pivoted intermediate their ends to form handles and forward ends, said forward ends being separable upon compression of the handles, spring engaging fingers pivotally connected to said forward ends to form forward extensions thereof, and screws threaded through said forward ends and engaging said fingers adjacent their rear ends to limit their pivotal movement and adjust the spacing between their forward ends.

HENRY C. CHRISTIAN.