April 13, 1943. F. H. WYMAN 2,316,306

SPREADER

Filed April 11, 1942

Fig. 1

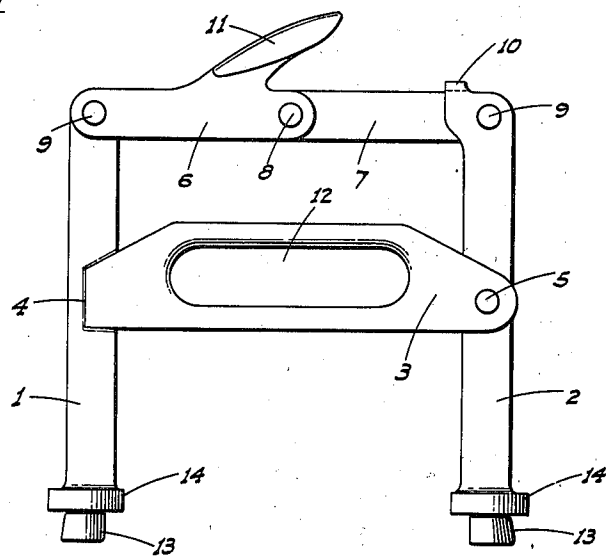


Fig. 2

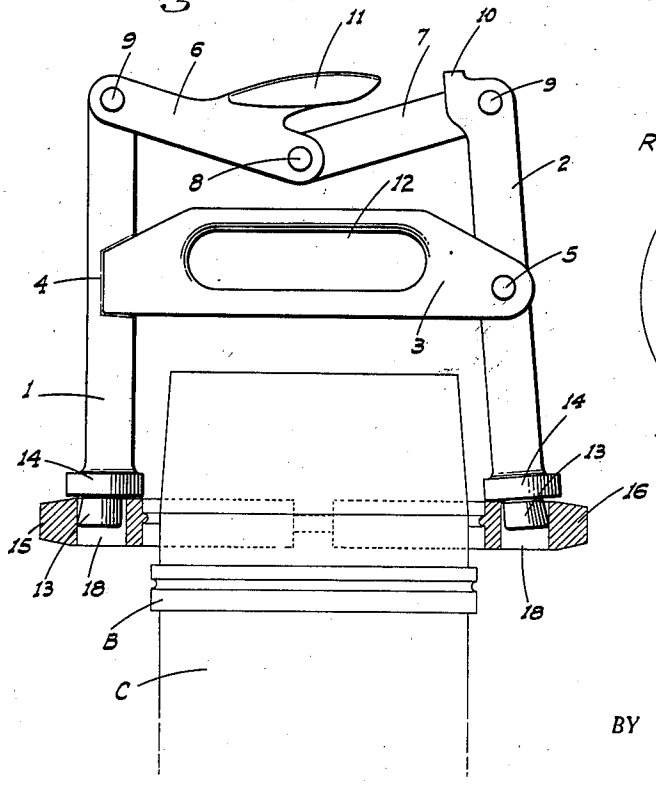
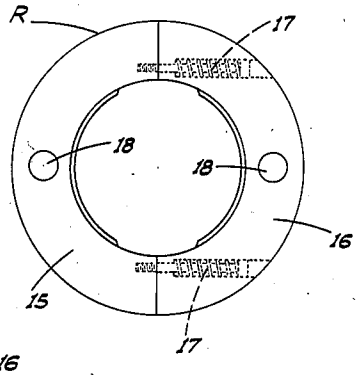


Fig. 3



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Patented Apr. 13, 1943 2,316,306

UNITED STATES PATENT OFFICE

2,316,306

SPREADER

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Application April 11, 1942, Serial No. 438,557

5 Claims. (Cl. 29—88.2)

This invention relates in general to an improved hand tool, and in particular the invention is directed to and it is my principal object to provide a unique one-hand operated spreader or separable spanner tool.

A further object of the instant invention is to provide a spreader, as above, for engagement with and to effect the spreading of the segments of a gun shell casing supporting and protector ring, such as shown in my copending application for United States Letters Patent, Ser. No. 438,556, filed April 11, 1942.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the tool when not in use.

Figure 2 is a side elevation of the tool engaged with a segmental gun shell casing supporting and protector ring, and actuated to spread the segments of said ring.

Figure 3 is a diagrammatic plan view of one of said rings with which the tool is particularly designed to be used.

Referring now more particularly to the characters of reference on the drawing, the device comprises a pair of normally parallel legs 1 and 2; these legs being of the same length and being connected substantially centrally of their ends by means of a spreader bar 3. At one end the spreader bar is rigidly fixed with the corresponding leg, as at 4, while at the other end the spreader bar is pivoted to the other leg by a pivot pin 5.

At their upper end the legs 1 and 2 are connected by a toggle link assembly which includes links 6 and 7. These links are pivoted together at adjacent ends by a pivot pin 8, while at their opposite ends the links are pivoted to the legs by other pivot pins 9.

An ear 10 is formed on the upper end of one link and overhangs the adjacent link 7, whereby to limit upward movement of the toggle link assembly so that the latter cannot move upwardly beyond dead center.

The link 7 intermediate its ends and overhanging pivot pin 8 is formed with an upwardly sloping hand or palm engaging pad 11, while the spreader bar 3 below pad 11 is cut out to form a hand grip 12. The distance between pad 11 and hand grip 12 is such that when the palm of the operator's hand is on pad 11, the fingers of such hand may engage grip 12.

The lower ends of the legs 1 are formed with longitudinally and outwardly projecting work-engaging lugs 13, each having an enlarged base 14 which serves as a limiting element when the lugs are projected into openings in the work to be spread, as will hereinafter appear.

The above described tool, while being capable of varied uses, is primarily intended for use to engage and separate a segmental gun shell casing supporting and protector ring as previously indicated, and which ring is here shown diagrammatically in Fig. 3. This ring, indicated generally at R, comprises separable, guided, and normally spring-closed segments 15 and 16, the guiding and spring closing means being indicated generally at 17. At opposed points the segments 15 and 16 are formed with lug receiving openings 18. To spread the segments of the ring R for the purpose of engaging the latter with the encircling band B on a gun shell casing C, the tool is manipulated as follows:

The tool is grasped in the hand in the manner previously described and the lugs 13 projected into openings 18 of the ring until enlarged bases 14 abut the ring. Thereafter the operator, with a squeezing action, causes toggle links 6 and 7 to articulate or buckle downwardly towards spreader bar 3. This results in the upper ends of legs 1 being drawn toward each other and a relative spreading of the lower end of said legs and lugs 13. Consequently the segments 15 and 16 of ring R are spread apart sufficiently to permit placement or removal of the ring G from the band B of shell casing C. Return movement of the parts of the tool to normal position, as shown in Fig. 1, results under the influence of the spring closing means 17 of the ring, when the operator relaxes his grip on the tool.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I

claim as new and useful and desire to secure by Letters Patent is:

1. A spreader comprising a spreader bar, a pair of legs, means securing the legs intermediate their ends in connection with opposite ends of said bar for relative pivotal movement of said legs, one leg being fixed to the bar at a right angle thereto, and the other leg being pivoted to said bar, work engaging elements on one end of said legs, and manually actuated means connected between the legs and operative to effect such relative movement thereof, said manually actuated means comprising a toggle link unit.

2. A spreader comprising a spreader bar, a pair of legs, means securing the legs intermediate their ends in connection with opposite ends of said bar for relative pivotal movement of said legs, work engaging elements on one end of said legs, a toggle link unit pivotally connected between the other ends of said legs, inward buckling movement of said unit causing separating movement of said work engaging elements, and an element formed with one leg adjacent the toggle link unit and overhanging one link of the latter, said element being positioned to prevent outward buckling movement of said unit beyond dead center.

3. A spreader comprising a spreader bar, a pair of legs, means securing the legs intermediate their ends in connection with opposite ends of said bar for relative pivotal movement of said legs, work engaging elements on one end of said legs, a toggle link unit pivotally connected between the other ends of said legs, inward buckling movement of said unit causing separating movement of said work engaging elements, and a hand engaging pad formed on and extending outwardly from one link of said unit.

4. A spreader comprising a spreader bar, a pair of legs, means securing the legs intermediate their ends in connection with opposite ends of said bar for relative pivotal movement of said legs, work engaging elements on one end of said legs, a toggle link unit pivotally connected between the other ends of said legs, inward buckling movement of said unit causing separating movement of said work engaging elements, and a hand engaging pad formed on and extending outwardly from one link of said unit, the spreader bar having a finger opening therethrough whereby a portion of said bar forms a finger grip.

5. A spreader comprising a pair of normally parallel legs, a spreader bar connected between said legs intermediate the ends of the latter and at substantially right angles thereto, said bar being pivoted to at least one of said legs, work engaging elements on one end of said legs, a toggle link unit pivotally connected between the other ends of said legs, said unit including a central pivot, a palm engaging pad formed with one link and projecting outwardly in overhanging relation to said central pivot, the spreader bar having a finger opening therethrough whereby a portion of said bar forms a finger grip, and means to prevent outward buckling movement of the toggle link unit.

FLOYD H. WYMAN.