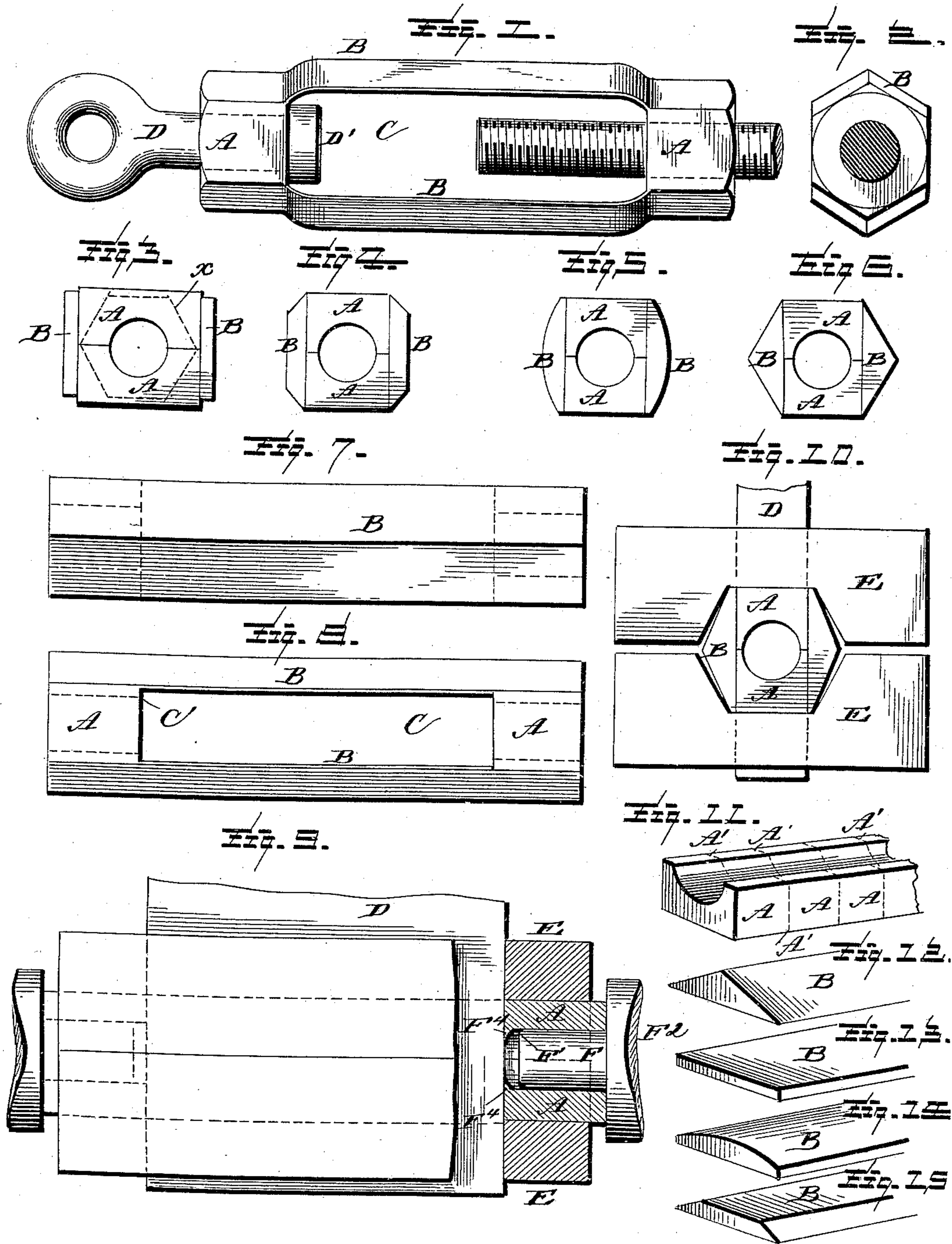


(No Model.)

C. H. WILLIAMS.  
TURN BUCKLE.

No. 445,625.

Patented Feb. 3, 1891.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES H. WILLIAMS, OF CLEVELAND, OHIO.

## TURN-BUCKLE.

SPECIFICATION forming part of Letters Patent No. 445,625, dated February 3, 1891.

Application filed June 10, 1890. Serial No. 354,878. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. WILLIAMS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Turn-Buckles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to certain improvements in turn-buckles and in the method and means of manufacturing the same; and among the objects in view are to reduce the cost of manufacture and the amount of waste material, and avoid the necessity of using 15 complicated mechanism in the manufacture and to produce an article which is strong, serviceable, and which presents an ample inner bearing for the head of a swivel.

20 Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a 25 plan of a turn-buckle embodying and constructed in accordance with my invention. Fig. 2 is an end elevation of Fig. 1. Figs. 3, 4, 5, and 6 are end elevations of turn-buckles, the arms of which are of different form in 30 cross-section. Figs. 7 and 8 are respectively a side elevation and plan of a turn-buckle having arms of the form shown in Fig. 6. Fig. 9 represents in side elevation and partial longitudinal vertical section an assem- 35 blage of dies upon a blank illustrating the method of manufacture. Fig. 11 represents in perspective a portion of a bar from which the filling blocks or pieces employed in constructing the heads of the buckle are severed; 40 and Figs. 10, 12, 13, 14, and 15 are perspectives of portions of bars of various forms in cross-section from which the arm portions of my turn-buckle are or may be constructed.

45 Like letters refer to like parts in all the figures.

One of the important advantages of my invention is that all parts of the turn-buckle may be primarily constructed in the form of bars and by means of well-known constructions of rolls having peripheral grooves of 50 suitable contour to produce the desired pattern or form of bar.

Fig. 11 represents a bar from which filling pieces or blocks A are made. This bar is rectangular in cross-section and has upon one 55 side and extending throughout its length a substantially semicircular groove, as shown. To form the filling pieces or blocks it is only necessary to sever the bar on transverse lines A' at such distances apart as will produce a 60 filling piece or block of a desired length. Two of these filling pieces or blocks are placed against each other, abutting at their thinner edges, as clearly shown in Figs. 3, 4, 5, 6, and 10, to form the head portion of the buckle in 65 connection with the arm portions B, which, as before stated, are formed of bars of the desired cross-section, several of which are illustrated in Figs. 12, 13, 14, and 15, which forms may also be varied to suit the taste of 70 the manufacturer. The lengths of the arms may be as desired, and in both cases cheapness and rapidity of manufacture are secured, and facility for the production of turn-buckles of varied lengths and sizes is provided in the 75 simple form of the various elements going to make up the completed article.

As illustrated more clearly in Fig. 3, the filling-blocks may be of greater dimension 80 than the width of the arms employed in connection therewith, so that in the subsequent operations of welding the blocks and arms there is provided sufficient material to be pressed into a solidly-welded and perfect head. By the employment of filling-blocks 85 of the character described a wide opening C is provided in the turn-buckle, and also a true, square, and extensive bearing C' is given for the head D' of the swivel D or for a set-nut when the same is employed upon a 90 threaded rod, and the proportions of the head may be, if desired, at least one and one-half times the diameter of the rod to be used with the buckle, thus providing adequate strength in all parts of the buckle. 95

Having arranged two of the filling-blocks between and at each end of the bars forming the arms, the same are bound together by wire or strap-iron, as is usual, for the purpose of maintaining the parts in desired rela- 100 tive position during the process of heating the same to a welding-point. Then an inner die D, conforming to the opening C, is arranged within said opening and between the

arms, the sides of the die conforming to the arms, whether spread, as shown in Fig. 1, or straight, as shown in Fig. 8, and outer dies E are caused to bear upon the parts constituting the buckle, so as to compress the same and complete the welding of the joints.

A plunger F, the end of which is slightly rounded, as shown at F', Fig. 9, is inserted into the bore of the filling-pieces, while its head F<sup>2</sup>, being extended beyond the limits of the filling-pieces and the arms thereon, is forced inwardly toward and against the fixed die D. The filling-pieces A, and also, if preferred, the arms, may project beyond the dies E, whereby there is sufficient stock to be solidly compressed within the dies, so as to form a compact and thoroughly-welded head. A small fillet or fin occurs by reason of the rounded end of the plunger F at the inner end and periphery of the bore of the head, as shown F<sup>4</sup>, Fig. 9. This fillet or surplus of metal occurs at such a point as not to interfere with the production of a perfectly-finished bearing-face on the inner ends of the heads and where it is conveniently removed in the preliminary reaming of the bore, which takes place to fit the same to be screw-threaded. The head of the plunger also produces a square finished end to the buckle, and, if desired, it may be other than plain to produce a chamfering of the corners in hexagonal buckles, as illustrated in Fig. 1.

By the method of manufacture thus described a turn-buckle is produced which has sufficient clearance on the inner face of its welds to permit the rotation of a swivel head or nut, the latter being shown by dotted lines *x* in Fig. 3 within the arms and against the heads, and in all steps of the manufacture there is avoided the necessity of employing any spreading-machine, and the necessary tools and dies for punching the head or upsetting or bending the ends of the arms to form the head portions, and not only such machines, are avoided, but the labor required to operate the same, and all expensive mandrels which have hitherto been employed for determining the bore of the head, and the expense of keeping the same in repair and to size, are dispensed with. A further important advantage is that all waste arising from the necessity of punching the bore of the head or the openings in the buckles is avoided, and the dies which are employed may be cast-iron, which, being cheaper than steel and of the conformation shown and described, costs less, and are more readily kept in condition for use. A further advantage is that very broad welded lines between the arms and the filling-pieces are secured and the joint or weld of the filling-pieces to each other occurs at a point where it is most thoroughly re-enforced by the weld-lines of the arms and the filling-pieces, so that a maximum of strength is secured in the buckle.

The fixed die D may be supported from above or below, and the movable dies may be operated by any suitable mechanism which will suggest itself to persons skilled in the art.

Having described my invention, what I claim is—

1. In a turn-buckle, filling-pieces consisting of rectangular blocks having in each a groove, substantially as specified.

2. In a turn-buckle, filling-pieces in the form of rectangular grooved blocks arranged with the groove of one block adjacent to that of the other, substantially as specified.

3. A blank or bar for filling-pieces of turn-buckles, the said bar being rectangular in cross-section and provided with a longitudinal groove extended along one side thereof, substantially as specified.

4. The method of making filling-pieces of turn-buckles, which consists in rolling a bar with a groove in one side thereof and subsequently severing said bar into blocks, substantially as specified.

5. The method of making turn-buckles, which consists in producing a bar having a groove extending longitudinally therein and in one side thereof, severing said bar into blocks and arranging said blocks with their grooves adjacent each other, and welding arms to the blocks and across the joints of said blocks, substantially as specified.

6. A turn-buckle the head of which is formed of the ends of its arm portions welded to the sides of grooved filling-blocks arranged with their grooves adjacent to each other, substantially as specified.

7. The method of making turn-buckles herein described, which consists in assembling grooved filling-blocks and arms and compressing the arms and filling-blocks transversely against each other and longitudinally against a fixed inner die, substantially as described.

8. In the art of making turn-buckles, a method of welding the head portions which consists in laterally compressing the same against each other and upon a plunger and longitudinally compressing the same against a fixed die so as to form a fillet within the bore of the head, substantially as specified.

9. A turn-buckle formed of arms and divided filling-blocks, substantially as specified.

10. A turn-buckle formed of arms and divided filling-blocks, the arms being welded across the joints of the filling-blocks, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. WILLIAMS.

Witnesses:

M. MILLARD,  
H. F. BALCOM.