No. 672,050. Patented Apr. 16, 1901.

L. A. WILLIAMSON.

BALL BEARING SHEARS.

(Application filed July 5, 1900.)

(No Model.)

Fig. 1

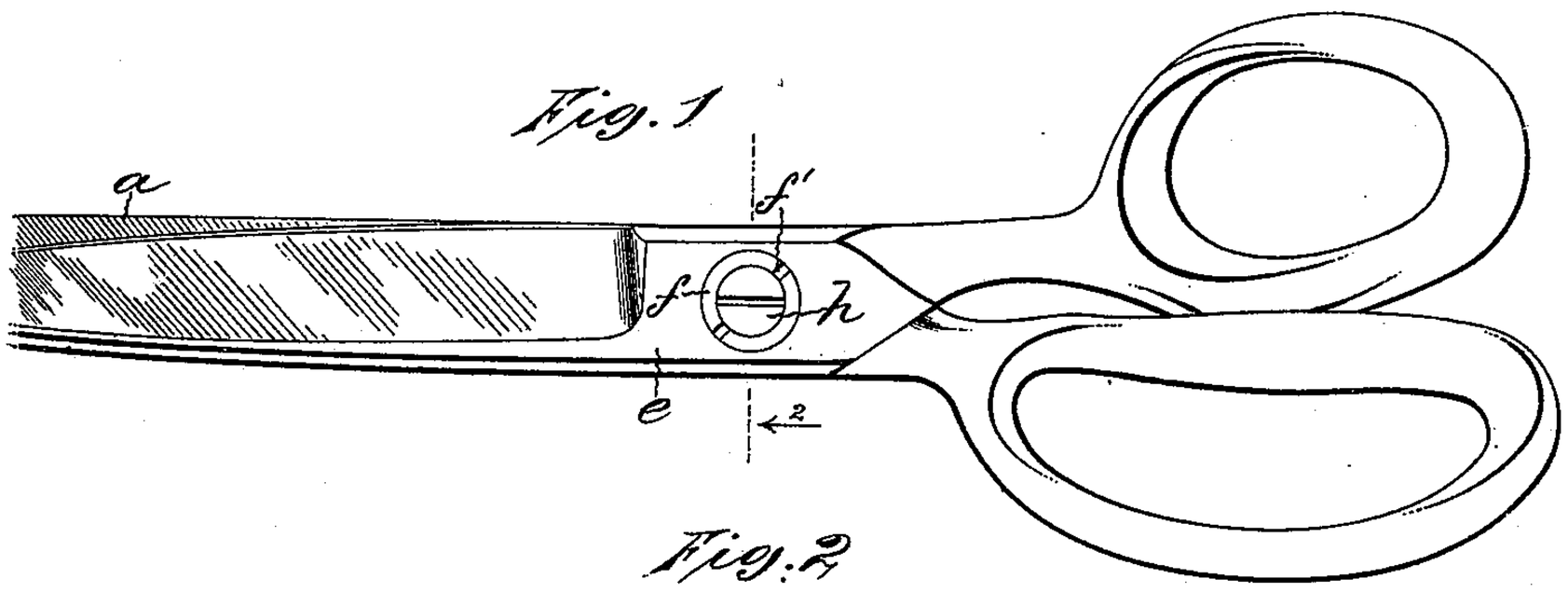


Fig. 2

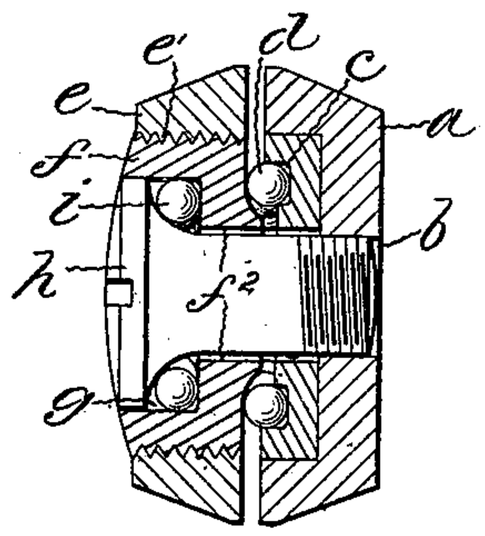


Fig. 3

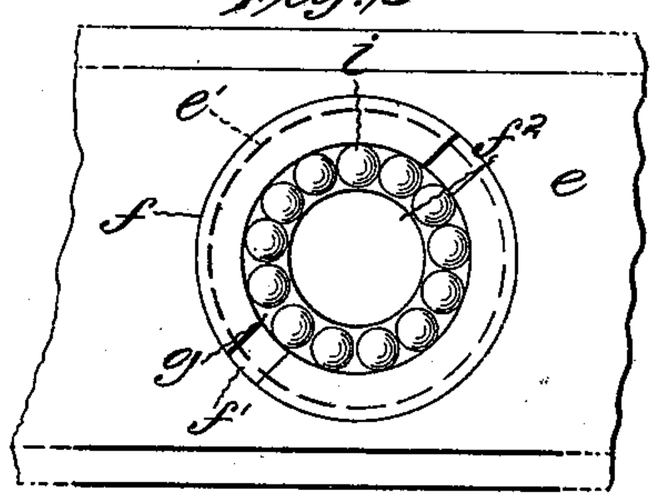
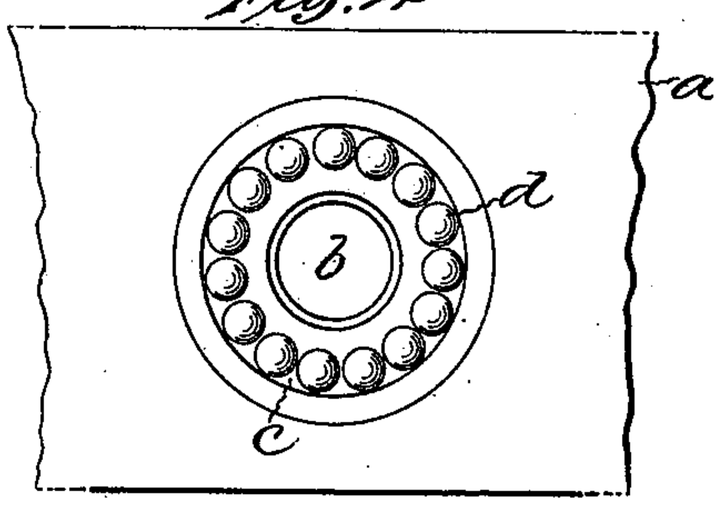


Fig. 4



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LEROY A. WILLIAMSON, OF WEST CORNWALL, CONNECTICUT.

BALL-BEARING SHEARS.

SPECIFICATION forming part of Letters Patent No. 672,050, dated April 16, 1901.

Application filed July 5, 1900. Serial No. 22,567. (No model.)

To all whom it may concern:

Be it known that I, LEROY A. WILLIAMSON, a citizen of the United States of America, having residence and post-office address at West Cornwall, in the county of Litchfield and State of Connecticut, have invented a certain new and useful Improvement in Ball-Bearing Shears, of which the following is a description, reference being had to the accompanying drawings, wherein—

Figure 1 is a side view of a pair of shears embodying the said improvement. Fig. 2 is a view of the same shears in cross-section on the plane denoted by the dotted line *x x* of Fig. 1, the scale being enlarged as compared with Fig. 1. Fig. 3 is a side view, on a scale similar to that of Fig. 2, of a portion of the shear-half which is next the observer in Fig. 1 with the pivot-screw absent. Fig. 4 is a view, on a scale similar to that of Fig. 2, of a portion of the inner face of that shear-half which is underneath in Fig. 2 with the pivot-screw absent.

The object of the improvement is the production of ball-bearing shears.

In the accompanying drawings the letter *a* denotes one of the shear-halves, *b* denotes an interiorly-screw-threaded pivot-hole through the same, *c* denotes a ball-race surrounding said pivot-hole, and *d* denotes the balls contained therein. By preference the pivot-hole and ball-race just referred to are made in a piece separate from the shear-half, which piece is tightly forced into a correspondingly-shaped orifice in that shear-half. The letter *e* denotes the other shear-half, and *e'* denotes an interiorly-screw-threaded pivot-plate hole therein.

The letter *f* denotes the exteriorly-screw-threaded pivot-plate which screws into the hole *e'*, it being provided with spanner-mortises *f'* for that purpose. The pivot-plate *f* contains the unthreaded pivot-hole f^2, and it also contains the larger ball-race *g*, surrounding the outer end of the same. The ball-race is sunken considerably below the outer surface of the pivot-plate in order to give place for the head of the pivot-screw *h*. The pivot-screw is threaded into the shear-half *a* and holds the two shear-halves together and, as its name indicates, is the pivot on which they turn. The under side of the head of that screw bears upon the balls *i* which are contained in the ball-race *g*. The inner side of the pivot-plate has a surface which bears upon the balls *d*.

The closeness of fit of the two shear-halves to each other is determined by adjusting the pivot-plate in the pivot-plate hole.

I claim as my improvement—

1. In combination; the shear-half having the screw-threaded pivot-hole and the ball-race surrounding the said pivot-hole; the balls carried in the ball-race last mentioned; the other shear-half having the screw-threaded pivot-plate hole; the exteriorly-threaded pivot-plate having the sunken ball-race, the unthreaded pivot-hole, and the surface adapted to bear on the balls first mentioned; the balls carried in said sunken ball-race; and the headed screw having its tip threaded into the threaded pivot-hole in said first-mentioned shear-half and its body loosely fitting said unthreaded pivot-hole and bearing by the under side of its head on the balls last mentioned; all substantially as described and for the purposes set forth.

2. In combination; the shear-half having the screw-threaded pivot-hole; the piece forced into said shear-half and having the unthreaded pivot-hole and the ball-race surrounding the said pivot-hole; the balls carried in the ball-race last mentioned; the other shear-half having the screw-threaded pivot-plate hole; the exteriorly-threaded pivot-plate having the sunken ball-race, the unthreaded pivot-hole, and the surface adapted to bear on the balls first mentioned; the balls carried in said sunken ball-race; and the headed screw having its tip threaded into the threaded pivot-hole in said first-mentioned shear-half and its body loosely fitting said unthreaded pivot-holes and bearing by the under side of its head on the balls last mentioned; all substantially as described and for the purpose set forth.

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