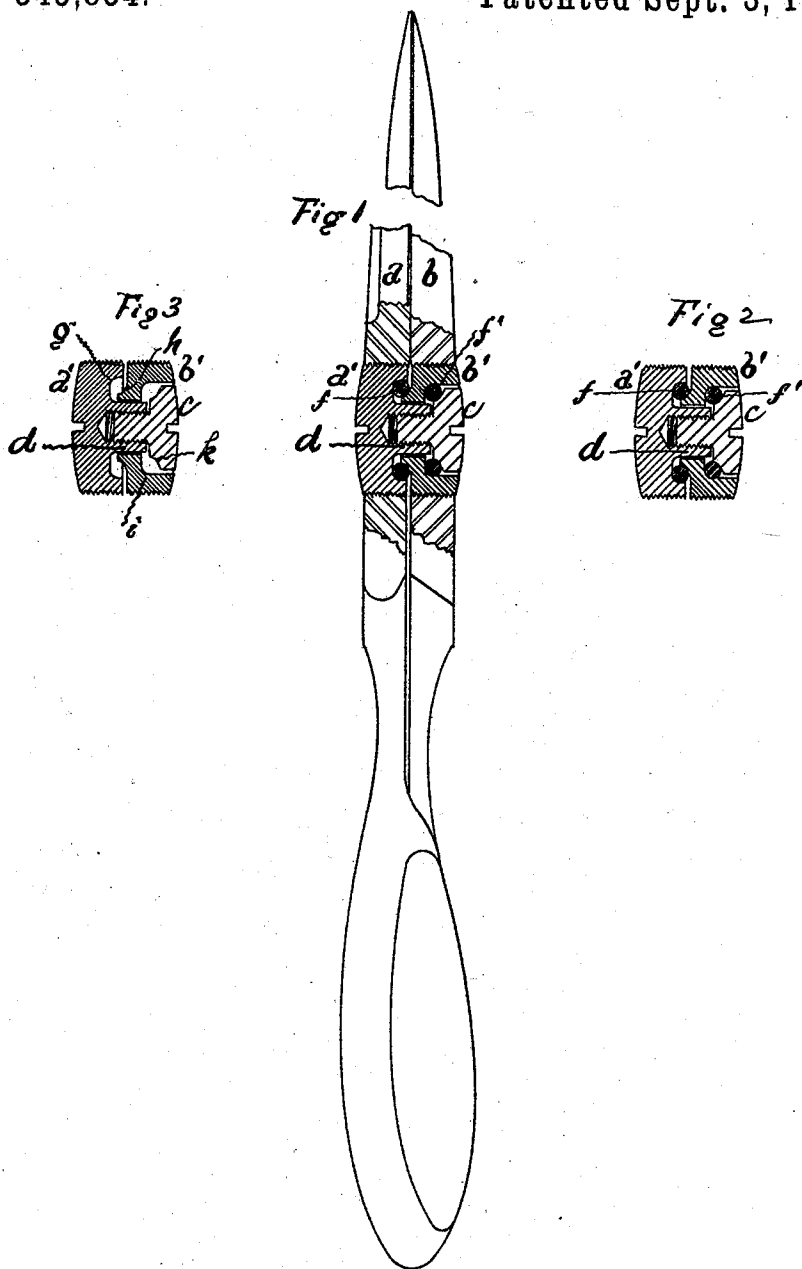


(No Model.)

L. A. WILLIAMSON.
BALL BEARING SHEARS.

No. 545,834.

Patented Sept. 3, 1895.



Witnesses
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John P. Healy.

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UNITED STATES PATENT OFFICE.

LEROY A. WILLIAMSON, OF HARTFORD, CONNECTICUT.

BALL-BEARING SHEARS.

SPECIFICATION forming part of Letters Patent No. 545,834, dated September 3, 1895.

Application filed December 19, 1894. Serial No. 532,352. (No model.)

To all whom it may concern:

Be it known that I, LEROY A. WILLIAMSON, a citizen of the United States of America, residing at Hartford, in the county of Hartford 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—

10 Figure 1 is an edgewise view of a portion of a pair of shears embodying said improvement, with the pivot portion represented as cut in central section lengthwise of the shears. Fig. 2 is a view of the shears in vertical cross-section on line *xx*. Fig. 3 is a view the same as
15 Fig. 2, except that the balls are omitted.

The invention is, in general terms, a ball-bearing for shears, scissors, and the like.

20 The letter *a* denotes one shear-half, *b* denotes the other shear-half, and *c* a pivot-screw which holds the two shear-halves together and also acts as a material part of the pivot. This screw enters the pivot-boss *d*, which is a part of the the shear-half *a*. There are two sets or
25 series of balls, one denoted by the letter *f* and the other denoted by the letter *f'*. The balls constituting the series *f* are confined between the annular ball-seat *g*, formed in the shear-half *a*, and the annular ball-seat *h*, formed in
30 or on the shear-half *b*. The balls which constitute the series *f'* are confined between the

annular ball-seat *i*, formed in the shear-half *b*, and the annular ball-seat *k*, formed in or on the inner side or surface of the head of the screw *c*.

The operation of the device is clear without
35 further description. The described arrangement constitutes a ball-bearing between the shear-halves *a b* and also between the shear-half *b* and the head of the screw *c*. The adjustment of the parts upon each other can be
40 tightened or loosened at pleasure.

As this specification is heretofore drawn the ball-bearing parts are treated as though they were directly parts of the two shear-halves. Such they are in substance. However, having
45 reference to the construction shown in the drawings, the letter *a'* denotes a bushing screwing into shear-half *a* and *b'* denotes a bushing screwing into shear-half *b*; and the ball-bearing parts are in these bushings.
50

I claim as my improvement—

In combination, the shear-half *a* provided with the annular ball-seat *g* and the pivot-boss *d*, the shear-half *b* provided with the annular ball-seats *h i*, the screw *c* provided with an
55 annular ball-seat on the inner side of the head, and the two series of balls, all substantially as described and for the purposes set forth.

LEROY A. WILLIAMSON.

Witnesses:

W. E. SIMONDS,
JOHN H. THOMPSON.