Nov. 27, 1934. C. J. SYMMONDS 1,981.882

BENCH DOG

Filed May 18, 1934

FIG. 1

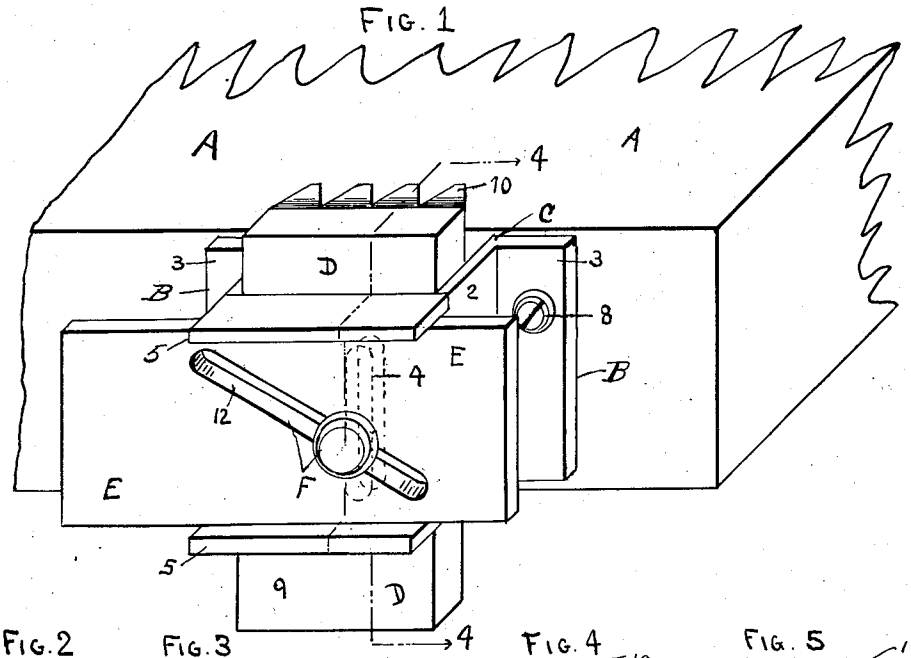


FIG. 2

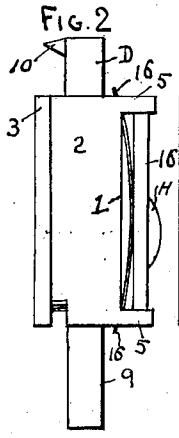


FIG. 3

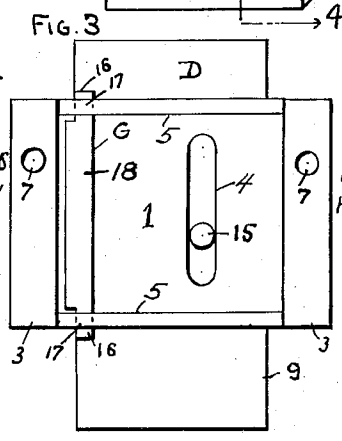


FIG. 4

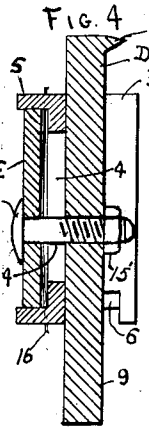


FIG. 5

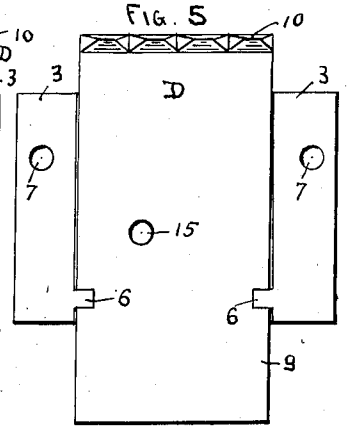
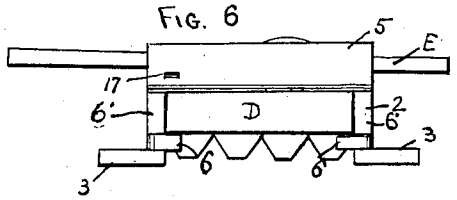


FIG. 6



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Patented Nov. 27, 1934 1,981,882

UNITED STATES PATENT OFFICE

1,981,882

BENCH DOG

Charles J. Symmonds, Chevy Chase, Md.

Application May 18, 1934, Serial No. 726,337

9 Claims. (Cl. 144—306)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention described herein may be manufactured and used by or for the Government for Governmental purposes, without the payment to me of any royalty thereon.

This invention generically appertains to a bench dog or stop adapted to be secured to a carpenter's work bench, for the purpose of securing the work against undesirable movement; but more particularly it is directed to an improvement in the means for adjusting the stop disclosed in Patent No. 1,943,352, granted to me January 16, 1934.

One object of this invention is to provide an assembly of the character designated having a vertically adjusted stop adapted to be raised or lowered through a series of positions and retained in any one of said positions by means of a cam mechanism, the latter being controlled through the instrumentality of a reciprocatory slide normally secured against movement by frictional contact.

Another object of this invention is to provide a bench dog assembly wherein the means for sliding the stop to and securing it in a predetermined position are rendered more efficient with respect to both the reciprocating movement of the slide and the retention of the stop in its adjusted position.

Another object of this invention consists in the provision of a bench dog having means for normally maintaining a binding frictional contact between the interacting camming means as well as the opposing surfaces of slide and bracket, which securely retains the stop in any adjusted position regardless of the shock of the work which tends to displace it.

Another object of this invention is to mount the reciprocating slide so that while normally it is secured against displacement, a slight pressure will release the slide and permit the latter to be easily moved to any position required for the proper adjustment of the stop.

Other objects of this invention are to provide a bench stop assembly wherein the adjustable stop is suitably reinforced to withstand the work impacts which it quite frequently receives; to provide a stop which when not in use offers no projecting parts to interfere with the normal utilization of the bench and to produce a device embodying but three major components, all of which may be stamped from sheet metal, and operatively assembled with a minimum expenditure of time, labor and material.

With these and other objects in view, this invention consists in certain novel details of construction, combination and arrangement of parts to be more particularly hereinafter set forth and claimed.

Referring to the accompanying drawing in which corresponding parts are indicated by similar reference characters:

Fig. 1 is a fragmentary perspective illustrating my improved bench stop assembly secured to one end of a carpenter's work bench;

Fig. 2 is a side elevation;

Fig. 3 is a front elevation with slide removed;

Fig. 4 is a transverse vertical section partly in elevation taken on the line 4—4 of Fig. 1;

Fig. 5, is a rear elevation of the bench stop assembly and

Fig. 6 is a bottom plan.

Briefly stated, this invention comprises a bracket adapted to be secured to a carpenter's work bench, a vertically disposed stop slidably mounted in the bracket and means for sliding said stop to and securing it in a predetermined position, said means including a reciprocatory slide, interacting camming means carried by the slide and stop and means for normally maintaining the slide against displacement.

In the illustrated embodiment characterizing this invention, there is shown a portion of a carpenter's work bench or table A, to one end of which there has been secured a bench stop assembly B, which constitutes the subject matter of this application. In its essentials this assembly consists of a suitable shaped bracket C, a vertically adjustable stop D, slidably carried by the bracket, a horizontally supported reciprocatory slide E, mounted in the bracket, interacting cam means F carried by stop D and slide E to enable the stop to be moved to and secured in any desired position by reciprocation of the slide, a spring means G functioning to normally establish a binding relation between the interacting camming means and the opposing surfaces of slide E and bracket C.

Coming now to the detailed construction of the preceding assembly, in the order of its components, bracket C consists of a metal strip shaped to provide front, side and anchoring sections (1), (2) and (3) respectively, as clearly shown in Figs. 1 and 3 of the drawing. In the course of this shaping process the front section (1) of bracket C is formed with a vertically extending slot (4), laterally off-set from the center of bracket section (1) as clearly shown in Fig. 3 of the drawing. Section (1) is also provided with parallel guide flanges (5), apertured as at (17) to receive the reduced extremities (16) of

leaf spring (18) which latter constitutes the means F functioning to frictionally secure the slide against displacement. Tongues (6) are struck from side sections (2) and extend inwardly toward each to produce a guide-way (6'). Sections (3) are perforated as at (7) for the passage of suitable fastening elements (8).

Bracket C having been constructed as stated, it is now ready to receive the stop D which consists of a single piece of metal of the required thickness, stamped to produce a shank (9) having horizontally extending teeth (10) formed at its upper end. To assemble the bracket C and the stop D, the shank (9) of the latter is disposed to the rear of section (1) and between section (2) of the bracket with the free end of the shank projecting through the guide-way (6'), formed by the inwardly projecting tongue (6), as clearly shown in Figs. 5 and 6 of the drawing.

To complete the assembly of major components, the reciprocatory slide E is disposed between flanges (5) of section (1) as clearly shown in Figs. 1 and 4 of the drawings. This slide E consists of a single piece of metal diagonally slotted as at (12) for a purpose hereinafter to appear.

Reciprocatory slide E and stop D are operatively associated by means of cam mechanism F and spring means G, which latter in connection with the cam mechanism normally establishes frictional engagement between the components of said cam mechanism and the opposing surfaces of section (1) and slide E. Cam mechanism F embodies a diagonally extending slot (12) in slide E and a follower H adapted to operate in the slide. Follower H consists of a screw having head (14) and externally threaded shank (14'). The shank of the follower F extends through the slots (12) and (14) of the slide E and bracket C respectively and through the internally threaded opening (15) formed in stop D, as clearly shown in Figs. 3 and 5 of the drawing.

The free end of shank (14) is engaged by a nut (15') the adjustment of which determines the tension of the spring G as will hereinafter appear. Spring means G which consists of a suitably bowed leaf spring (18) is disposed along one edge of section (1), of bracket C beneath the slide so that normally the latter owing to the laterally offset position of the follower is disposed at an angle between the parallel guide flanges (5), thus forcing the components of the cam mechanism F and the opposing surfaces of section (1) and slide E into frictional contact.

With this arrangement it is apparent adjustment of the nut (15') on follower H will compress the bowed leaf spring G and increase the pressure upon slide E, as will be readily understood without further discussion. Although spring means G normally secures the slide against movement, a very slight pressure upon the outer surface of the slide releases the frictional contacts established and permits the slide to be easily moved to any desired position.

The use of spring means G in connection with cam mechanism F materially improves the effectiveness of the bench dog assembly disclosed in my Patent No. 1,943,352, in that it positively secures both the slide E and stop D against displacement regardless of the shocks to which the dog may be subjected by the work.

With the various parts assembled and interconnected as stated, it is evident operation of slide E in one direction causes follower H to ascend slot (12), thus lifting stop D, while movement in the opposite direction causes follower H to descend slot (12) to lower the stop as will be understood without further discussion. Wherever follower H stops in the path of its travel the action of spring means G frictionally secures it against displacement.

In conclusion it will be seen this invention provides a stop assembly constructed so that it may be conveniently operated with one hand thus leaving the other free for adjustment of the work or for other purposes and furnishes a three point system of reinforcement including tongue (6) and cam follower H, which will enable stop D to withstand the impacts of the work as the latter is being planed or otherwise treated.

Having described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a front section, a dog mounted on and adjustable over one surface of the front section, slide disposed upon and movable over the opposing surfaces of the front section, the movement of said slide being at right angles to that of the dog, means in connection with said slide, front section and dog, whereby movement of the slide will effect adjustment of the dog, spring means interposed between the front section and slide and coacting with the first mentioned means to frictionally secure said slide in any adjusted position.

2. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a front section, parallel laterally spaced guides extending across the outer surface of said front section, a slide mounted for reciprocating movement between the guides, a dog mounted on and adjustable over one surface of said front section, a slide disposed upon and movable over the opposite surface of said front section, the movement of said slide being at right angles to that of the dog, means in connection with the slide, front section and dog whereby movement of the slide will effect adjustment of the dog, and a bowed spring disposed between one edge of the front section and the slide and coacting with the first mentioned means to normally dispose the slide at an angle between said guides to frictionally secure the slide in any adjusted position.

3. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, a dog mounted on and adjustable over one surface of said front section, a diagonally slotted slide disposed upon and movable over the opposite surface of the front section, the movement of the slide being at right angles to that of the dog, a follower projecting through the slots in the slide and front section, and through an opening formed in the dog whereby movement of the slide will effect movement of the dog to any desired position, spring means carried by the bracket and coacting with said slide and follower to frictionally secure the slide in its adjusted position and means in connection with the free end of the follower to retain the latter in position and at the same time permit tensioning of said spring means.

4. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, a dog mounted on and adjustable over one surface of said front section, a diagonally slotted slide disposed upon and movable over the

opposite surface of the front section, the movement of the slide being at right angles to that of the dog, a follower projecting through the slots in the slide and front section and through an opening in said dog whereby movement of the slide will effect movement of the dog to any desired position, spring means carried by the bracket and coacting with the slide and follower to frictionally secure the slide in adjusted position, said spring means including a bowed leaf spring underlying the slide, and adjustable means in connection with the free end of the follower, to tension the spring and retain the follower in operative position.

5. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, a dog mounted on and adjustable over one surface of said front section, means for reinforcing and guiding the dog during the course of its movement, a diagonally slotted slide disposed upon and movable over the opposite surface of the front section, the movement of the slide being at right angles to that of the dog, a follower projecting through the slots in the slide and front section, and through an opening formed in the dog, whereby movement of the slide will effect movement of the dog to any desired position, spring means carried by the bracket and coacting with said slide and follower to frictionally secure the slide in its adjusted position and means in connection with the free end of the follower to retain the latter in position and at the same time permit tensioning of said spring means.

6. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, parallel laterally spaced guides extending across the outer surfaces of said front section, a diagonally slotted slide mounted for reciprocating movement between said guides, a dog mounted on and movable over the inner surface of said front section, the movement of the dog being at right angles to that of the slide, a follower extending through the slots in said slide and front section and through an opening formed in the dog, whereby movement of the slide will effect adjustment of the dog to any position, a bowed leaf spring interposed between said front section and slide and in off-set relation with respect to the follower to force the slide outwardly and at an angle between said guides and adjustable means in connection with the free end of the follower to secure said follower in position and at the same time tension said spring.

7. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, parallel laterally spaced guides extending across the outer surface of the front section, a diagonally slotted slide mounted for reciprocating movement between said guides, a dog mounted on and movable over the inner surface of said front section, the movement of the dog being at right angles to that of the slide, means for reinforcing and guiding the dog through its course of movement, a follower extending through the slots in said slide and front section and through an opening formed in the dog, whereby movement of the slide will effect adjustment of the dog to any position, a bowed leaf spring interposed between said front section and slide and in off-set relation with respect to the follower to force the slide outwardly and at an angle between said guides and adjustable means in connection with the free end of the follower to secure said follower in position, and at the same time tension said spring.

8. A bench stop comprising a bracket to be secured to the edge of a work bench, said bracket including a longitudinally slotted front section, parallel side sections and parallel guides on the outer surface of said front section, a diagonally slotted slide mounted for reciprocating movement between said guides, a dog mounted on and movable over the opposite surface of the front section, the movement of the dog being at right angles to that of the slide, tongues struck from the lower edges of the side section and coacting with the front section to guide and reinforce said dog during the course of its movement, a follower extending through the slots in said slide and front section and through an opening formed in the dog, whereby movement of the slide will effect adjustment of the dog to any position, a bowed leaf spring interposed between said front section and slide and in off-set relation with respect to the follower to force the slide outwardly and at an angle between said guides and adjustable means in connection with the free end of the follower to secure said follower in position, and at the same time tension said spring.

9. A bench stop comprising a bracket adapted to be secured to the edge of a work bench, a dog vertically adjustable in the bracket, a slide mounted for reciprocatory movement in said bracket and movable at right angles to that of the dog, means in connection with said slide and dog whereby movement of the slide will effect adjustment of the dog, and spring means coacting with said slide and said first mentioned means to frictionally secure said slide in any adjusted position.

CHARLES J. SYMMONDS.