Sept. 16, 1947. G. BUSHKO 2,427,384

ADJUSTABLE DOOR HINGE

Filed July 20, 1945

Fig. 1.

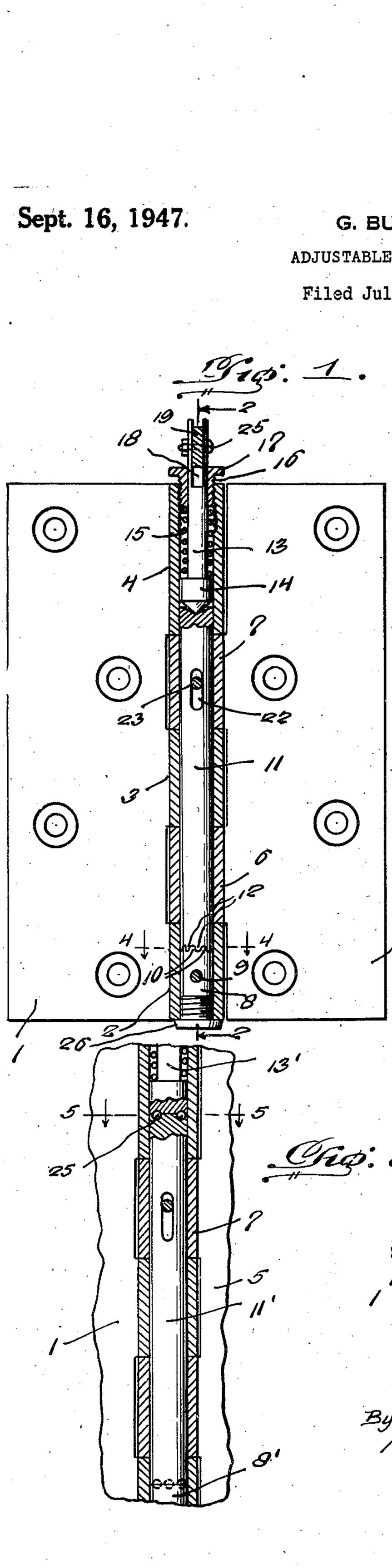


Fig. 2.

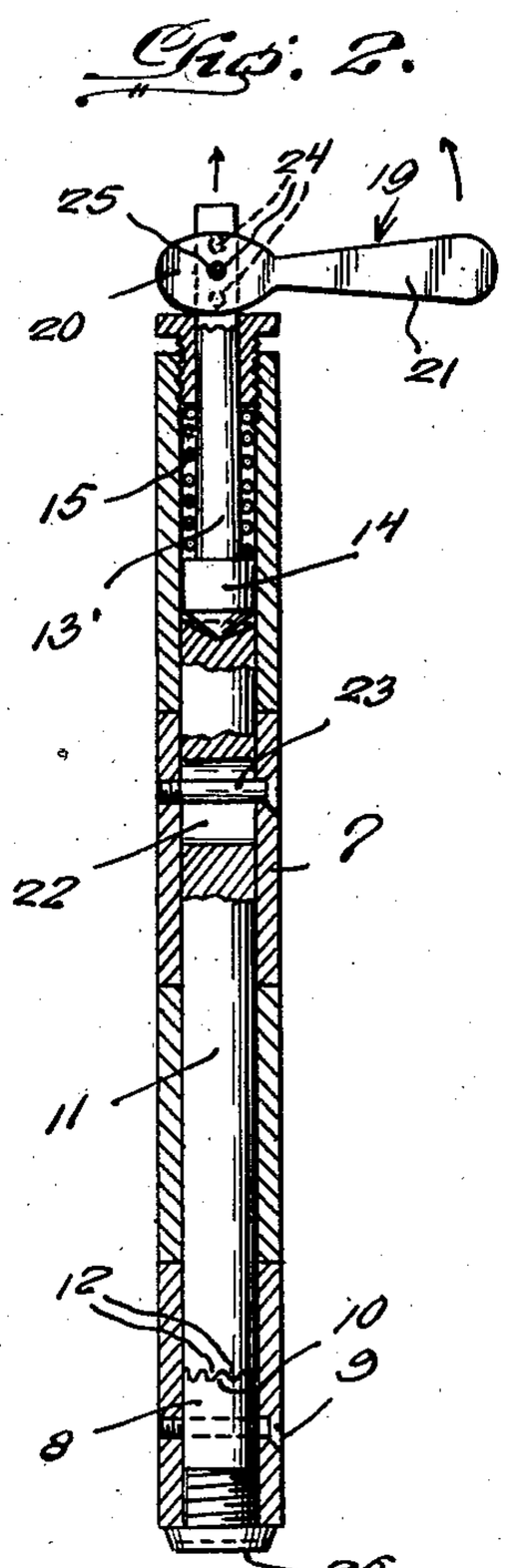


Fig. 4.

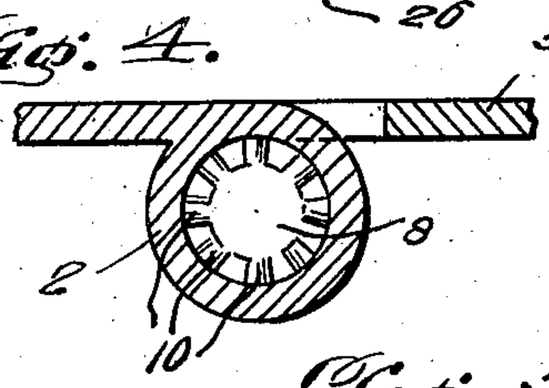
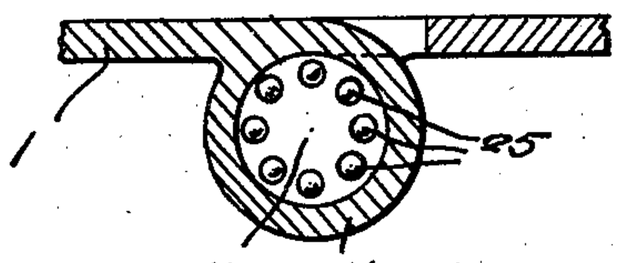


Fig. 5.



Inventor
George Bushko,

By McMorrow, Berman & Davidson

Attorneys

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2,427,384

ADJUSTABLE DOOR HINGE

George Bushko, Eynon, Pa.

Application July 20, 1945, Serial No. 606,137

4 Claims. (Cl. 16—141)

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This invention relates to door hinges, and more particularly to a door hinge structure wherein adjustable holding means for maintaining the door in a desired partly open position is provided. A main object of the invention is to provide a novel and improved adjustable door hinge of simple construction, which may be readily installed and which is extremely easy to adjust from free hinge movement to locking movement and which permits the door to be forceably moved.

A further object of the invention is to provide an improved hinge structure which embodies locking features and which may be readily adjusted from a free hinge condition to a locking condition by a simple cam-actuated mechanism embodied therein.

Further objects and advantages of the invention will appear from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a front elevational view, partly in cross-section of an adjustable hinge structure according to this invention.

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1.

Figure 3 is a detail view of a portion of a hinge structure similar to Figure 1, but illustrating a modification thereof.

Figure 4 is a cross-sectional view taken on line 4—4 of Figure 1.

Figure 5 is a cross-sectional view taken on line 5—5 of Figure 3.

Referring to the drawings, the hinge structure comprises a first butt member 1 formed with rolled vertically aligned sleeve elements 2, 3 and 4 and a second butt member 5 formed with vertically aligned sleeve elements 6 and 7 respectively received between the sleeve elements 2 and 3 and between the sleeve elements 3 and 4 of butt member 1.

Sleeve element 4 is internally threaded at its upper portion and sleeve element 2 is internally threaded at its lower portion.

The hinge pin structure for the hinge comprises a bottom cylindrical element 8 positioned in sleeve element 2 and secured therein by a bolt 9. The top surface of element 8 is formed with rounded peripheral teeth 10. Positioned in aligned sleeve elements 4, 7, 3, 6 and 2 above element 8 is a pin member 11 formed at its lower surface with peripheral rounded teeth 12 adapted to slidably interlock with teeth 10, and normally biased to an interlocking relation therewith by a vertically movable abutment member 13

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having a lower tapered head portion 14 adapted to bear in a conical depression formed in the top of pin member 11 and urged downwardly by a spring 15 bearing between head portion 14 and a bushing member 16 threadedly received in the upper internally threaded portion of sleeve element 4. Bushing member 16 is formed with a top flange 17. The upper end of abutment member 13 is slotted at 18 and pivotally mounted in the slot is a cam member 19 having an elliptical bearing portion 20 adapted to cooperate with flange 17 and formed with a lever arm 21. When lever arm 21 is rotated counterclockwise to a vertical position from the position shown in Figure 2, abutment member 13 is raised against the pressure of spring 15 to move head portion 14 out of engagement with pin member 11. A vertical slot 22 is provided in pin member 11 in which a securing bolt 23 is positioned, whereby pin member 11 is at times guided for vertical movement with respect to sleeve element 7.

Abutment member 13 is provided with a plurality of vertically spaced openings 24 in which the bolt 25 which secures cam member 19 thereto may be selectively positioned for obtaining a desired spring pressure of spring 15.

A threaded cap member 26 is received in the lower internally threaded portion of sleeve element 2 to close off the bottom of said sleeve element.

In the position shown in Figures 1 and 2, the hinge is releasably locked so that the butt members 1 and 5 are resiliently held with respect to each other and may be rotated to a number of desired angular positions, teeth 10 and 12 interlocking at said positions. When lever arm 21 is rotated to a vertical position, the butt members 1 and 5 may freely rotate with respect to each other.

Instead of employing the interlocking rounded teeth 10 and 12, the head of abutment member 13' and the opposing top surface of pin member 11' may be formed with registrable semi-circular depressions in which ball bearing elements 25 are positioned, as shown in Figure 3. Said ball bearing elements function in the same manner as the interlocking teeth 10 and 12 to resiliently lock the butt members 1 and 5 in desired angular positions when the lever arm 21 is in its horizontally projecting position. Similar recesses and ball bearing elements are provided between the lower end of pin member 11' and the upper end of bottom element 8' in this modification of the invention. As in the modification of Figures 1 and 2, when lever arm 21 is raised to its vertical

position, the spring pressure is removed from the pin elements and free rotation of the butt members is permitted.

The hinge structure is secured with respect to a door and the door frame so that ready access may be had to lever arm 21 for manual actuation thereof. The door may thus be yieldably locked in a desired partly open position and may be readily released for free rotation on its hinges.

While certain specific embodiments of adjustable hinge structures have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention other than as defined by the scope of the appended claims.

What is claimed is:

1. An adjustable hinge structure comprising a pair of butt members, each butt member being formed with a plurality of axially aligned sleeve elements, said sleeve elements being arranged to interfit to define a pin-receiving recess, a first pin element secured within a sleeve element of one butt member, a second pin element passing through other of the sleeve elements to hingedly connect the butt members, means securing said second pin element to a sleeve element of said other butt member for axial movement with respect thereto, an abutment member bearing on said second pin element, spring means urging

said abutment member against said second pin element and urging said second pin element into contact with said first pin element, camming means at the mutually contacting surfaces of said pin elements, and manually operable means for at times removing the spring pressure from said second pin element.

2. The structure of claim 1, and wherein said manually operable means is an elliptical cam centrally secured to said abutment member and bearing on a bushing carried by the uppermost sleeve element.

3. The structure of claim 1, and wherein said camming means comprises rounded teeth formed on the opposing surfaces of the pin elements, said teeth being adapted to interlock.

4. The structure of claim 1, and wherein said camming means comprises ball bearings positioned in registrable circularly arranged recesses formed in the opposing surfaces of the pin elements.

GEORGE BUSHKO.

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The following references are of record in the file of this patent:

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