

Feb. 4, 1930.

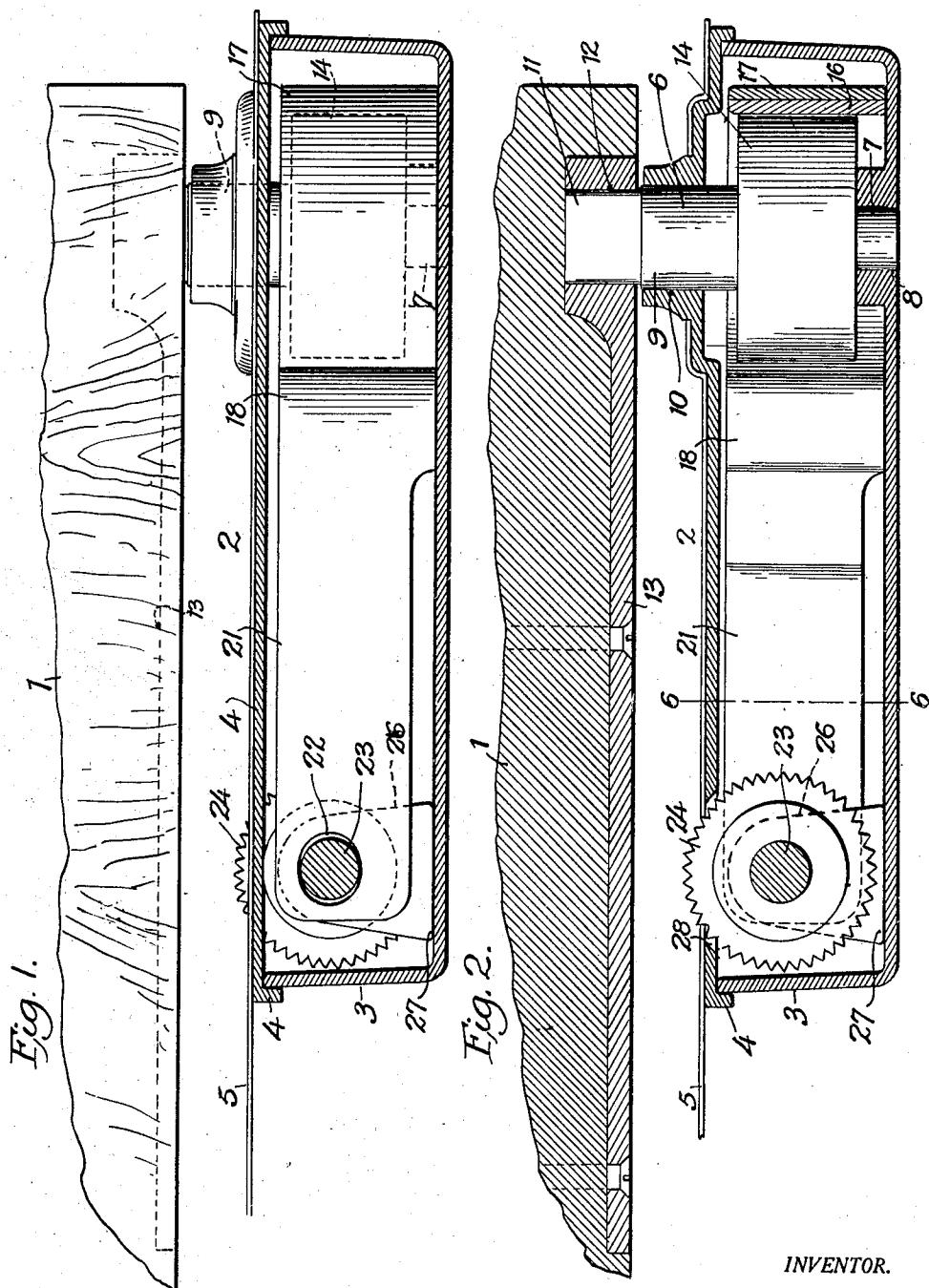
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1,745,545

FRICITION HINGE

Filed April 12, 1929

3 Sheets-Sheet 1



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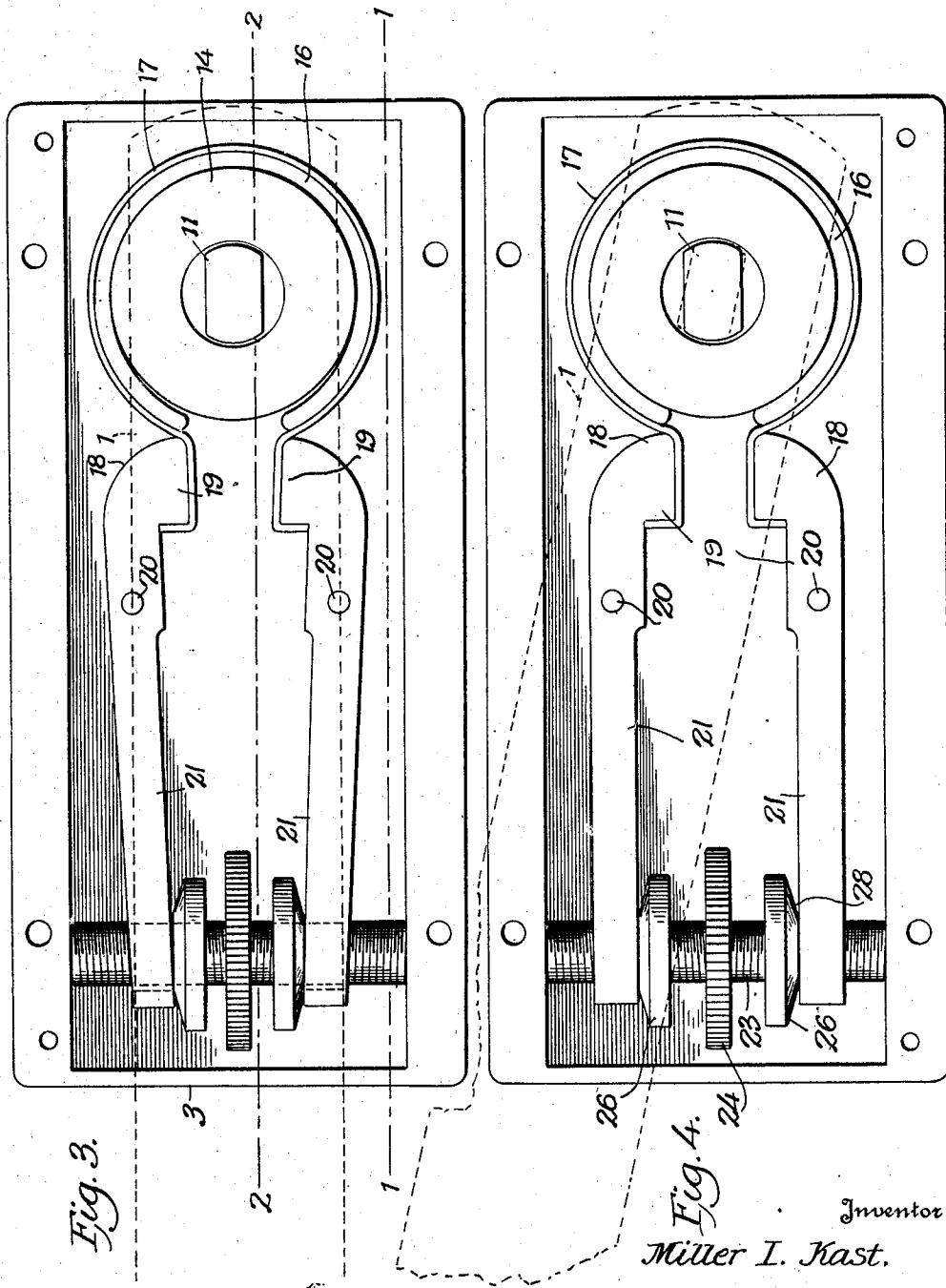


Fig. 4.  
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3 Sheets-Sheet 3

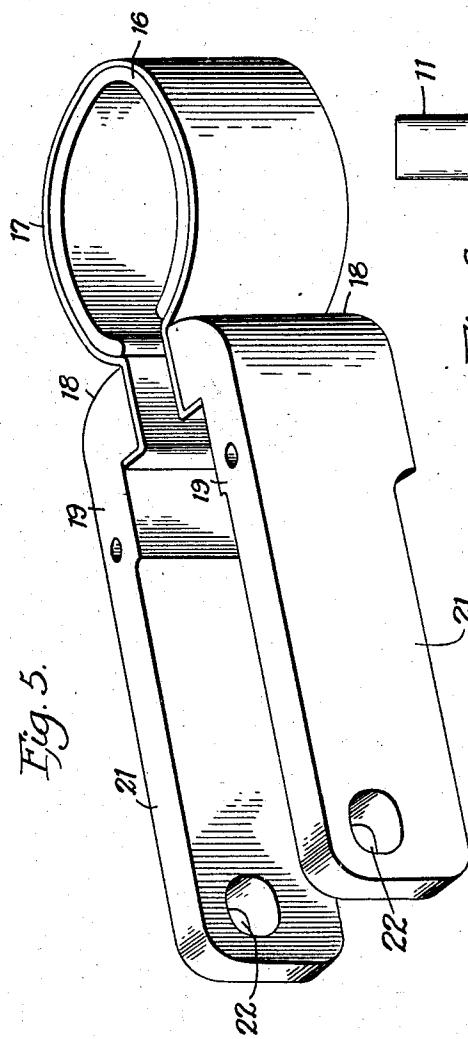


Fig. 5.

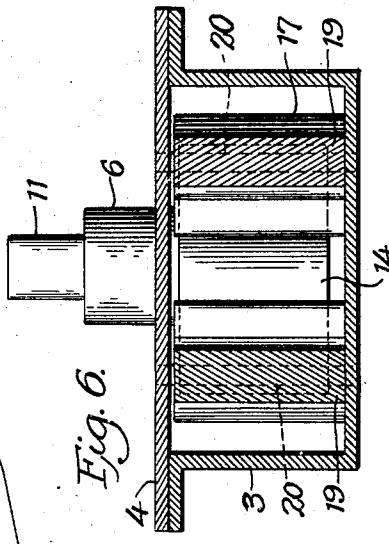


Fig. 6.

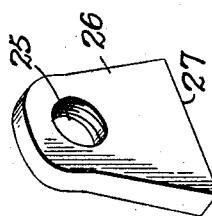


Fig. 7.

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# UNITED STATES PATENT OFFICE

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## FRICITION HINGE

Application filed April 12, 1929. Serial No. 354,646.

This invention relates to door hinges of the so-called friction type, in which friction means are provided for holding the door normally in any desired position between fully closed and fully open in either direction; and the object of the invention is to provide a friction hinge which may be used as a simple frictionless hinge when desired, which may be readily and conveniently adjusted to regulate the frictional resistance to movement of the door, and which may be applied to the floor to serve as a lower hinge in such a manner as to obviate the objections to the jamb hinges commonly used, as well as to permit of adjustment of the device to regulate its frictional resistance without the necessity of removing covers or other parts.

The invention consists of the features of construction, combination and arrangement 20 of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Fig. 1 is a view in elevation of the lower portion of a door showing the same mounted 25 upon my improved friction hinge, the latter being in section taken substantially on line 1—1 of Fig. 3.

Fig. 2 is a vertical longitudinal section through the door and the friction hinge on 30 the line 2—2 of Fig. 3.

Fig. 3 is a top plan view of the friction hinge with the cover of its casing removed and showing in dotted lines the door in closed position.

Fig. 4 is a view similar to Fig. 3 showing the hinge as arranged to hold the door open to a predetermined degree, a portion of the door appearing in dotted lines.

Fig. 5 is a perspective view of the friction 40 brake band and the brake levers.

Fig. 6 is a vertical transverse section on the line 6—6 of Fig. 2.

Fig. 7 is a perspective view of one of the bearing nuts.

Referring now more particularly to the drawings, 1 designates the lower portion of a door, and 2 my improved friction hinge device.

The friction hinge device 2 comprises a casing 3 normally open at its top and having a

cover 4 for closing the same, the casing or floor box being designed to be set in a floor so that the upper surface of the cover will lie flush with the floor, over which casing cover 4 is placed a wear strip or plate 5 of brass or other metal. 55

Within the casing 3, adjacent one end thereof, is arranged a hinge or pivot pin 6, having a lower end portion 7 journaled in an opening 8 in the bottom of the casing 3, and having an upper end portion 9 journaled in an opening 10 in the cover plate 4, said portion 9 of the pin 6 being provided with an angular or non-circular coupling lug or projection 11 fitting within a correspondingly shaped opening 12 in a door supporting bracket plate 13 mortised in and secured by screws or other suitable fastenings to the bottom edge of the door 1. The pin 6 has fixedly formed therewith or keyed or otherwise fixedly secured 60 thereto a brake drum 14, of wood, metal or other suitable material. 65

The drum 14 is adapted to be engaged by the friction brake lining 16 of a split resilient brake band 17, the ends of which are respectively secured to the adjacent short ends or arms 18 of a pair of brake levers 19, pivotally mounted at 20 in the casing, the opposite or long arms 21 of which levers extend toward the end of the casing opposite that at which the pivot pin and brake drum are located. 75

The outer or free ends of the arms 21 of the levers 19 are formed with elliptical or other elongated openings 22, adapting said arms to loosely embrace an adjusting shaft 23 provided with a centrally disposed milled adjusting wheel 24. The opposite ends of the shaft, or portions thereof on opposite sides of the wheel 24, are respectively right and left hand threaded, and such threaded portions or ends of the shaft engage threaded openings 25 in bearing nut blocks 26 having flattened base portions 27 fitted to rest and slide upon the bottom wall of the casing 3 and to bear stably thereon. These nuts 26 are provided with outer concaved faces 28 arranged to respectively bear against the inner faces of the apertured ends of the lever arms 21, so that when the shaft 23 is turned 90 95 100

in one direction the lever arms 21 will be forced apart to move the lever arms 18 inwardly or towards each other and thereby contract the resilient brake band 17 for an obvious purpose, and so that when the shaft 23 is turned in the opposite direction the lever arms 21 will move inwardly or toward each other under the force of the resilient brake band 17 which is automatically extensible. The ends of the shaft 23 may be arranged to abut against the side walls of the casing or be journaled therein so as to hold said shaft from endwise movement, while the form of the openings 22 and the sliding arrangement of the bearing nut blocks 26 in the casing permit of the free and easy adjustment of the lever arms to regulate to any desired degree the working pressure of the brake band 17 and lining 16 on the brake drum. The bearing force of the brake band on the brake drum made by the arrangement described may be so applied that the greatest frictional pressure will be instituted at a certain point in the path of swinging movement of the door, so that by proper regulation the door may be maintained normally in any position between fully open and fully closed position against accidental closure and until proper force is exerted for an intended opening or closing movement. The adjusting wheel 24 projects upwardly through a slot 28 in the casing cover 4 through which it is sufficiently exposed to permit it to be manipulated for regulating the frictional binding action without the necessity of removing the cover or otherwise disrupting the parts of the friction hinge or other parts of the door mounting.

The construction and operation of the improved friction hinge will be readily understood from the foregoing description and its advantages understood by those versed in the art without a further and extended description. It is, of course, to be understood that, while the structure disclosed is preferred, changes falling within the scope of the appended claims may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, I claim:—

1. A friction hinge for doors embodying a casing, a hinge pin for connection with the door journaled in the casing, a brake drum carried by the pin, a brake band for engagement with the drum, levers for contracting the band and permitting expansion thereof, and means for adjusting the levers to regulate the braking action.
2. A friction hinge for doors embodying a casing, a hinge pin for connection with the door journaled in the casing, a brake drum carried by the hinge pin, a resilient brake band for engagement with the drum, pivoted levers connected with the ends of the brake

band, a right and left hand screw shaft for adjusting said levers, and means for turning said shaft.

3. A friction hinge for doors embodying a casing, a hinge pin for connection with the door journaled in said casing, a brake drum carried by the pin, nuts within the casing, a resilient brake band for action on the drum, levers connected with the brake band and movable in one direction by the resiliency of the band and in the opposite direction by movement of said nuts, a right and left hand threaded shaft for moving the nuts, and means for turning the shaft.

In testimony whereof I affix my signature.

MILLER I. KAST.

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