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A. A. RIZZUTO
HINGE LOCKING DEVICE
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3,048,883

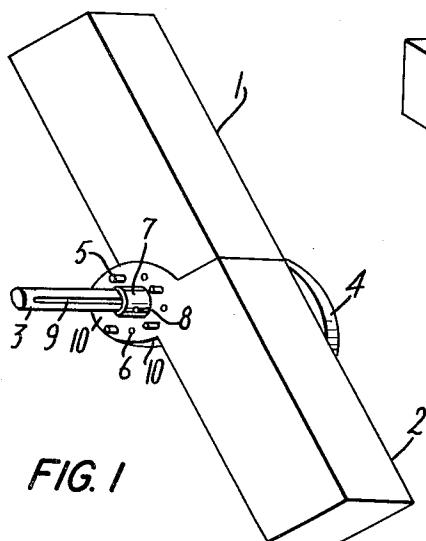


FIG. 1

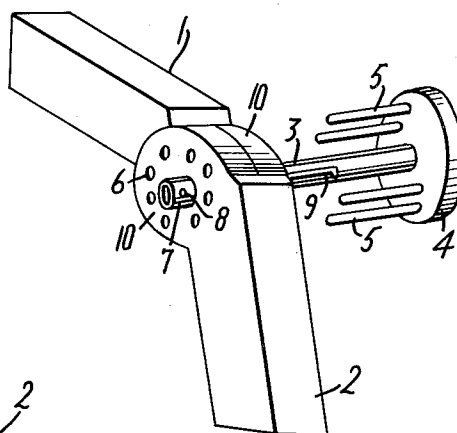


FIG. 2

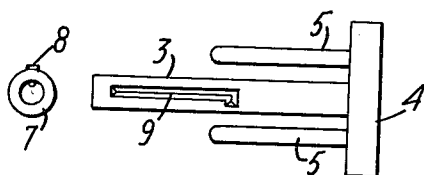


FIG. 3

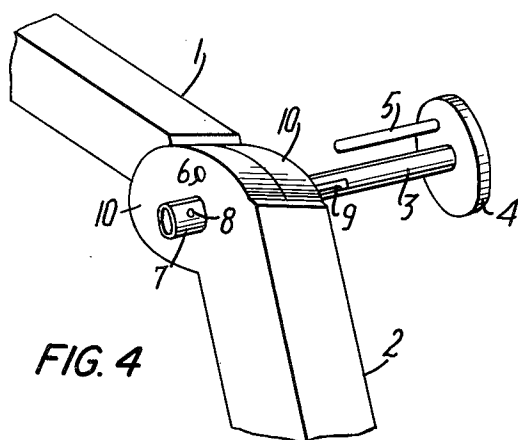


FIG. 4

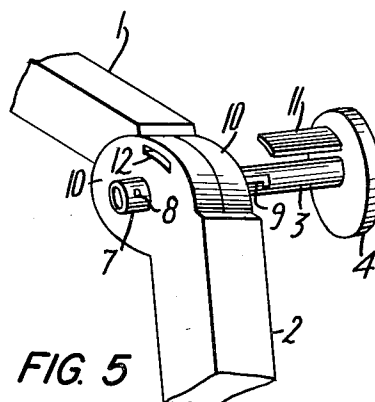


FIG. 5

INVENTOR.
Angelo A. Rizzuto

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HINGE LOCKING DEVICE

Angelo A. Rizzuto, Box 325, General Post Office,
New York, N.Y.

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This invention relates to new and useful improvements in hinges and more particularly to hinges of the type having a pair of leaves with integral disk-shaped knuckles extending angularly from one edge thereof and a pivot pin engaging in the knuckles, and this application constitutes a continuation in part of a copending application, Serial No. 661,644, filed May 27, 1957, now abandoned.

An object of the present invention is to provide a hinge of the type described with a simple and practical means whereby the hinge leaves can be locked at a desired angle and readily unlocked for relative pivotal movement thereof.

Another object is to provide a hinge of the type described with a simple and practical means whereby the hinge leaves can be locked at a desired angle and be secured in the locked position by a safety device.

A further object is to provide a hinge having a locking means which may be substituted for an ordinary hinge if feasible and desirable with the advantage of the use of said locking means.

In the accompanying drawing forming a part hereof:

FIG. 1 is a perspective view of the preferred embodiment of the invention illustrating the hinge locking device in an operative position wherein the hinge is locked at a straight angle by a locking pin and the pin is itself locked against a withdrawal thereof, from a locking position, by a locking collar.

FIG. 2 is a perspective view of the hinge locking device in an inoperative position wherein the hinge functions as an ordinary hinge.

FIG. 3 illustrates the hinge locking device, a locking pin seen in a side view, and also a supplementary locking device, a locking collar seen in a face view.

FIG. 4 illustrates the simplest form of the locking means in the hinge namely, a single prong extending inwardly from the head of the locking pin.

FIG. 5 illustrates a modification of the locking means whereby a stave-like lug is substituted for a prong.

The hinge illustrated in the drawing is the type best suited for the embodiment of the invention because of the shape and size of the knuckles. The ordinary fast-pin or loose-pin hinge is provided with knuckles which could not practicably embody the invention altho of course the ordinary type of hinge could be specially constructed for the purpose, if desired or required. In the type of hinge illustrated, each leaf 1 and 2 has only one knuckle 10 which extends at a forty-five degree angle from an edge and the knuckle 10 is only one half the width of the leaf. The knuckles have each a bore and are superimposed one upon the other with the bores in alignment. Normally a fixed pivot pin is engageable in the aligned bores.

The specific improvement in the hinge consists of a modification of the pivot pin 3 which is lengthened and provided with a head 4 having locking means such as prongs 5, and which is slidably disposed within the aligned bores of the knuckles 10. The knuckles are provided with perforations 6 which register when the hinge leaves 1 and 2 are set at a desired angle and thereby permit the prongs 5 to engage therein and secure the hinge leaves in the desired angular position. The elongated pivot pin 3 is also provided with a longitudinal groove 9 which extends approximately one half the length of the pin 3 from the free end thereof, the free end being solidly intact and the groove 9 terminating in an L-shape. A collar

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7, having a stud 8 projecting inwardly from the wall of the bore, is slidably disposed on the free end of the pin 3, and the stud 8 engages in the L-shaped groove 9 thereby limiting the sliding movement of the collar 7 on the pin 3 to the length of the groove 9. When the locking pin 3 is fully retracted as in FIG. 2, the collar 7 is positioned at the end of the pin 3 and thereby prevents a detachment of the pin 3 from the knuckles 10. When the locking pin 3 is in a locking position as in FIG. 1, with the prongs 5 engaging in the registering perforations 6, the collar 7 may be moved to the base of the L-shaped groove 9, where it would be in contact with a lateral surface of one of the knuckles 10, and rotated on the peripheral segment of the groove 9. In such a position, the collar 7 serves as a safety device by preventing an accidental displacement of the locking pin 3 from a locking position, the free end of the pin 3 being exposed as seen in FIG. 1.

The prong 5 extending inwardly from the head 4 of the locking pin 3, is regarded as the simplest form which the locking means can assume; however, if a different form is considered desirable, such as the stavelike lug 11 seen in FIG. 5, the registering openings in the knuckles 10, such as the arcuate slot 12 in FIG. 5, in which the locking means are engageable, must of course conform to the shape of the particular means employed. The preferred embodiment of the invention, illustrated in FIGS. 1 and 2, is provided with a number of perforations 6 in the knuckles 10 to permit a wide range of angular adjustments of the hinge leaves 1 and 2.

The invention described and illustrated herein may assume other forms in the construction and arrangement of parts and it should be understood that changes in the form of the invention may be made without departing from the spirit and scope thereof as hereinafter claimed.

What is claimed is:

1. A hinge comprise a pair of leaves, each of said leaves having an integral disk-shaped knuckle extending at a forty-five degree angle from one edge thereof, said knuckles being each one half the width of said leaves, said knuckles being provided each with a bore therein and being superimposed one upon the other with said bores in alignment thereby forming a jointed central portion of said hinge, said central portion being equal in width to said hinge leaves and in longitudinal alignment therewith, an elongated pivot pin slidably engageable in said aligned bores and being substantially twice the length of said bores combined, said pin having a head on one end, said head being provided with prongs extending inwardly in a spaced apart relation to and parallel to said pin, said prongs having a length substantially one half the length of said pin, said disk-shaped knuckles being provided with spaced perforations adapted to register when the hinge leaves are angularly disposed, said prongs being releasably engageable in said registering perforations to secure the hinge leaves in a locked angular position, an L-shaped groove formed in said pin the longitudinal portion of said groove extending approximately one half the length of the pin from the free end thereof and terminating in a base portion constituting a peripheral segment, said free end of the pin being solidly intact, and a collar slidably disposed on the grooved portion of the pin having a pin-retaining stud extending from the wall of the bore thereof, said stud being engageable in the longitudinal portion of said groove when the pin is withdrawn to an inoperative position thereby permitting said collar to serve as a retaining means to prevent a disengagement of the pin from the knuckles of the hinge leaves and said stud being engageable in the base portion of said groove when the pin is in a locking position thereby permitting a limited rotary movement of the collar to a position wherein said

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pin is releasably secured against a withdrawal thereof from said locking position.

2. A hinge comprising a pair of leaves having each an integral disk-shaped knuckle extending from one edge thereof, said knuckles having aligned bores, an elongated pivot pin slidably disposed in said aligned bores, said pin having a head with prongs extending inwardly in spaced relation to said pin, said disk-shaped knuckles being provided with spaced perforations adapted to register when the hinge leaves are angularly disposed, said prongs being releasably engageable in said registering perforations to secure the hinge leaves in a locked angular position, a groove formed in said pin extending approximately one half the length of the pin from the free end thereof and terminating in a peripheral segment, said free end of the pin being solidly intact, and a collar slidably disposed on the grooved portion of the pin having a stud extending from the wall of the bore thereof, said stud being engageable in said groove,

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said collar being adapted to prevent a disengagement of said pin from the knuckles of the hinge leaves when the pin is in a fully withdrawn position by engaging with the solid free end thereof and being adapted to prevent a disengagement of the pin from a locking position by a releasable rotary movement in said peripheral segment of said groove.

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