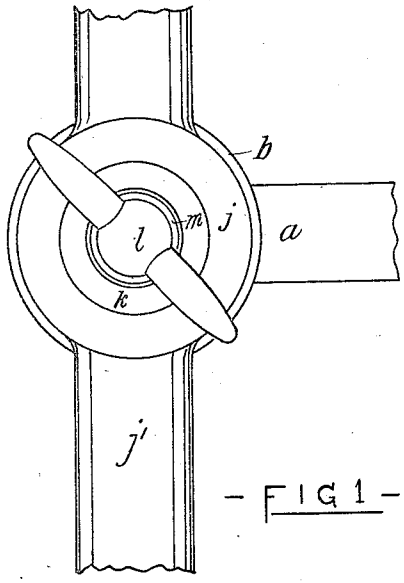
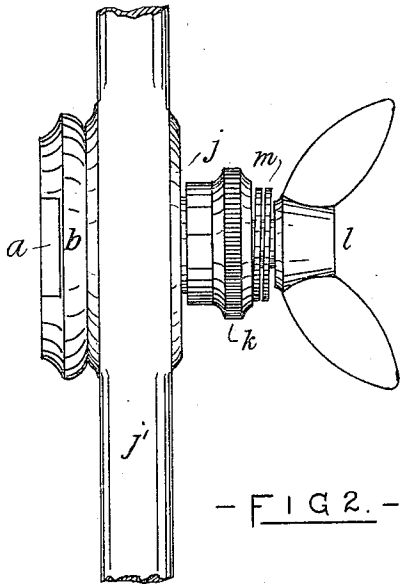
T. P. O'GRADY, DEC'D.
V. I. O'GRADY, EXECUTRIX.
MECHANICAL LOCK OR GRIP.
APPLICATION FILED JAN. 24, 1917.

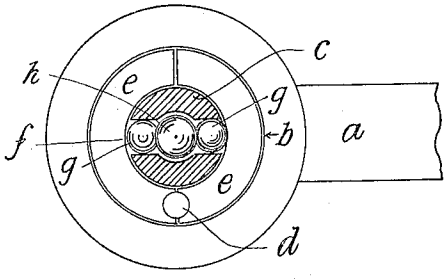
1,243,338. Patented Oct. 16, 1917.



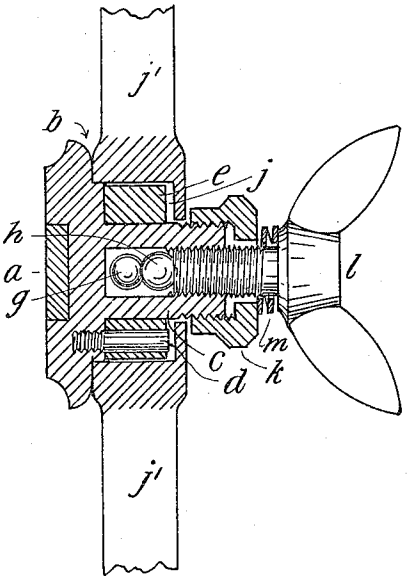
- FIG 1 -



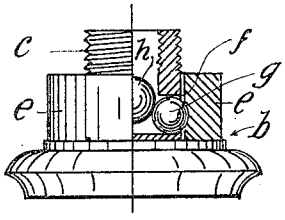
- FIG 2. -



- FIG 3 -



- FIG 4 -



- FIG 5. -

Inventor

Thomas Patrick O'Grady, decd.
Violet Isabel O'Grady, Executrix
by Albert G. Davis
her Attorney

UNITED STATES PATENT OFFICE.

THOMAS PATRICK O'GRADY, DECEASED, LATE OF THE ESPLANADE, GRANGE, SOUTH AUSTRALIA, AUSTRALIA, BY VIOLET ISABEL O'GRADY, EXECUTRIX, OF THE ESPLANADE, GRANGE, SOUTH AUSTRALIA, AUSTRALIA.

MECHANICAL LOCK OR GRIP.

1,243,338. Specification of Letters Patent. Patented Oct. 16, 1917.

Application filed January 24, 1917. Serial No. 144,122.

To all whom it may concern:

Be it known that VIOLET ISABEL O'GRADY, citizen of the Commonwealth of Australia, residing at the Esplanade, Grange, in the State of South Australia, Commonwealth of Australia, gentlewoman, is the sole executrix of THOMAS PATRICK O'GRADY, late of same address, deceased, who invented certain new and useful Improvements in a Mechanical Lock or Grip, of which the following is a specification.

The invention relates to an improved mechanical lock or grip, the object of the same being to construct a locking or gripping device which shall be applicable to a rotary moving part, but can be quickly applied so as to render such part immovable.

The invention consists essentially of the arrangement of three hard balls contained within a chamber which is rigidly secured to the immovable part of the structure, two of such balls being designed to impinge upon semi-annular lock plates when forced apart by a screw through the medium of the three balls and is applicable to a great variety of uses, as for instance to the supports or frame of wind-screens for motor cars.

I will further describe the invention in detail so that the functions of the several parts connected therewith may be clearly understood.

To assist this description reference is made to the accompanying illustrative drawings wherein,

Figure 1 is a front elevation of the invention,

Fig. 2 is a side view of same,

Fig. 3 section showing passage for accommodation for balls,

Fig. 4 sectional view of Fig. 2,

Fig. 5 part sectional view of lower members showing relative position of balls in passage.

In each of the illustrations similar letters of reference are used to denote similar or corresponding parts.

Upon a fixed portion *a* of the structure is formed a bearing plate or surface *b* upon which a cylindrical boss extends which serves as an axle to the rotary portion hereinafter described. A portion of this boss is screw threaded internally, and externally its base is plain, while its upper or outer end is likewise screw threaded.

Upon the foundation or bearing is fastened a small projecting test pin *d* to prevent the rotation of semi-annular skid blocks *e*. These blocks fit snugly around the plain portion of the projecting boss so as to embrace it on either side, and are recessed as shown for the reception of the stop pin above mentioned.

Upon either side of the boss is drilled a horizontal hole or passage *f* for the reception of the locking balls *g*, two such balls being used opposite to each other, and a slight recess may be formed in the semi-annular plates opposite to the passage, so that when the balls are accommodated in the horizontal hole or passage in the boss, one side of each ball projects internally slightly beyond the inner edge, while the opposite side of the ball projects outwardly into the recess in the blocks.

This arrangement is clearly indicated in Fig. 5 of the drawings.

The third ball *h* which is preferably a little larger in diameter than those previously mentioned and is hereinafter referred to as the wedge ball is dropped into the interior of the projecting boss so that it rests upon the inner surfaces of the two smaller balls.

Upon a rotary frame as contra-distinguished from the surface plate structure is formed a grip chamber *j* consisting of an open-ended cylindrical recess of sufficient diameter to fit easily over the semi-annular plates, which when the device is complete are accommodated therein. This grip chamber may be formed within a boss or enlargement of the continuation arms j^1 which constitute a portion of the rotatable body.

There is now applied what may be termed a lock nut to the external screw thread of the projecting cylindrical boss, screwing the same down to slightly bear upon the rotary member. This lock nut has a hole bored through its center, such a hole being slightly in excess of the diameter of the screw threaded portion of the projecting cylindrical boss, so that it forms no impediment to a lock screw *l* which consists preferably of a screw having a wing nut head to be operated by

hand. This screw is steadied in position and prevented from working loose through vibration by the addition of a spring or spring washer *m*, and the arrangement is such that when screwed down into the boss the bottom of the screw presses upon the wedge ball previously mentioned, so that it in turn impinges upon the two smaller balls which are a little lower down.

The method of locking the device when the parts are fitted together in the manner above described consists in merely giving a slight turn to the locking screw by means of the wing nut head. This action as previously indicated causes the large ball to wedge down upon the small balls, thereby pushing them out sidewise along the passage. This pressure is transmitted direct to the semi-annular blocks which are forced apart, and the surfaces of the plates bear heavily upon the wall of the grip chamber, thus effecting an efficient frictional lock and preventing the rotation of the movable part.

In reverse manner, slackening or unscrewing the lock screw relieves the pressure upon the balls, and releases the grip of the adjacent parts.

If so desired a small cone may be used in lieu of the wedge ball, and is operated upon by the lock screw so that it performs the same function as the ball, or the end of the lock screw may be rounded or pointed off and of sufficient length to force the balls apart.

The invention may be manufactured in great variety of sizes to suit different purposes, and can even be applied as a brake or as a grip clutch in connection with various mechanical movements.

If so desired additional balls may be introduced into large grips to be operated upon separately in the center ball or wedge, or the balls may be grouped in pairs, and the wedge ball will then impinge upon pairs of balls the effective result and mechanical achievement being the same in either case. It will of course be obvious that in some structures the extensions j^1 may be a fixture upon which the other parts rotate.

Having now fully described and ascertained the said invention, and the manner in which it is to be performed, I declare that what is claimed is:—

1. In a device of the character described, the combination with a fixed member having a passage therethrough, of a movable member in position to be clutched to said fixed member, a pair of balls adapted to have limited movement toward and from each other in said passage, a third ball of a size incapable of entirely occupying the space between said pair of balls, and means for exerting pressure against said third ball to wedge said pair of balls apart and clutch said movable member to said fixed member.

2. In a device of the character described, the combination with a fixed member having a passage therethrough, of a movable member embracing said fixed member, a pair of balls adapted to have limited movement toward and from each other in said passage, a third ball larger than either ball of said pair and adapted to contact therewith, and means for exerting pressure against said third ball to wedge said pair of balls apart and clutch said movable member to said fixed member.

3. In a device of the character described, the combination with a fixed boss having a passage therethrough, of segmental blocks about said boss, a movable member surrounding said blocks, a pair of balls having limited movement toward and from each other in said passage, a third ball contacting with said pair of balls and of a size incapable of entirely occupying the space between said pair of balls, and means for exerting pressure against said third ball to wedge said pair of balls apart and force said segmental blocks into engagement with said movable member.

4. In a device of the character described, the combination with a fixed member having a hollow boss projecting therefrom and a transverse passage through said boss, of a fixed member in position to be clutched to said boss, a pair of balls adapted to have limited movement toward and from each other in said passage, a third ball contacting with said pair of balls and of a size incapable of entirely occupying the space between said pair of balls, a movable member, and means movable axially of said hollow boss for exerting pressure against said third ball to wedge said pair of balls apart and clutch said movable member to said boss.

5. In a device of the character described, the combination with a fixed hollow boss having a transverse passage therethrough, of segmental blocks embracing said boss, means to prevent rotation of said blocks about said boss, a movable member embracing said blocks but permitting movement of the latter in relation to each other, a pair of balls having limited movement toward and from each other in said passage, a third ball contacting with said pair of balls, said third ball being larger than the maximum space between the balls of said pair, and a screw movable into and out of said boss and having an end adapted to contact with said third ball to wedge the balls of said pair apart.

6. In a device of the character described, the combination with a fixed hollow boss having a transverse passage therethrough, of segmental blocks embracing said boss, means to prevent rotation of said blocks about said boss, a movable member embracing said blocks but permitting movement of

the latter in relation to each other, a pair of balls having limited movement toward and from each other in said passage, a third ball contacting with said pair of balls, said third ball being larger than the maximum space between the balls of said pair, a screw movable into and out of said boss and having an end adapted to contact with said third ball to wedge the balls of said pair apart, and a lock nut mounted on said boss.

In testimony whereof I affix my signature.

VIOLET ISABEL O'GRADY,
Executrix of Thomas Patrick O'Grady, deceased.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."