

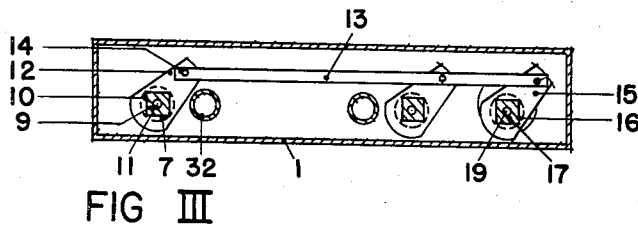
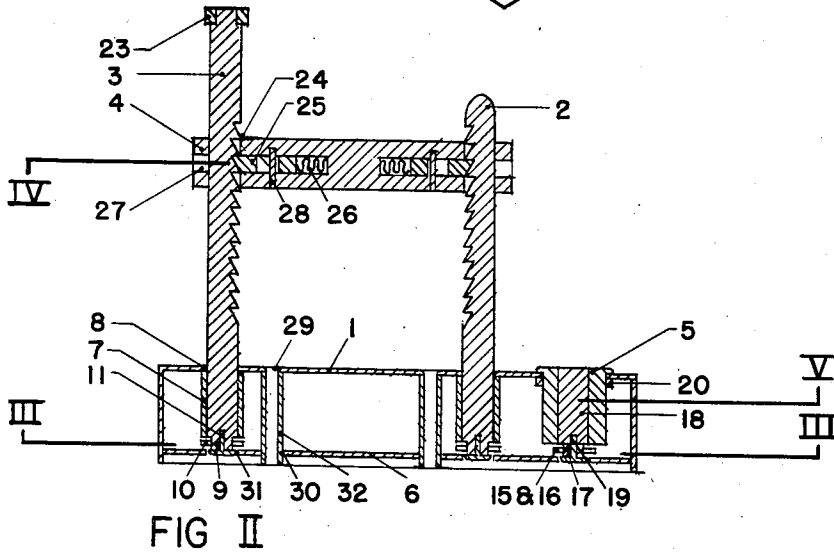
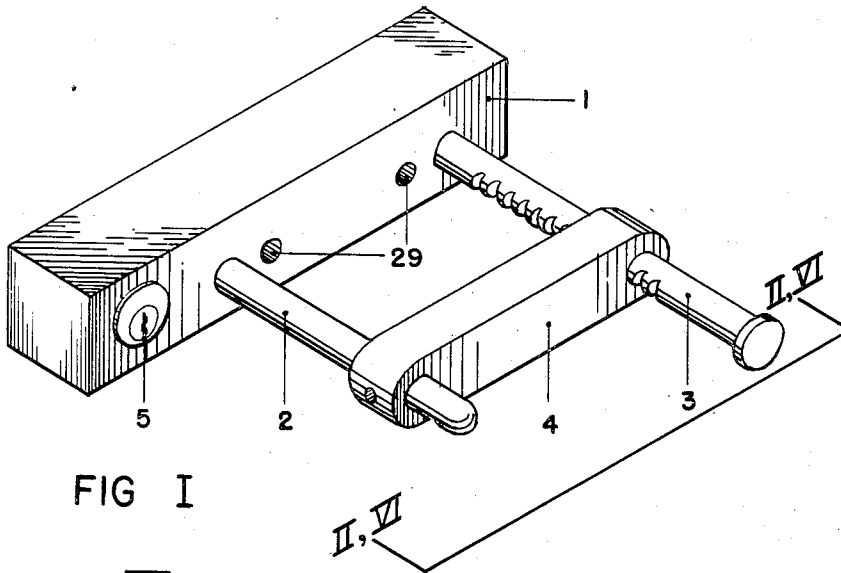
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R. O. KIDD ET AL
LOCKING MECHANISM

2,831,335

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

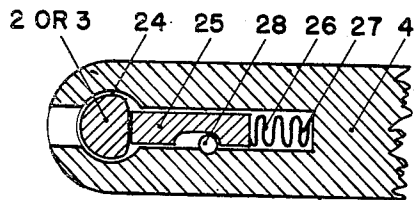


FIG IV

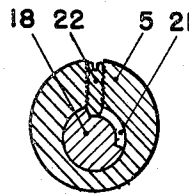


FIG V

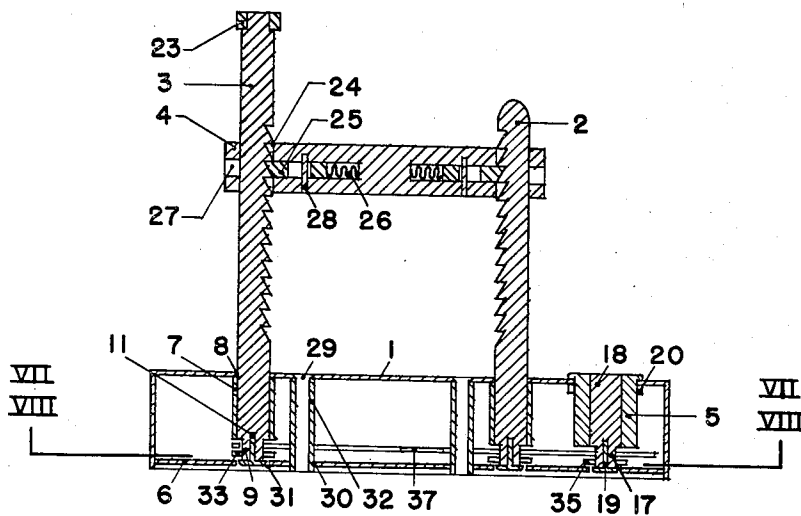


FIG VI

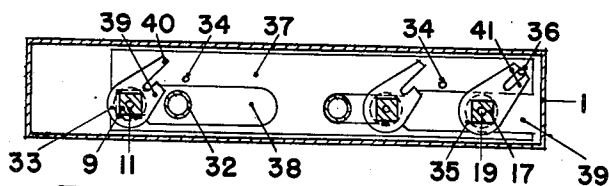


FIG VII

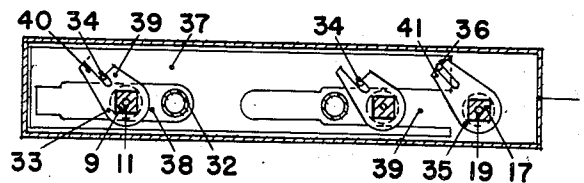


FIG VIII

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2,831,335

LOCKING MECHANISM

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1 Claim. (Cl. 70—58)

The invention relates to a locking mechanism which is intended to be permanently or temporarily mounted to some relatively immovable object and is to be provided with two extended ratchets and a movable latch bar provided with holes through which the ratchets extend and is designed to move in one direction only, unless the latches are disengaged by the operation of a key. This application is a continuation-in-part of application filed July 12, 1957, Serial No. 671,541, which has been abandoned.

The primary object of the invention is to provide a locking mechanism which is adaptable to a wider range than known locks and to provide a suitable rack or hanger for the objects being secured.

To this end and according to the important features of the invention the locking mechanism is designed to be mounted on any surface and is provided with two projecting ratchets of such length, designs, and spacing as to allow any object, thicker or broader at each end, for instance, a pair of skis, tennis racket, golf clubs, etc., to be placed between them or any object with a hole, loop or other opening, for instance, a ski pole, ring, buckle, etc., to be threaded over one or both of the ratchets, and is further provided with a latch bar, which when installed according to the invention, will prevent the removal of the object or objects being secured.

Further features and advantages of the invention will appear from the following description with reference to the drawings. These serve to illustrate some embodiments of the invention which, however, is not limited to these special embodiments but comprises everything covered by the claims.

Figure I is a perspective view of a locking mechanism according to the invention.

Figure II is a section on line II—II and VI—VI in Figure I.

Figure III is an elevation on lines III—III, in Figure II, of the inside of the housing 1 with the back plate 6 removed.

Figure IV is a section through latch bar 4 on line IV, Figure II.

Figure V is a section through the cylinder lock 5 on line V, Figure II.

Figure VI is a section on line II—II and VI—VI, according to another feature of the invention mainly the substitution of connecting plate 37 for the connecting bar 13.

Figure VII is an elevation on lines VII—VII in Figure VI of the inside of the housing with the back plate removed with the mechanism in the locked position according to the same feature of the invention as shown in Figure VI.

Figure VIII is the same as Figure VII except that the mechanism is shown in the unlocked position.

The locking mechanism shown in Figures I to V comprises a housing 1 which is provided with two round extended ratchets 2 and 3 which are provided with a tubular sleeve 7 securely fixed to one end which when

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installed as shown through the hole 8 will prevent the axial movement of the ratchet but will allow the ratchets to rotate. The ratchets are further provided with a squared end 9 which engages a like squared hole in receiver 10. The ratchets 2 and 3 are further provided with a round hole into which a flat-headed pin 11 is driven thus preventing the removal of the receivers 10 from the end of the ratchets 2 and 3. The squared end of the ratchets is of such length as to extend into the holes 31 in back plate 6, said holes 31 being of such size as to allow the rotation of the ratchets and are provided to restrict the movement of the ratchets in any direction perpendicular to their axis. The receivers 10 are further provided with cams 12, positioned as indicated, which are loosely connected to the connecting bar 13 by pins 14. The end of the connecting bar 13 is loosely secured to the operating cam 15 by a pin upset at each end and in such a manner that a clockwise rotation of the operating cam 15 will move the connecting bar 13 in a direction away from the cylinder lock mechanism 5. The operating cam 15 is part of the operating lug receiver 16 which is provided with a square hole suitably sized to allow the operating lug 17 to engage in this hole, and is held in this position by screw 19 being engaged in the internally threaded portion of the cylinder 18 of the cylinder lock mechanism 5 of known construction. The operating lug 17 is part of the cylinder 18 of the cylinder lock mechanism 5. The cylinder lock mechanism 5 is provided with a locking ring 20 to prevent its removal from the housing 1. The cylinder 18 operates with tumblers and is further provided with a 90 degrees circumferential groove 21 in which an adjustable pin 22 is engaged in order to prevent the removal of the cylinder 18 from the locking mechanism 5 and to restrict its rotation to 90 degrees.

The ratchets 2 and 3 are provided with equally spaced notches or grooves on one side along part of their length and so positioned that the latch bar 4 may be moved only in a direction towards the lock housing 1 unless released as hereinafter described. One of the ratchets 3 is longer than the other 2 with an enlarged end 23 so that when the latch bar 4 is removed from ratchet 2 the enlarged end will not allow the removal of the latch bar 4 completely from the locking mechanism.

The latch bar 4 is provided with two holes 24 spaced the same as the ratchets 2 and 3 and of a size to loosely fit over the ratchets. The latch bar 4 may be pushed down over the ratchets 2 and 3 towards the housing 1. The latch bar is prevented from being withdrawn from the housing 1 by being provided with latches 25 continuously engaged in the ratchets 2 and 3 by the influence of springs 26. Both spring 26 and latch 25 are inserted in hole 27. The removal of the latch from the latch bar is prevented by pin 28 tightly driven into position.

The locking mechanism is installed by securing the back plate 6 to the housing 1 by being bolted through the holes 29 and 30 to a relatively non-removable object with a type of "theft proof screw" of known construction, the long axis of the housing 1 and of the ratchets 2 and 3 being horizontal. Holes 29 are further provided with tubes 32 which prevent the collapsing of the housing 1 while the screws are being drawn up tight.

The operation of the locking mechanism according to the embodiment described is as follows:

While the locking mechanism is in the position shown in Figure I the key belonging to the cylinder lock mechanism 5 is inserted and the cylinder is rotated clockwise 90 degrees. Through the systems of cams and connecting bar described, the ratchets 2 and 3 are also rotated 90 degrees thus releasing the ratchets from the latches 25 and allowing the latch bar 4 to be withdrawn away

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from the housing until it has cleared the end of ratchet 2 and is prevented from further axial movement by the upset end 23 of ratchet 3. The latch bar 4 is then released allowing gravity to swing the latch bar 4 in a vertical position. The key is then rotated 90 degrees counterclockwise and removed from the cylinder, which causes at the same time, the ratchets to be rotated 90 degrees, which will then allow the ratchets to be in the proper position to engage the latches 25 of the latch bar 4 as shown in Figure II.

The object to be secured is then placed between the ratchets 2 and 3 or, in the case of an object provided with a hole, threaded over either or both ratchets and then drawn up tightly against the housing 1. The latch bar 4 is then rotated to a horizontal position so that the end of ratchet 2 is lined up with its corresponding hole 29.

The latch bar is then moved toward the housing until further movement is stopped by being in contact with the object being secured. When in this position the objects being secured can not be removed due to the action of the latches engaging the ratchets, thus holding the latch bar 4 in an unmovable position until the proper key is inserted in the cylinder lock mechanism 5 and rotated as previously described.

An additional feature to give added security to the locking mechanism, according to the invention, is shown and described in the following. In Figures VI, VII and VIII there is shown an embodiment, mainly the connecting plate 37 of such design as hereinafter described so as to more positively restrict the rotation of the ratchets 2 and 3 while in the locked position without being dependent upon the tumblers of the lock cylinder to restrict such movement.

According to this feature the squared ends 9 of the ratchets 2 and 3 are extended further than previously described to allow in addition to the cam, a connecting plate 37. The connecting plate 37 is permitted to be installed over the squared ends 9 of the ratchets 2 and 3 by being provided with elongated holes 38, one end being the same width as the length of the side of the squared ends of the ratchets 2 and 3, the remainder of the hole being the width of the diagonal measurement of the squared ends of the ratchets and the tubes 32. The connecting plate 37 is further provided with an elongated hole 39 of a width equal to the diagonal of the squared end of the operating lug 17, said lug 17 also being extended to allow for the connecting plate 37 in addition to the operating cam 35.

The squared ends of the ratchets 2 and 3 are further provided with cams 33 having a square opening at one end sized to suit the squared ends 9 of the ratchets and are further provided with two protruding legs 39 and 40 of such design and length so that leg 39 will not be in contact with pin 34 set into the connecting plate 37 when the locking mechanism is in the locked position as shown in Figure VII. Leg 40 is designed so that it will be engaged by pin 34 when the locking mechanism is operated as hereinafter described and indicated in Figure VIII. Pin 34 set into the connecting plate 37 is positioned so that when the connecting plate 37 is moved away from the locking cylinder 5, as hereinafter described, the pin 34 will not engage the leg 40 of the cams 33 until the portion of the elongated hole 38 equal to the diagonal of the squared ends 9 is positioned so that the ratchets may be rotated by the further travel of the connecting plate 37 away from the lock cylinder 5 by reason of pin 34 being engaged with leg 40 of cam 33 thus implying a rotary motion to the ratchets. The operating cam 33 is provided with a square hole

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suitably sized to fit over the operating lug 17, said lug 17 being part of the cylinder 18 of the cylinder lock mechanism 5. The operating cam 35 is further provided with two protruding legs positioned as shown and of such design as to properly engage pin 36 attached to connecting plate 37. Pin 36 is so positioned that when the operating lug 17 is rotated clockwise 90 degrees the operating cam 35 likewise being rotated by reason of its attachment as heretofore described, the pin 36, being engaged with the legs 41 of the operating cam 35, will cause the connecting plate to move away from the cylinder lock mechanism 5 a sufficient distance to allow the narrow part of the elongated hole 38 to clear the squared ends 9 of the ratchets 2 and 3 before pins 34 engage legs 40 of the cams 33. The further movement of the connecting plate thus causing the rotation of ratchets 2 and 3 90 degrees in a clockwise direction.

The cams 33 are secured to the ratchets 2 and 3 by flat headed pins as previously described. The operating cam 35 is secured to the operating lug 17 by screw 19 being engaged in the internally threaded portion of the cylinder 18 of the cylinder lock mechanism.

The operation of the lock according to this embodiment is as follows:

While the locking mechanism is in the position shown in Figure I the key belonging to the cylinder lock mechanism 5 is inserted and the cylinder is rotated clockwise 90 degrees. Through the system of cams and connecting plate previously described, that part of the connecting plate which restricts the rotation of the ratchets is disengaged, thus permitting the further rotation of the key to rotate the ratchets 2 and 3 90 degrees thus releasing the ratchets from the latches 25 and allowing the latch bar 4 to be withdrawn away from the housing 1.

Having thus fully described the invention, what is claimed and desired to be secured by Letters Patent is:

A locking device for skis and the like comprising a housing, two ratchet bars rotatably mounted on and projecting from said housing, ratchet means on said ratchet bars, key operated means within said housing forming a connection with said ratchet bars to move the same from a first to a second position of relative angular adjustment, a latch bar mounted on said ratchet bars spaced from said housing and being movable from a locked to an unlocked position, said latch bar having biased detents thereon which are movable from an operative position engaging said ratchet means when said ratchet bars are in said first position whereby said latch bar cannot be moved to an unlocked position, to an inoperative position out of engagement with said ratchet means when said ratchet bars are in said second position whereby said latch bar can be moved to unlocked position, said key operated means comprising a lock cylinder movable on said housing, a connecting plate operatively connected to said cylinder, stop means engageable with said ratchet bars when in said first position to prevent rotation thereof to said second position, and means on said connecting plate to simultaneously render said stop means ineffective and move said ratchet bars from said first position to said second position upon movement of said lock cylinder by a proper key.

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