March 29, 1960 J. F. FANSMITH 2,930,219

LOCKING DEVICE

Filed June 6, 1957

Fig. 1.

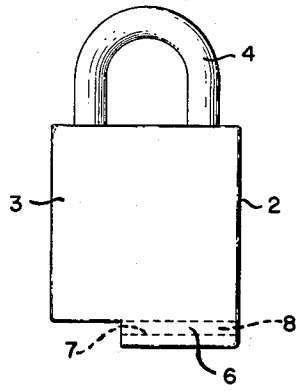


Fig. 2.

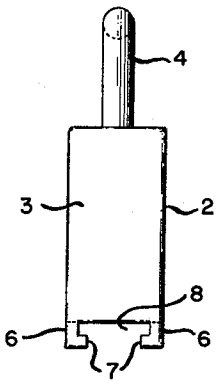


Fig. 3.

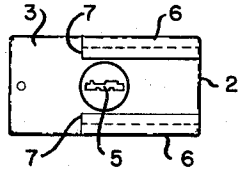


Fig. 4.

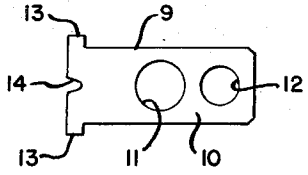
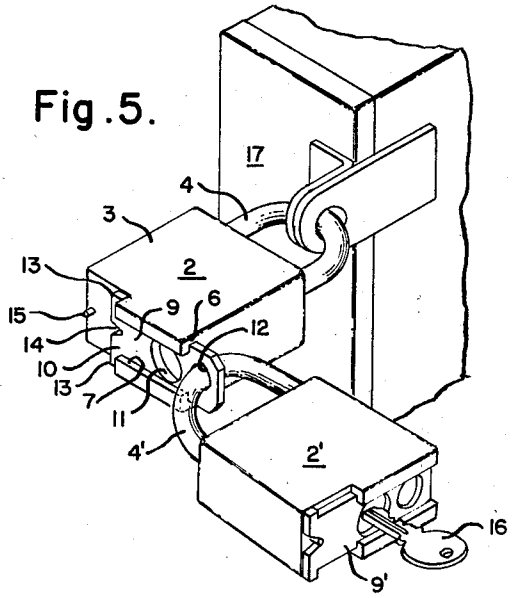


Fig. 5.



INVENTOR

John F. Fansmith

by Hoopes, Leonard & Buell

his attorneys

United States Patent Office 2,930,219 Patented Mar. 29, 1960

2,930,219

LOCKING DEVICE

John F. Fansmith, Franklin Township, Allegheny County, Pa.

Application June 6, 1957, Serial No. 663,942

4 Claims. (Cl. 70—428)

This invention relates to a locking device and particularly to a device adapted to be used for preventing operation of machinery which is being serviced or worked on and which if set in operation might injure workmen or result in damage to the machinery due to its not being in completely operative condition. My locking device may be applied at any appropriate place to prevent operation of the machinery; it will normally be applied to lock in open position the master switch conducting electric current to the machinery so that current cannot flow to the machinery until the locking device is removed and the master switch is closed; but the locking device may also be otherwise applied, as, for example, to an enclosure containing the machinery or to an enclosure containing the master switch barring entrance to the enclosure until the locking device has been removed.

Machinery may be worked on or serviced by a number of different workmen or by workmen of a number of different crafts whose work is being conducted more or less at the same time. For example, a machinist, an electrician and a painter may be working on or about a particular machine doing work which may extend over a substantial period of time. It is important that the machine be not operated until all of the workmen have completed their work and the machine is in fully operative condition and the workmen have removed their tools and are out of the vicinity of the machine.

Simply providing each workman or a workman of each craft with an ordinary padlock to apply to the master switch of the machine does not insure against operation of the machine before all of the workmen have completed their work. For example, on a particular day the three workmen above mentioned, the machinist, the electrician and the painter, may all be working on the machine. Assume that the painter arrived first and applied his lock to the master switch of the machine. There is provision in the master switch for receiving only one lock so the workmen arriving later cannot apply their locks. Assume that the painter is the first to finish. He removes his lock and goes away. He is supposed to notify the machinist and the electrician that he has removed his lock, but he forgets, or at least omits to do so. There is no assurance against operation of the machine before the machinist and the electrician have completed their work. An operator seeing the master switch unlocked may think that all the workmen have finished their work and start the machine, injuring the machinist and/or the electrician and/or damaging the machine.

I provide a locking device providing a definite safeguard against the operation of a machine until all of the workmen working on the machine have completed their work. Each workman or a workman of each craft is provided with one of my locking devices and as he goes to work on the machine he applies his locking device, the locking devices being constructed and arranged to be applied in series so that application of each locking device prevents operation of the machine and

prevents removal of all previously applied locking devices. The locking devices must be removed in the inverse order of their application.

My locking device comprises a key-operated locking member having a keyhole and a cover operatively positionable to render the keyhole inaccessible and removable to inoperative position to render the keyhole accessible, the locking device having means for receiving another locking member to lock the cover in operative position rendering the keyhole inaccessible. When a second workman goes on the job a second locking member is applied to said means whereby to lock the cover in operative position, and any number of similar locking devices may be applied in series one after the other.

Preferably the cover is mounted on the locking member for movement between an operative position rendering the keyhole inaccessible and an inoperative position rendering the keyhole accessible. I prefer to slidably mount the cover on the locking member for sliding movement between said positions. The cover preferably has means for receiving another locking member to lock the cover in operative position rendering the keyhole inaccessible.

The key-operated locking member preferably has means forming a retainer and guide for the slidable cover and the cover is preferably mounted in the retainer and guide for sliding movement between operative and inoperative positions. Desirably the locking member and cover have cooperating means limiting movement of the cover in one direction in the retainer and guide, the cover when in its extreme position in that direction being in operative position, the locking device having means for receiving another locking member to hold the cover against substantial movement in the opposite direction and thereby maintain the cover in operative position. In my preferred structure I provide the cover with an opening through which access to the keyhole may be had when the cover is in inoperative position, which opening is moved to a position offset from the keyhole when the cover is in operative position. The cover may have a second opening adapted when the cover is in operative position to receive another locking member to hold the cover in that position. I also desirably provide means limiting movement of the cover in the direction away from its operative position to prevent inadvertent separation of the cover from the locking member.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention in which

Figure 1 is a front view of a key-operated locking member forming a portion of my locking device;

Figure 2 is a side view of the key-operated locking member shown in Figure 1;

Figure 3 is a bottom view of the key-operated locking member shown in Figures 1 and 2;

Figure 4 is a face view of a cover used with the key-operated locking member shown in Figures 1, 2 and 3 and adapted to be slidably applied thereto; and

Figure 5 is a view showing two of my locking devices in series and illustrating how their employment positively prevents operation of machinery until all workmen working on the machinery have completed their work.

Referring now more particularly to the drawings, while my key-operated locking member may take various forms it is shown in the drawings as in the form of a padlock 2 having a body 3 and a shackle 4. The padlock may, except for the provision for application of the cover

presently to be described, be of conventional construction having in its bottom a keyhole 5 through which a key is adapted to be inserted to operate the lock cylinder to open the shackle. The lock cylinder may be of any desired construction and the shackle may be either of the pivoted type or of the sliding type. Since all of the portions of the padlock described up to this point may be conventional they are not shown in detail.

Disposed at the bottom of the body 3 of the padlock 2 are opposed extensions 6 each extending along about three-fourths of the length of the body of the padlock as shown in Figures 1 and 3 and each having an inward foot 7 as shown in Figure 2 whereby to form a retainer and guide, designated generally by reference numeral 8, for a cover designated generally by reference numeral 9. The cover has a body 10 shaped to be received and slidably guided in the retainer and guide 8, the body 10 having therein a first opening 11 and a second opening 12. At one end of the body 10 are opposed lateral projections 13 adapted when the cover 9 moves in the retainer and guide 8 toward the right viewing Figures 3 and 4 to engage the left-hand ends viewing Figures 1 and 3 of the opposed extensions 6, thus limiting movement of the cover relatively to the body 3 of the padlock in that direction. The cover 9 has at its left-hand end viewing Figure 4 a recess 14 and the lock body 3 has a pin 15, appliable after insertion of the cover 9 into the retainer and guide 8, which limits movement of the cover toward the left; when the pin 15 seats in the body of the recess 14 the cover is in inoperative position with the opening 11 in the cover in alignment with the keyhole 5 so as to provide for access to the keyhole through the opening 11 by a key whereby the padlock may be unlocked.

When the locking device is applied, as to the master switch of a machine, and is in closed or locked position maintaining the master switch open and a second workman comes to work on the same machine he applies his locking device in series with the first locking device. He does that by moving the cover 9 of the first locking device to the right until the opening 12 thereof is in the clear at the side of the body 3. At that time the cover is in operative position as the opening 11 is offset from the keyhole 5 and the body 10 of the cover 9 between the opening 11 and the recess 14 is in line with or covers the keyhole preventing access thereto by a key. The second workman passes the shackle of his key-operated locking member or padlock through the opening 12 and locks his padlock. The padlock of the second workman maintains the cover 9 of the first locking device in operative position until the second padlock has been removed. Similarly a third, fourth, etc., locking device may be applied in series, one by each additional workman who comes to work on the machine, and the machine cannot be operated until all of the padlocks have been removed, the removal being by necessity in the inverse order of application of the padlocks. In Figure 5 the first padlock 2 is shown applied to a switch box 17 to lock the same closed with its cover 9 in operative position rendering the kevhole of that padlock inaccessible and the second padlock 2' is shown with its shackle 4' in the opening 12 of the cover 9 of the first locking device, positively rendering the keyhole of the first padlock inaccessible, and with its cover 9' in inoperative position rendering the keyhole of the second padlock accessible by a key 16.

While I have shown and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A locking device comprising a key-operated locking member, said member having a keyhole and having means

forming a retainer and guide for a slidable cover, and a cover mounted in the retainer and guide for sliding movement between an operative position rendering the keyhole inaccessible and an inoperative position rendering the keyhole accessible, the cover having therein a first opening through which access to the keyhole may be had when the cover is in inoperative position, the locking member and cover having cooperating means limiting movement of the cover in one direction in the retainer and guide, the cover when in its extreme position in that direction being in operative position with the first opening in the cover offset from the keyhole, the cover having therein a second opening adapted when the cover is in operative position to receive another locking member to hold the cover against substantial movement in the opposite direction and thereby maintain the cover in operative position.

2. A locking device comprising a key-operated locking member, said member having a keyhole and having means forming a retainer and guide for a slidable cover, a cover mounted in the retainer and guide for sliding movement between an operative position rendering the keyhole inaccessible and an inoperative position rendering the keyhole accessible, the cover having therein a first opening through which access to the keyhole may be had when the cover is in inoperative position, the locking member and cover having cooperating means limiting movement of the cover in one direction in the retainer and guide, the cover when in its extreme position in that direction being in operative position with the first opening in the cover offset from the keyhole, the cover having therein a second opening adapted when the cover is in operative position to receive another locking member to hold the cover against substantial movement in the opposite direction and thereby maintain the cover in operative position, and means limiting movement of the cover in said opposite direction when the second mentioned locking member is removed from the second opening whereby to prevent inadvertent separation of the cover from the first mentioned locking member.

3. A locking device comprising a padlock comprising a casing having therein a keyhole for receiving a key to operate the padlock, the casing being formed to provide a guideway for a slidable cover, and a cover slidably received in the guideway, the cover having laterally projecting means adjacent an end thereof limiting by engagement with a portion of the casing slidable movement of the cover toward its opposite end, the cover when in its extreme position toward said opposite end covering and rendering inaccessible the keyhole, and locking means cooperating with said opposite end of the cover preventing the cover from sliding toward its first mentioned end.

4. A locking device as claimed in claim 3 in which the cover has a keyhole therethrough positioned to be aligned with the keyhole of the padlock so that a key may be inserted through the keyhole in the cover and into the keyhole of the padlock to unlock the padlock when the cover is moved somewhat toward its first mentioned end from its said extreme position.

References Cited in the file of this patent

UNITED STATES PATENTS

596,050	Byrnes	Dec. 28, 1897
605,720	Jenkins	June 14, 1898
1,004,758	Ebbert	Oct. 3, 1911
1,078,156	Locher	Nov. 11, 1913
1,333,874	Platt	Mar. 16, 1920
1,917,973	Hughes	July 11, 1933

FOREIGN PATENTS

38,855	Austria	Sept. 10, 1909
110,805	Great Britain	Nov. 7, 1916