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[21] Appl. No. **859,975**
[22] Filed **Sept. 22, 1969**
[45] Patented **Mar. 23, 1971**
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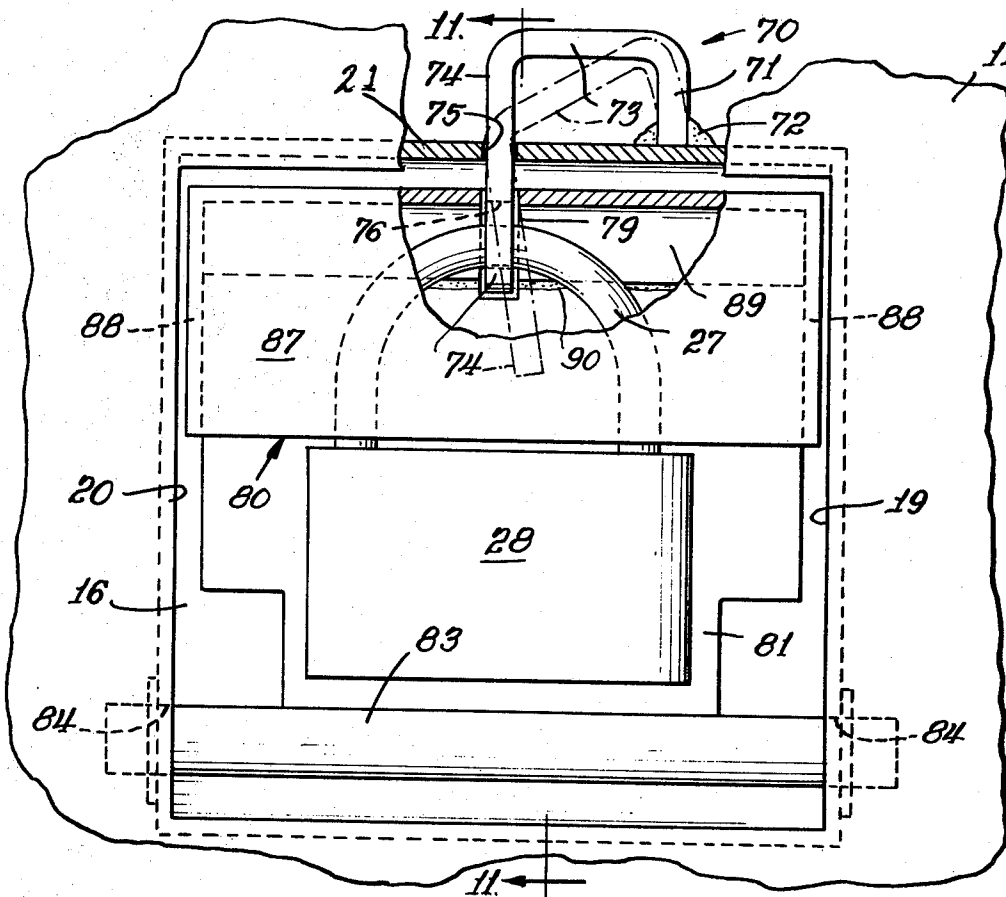
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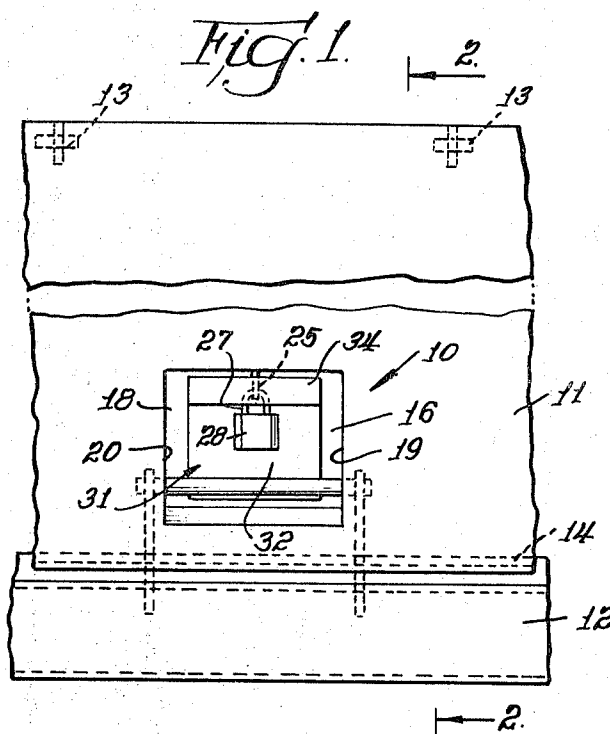
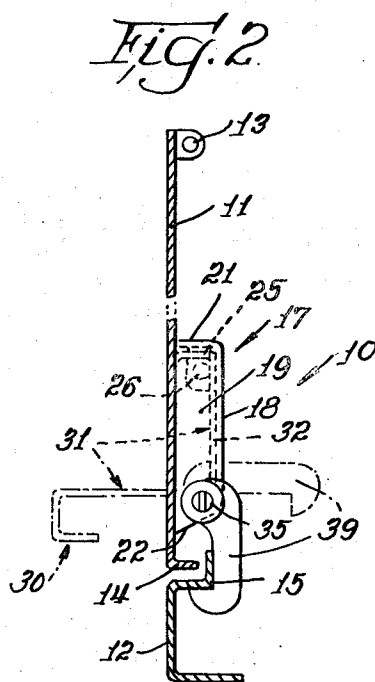
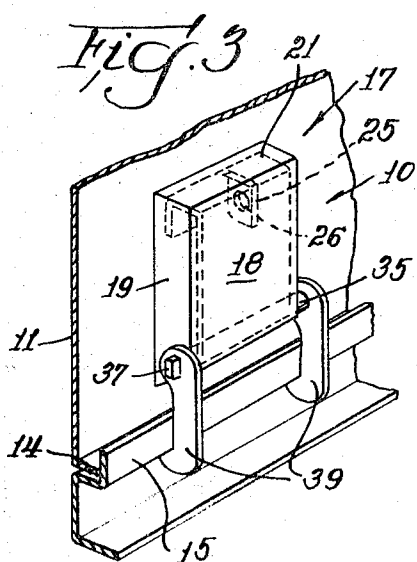
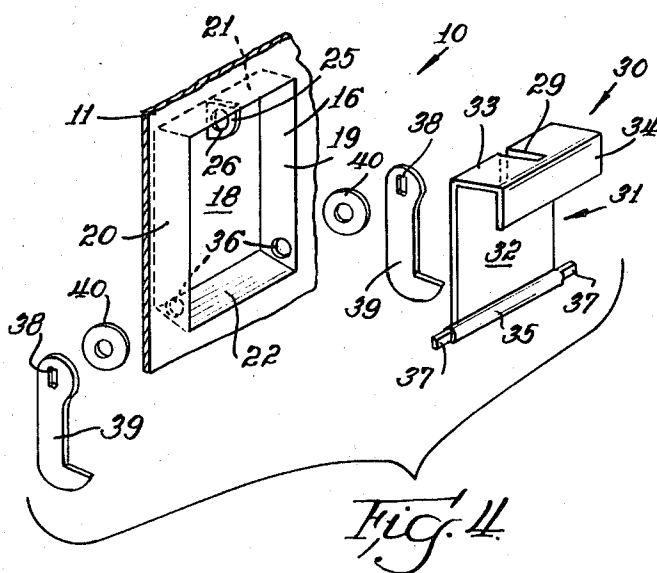
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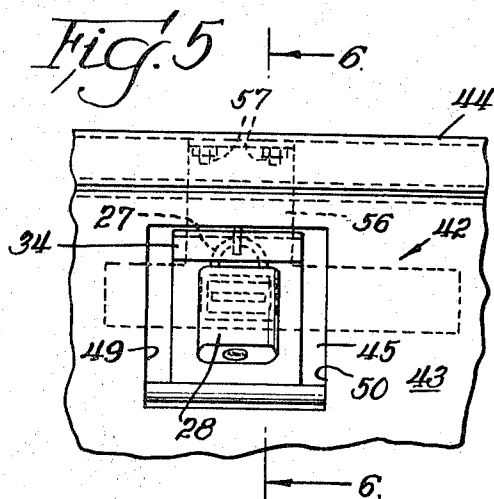
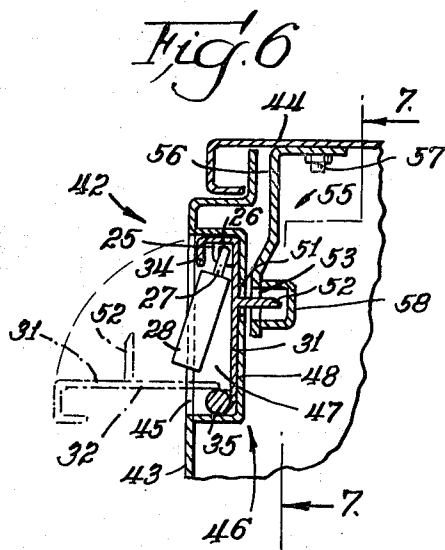
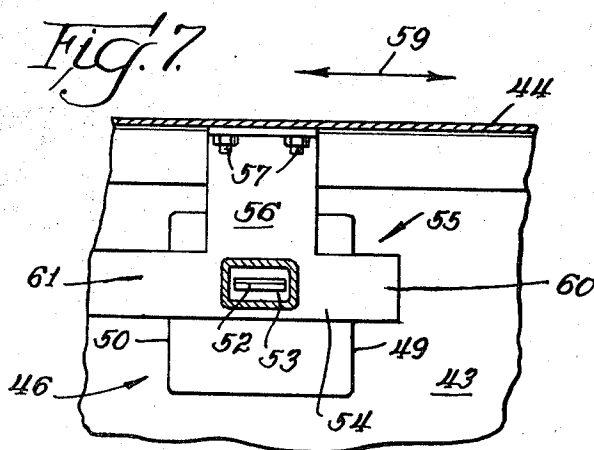
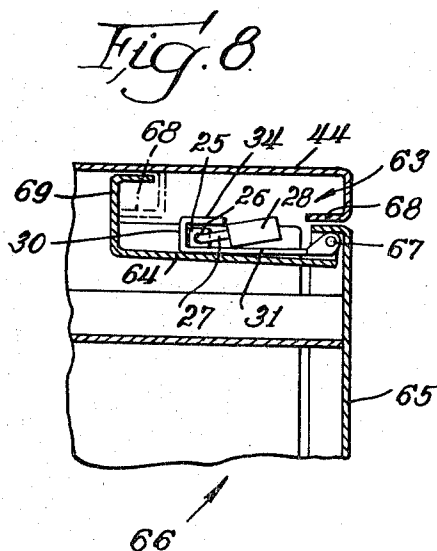
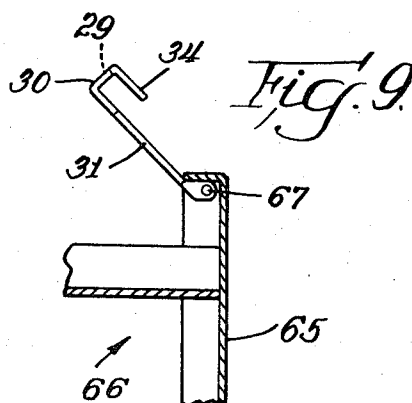
[54] **TAMPER PROOF LOCKING MEANS USING A PADLOCK**
7 Claims, 12 Drawing Figs.

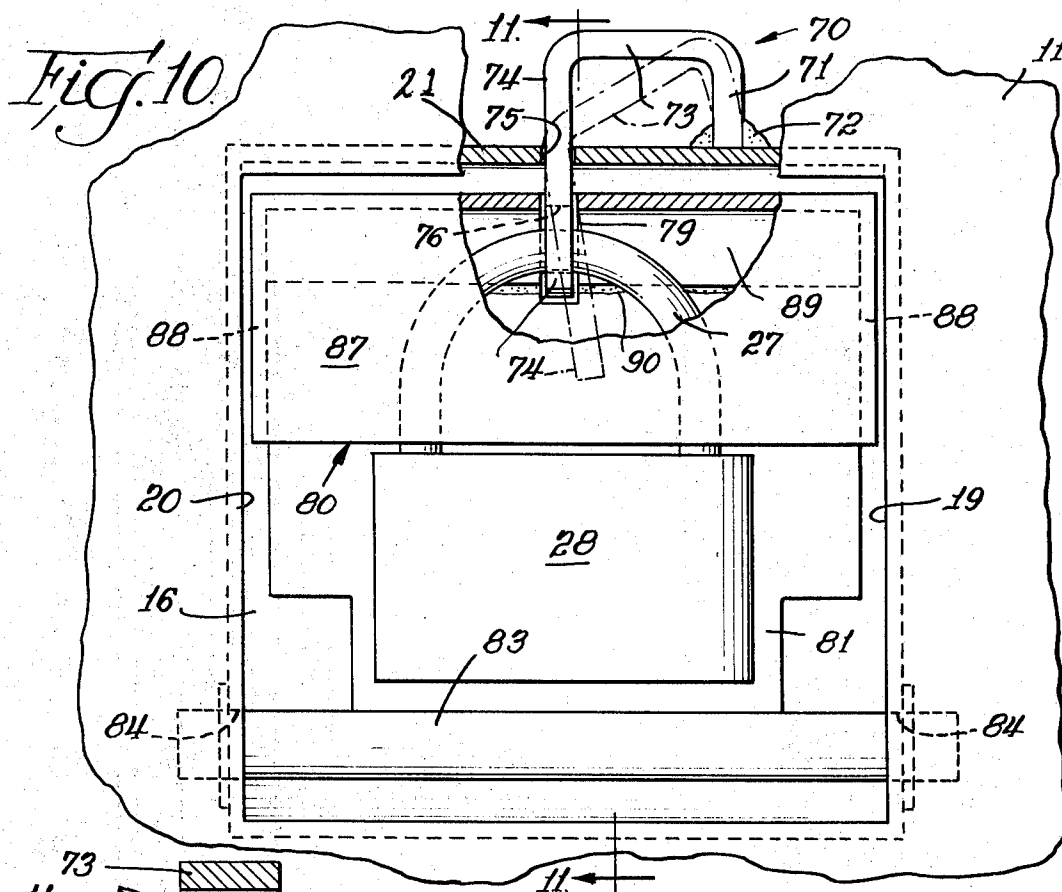
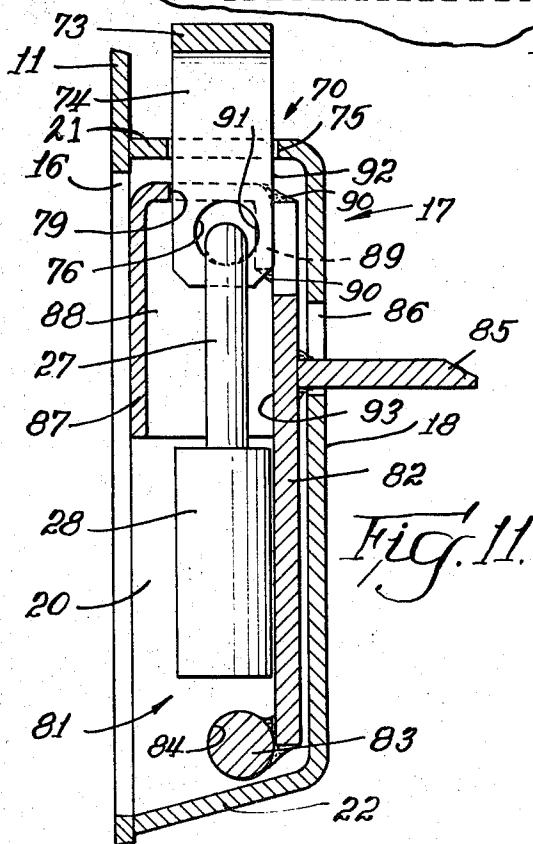
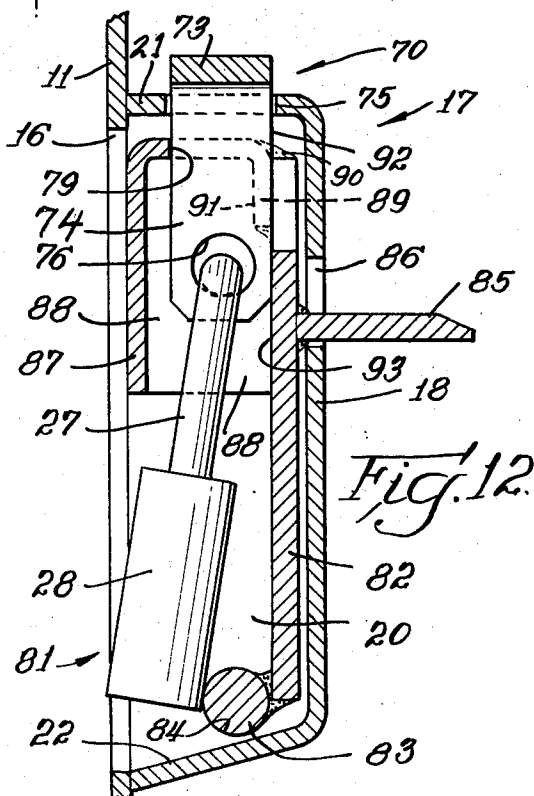
[52] U.S. Cl. **70/1.5,**
70/422, 292/56, 292/205, 292/281, 292/340
[51] Int. Cl. **E05b 15/02,**
E05b 65/52, E05c 3/04
[50] Field of Search 70/1.5, 422,
159, 212, 203, 56, 6, 3; 292/104, 205, 281, 120,
218, 340, (Digest) 31, 282

ABSTRACT: A J-shaped pivoted hasp has a slot in the hook end through which a padlock shackle receiving staple projects with the flange at the hook end overlying the shackle to limit access thereto. A hook or tongue movable with the hasp is in several species engageable with a member to be locked to the hasp carrying member. Also in another species the staple is mounted on one member and the hasp is pivoted on another member. The staple is movable into locking engagement with the hasp when the padlock is forcibly displaced.









TAMPER PROOF LOCKING MEANS USING A PADLOCK

This invention relates to my copending application Ser. No. 858,458, filed Sept. 16, 1969, and is directed to the locking mechanism thereof.

When a padlock is employed to prevent unauthorized entrance to metal enclosed switchgear, for example, it has been found that attempts at forcible entry are made by inserting a bar in the shackle of the padlock or by using bolt cutters to sever the shackle. As a result unauthorized persons may obtain access to the switchgear within the metal enclosure and may come in contact with parts energized at dangerous voltages or they may undertake to operate the switchgear in a dangerous manner.

Among the objects of this invention are: To limit access to the shackle of a padlock in a shackle receiving staple when the padlock is in the locked position; to overlie the shackle and staple with a flange on a hasp when it is in the locked position; to mount the staple and pivotally mount the hasp on one of two relatively movable members with a locking member connected to the hasp for locking engagement with the other of the two members; to mount the staple on one of two relatively movable members and pivotally mount the hasp on the other member; and to mount the staple in such manner that it is moved into interfering relation to the hasp when the padlock is displaced.

According to this invention a J-shaped hasp is pivotally mounted and has a slot in its hooked end through which a padlock shackle receiving staple projects. To limit access to the shackle the flange of the hooked end overlies the staple thereby leaving substantially only the body of the padlock exposed and accessible. The staple and hasp are mounted on one of the two members to be locked together while a locking member on the hasp has locking engagement with the other of the two members. In one embodiment a hook on the hasp has locking engagement with the other member. In another embodiment a tongue on the hasp interfits with an opening in a locking member on the other of the two members. In a third embodiment, the staple is secured to one of the two members and the hasp is pivoted on the other member. In a fourth embodiment the staple is movable into interfering relation with the hasp when the padlock is displaced.

In the drawings: FIG. 1 is an elevational view of a portion of an enclosure in which a pivoted cover member is arranged to be locked to a stationary part of the enclosure. FIG. 2 is a vertical section view taken generally along line 2-2 of FIG. 1. FIG. 3 is a perspective view of the locking mechanism and part of the enclosure which are locked thereby together, the view being taken from inside the enclosure.

FIG. 4 is an exploded view of the locking mechanism for the enclosure portion which is shown in FIGS. 1, 2 and 3. FIG. 5 is an elevational view of a portion of an enclosure having a sliding top panel that is arranged to be locked in the closed position by locking means constructed in accordance with this invention. FIG. 6 is a vertical sectional view taken generally along line 6-6 of FIG. 5. FIG. 7 is a vertical sectional view taken generally along line 7-7 of FIG. 6. FIG. 8 is a vertical sectional view of another portion of the enclosure having the sliding top panel and showing how the locking means of this invention can be employed in connection with a horizontally slidable fuse drawer. FIG. 9 is a view, similar to FIG. 8, but showing only a portion of the fuse drawer and the hasp which forms a part of the locking mechanism. FIG. 10 is a front elevational view of locking means in which the staple is movable into interfering relation with the hasp. FIG. 11 is a vertical sectional view taken generally along line 11-11 of FIG. 10. FIG. 12 is a view, similar to FIG. 10, showing the padlock displaced together with the staple.

In FIGS. 1, 2, 3 and 4 reference character 10 designates, generally, locking means for locking together a cover member 11 and a housing member 12, only portions of these elements being shown. The cover member is arranged to be pivoted at 13 and its flanged distal end 14 is arranged, in closed position, to abut an angle section 15 of the housing member 12. The upper member 11 has a rectangular opening 16 which is sur-

rounded by a box member 17 which is formed by a flat bottom wall 18, sidewalls 19 and 20, a top wall 21 and an inclined lower wall 22.

A staple 25 in a form of a flat plate is secured to the box member 17 at the junction between the flat bottom wall 18 and the top wall 21. The staple 25 preferably is in the form of a flat metallic plate which may be secured, as by welding, to the adjacent walls of the box member 17 which also is formed of metal and may be secured, as by welding, to the cover member 11 of metal. The staple 25 has an opening 26 for receiving a shackle 27 of a conventional padlock 28, FIG. 1. The staple 25 is arranged to project through a slot 29, FIG. 4, in a J-shaped end 30 of a hasp 31 that may be formed of flat sheet metal. The hasp 31 has a stem portion 32, a flat end portion 33, which extends at right angles thereto, and a depending flange portion 24 which extends from the end portion 33 at right angles. The slot 29 is located partly in the stem portion 32 and partly in the end portion 33. The lower end of the stem portion 32 is secured to a shaft 35 that projects through openings 36 in the sidewalls 19 and 20 of the box member 17. The shaft 35 has rectangular end portions 37 for extending into rectangular openings 38 in hooks 39 and nonrotatably mounting them on the shaft 35. The hooks 39, in the locked position of the hasp 31 have locking engagement with the angle section 15 of the housing member 12. Washers 40 between the outer sides of the sidewalls 19 and 20 and the inner sides of the hooks 39 facilitate pivotal movement of the shaft 35 and parts secured thereto.

When the cover member 11 is in the closed position, as shown in FIGS. 1, 2 and 3, the hasp 31 can be swung from the broken line position, shown in FIG. 2, to the locked position in which the staple 25 projects through the slot 29 where the opening 36 is in position to receive the shackle 27 of the padlock 28. In this position the flange portion 24 overlies the shackle 27. When the shackle 27 is protected in this manner, access by a bar into the shackle is limited as is application of the jaws of a bolt cutter for severing the shackle 27. However, authorized personnel having a key to the padlock 28 can readily unlock it and then remove the shackle 27 from the staple 25.

In FIGS. 5, 6 and 7 locking means, indicated generally at 42, is arranged to be mounted partly on a stationary wall 43 of a metal enclosure for electrical switchgear and partly on a top panel 44 that is horizontally slidable as disclosed in more detail in the application above referred to. The wall 43 has a rectangular opening 45 which is surrounded by a box member 46 which corresponds, generally to the box member 17 previously described. The box member 46 provides a recess 47 for the hasp 31 and it has a bottom wall 48 and sidewalls 49 and 50. The shaft 35 is pivoted at its ends through suitable openings in the sidewalls 49 and 50. As before, the staple 25 is secured to the box member 46 and is arranged to enter the slot 29 in the J-shaped end 30 of the hasp 31. The shackle 27 of the padlock 28 is arranged to enter the opening 26 in the staple 25 and to be overlaid by the flange portion 34 for preventing access thereto.

For locking the top panel 44 to the wall 43 an opening 51 is provided in the bottom wall 48 of the box member 46 and a tongue 52 is secured to the hasp 31 intermediate the ends of the stem portion 32. In the locked position of the hasp 31 the tongue 52 projects through the opening 51 and also through an opening 53 in a head portion 54 of a T-shaped locking member that is indicated, generally, at 55. The locking member 55 has a stem 56 which is secured by bolts 57 to the underside of the top panel 44. A cap 58 is secured to the head portion 54 and around the opening 53 to prevent access to the interior of the enclosure through the opening 52.

As shown in FIG. 7 the top panel 44 is movable in opposite directions as indicated by the double headed arrow 59. When it is moved to the left, as viewed in FIG. 7, after unlocking and removal of the padlock 28 and swinging of the hasp 31 to the broken line position shown in FIG. 6, the end portion 60 of the head portion 54 overlies the opening 51 in the bottom wall 48

of the box member 46 and thus prevents movement of the hasp 31 to the locking position. In like manner, when the top panel 44 is moved to the right as viewed in FIG. 7, end portion 61 overlies the opening 51 and prevents movement of the hasp 31 to the locking position. The reason for this construction is to insure that the hasp 31 is moved to the locked position only when the slidable panel 44 occupies a predetermined position.

In FIGS. 8 and 9 locking means are shown for further cooperation with the sliding panel 44. The locking means is indicated, generally, at 63 in FIG. 8 where the staple 25 is shown as being secured to and extending upwardly from a stationary frame member 64 which forms a part of the metallic enclosure. A front panel 65 of a fuse drawer, a part of which is indicated generally at 66, is arranged to be moved horizontally away from the stationary frame member 64. The hasp 31 is pivoted at 67 on the front panel 65, and as shown in FIG. 9, moves therewith as it is withdrawn from the metal enclosure. As before the shackle 27 of the padlock 28 is inserted through the opening 26 in the staple 25 and access thereto is prevented by the overlying flange portion 34 of the J-shaped end 30 of the hasp 31.

Access to the locking means 63 can be had only when the top panel 44 is moved to the left where an intumed edge portion 68, shown by a broken line, engages an upturned flange 69 of the stationary frame member 64. Only then is it possible to have access to the locking means 63 which can be unlocked in the manner previously described.

FIGS. 10, 11 and 12 show a further modification of the locking means, particularly for metalclad switchgear in exposed public locations. The cover member 11 is shown which is provided with a rectangular opening 16 which is surrounded by a box member that is indicated, generally, at 17. As before, the box member 17 has a flat bottom wall 18, sidewalls 19 and 20, a top wall 21 and inclined lower wall 22. A J-shaped staple, indicated, generally, at 70 has its short arm 71 secured, as by welding 72, to the upper side of the top wall. The welding at 72 provides a flexible weakened section which is intended to hold normally the J-shaped staple 70 in the position shown in FIGS. 10 and 11. However, on application of sufficient force, it can be shifted to the position shown in FIG. 12. This short arm 71 of the J-shaped staple 70 is connected by a section 73 to a long arm 74 which extends downwardly through a slot 75 in the top wall 21. Near the distal end of the long arm 74 there is a shackle receiving opening 76 which is adapted to receive the shackle 27 of the padlock 28 as shown in FIG. 11.

The lower end of the long arm 74, provided with the shackle receiving opening 76, projects downwardly through a slot 79 in a J-shaped end 80 of a hasp that is indicated, generally, at 81. The J-shaped end 80 can be formed as a separate part and secured to a flat body portion 82 of the hasp 81. Alternatively the J-shaped end 80 can be formed integrally with the flat body portion 82. At its lower end the flat body portion 82 is secured to a shaft 83 which projects through openings 84 in the sidewalls 19 and 20 in a manner similar to the shaft 35 previously described. A tongue 85 corresponding to the tongue 52, previously described, projects from the body portion 82 rearwardly through an opening 86 in the bottom wall 18. The tongue 85 is arranged to project into a member, such as the T-shaped locking member 55 to prevent relative movement between the wall 43 and the slidable top panel 44 in the manner previously described when the hasp 81 is in the locked position.

The J-shaped end 80 of the hasp 81 includes a downwardly extending flange 87 which overlies the lower end of the long arm 74 and the shackle 27 of the padlock 28. Its purpose is to limit access to the shackle 27. The J-shaped end 80 also includes rearwardly extending plates 88 that are joined by a downturned flange 89 which is offset from the bottom wall 18 and from the body portion 82. It is secured to the latter by welding as indicated at 90.

The front surface 91 of the flange 89 is tangent to the opening 76 which is circular. The reason for this is to provide for accommodating a wide range of diameters of shackles 27 with a minimum of looseness.

It was pointed out that the lower end of the long arm 74 extends downwardly through a slot 79 in the J-shaped end 80.

This slot extends into the downturned flange 89 so that, when the padlock 28 is unlocked and the shackle 27 removed, the hasp 81 can be swung away from the bottom wall 18 of the box member 17 accompanied by movement of the tongue 85 out of its locking position. The relation between the rear edge 92 of the long arm 74 with respect to the front surface 93 of the flat body portion 82 is important. It will be observed that the rear edge 92 is located in a plane spaced slightly in front of the plane of the front surface 93. The reason for this is that, should an attempt be made to insert a prying bar between the lower end of the flange 87 and the body of the padlock 28 to force the latter downwardly, this will be accompanied by downward movement of the long arm 74 into overlying relation with respect to the front surface 93 of the body portion 82 of the hasp 81. Even though the padlock 28 is displaced, as indicated in FIG. 12, and possibly removed by cutting of the shackle 27 by bolt cutters, still the hasp 81 is locked in position by the long arm 74 of the J-shaped staple 70.

I claim:

1. Locking mechanism for receiving the shackle of a padlock comprising:

a shackle receiving staple;

a relatively movably mounted generally J-shaped hasp having a slot at its distal end in the bottom and back portions of the J-shape for receiving said staple therethrough in the locking position of said hasp; and
a flange on said hasp for overlying said staple in said locking position of said hasp to limit access to said shackle.

2. Locking mechanism according to claim 1 wherein said hasp is formed of plate like material.

3. Locking mechanism for receiving the shackle of a padlock to limit relative movement between two members comprising:

a shackle receiving staple on one of said member;

a generally J-shaped hasp pivoted on said one member and having a slot in the hook portion of said J-shape for receiving said staple therethrough in the locking position of said hasp;

a flange on said hasp overlying said staple in said locking position of said hasp for overlying said shackle in said staple to limit access to said shackle; and

means on said hasp for interfitting with the other of said members in said locking position of said hasp to limit said relative movement.

4. Locking mechanism for receiving the shackle of a padlock to limit relative movement between two members one of which is provided with an opening comprising:

a box member for surrounding said opening in said one member and having a top wall, sidewalls and a lower wall interconnected by a bottom wall;

said top wall having a slot;

a J-shaped staple having its short arm secured to the upper side of said top wall and its long arm extending downwardly through said slot in said top wall with a shackle receiving opening at its distal end;

a hasp pivoted on said box member and having a slot at its distal end for receiving said distal end of said long arm in the locking position of said hasp;

a flange on said hasp overlying said distal end of said long arm to limit access to said shackle; and

means on said hasp for interfitting with the other of said members in said locking position of said hasp to limit said relative movement.

5. Locking mechanism according to claim 4 wherein said long arm of said staple is movable downwardly on application of sufficient force into overlying relation to said hasp.

6. Locking mechanism according to claim 5 wherein:

said hasp has a flange offset away from said bottom wall; and

said shackle receiving opening is circular and tangent to the last mentioned flange.

7. Locking mechanism according to claim 4 wherein:

said bottom wall has an opening; and

a locking tongue is secured to said hasp and extends through said opening in said bottom wall in the locked position of said hasp.