

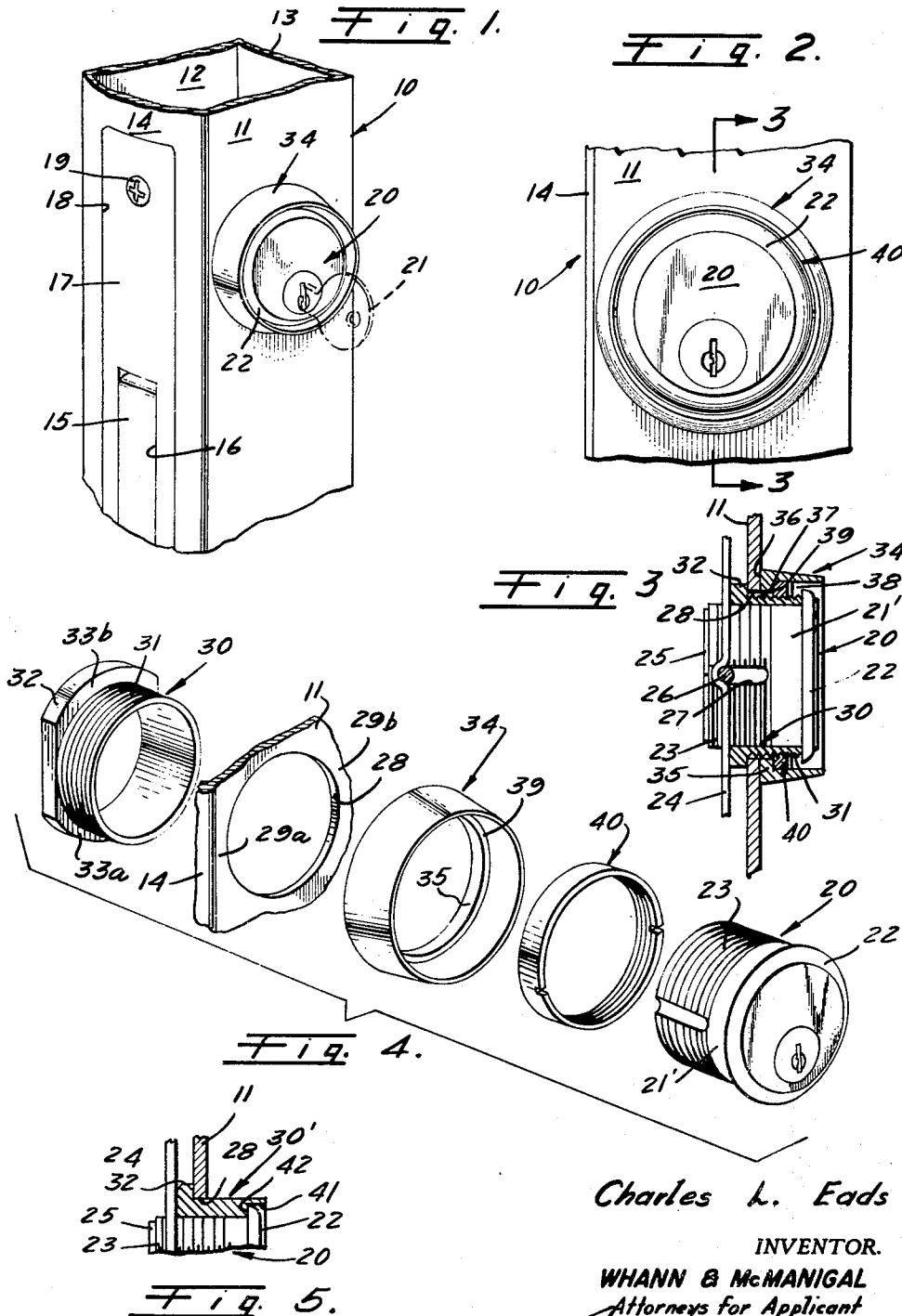
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BURGLAR PROOF SHIELD FOR LOCK CYLINDER

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BURGLAR PROOF SHIELD FOR LOCK CYLINDER
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The present invention relates generally to the mounting of lock cylinders, and is more particularly concerned with mounting means which will provide a burglar proof shield for the lock cylinder.

Lock cylinders conventionally embody a rather standardized construction which usually includes a cylinder or barrel constructed of a relatively soft metal material such as brass, aluminum or the like, adapted to mount in an opening in a door frame or stile. The lock cylinder at its outermost end is formed with a peripheral flange which is adapted in the mounted position of the lock cylinder to abut either directly against the outer surface of the door frame, or against a spacer ring usually constructed of a metal similar to that of the lock cylinder. In either of these types of mounting, the peripheral end flange of the lock cylinder is exposed.

While such installations are a protection against normal attempts of entry, such installations do not provide a high degree of security, and forced entry can ordinarily be accomplished by the well known and practiced procedures of applying a large pipe wrench to the exposed flanged end of the lock cylinder and twisting the cylinder until it is forcefully broken or damaged to such an extent that the lock will be released. Another known procedure resides in the utilization of powerful high leverage pliers or pinchers to engage the lock cylinder back of the exposed end flange or the spacer ring, and by then prying the cylinder loose from its mounting to release the lock mechanism.

Having the foregoing in mind, the present invention has for one object the provision of a protective ring shield of relatively tough material which is strongly anchored to the door frame structure independently of the lock cylinder, and which is so constructed that it shieldingly extends over the outer end flange of the lock cylinder body so as to deter forceful entries of the character described above.

A further object is to provide a burglar proof shield of the herein described character for a lock cylinder, which is of simple construction, has a high degree of flexibility, and is easily installed.

A still further object is to provide a burglar proof shield for lock cylinders, which is so constructed that it may be utilized in the limited space of a narrow stile door frame without unduly weakening the stile wall, or having to materially enlarge the lock cylinder mounting opening in the stile wall to such extent that the wall be undesirably weakened.

It is also an object to provide a shielding structure for the herein described purpose which may be readily used for different mounting wall thicknesses, and which can be readily adjusted for different cylinder lengths e.g. to accommodate five or six pin lock structures.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is a fragmentary perspective view showing the burglar proof shield and associated lock cylinder mounted upon a narrow stile extruded door frame member;

FIG. 2 is an enlarged fragmentary front elevational view, looking toward the exposed end of the lock cylinder;

FIG. 3 is a vertical sectional view, taken substantially on line 3—3 of FIG. 2, and showing the cooperative relationship of the shielding means with respect to the lock cylinder;

FIG. 4 is an exploded view showing the component parts of the shielding structure of the present invention; and

FIG. 5 is a fragmentary sectional view similar to FIG. 3, showing a modified structure.

Referring more specifically to the drawings, for illustrative purposes, the burglar proof shielding structure of the present invention is disclosed in FIG. 1 as being mounted upon a "narrow stile" extrusion, as generally indicated by the numeral 10, which is formed with front and back walls 11 and 12 and an inner wall 13 in right angled relation. An outer wall 14 is of curved configuration. These walls provide a tubular structure within which the locking mechanism contained within its own frame structure may be mounted in such a manner that a lock bolt 15 will be operably extended and retracted through an opening 16 in a face plate 17 which is secured within an opening 18 of the wall 14 as by the mounting screws 19.

The locking mechanism is controlled by means of a lock cylinder unit, as generally indicated by the numeral 20, of conventional construction, this unit being key controlled as by a key 21. As best shown in FIG. 3, the lock cylinder unit is disclosed as comprising the usual barrel 21' which is formed on its outermost end with a radially extending end flange 22, and is threaded on its innermost end 23 to permit its being screwed into an opening in a frame member 24 constituting a part of the lock frame structure mounted within the extrusion 10. The lock cylinder unit is provided with the usual rotatable cam member 25 which is operatively associated with the mechanism for actuating the lock bolt 15 in well known manner. The lock cylinder unit is retained against rotative movement in its mounted position by means of a set screw 26 which is adapted to seat in a slot 27 formed in the barrel surface.

Referring to FIG. 4, the front wall 11 is shown as being provided with a circular opening 28 which is adapted to receive axially therein the lock cylinder unit. In the case of a narrow stile extrusion, the width of the walls 11 and 12 is relatively extremely narrow so that the diametrically opposite wall margins 29a and 29b on opposite sides of the opening 28 limit the size of this opening and the extent to which it may be enlarged without unduly weakening the wall structure. The burglar proof mounting means of the lock cylinder unit of the present invention is especially adapted for use with narrow stile extrusions as just described, since it may be mounted with a minimum of enlargement of the opening 28.

Referring to FIGS. 3 and 4, the mounting and shielding means for the lock cylinder unit comprises an adapter sleeve 30 having a threaded end 31 and a flanged end 32. The flanged end may extend throughout the entire circumference of the sleeve, however, for use on narrow stile extrusions, it is preferred to remove diametrically opposite portions of the flange in order to accommodate the adapter sleeve for the narrow wall margins 29a and 29b in the wall 11. With this construction, shoulders 33a and 33b will be disposed on diametrically opposite top and bottom sides of the sleeve for abutment against the inner surface of the wall 11, when the sleeve is inserted into the opening 28 and positioned therein as shown in FIG. 3.

Exteriorly mounted on the threaded end 31 of the adapter sleeve is ring shield 34, the outer surface of which

is tapered towards its outermost end. Interiorly, the ring shield is formed at its inner end with an inwardly projecting end flange 35. This flange provides an outer surface 36 adapted to bear against the adjacent outer surface of the wall 11. The flange at this end of the ring shield provides a restricted opening 37 of a diameter having sliding fit with the threaded end 31 of the adapter sleeve. The outer end portion of the ring shield 34 is internally of slightly greater diameter than the diameter of the opening 37 so that the inner wall in this portion of the shield will be spaced from the threaded end 31 to provide an annular space 38. The adjacent inner end portions of the opening 37 and the annular space 38 are joined at an abutment shoulder 39 on the end flange 35.

A ring nut 40 is internally threaded to engage the threaded end 31 of the adapter sleeve, the ring nut being of a diameter to fit within the annular space 38. By tightening the ring nut against the abutment shoulder 39, the adapter sleeve 30 and the ring shield 34 may be cooperatively tightened into clamping engagement against the front and back surfaces of the wall 11 to hold the parts in assembled relation thereon. The ring shield is fabricated from a tough hard metallic material suitable for the purpose of providing a protection shield for the softer material of the lock cylinder unit 20.

With the lock cylinder unit 20 mounted in operative position, as shown in FIG. 3, the end flange 22 will be inwardly disposed of the outer end of the ring shield 34, and the end flange 22 will thus materially reduce the annular opening 38 at this point and form a substantial bar against access to the ring nut 40 and prevent its being loosened. Moreover, the ring shield prevents engaging the lock cylinder unit by means of pliers, pipe wrenches and the like to effect forceful entry. It will also be observed that the protective shield structure is mounted independently of the lock cylinder unit on the wall 11.

Referring now to FIG. 5, a modified arrangement is disclosed wherein similar parts are indicated by similar numerals to the parts previously described. The modified arrangement differs from that previously described primarily in that the adapter sleeve 30' is utilized to perform the function of the ring shield 34, which is eliminated. The adapter sleeve 30' is not provided with a threaded end but is arranged with a smooth outer surface to fit snugly within the opening 28. At its outermost end, the adapter sleeve is provided with an internal end groove 41 to receive the flange 22 of the lock cylinder unit therein and into a mounted abutting position against a bottom shoulder 42 in the groove. This arrangement provides a simplified arrangement over that previously described, and utilizes a single element rather than three elements as in the other arrangement.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims, wherein various portions have been separated for clarity of reading and not for emphasis.

I claim:

1. Burglar proof shielding means for a narrow stile mounted door lock, comprising:

(a) a sleeve member adapted to be positioned in an opening in a wall of a narrow stile of a door, said sleeve having a projection adjacent one end for abutting an inner surface portion of the wall and an opposite threaded end to project beyond the outer surface of said wall;

(b) a ring shield adapted to be positioned over the threaded end of the sleeve member with its inner end abutting a portion of said outer surface of said wall, said ring having an outer end inner wall portion of greater diameter than the outer diameter of said threaded end to provide an annular space; and

(c) a ring nut for threaded engagement with said threaded end, operable in said space into engagement with an abutment of said ring shield, whereby the sleeve member and ring shield are clampingly secured in an operative position on the stile of the door.

2. Burglar proof shielding means for a narrow stile mounted door lock cylinder, comprising:

(a) a sleeve member adapted to be positioned in an opening in a wall of a narrow stile of a door, said sleeve having a projection adjacent one end for abutting an inner surface portion of the wall and an opposite threaded end to project beyond the outer surface of said wall;

(b) a ring shield adapted to be positioned over the threaded end of the sleeve member with its inner end abutting a portion of said outer surface of said wall, said ring having an outer surface tapered from said inner end to its opposite outer end, and said outer end having an interior wall portion of greater diameter than the outer diameter of said threaded end to provide an annular space; and

(c) a ring nut for threaded engagement with said threaded end, operable in said space into engagement with an abutment of said ring shield, whereby the sleeve member and ring shield may be clampingly secured in an operative position on the stile of the door.

3. Burglar proof shielding means for a narrow stile mounted door lock cylinder, comprising:

(a) a sleeve member adapted to be positioned in an opening in a wall of a narrow stile of a door, said sleeve having a projection adjacent one end for abutting an inner surface portion of the wall and an opposite threaded end to project beyond the outer surface of said wall;

(b) a tapered ring shield adapted to be positioned over the threaded end of the sleeve member, said ring shield at its inner end having a radially inwardly extending end flange engageable with the outer surface of said wall, said flange having an inner shoulder providing an abutment at an inner end of an annular space surrounding said threaded end of the sleeve member; and

(c) a ring nut for threaded engagement with said threaded end operable in said space into engagement with said flange shoulder, whereby the sleeve member and ring shield are clampingly secured in an operative position on the stile of the door.

4. Burglar proof shielding means for a lock cylinder mounted in an opening of a wall of a narrow stile of a door, comprising:

(a) an externally threaded lock cylinder adapter sleeve having a radially outwardly extending flange portion at one end;

(b) a ring shield having a radially inwardly extending flange portion at one end adapted to receive the threaded portion of said sleeve therethrough so as to position said flanges in confronting relation; and

(c) a ring nut operable within a portion of said ring shield on the threaded sleeve for engaging its said flange for relatively axially moving the sleeve and ring shield to position their confronting flanges in a cooperative clamping position.

5. Burglar proof shielding means for a lock cylinder mounted in an opening of a wall of a narrow stile of a door, said cylinder having a radially protecting peripheral flange at its outermost end, said means comprising:

(a) an externally threaded lock cylinder adapter sleeve having a radially outwardly extending flange portion at one end;

(b) a ring shield having a relatively smaller internal diameter portion at its inner end adapted to receive the threaded portion of said sleeve therethrough, and a larger internal diameter portion at its outer end adapted to receive the projecting end flange of the

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lock cylinder therein, said portions at adjacent inner ends forming a shoulder; and
 (c) a ring nut operable within the outer end portion of said ring shield on the threaded sleeve for engaging said shoulder to axially move the sleeve flange and the adjacent inner end of the ring shield into a clamping position, the outer end flange of the lock cylinder in mounted position serving to prevent exterior access to said ring nut.

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