Dec. 24, 1968 S. KAUFMAN ETAL 3,417,805

EMERGENCY OPENING PROTECTIVE GATE

Filed July 19, 1967

FIG. 1.

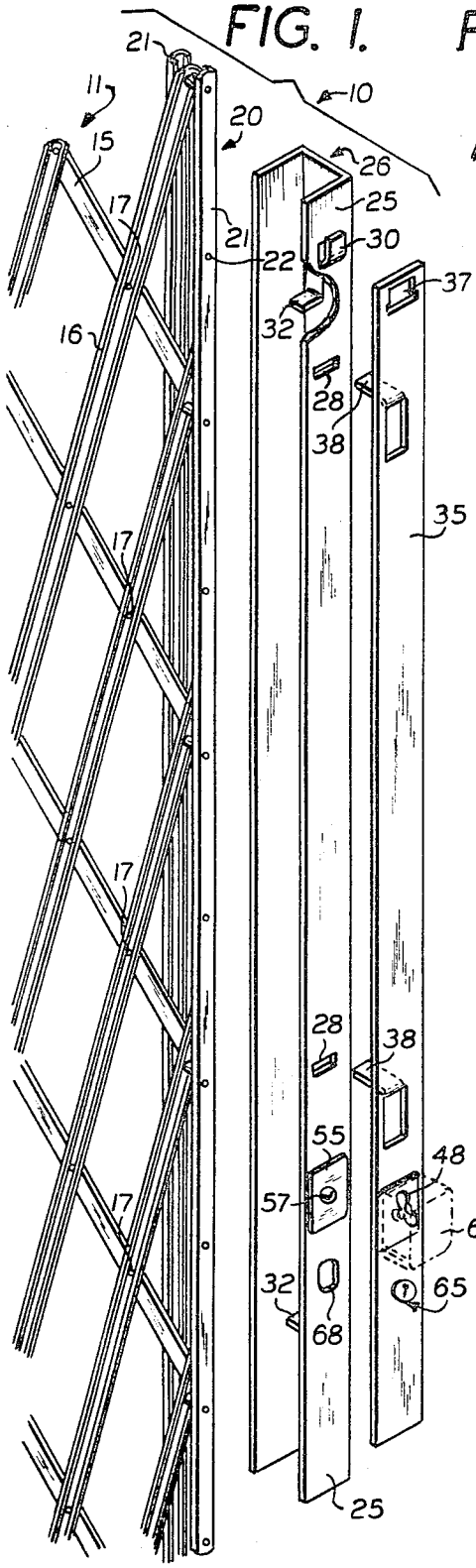


FIG. 2.

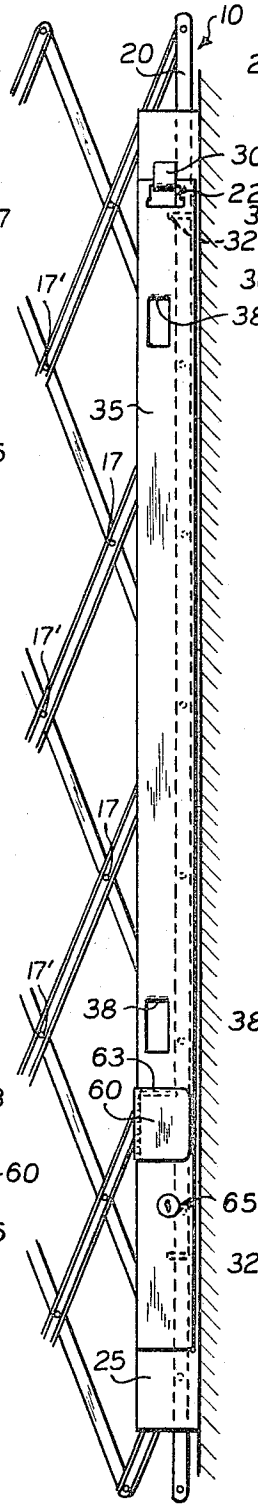


FIG. 3.

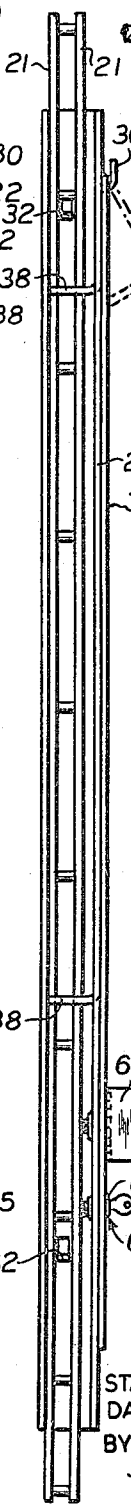


FIG. 5.

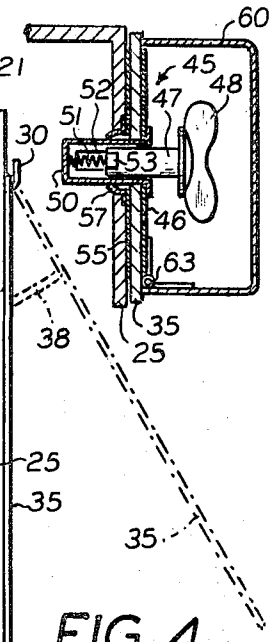
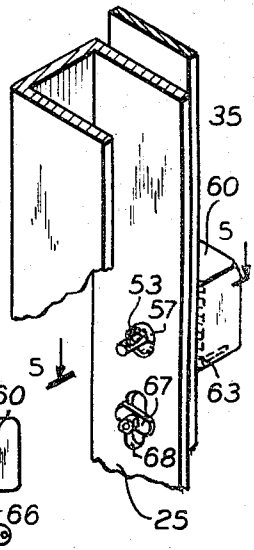


FIG. 4.



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EMERGENCY OPENING PROTECTIVE GATE

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ABSTRACT OF THE DISCLOSURE

A protective gate subject to being opened in emergencies, the gate having a latch bar pivotally mounted on a closure plate positioned to engage the free end of the gate when the gate is oriented in an operative protecting position. The latch bar is formed with detents extending through openings in the closure plate to retain the gate in operative protecting position when the latch bar overlies the closure plate, and manually operable locking means accessible only from the protected area, are extended between the latch bar and closure plate to retain same in a juxtaposed relationship, so that opening of the gate may be readily accomplished only from the protected area in a rapid fashion during emergencies, but may not be accomplished from the outside.

Background of the invention

This invention relates to the art of protective gates, and more particularly to an improved protective gate construction in which though the gate lends itself to being locked in an operative protecting position with respect to any given openings such as a window or the like, in the event of an emergency requiring quick opening of the gate to permit egress through the protected opening, this is readily possible.

A variety of different types of protective gate structures have been evolved, such for example, as shown by applicants' prior patent 3,314,469. These gate structures are particularly adapted for use in preventing unauthorized entry through an opening such as a window or the like, while at the same time admitting light and air through the opening. Such gates are generally constructed of an open grill, such as a lazy tong lattice provided with sufficient apertures so as not to interfere with light and air, and at the same time prevent undesired entry. Protective gates of this type find relatively widespread use in tenement apartments, serving the twofold purpose of preventing unauthorized access to the protected premises through windows leading to low level windows, fire escapes, or the like, and additionally, serve the purpose of preventing children from falling out of the window. In use, the protective gate should desirably be securely locked in position in a fashion preventing one on the outside from forcing the gate to obtain access.

Where conventional locking arrangements are employed, problems arise in that during emergency situations, the gate must be subject to ready removal to permit the occupants of the protected area to leave via first escapes or the like. Where conventional locks are employed, the keys are unfortunately not kept readily available for use during emergency situations. Even where the key has been stored in a position near the gate, such as by hanging on a wall beyond the reach of an outsider, with time the keys have been lost.

Summary of the invention

It is with the above problems and considerations in mind that the present improved protective gate construction has been evolved, providing a gate which may be securely maintained in operative protecting position with

respect to a window, or the like opening, and which may be locked in this protecting position in a fashion precluding opening of the gate from the outside of the protected area, and at the same time permitting rapid opening by anyone within the protected area in an emergency situation requiring removal of the gate.

It is accordingly among the primary objects of this invention to provide an improved protective gate subject to being locked in protecting position, with unlocking taking place only from within the protected area at the discretion of an occupant of the protected area.

Another object of the invention is to provide a protective gate with manually manipulable locking means not requiring the use of a key.

A further object of the invention is to provide a protective gate with keyholes locking means requiring manipulation which can only be performed from within the protected area.

These and other objects of the invention, which will become hereafter apparent, are achieved by providing a collapsible lattice type gate, preferably of the lazy tong type, with one end adapted for fixed securement with respect to the side of a window or door which is to be protected, and the other end of the gate subject to being moved to extend the gate over the protected openings, such as a window or the like, with the free end seating beneath a closure plate. The closure plate is preferably formed as one leg of a U-shaped channel, and the channel is rigidly secured to the side of the window or door opening opposite to the one to which the fixed end of the gate has been secured. A latch bar is detachably pivoted to the closure plate by means of a pivot hook extending between the latch bar and the closure plate. Detents on the closure latch bar extend through openings in the closure plate, with the detents extending a distance sufficient to engage the free end of the gate and lock same beneath the closure plate in the closure plate channel. A thumb plate lock is secured to the latch bar at a point remote from the pivot hook to lock the latch bar with respect to the closure plate to maintain the detents in gate engaging position. This thumb plate lock is preferably enclosed in a spring hinged cover box which is mounted so that opening of the box to provide access to the thumb plate requires that the hand of the user approach the thumb plate from the inner side of the gate.

A feature of the invention resides in the dimensioning of the detents on the latch bar of a length such that the necessary pivoting of the latch bar to release the gate requires movement of the latch bar a distance greater than the length of the average arm, thus minimizing the possibility of the latch bar being displaced to open the gate from the outside of the protected area.

Another feature of the invention resides in the preferred formation of the collapsible gate of a lazy tong lattice in which the openings of the lattice are so spaced from the end of the gate as to preclude insertion of an arm through the gate to actuate the lock to release the latch bar.

Brief description of the drawing

The specific details of a preferred embodiment of the invention, and their mode of functioning will be particularly pointed out in clear, concise and exact terms in conjunction with the accompanying drawing wherein:

FIG. 1 is a perspective exploded elevational view showing the free end of a lazy tong lattice gate with the closure plate channel and latch bar shown in exploded position with respect to this free end indicating the relationship between the components;

FIG. 2 is a front elevational view of a gate made in accordance with the teachings of this invention as viewed in closed position from the interior of the protected area;

FIG. 3 is an elevational view looking along the surface of the gate, indicating the movement of the latch bar necessary to effect release of the gate;

FIG. 4 is an enlarged detail view through the closure plate channel, with parts broken away to reveal the interlock between the latch bar and closure plate; and

FIG. 5 is a cross sectional view on line 5—5 of FIG. 4 showing the thumb plate lock employed for securing the latch bar with respect to the closure plate.

Description of the preferred embodiment

Referring now more particularly to the drawings, like numerals in the various figures will be employed to designate like parts.

The protective gate **10**, as best seen in FIGS. 1 and 2, embodying applicant's invention preferably comprises a lazy tong lattice **11** formed by a plurality of angularly disposed criss-crossing truss bars **15** and **16**. The truss bars designated **15** are inclined downwardly from left to right as viewed in FIGS. 1 and 2, while those truss bars designated **16** are inclined upwardly from left to right as viewed in FIGS. 1 and 2. Truss bars **15** are pivotally interconnected to the truss bars **16** at pivot points **17** preferably formed by rivets or the like. In the illustrated preferred embodiment, the truss bars **15** and **16** are formed of U-shaped channels but obviously may be made of simple strips. As is known to those skilled in the art, and is more fully set forth in applicant's prior Patent 3,314,469, lazy tong lattices of this type have long been used for protective gates.

The positioning of the pivot points between the truss bars **15** and **16** of a preferred embodiment of the lattice **11** is such that the labeled pivot points **17** in the drawing (those one row away from the free end of the lattice **11**) are less than two inches from the end of the lattice, with the spacing between the next adjacent row of pivot points labeled in FIG. 2 as **17'** and the free end of the lattice will be less than 4 inches. By virtue of this dimensioning as will become hereinafter more apparent, it will be substantially impossible for the average human hand to be extended to a position effecting opening of the gate from the outside of the protected area.

A guide post member **20**, as seen to the right in FIGS. 1 and 2 is employed at the free end of the grill work **11** forming the gate **10**. Guide post member **20**, as best seen in FIG. 1 is formed by two opposed U-shaped channel members **21** conjoined by means of fastening members **22** in the form of rivets or the like, in a fashion much as described in connection with guide post **60** of applicant's aforementioned patent.

Closure plate **25** is provided to overlie the guide post **20**. The dimensioning of closure plate **25** is such that it will have a width preferably at least a half inch greater than the width of guide post **20** for a purpose to become hereinafter more apparent. Closure plate **25** is preferably formed as a leg of a U-shaped channel **26** dimensioned to accommodate guide post **20** within the channel. The closure plate is formed with one or more detent receiving openings **28**, and a pivot hook **30**. The closure plate channel **26** is pivoted with one or more aligning tongues **32** positioned to extend between the channel members **21** forming the guide post **20** when the guide post **20** is properly seated within the closure plate channel.

Detachably pivoted on pivot plate hook **30** is latch bar **35**. Latch bar **35** is formed with a pivot hook engaging opening **37** spaced slightly from the top of the latch bar **35**, as best seen in FIGS. 1 and 3 such that the material of the latch bar above opening **37** will be freely accommodated by the hook **30** without interfering with pivoting action of the latch bar **35** with respect to the closure plate **25**. Extending from the latch bar **35** are one or more detents **38** positioned on the latch bar at a point such that the detents **38** will enter detent receiving apertures **28** of the closure plate **25** when the latch bar **35** is hooked on pivot hook **30**. Detents **38** are selected of a length such

that the latch bar, at a point adjacent a hereinafter described lock **45**, will have to be moved a distance away from the closure plate greater than the length of the average human arm in order to free the detent from the closure plate, as illustrated in FIG. 3. By way of example, it is noted that from a simple trigonometric analysis of the triangle formed when the latch bar **35** is moved to the dotted line position illustrated in FIG. 3, that where the distance between the pivot hook **30** and the locking mechanism is four feet, and the distance between the pivot hook and detent four inches, where it is desired to require swinging of the latch bar **35** a distance at least equal to three feet, such as would be the limit of the length of the human arm, the detent **38** should be three inches long.

A manually operable lock **45**, as best seen in FIG. 5, is provided for securing the latch bar **35** in a locked position overlying the closure plate **25**, as seen in FIG. 3. This lock **45** comprises plate **46** through which lock pin **47** extends. A thumb handle **48** is secured to pin **47** to rotate same. Lock pin housing **50** is secured to plate **46**, and is provided with a compression spring **51** bearing against the end of pin **47**. A slot **52** in the housing permits the passage therethrough of detent **53** extending laterally from pin **47**. Latch plate **55** is secured by welding or the like to closure plate **25** and is formed with an apertured cam surface **57**, as best seen in FIG. 4. The apertured cam surface is formed with a keyhole opening through which the pin **47** and detent **53** may be passed when the detent **53** is aligned with the slot of the keyhole opening. Thereafter, by turning the thumb handle **48**, the pin **47** will be rotated to move the detent **43** out of alignment with the keyhole slot, causing it to ride on the cam surface **57** which is preferably contoured to form a valley remote from the keyhole slot so that the natural tendency of the detent will be to move away from the keyhole slot.

A lock covering box **60** is secured by means of spring hinge **63** to the latch bar **35**. The spring hinge **63** is of a conventional type tending to bias the box cover **60** to the closed position illustrated in FIGS. 3, 4, and 5. It will be noted from FIGS. 2 and 4 that the position of hinge **63** is such that the box cover **60** will have to swing towards the opening covered by the gate. The hinge is preferably such that when the box is swung to the open position, the hinge limits the movement of the box to extend perpendicular to the plane of the latch bar, and is selected of a dimension such as to exceed the dimension of the average human hand reaching from the outside of the protected area so as to prevent access to the thumb handle **48**.

In the event that it is desired to provide permanent locking of the gate, as for example, during periods when the protected premises are unoccupied, an auxiliary key lock **65** may be provided which as illustrated in FIGS. 3 and 4 is formed with a tumbler barrel **66** mounted on latch bar **35** and rotating stop plate **67** in slot **68** formed in closure plate **25** to engage the latch bar with respect to the closure plate, as illustrated in FIGS. 3 and 4.

Operation

In use, the aforedescribed protective gate **10** is positioned with respect to an opening such as a window or door by affixing the end of the gate remote from the free end illustrated in FIGS. 1 and 2, in conventional fashion, such for example, as illustrated in applicants' prior patent 3,314,469. With the lazy tong grill gate here illustrated, and generally found preferable in practicing the invention, the gate is generally positioned to extend over the opening from left to right, so that the grill work will be affixed with respect to the opening at the left hand side of the opening.

The closure plate channel **26** is affixed with respect to the right hand side of the window or door to be pro-

tected. Latch bar 35 is hooked on pivot hook 30, and the gate is thereafter ready for use.

To effect protective closure of the opening over which the gate is positioned, the lattice 11 is extended over the opening from left to right with the guide post 20 moved into the closure plate channel 26, with the channels 21 forming the guide post 20 straddling the aligning tongue 32. It is preferred that the aligning tongue 32 be oriented with respect to the lattice 11, so that the aligning tongue 32 is positioned to have one of the rivets 22 connecting the channels 21 seated on the tongue 32, thus providing support for the gate and minimizing possible sagging.

In order to move the guidepost 20 into the closure plate channel 26, it will be necessary to make certain that the detents 38 on the latch bar 35 are not in the way of movement of the guidepost 20. This requires pivoting of the latch bar 35 with respect to the closure plate 25 to the position illustrated in dot-dash line in FIG. 3. Once the guidepost 20 is seated in the channel straddling aligning tongue 32, the latch bar 35 is returned to the solid line position illustrated in FIG. 3 with the detents 38 locking the guidepost in position in the channel. When the latch bar 35 is moved to the solid line position illustrated in FIG. 3, lock pin housing 50 extends through the opening in cam surface 57 of latch plate 55 secured to the closure plate 25. Lock covering box 60 is opened to provide access to thumb handle 48, and the thumb handle is rotated moving detent 53 into a position out of alignment with the keyhole slot through which it passed, and causing it to ride over the cam surface 57 thus effecting secure engagement of the latch bar with respect to the closure plate. Upon release of the thumb plate 48, the lock covering box 60 springs back to the position illustrated in the drawings under the action of spring hinge 63.

It will be observed that the dimensioning of the lattice grill work 11, and the dimensioning of the lock covering box 60 is selected to be such as to substantially preclude the possibiltiy of releasing the latch bar from the outside of the protected area, even by those who may be aware of the mechanism employed. This flows from the fact that the four inch horizontal spacing between pivot points of the lattice, though possibly permitting the insertion of an arm of the average person, prevents insertion of the arm through the lattice openings adjacent the guidepost, which openings are approximately two inches across, and in the event that the arm is extended through the next adjacent row of lattice openings, the distance between the wrist of the person inserting his arm and the thumb plate will be greater than six inches, which is more than the distance between the wrist and thumb of the average person. Additionally difficulty in manipulating thumb plate 48 rises from the fact that it becomes necessary to reach over the free edge of box 60.

A further deterrent to the possible unauthorized opening of the gate is provided by dimensioning the detents 38, and positioning them with respect to the pivot hook 30 so that the latch bar in the vicinity of the lock, which is the place, where it would most likely be gripped by an intruder, must be moved a distance preferably greater than three feet, which far exceeds the possible reach of the average person.

Notwithstanding the difficulty of displacing latch bar 35 from outside the protected area, should an emergency situation, such as a fire or the like, develop in the protected area, requiring removal of the protective gate, the occupant of the area need merely swing open box 60, turn the thumb plate 48 to release the detent 53, and move the latch bar 35 to the dot-dash position illustrated in FIG. 3 at which time opening of the gate is readily possible.

It is of course recommended that the occupants of any protected area be educated in the steps required to effect release, and in the event of use in public areas requiring protection, such as school buildings or the like, instructions may readily be provided.

It is thus seen that a simple, relatively inexpensive protective gate has been provided which though not subject to unauthorized opening from outside of the protected area, is readily openable from the protected area in situations where such opening is desired.

The above disclosure has been given by way of illustration and elucidation, and not by way of limitation, and it is desired to protect all embodiments of the herein disclosed inventive concept within the scope of the appended claims.

What is claimed is:

1. A protective gate subject to being opened in emergencies, said gate comprising: a gate member extensible over an opening to be protected; a closure plate beneath which the free end of the gate is moved when extended; a latch bar pivoted to said closure plate; and a detent on said latch bar passing through an opening in said closure plate to engage the free end of said gate member.

2. A protective gate, as in claim 1, in which a manually operable locking member is positioned between said latch bar and said closure plate to detachably engage same.

3. A protective gate, as in claim 2, in which said locking member is actuatable by rotation of a thumb plate.

4. A protective gate, as in claim 2, in which said locking member is covered by a spring hinged box biased to overlie said locking member.

5. A protective gate, as in claim 1, in which said closure plate is formed with a pivot hook engaging in an opening adjacent the top of said latch bar to form a pivot connection between the upper end of said latch bar and said closure plate.

6. A protective gate, as in claim 1, in which said closure plate is formed by one leg of a U-shaped channel dimensioned to enclose the free end of said gate member.

7. A protective gate, as in claim 2, in which said detent is of a length such as to require displacement of said latch bar at the point of positioning of said locking member a distance of at least two feet to effect release of said gate.

8. A protective gate, as in claim 1, in which a key lock is provided for engaging said latch bar with said closure plate.

9. A protective gate, as in claim 1, in which said gate member comprises a lazy tong lattice having a maximum horizontal spacing between lattice pivot points of five inches.

10. A protective gate, as in claim 6, in which said channel is formed with aligning tongues engaging in openings in the free end of said gate member.

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