United States Patent

List

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[54] LOCKING MECHANISM FOR PORTABLE GATE

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[73] Assignee: **List Industries Inc.**

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[52] **U.S. Cl.** **160/161**, 160/351

[51] **Int. Cl.** **E06b 9/08**

[58] **Field of Search** ..... 160/136-164, 84, 160/350, 351, 373; 280/1, 34 A, 34 C, 35, 36 A, 79.1, 79.2, 79.3, 400, 401; 52/64, 109, 143, 238; 49/34; 256/24

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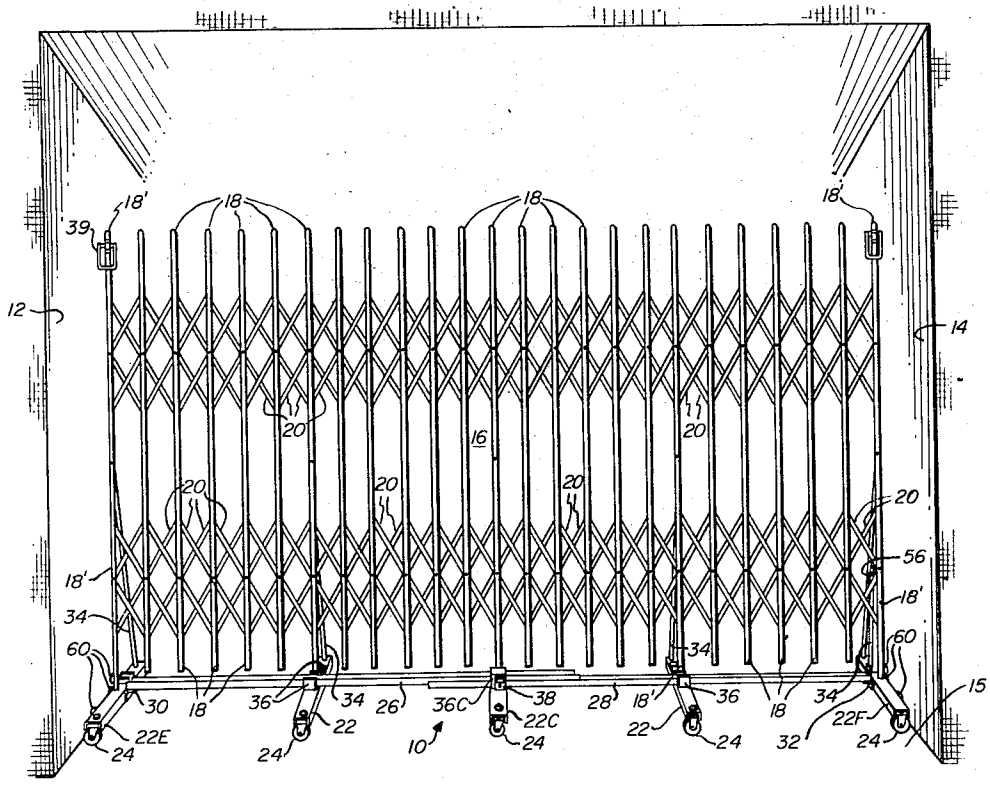
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[57] **ABSTRACT**

A portable gate of a conventional extensible and collapsible type is provided with facilities to enable the gate to be installed quickly and securely. Pivoted locking bars for holding the gate extended are provided with interference structure that interengages during final swinging movement of the bars to force resilient bumpers into predetermined compression against the sidewalls that are bridged by the gate. Retainers on opposite ends of the gate engage floor anchors during final extension of the gate to provide vertical interlocks in accordance with an additional optional feature.

3 Claims, 6 Drawing Figures



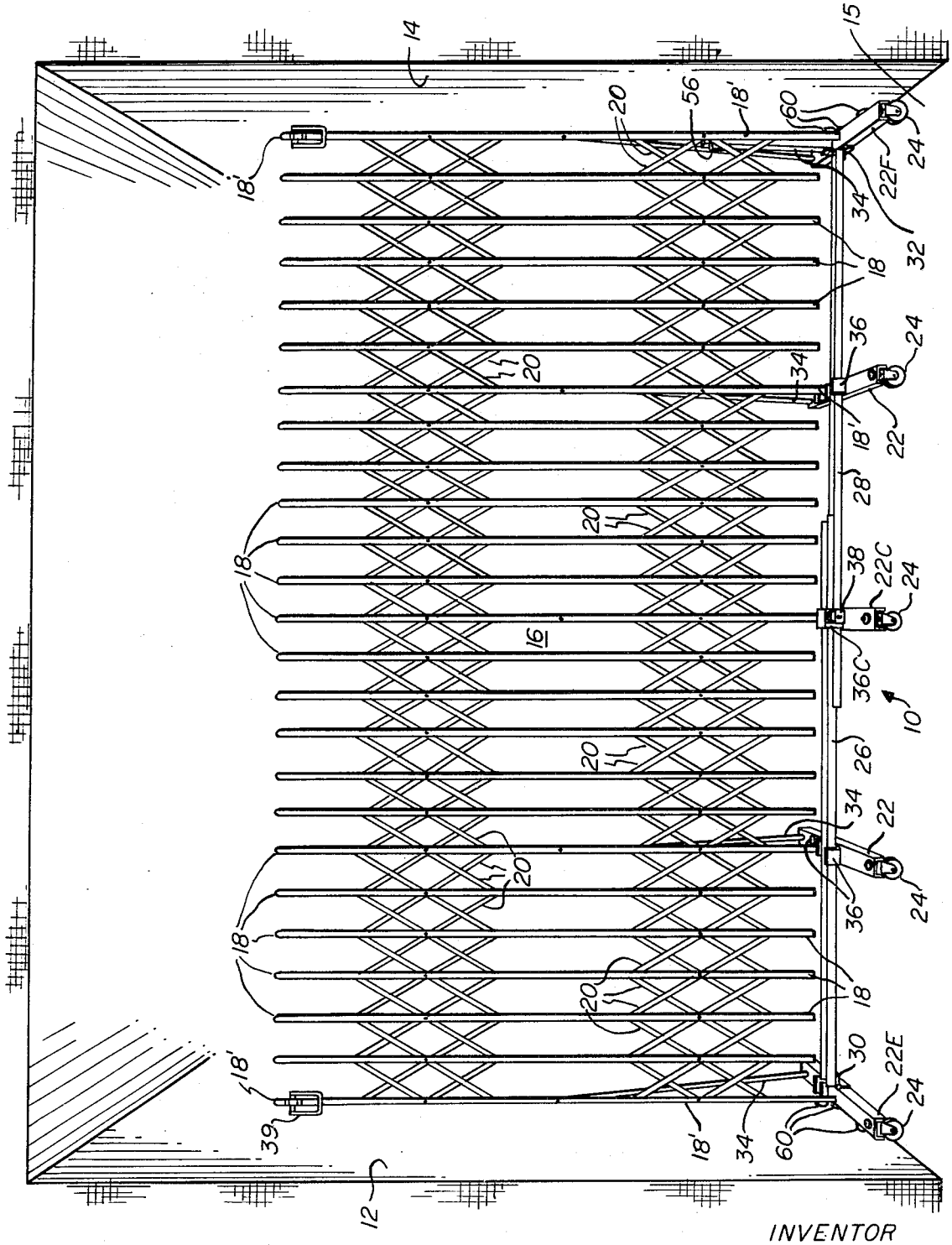


FIG. 1

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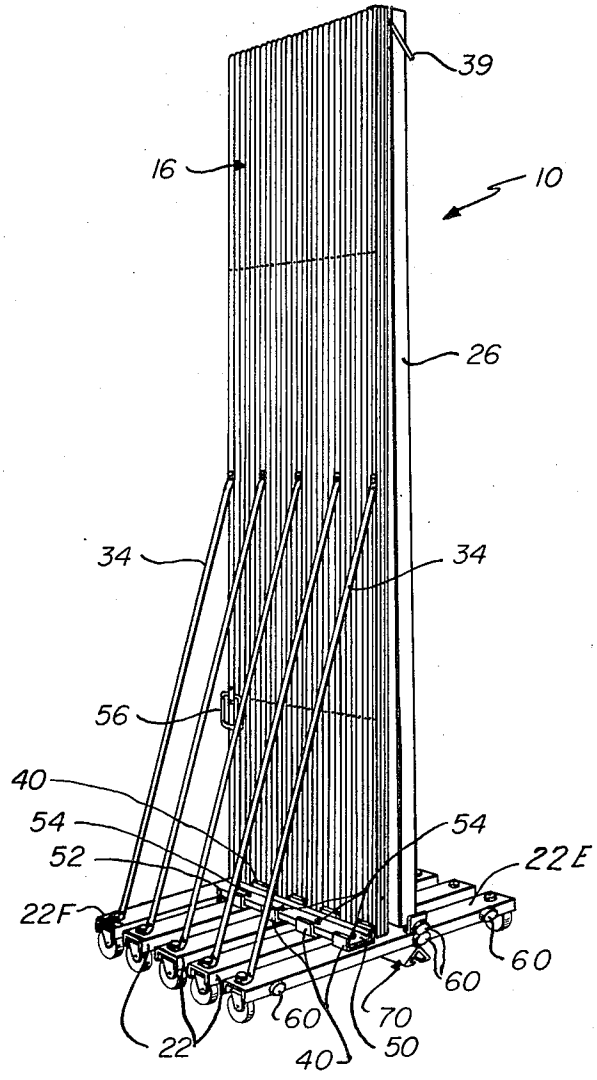
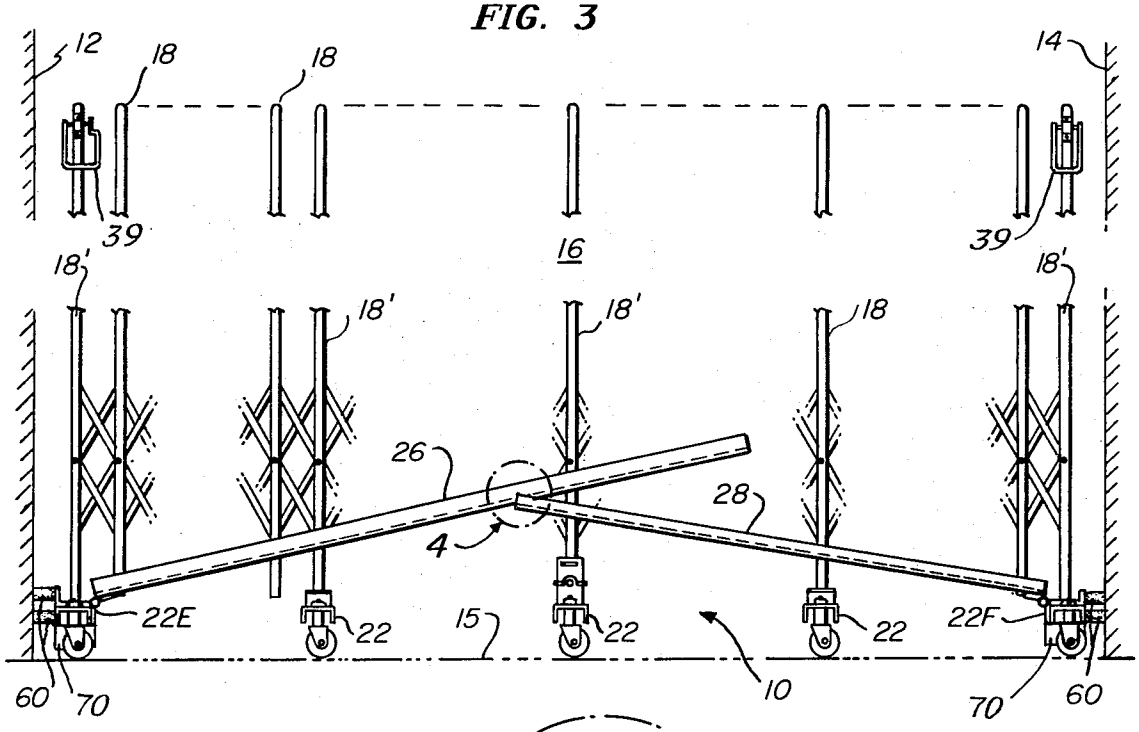


FIG. 2

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FIG. 3



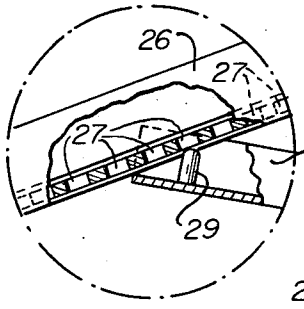


FIG. 4

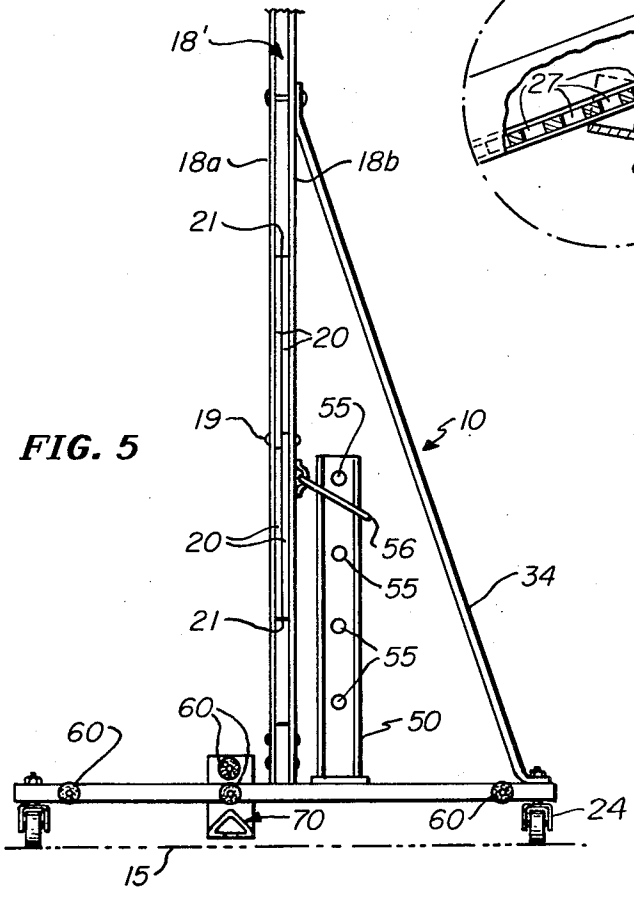


FIG. 5

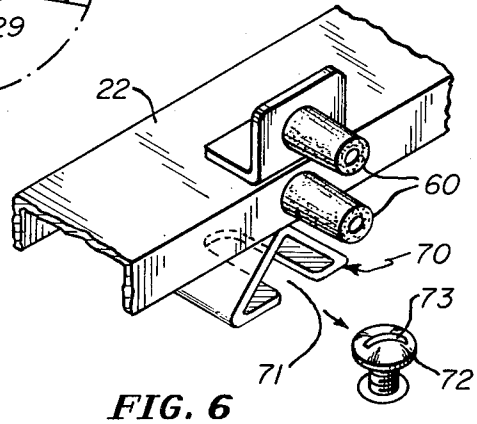


FIG. 6

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LOCKING MECHANISM FOR PORTABLE GATE

The present invention relates to portable gates of an extensible and collapsible type that may be used for temporarily blocking access to a corridor or hallway by direct engagement with the sidewalls of the building.

Portable gates of this general type utilize a set of vertical support posts carried on movable base carriages and interconnected by extensible and collapsible lazy tongs. Locking bars are utilized to hold the gate extended. For various reasons it has been necessary to provide special fittings in the floor for positively anchoring such portable gates.

The present invention provides a simplified arrangement for enabling the gate to be installed quickly and securely with or without floor anchors.

In accordance with the invention, resilient bumpers are provided to engage the side walls and interference structures are actuated during final swinging movement of the locking bars to create final endwise extension of the gate for compressing the bumpers into stable gripping engagement with the side walls.

In the disclosed embodiment, the interference structures are comprised of a set of interference holes in one locking bar and an interference pin in the other bar to engage in one of the holes, in accordance with the extension width of the gate, as the bars are forced through final swinging movement to cause the interference action to produce a predetermined final extension of the gate in accordance with the size of the hole that receives the interference pin. The bumpers are selected to compress sufficiently to accommodate the final extension travel.

The invention provides, as an additional option, a simplified floor anchor arrangement that may be permanently installed to be engaged during such final extension travel to create a vertical interlock that reinforces the secure mounting of the gate.

Other features and advantages of the invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which show structure embodying preferred features of the present invention and the principles thereof, and what is now considered to be the best mode in which to apply these principles.

BRIEF DESCRIPTION OF THE DRAWINGS

The features of this invention which are believed to be novel are set forth with particularity in the appended claims. The invention, together with further features and advantages thereof, may best be understood, however, by reference to the following description taken in conjunction with the accompanying drawings wherein like numerals identify like elements and in which:

FIG. 1 is a perspective front view of a portable gate constructed in accordance with the principles of the present invention, the gage being shown extended and locked in place;

FIG. 2 is a rear perspective view of the gate, the gate being shown collapsed;

FIG. 3 is a front elevational view of the gate, with some parts broken away and other parts eliminated the gate being shown in an intermediate extended position to illustrate the manner of installing the gate;

FIG. 4 is an enlarged fragmentary view showing the intersection of the locking bars and the initial engagement of interference structures on the locking bars for causing final extension thereof;

FIG. 5 is a side elevational view of the gate in its extended configuration; and

FIG. 6 is a fragmentary perspective view showing an end post base carriage moving into vertical interlock with an anchor bolt during final extension of the gate by the interference action of the locking bars.

Referring now to the drawings, a preferred embodiment of a portable gate **10** is shown for temporarily blocking access to a hallway or corridor. The gate **10** in accordance with this invention is extensible into pressure contact with the opposed

sidewalls **12, 14** of the corridor and normally is supported directly upon the floor **15**.

As is typical of portable gate arrangements of this general type the gate is normally collapsed as shown in FIG. **2** for convenient storage and it is extensible to provide a barrier **16** as shown in FIG. **1**, such extension being variable to provide an adjustable width barrier that is adaptable to a number of different mounting locations.

In the illustrated embodiment, the gate typically includes a set of vertical support posts **18, 18'** and lazy tongs **20** connected between adjacent posts **18** to control extension and collapse of the gate. Wheeled base carriages **22, 22C, 22E, 22F** are provided to support the end posts **18'** and certain of the intermediate posts **18**, the base carriages receiving the posts substantially centrally and projecting fore and aft of the barrier to afford desired stability. Caster wheels **24** are shown at the extreme ends of the base carriages. The preferred construction for the gate utilizes for each vertical post a fore and aft spaced pair of cold rolled flat steel bars **18A, 18B** interconnected by rivets **19** which serve to mount the pivoted ends of the lazy tongs. The bars **18A, 18B** are also interconnected adjacent their top and bottom ends. The floating ends **21** of the lattice bars are pivoted together and provided with nylon rollers for guiding vertical movement of the floating ends **21** during extension and collapse of the gate.

Channel-shaped locking bars **26** and **28** are pivotally connected to the left and right end post base carriages **22E, 22F** respectively as shown in FIGS. **1** and **3**. Locking bar **26** is pivotally connected to the base carriage **22E** by a hinge **30** and locking bar **28** is similarly connected to the base carriage **22F** by a hinge **32**.

In the gate-extended position as shown in FIG. **1**, the locking bars **26, 28** are horizontal and are nested in generally U-shaped guides **36, 36C** on the intermediate base carriages. The free end of bar **26** is shown nested within the free end of locking bar **28**. The central base carriage **22C** is provided with the guide **36C** which includes a conventional hinged latch and lock receiving ring to hold the overlapping free ends of the bars **26** and **28** securely in place. A padlock **38** is shown for locking the bars **26** and **28** down.

Additional details of the gate **10** are shown in FIG. **2**. A rod-like brace **34** is shown attached the rear end of each base carriage and to approximately the mid-height region of each corresponding vertical post. The locking bars **26, 28** extend vertically in the gate-collapsed position to run along the front of the corresponding end post. A loop latch **39** is provided at the top of each end post to secure the locking bars in vertical position. Finally, several of the base carriages are provided with U-shaped guides **40** for receiving a channel-shaped storage tie **50** connected by a hinge **52** to the end post base carriage **22F** and spanning the collapsed width of the gate. The tie **50** has spaced holes **55** (See FIG. **5**) to engage upstanding pins **54** (See FIG. **2**) provided centrally within the U-shaped guides **40**. When the gate is to be extended, the tie **50** is swung to the vertical position shown in FIG. **5** and is retained by a loop latch **56**.

In accordance with the present invention, a set of resilient bumpers **60** are mounted to project endwise outwardly along the end post base carriages **22E, 22F** for side wall contact and the locking bars **26, 28** are provided with interference means that interengage as the locking bars are swung into intersecting relation as shown in FIGS. **3** and **4** to impart a predetermined final extension travel that compresses the bumpers against the side walls **12, 14**. In the illustrated embodiment the locking bar **26** which is shown as a U-channel is provided with a set of holes **27** spaced along its base wall and the locking bar **28** is provided with an upstanding pin **29** for entry into any one of the holes **27** in accordance with the degree of pressure to be placed against the end bumpers **60**.

In accordance with another feature of the invention, each of the end post base carriages **22E, 22F** is provided with a retainer **70** having an open-ended slot **71** for lateral reception of a headed floor anchor **72**. The anchor **72** is shown in FIG. **6**

as a floor bolt which may either be removable or captively mounted in a permanent floor socket. The anchors are located adjacent the side walls and are provided with head slots **73** to allow the bolt to be seated flush with the floor when not in use. The retainer **70** is shown as a hollow tube of triangular section and is fixed centrally along the underside of its base carriage, with the slot **71** opening outwardly to receive the shank of the anchor bolt and enable the bolt head to enter within the retainer and establish a vertical interlock therewith. The triangular form of the retainer **70** prevents any possibility of the bolt **72** being removed when the gate is extended and locked in place.

The function of the interference action of the locking bars is to enable the portable gates to be installed quickly and securely with or without the floor anchors. To install the unit, the gate is extended full width between the side walls so that the bumpers **60** are in actual contact with the side walls as shown in FIG. **3**. The locking bars which are normally stored in vertical position are then swung to the intersecting relation shown in FIGS. **3** and **4** so that the interference pin **20** may enter the interference hole **27** which is most conveniently available. This relationship depends upon the degree of extension of the gate and thus is determined by the spacing of the side walls **12, 14**. The length of the interference pin **60** is selected so that in the typical case, the point of intersection and of initial pin entry occurs about **6** inches above the final horizontal position for the locking bars. After the pin is engaged, the locking bars **26,28** are manually forced downwardly from the intersecting position of FIG. **3** to the final gate-extended position of FIG. **1**. The interference action between the locking bars during this final forced swinging movement causes a final extension of the gate which loads the bumpers **60** into compressed contact with the side walls. The final travel imparted by the interference action is taken up by the compression of the bumpers **60**. The locking bars **26, 28** are stable in the final horizontal position of FIG. **1** and the lock **38** is applied to prevent tampering.

Where the floor anchors **72** are provided the gate when arranged in the FIG. **3** position is positioned to align the retainer slots **71** with the anchors **72**. Depending on the spacing of the anchors **72** from the side walls the slots may partly lap the anchors when the gate is in the FIG. **3** position. In any case, the final travel of the base carriages due to the interference action of the locking bars **26, 28** produces full insertion of the retainers **70** upon the anchors. The retainer slots **71** are sized to allow full entry of the anchors with some additional clearance in order to insure that the interference action is taken only by the bumpers and not by the anchors.

Typical dimensions for the illustrated gate are: height 6½ feet, width, extended, 7 feet to 12 feet, contracted **24** inches, depth: 30 inches. The main framing is 2⅝ by 1 inch, **10** gauge cold rolled flat steel channels. Cold rolled flat steel is employed for the lazy tongs **20** and 15/16 inch steel tubing is used for the braces **10**. Hard rubber is employed for the bumpers **60**. With conventional modification, gates accommodating, for example, 6 to 9 feet, 11 to 15 feet and 13 to 18 feet can be provided. The stated dimensions and specifications are for purposes of example and completeness but not for the purpose of limiting the invention.

A new and improved portable gate has been disclosed that may easily and quickly be set up and taken down without need for special tools or extensive installation. Except for the optional anchor bolt feature, no permanently installed hardware is needed at all. The gate may be used at numerous different locations at different times, as it is adaptable to a range of opening widths. In addition, the gate is easily retracted to its storage state in which it is compact and can be easily moved, handled and stored.

Thus, while preferred constructional features of the invention are embodied in the structure illustrated herein, it is to be understood that changes and variations may be made by those skilled in the art.

What I claim is:

1. In a portable gate arrangement for temporarily closing an opening between spaced side walls, said arrangement having a set of vertical support posts including a pair of end posts and at least one intermediate post, separate movable base carriages supporting each of said end posts and said one intermediate post, extensible and collapsible lazy tongs connecting adjacent posts of said set, and a pair of locking bars swingably mounted to opposite ends of said gate to move between a generally upright gate-collapsed position wherein each locking bar extends alongside the corresponding end post and a horizontal gate-extended position wherein the locking bars have overlapping free ends overlying the base carriage of said one intermediate post, the improvement comprising bumper means on the gate facing endwise outwardly thereof for engaging the side walls and cooperating interference means interengageable when said locking bars intersect at intermediate swing positions thereof to create predetermined relative endwise extension travel of the locking bars during final swinging movement to the horizontal gate-extended position to compress said bumper means against said side walls, said arrangement including stationary anchors in floor regions adjacent the side walls and each end of the gate includes retainer structure engageable in vertically interlocking relation with said anchors in response to outward extension of the gate.

2. In a portable gate arrangement for temporarily closing an opening between spaced side walls, said arrangement having a set of vertical support posts including a pair of end posts and several intermediate posts, separate movable base carriages supporting each of the end posts and each of the intermediate posts extensible and collapsible lazy tongs connecting adjacent posts of said set, and a pair of locking bars swingably mounted to the end post base carriages to move between a generally upright gate-collapsed position wherein each locking bar extends alongside the corresponding end post and a horizontal gate extended position wherein the locking bars have overlapping free ends supported upon the base carriages of said intermediate posts, the improvement comprising resilient bumper means facing endwise outwardly on each of said end post base carriages for engaging the side walls and cooperating interference means on the free ends of said locking bars for interengagement when said locking bars intersect at intermediate swing positions thereof to create predetermined relative endwise extension travel of the locking bars during final swinging movement to the horizontal gate-extended position whereby said end post base carriages move outwardly to compress said bumper means against said side walls to the extent determined by said travel, said arrangement including stationary anchors in floor regions adjacent the side walls and each of the end post base carriages includes retainer structure engageable in vertically interlocking relation with said anchors in response to outward shifting of said end post base carriages due to the interengagement action of said interference means.

3. In a portable gate arrangement as defined in claim **2** wherein each of said anchors includes an upstanding shank terminating in an enlarged head and each of said retainers has an endwise open slot to receive the shank and engage in vertical interlock beneath the head.

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