

May 2, 1961

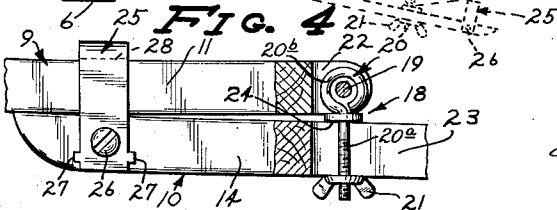
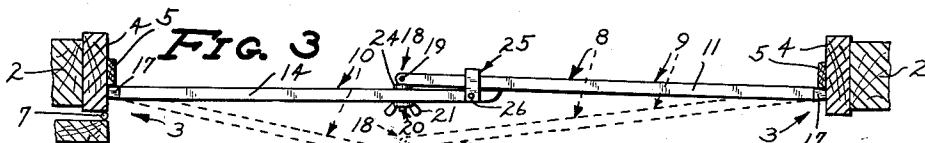
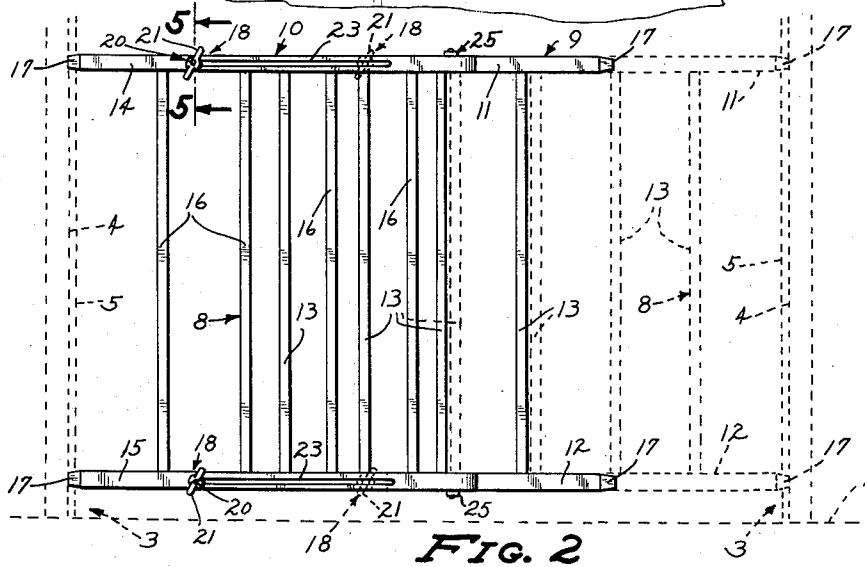
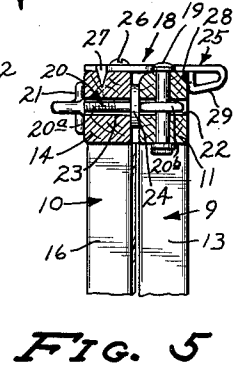
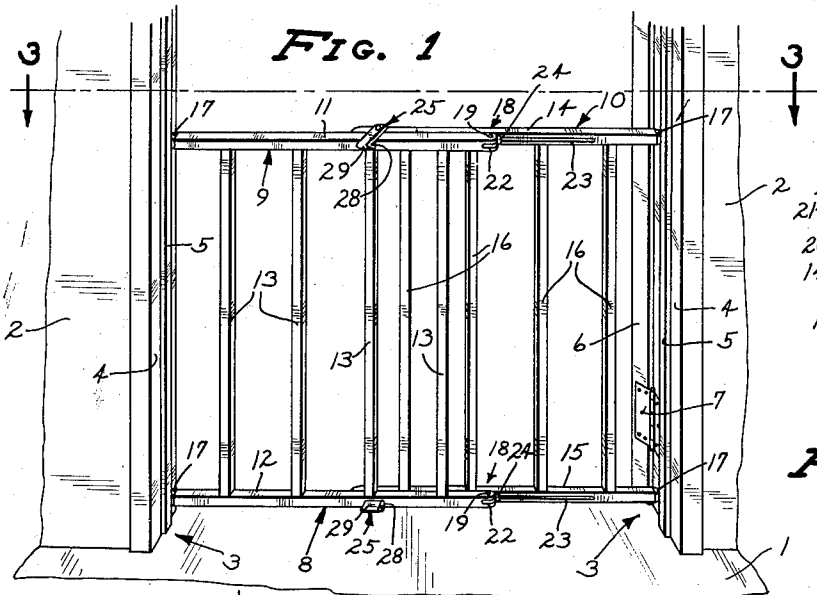
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2,982,353

GATE STRUCTURE FOR TEMPORARY CLOSURE FOR PASSAGEWAYS

Filed July 8, 1959

2 Sheets-Sheet 1



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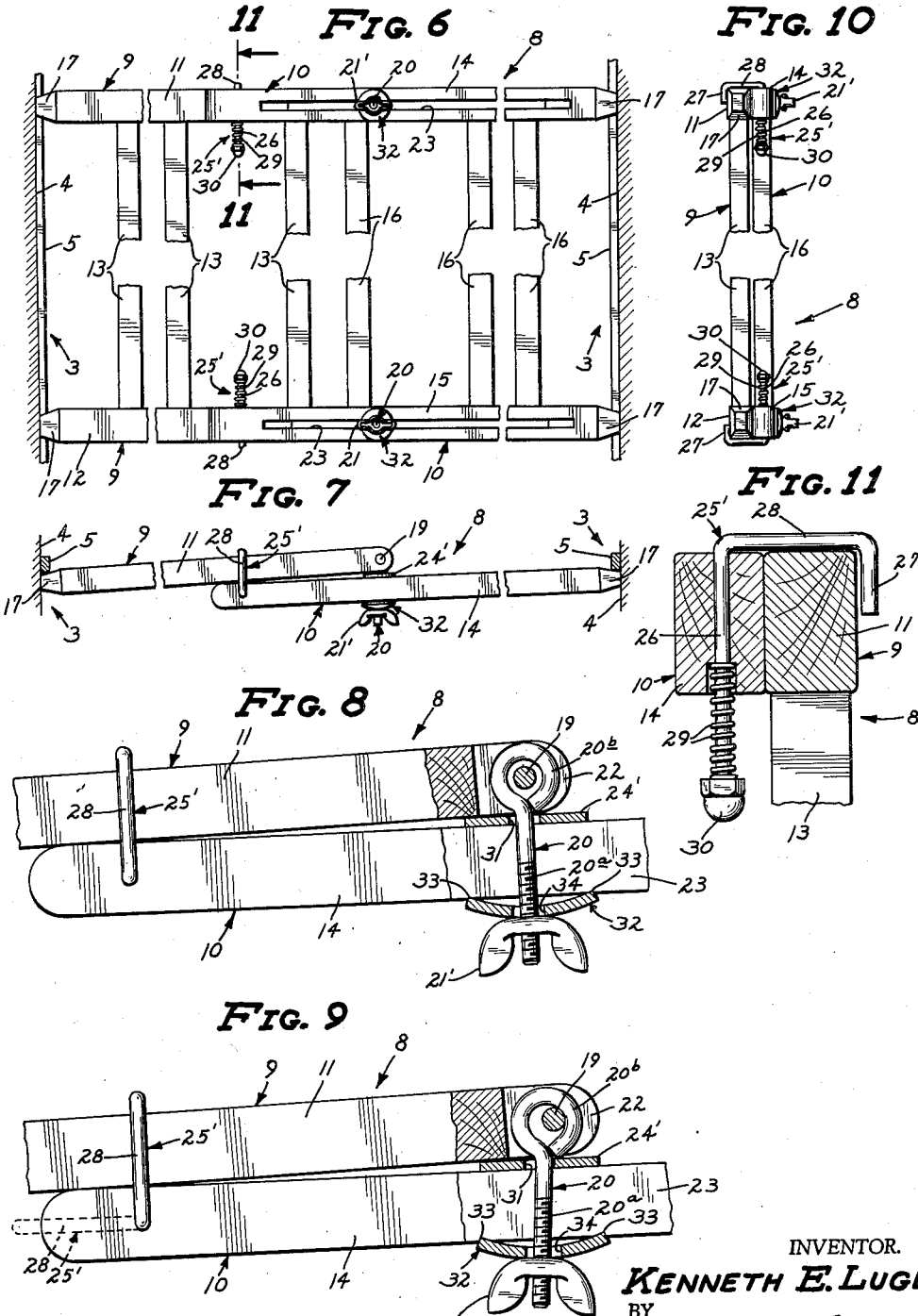
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GATE STRUCTURE FOR TEMPORARY CLOSURE FOR PASSAGEWAYS

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2 Sheets-Sheet 2



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## GATE STRUCTURE FOR TEMPORARY CLOSURE FOR PASSAGEWAYS

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Filed July 8, 1959, Ser. No. 825,851

3 Claims. (Cl. 160—183)

This application is a continuation-in-part of my co-pending application Serial No. 764,968, filed October 2, 1958, now abandoned.

My present invention relates to improvements in readily installable and displaceable gate structures for temporary use in doorways, stairways, and other passages defined by opposed walls or structural members adapted for anchoring engagement by opposite ends of the gate structure; the gate structure hereof being of the type that is longitudinally adjustable as to length before installation to engage the opposed wall or jamb surfaces defining the passage with sufficient pressure to frictionally anchor the gate structure against accidental displacement; and which, gate structure, is collapsible for compact storage. While gates of this general character have many possible uses, the most common use therefor is the closing off of doorways, hallways, stairways, and analogous passages, of buildings and other enclosures to confine and safeguard infants and small children.

Among the important objects of the instant invention is the provision of an improved gate structure of the general character above described which is of simplified construction, can be manufactured at exceptionally low cost, can be quickly and easily collapsed and restored to operative condition with a minimum of time and effort, can be adjustably extended and retracted to fit and be installed in passages of different widths, and is of exceptionally rigid and durable construction.

A further object of the present invention is the provision of an improved gate structure, of the general character and for the general purpose set forth, comprising a pair of overlapping gate sections connected together for relative pivotal movements in one direction and for relative longitudinal adjustments in horizontal direction to fit openings of different dimensions by an improved connecting structure of extremely simple and low cost construction and which, while allowing quick and easy adjustment of the gate as to length by sliding action of the gate sections relative to one another will, when locked up, resist exceptionally great compression pressure.

The above and other highly important objects and advantages of the invention will be made apparent from the following specification, claims, and appended drawings.

In the accompanying drawings, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a fragmentary perspective view of a portion of a building structure defining a doorway having installed therein a gate built in accordance with one embodiment of the instant invention;

Fig. 2 is a view in side elevation of the gate structure of Fig. 1 but showing the side thereof opposite that exposed in Fig. 1; the gate being shown in a longitudinally retracted condition such as for accommodation to a narrow passage by full lines in this figure and being

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shown longitudinally adjusted to accommodate wide passageways by dotted lines in this figure;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1 and turned 180° on a vertical axis with respect to Fig. 1;

Fig. 4 is a greatly enlarged fragmentary view in top plan, with some parts broken away and some parts shown in section, of the intermediate portion of the gate structure of Figs. 1—3;

Fig. 5 is a greatly enlarged detail sectional view taken on the line 5—5 of Fig. 2;

Figs. 6—11 illustrate a different and somewhat modified embodiment of the invention;

Fig. 6 is a view in side elevation illustrating the modified gate construction in side elevation, said view showing the side of the gate opposite that shown in Fig. 1 and showing the gate turned upside down with respect to Fig. 1;

Fig. 7 is a top plan view of the gate of Fig. 6;

Fig. 8 is a fragmentary top plan view showing a portion of Fig. 7 on an enlarged scale;

Fig. 9 is a fragmentary view corresponding to Fig. 8, but showing a somewhat shifted position of the parts;

Fig. 10 is an end view of the structure shown in Fig. 6; and

Fig. 11 is an enlarged fragmentary sectional view taken on the line 11—11 of Fig. 6.

### Description of Figs. 1—5

In these figures of the drawings, a building floor is indicated by 1 and a building wall by 2; the wall 2 being provided with a passage 3 in the nature of a doorway whose opposite sides are defined by door jamb members 4 each carrying a door stop strip 5. The doorway 3 is provided with a conventional door 6 pivoted to one of the door jamb members 4 by a conventional hinge or hinges 7.

In accordance with the instant example, the doorway or passage 3 may be closed off by means of the conventional door 6, but in many cases it is desirable to confine an infant or small child within a space or room on one side of the doorway without obstructing the passage to sight or sound. Hence, in Figs. 1 and 3 of the drawings, the door 6 is shown in its open position, but with the passage through the doorway closed off by means of a gate structure of the instant invention, indicated as an entirety by 8. This gate structure 8 comprises a pair of similar gate sections the first of which is indicated as an entirety by 9 and the other of which is indicated as an entirety by 10.

The gate section 9 comprises horizontally disposed spaced parallel upper and lower rails indicated respectively by 11 and 12 and vertically disposed spaced parallel slats or bars 13. The similar gate section 10 comprises horizontally disposed spaced parallel upper and lower rails indicated respectively by 14 and 15 and vertically disposed parallel slats or bars 16. The rails 11, 12, 14 and 15 are provided at their outer ends with resilient friction pads 17 of rubber or the like.

It will be seen by reference to the drawings that the gate sections 9 and 10 are disposed with their inner end portions in overlapping generally parallel side by side relationship; the extent of overlap depending upon the longitudinal extending and retracting adjustment between the sections.

In accordance with the invention the similar gate sections 9 and 10 are connected together for pivotal swinging movements with respect to one another on a vertical axis and also for longitudinal extending and retracting adjustments with respect to one another. Preferably, and as illustrated in Figs. 1—5, this is accomplished by means of a pair of hinges each indicated as an entirety by 18

and being carried one by the inner end portion of the rail 11 of gate section 9 and the other being carried by the inner end portion of the rail 12 of gate section 9; the hinge 18 of rail 11 of gate section 9 having interlocking longitudinal sliding engagement with the rail 14 of gate section 10, and the hinge 18 of rail 12 of gate section 9 having similar longitudinal sliding interlocking engagement with the rail 15 of gate section 10. As illustrated in Figs. 1-5, the hinges 18 each comprise a vertical axis hinge pin 19 fixed in a rail 11 or 12 of gate section 9, and a threaded eye-bolt 20 carrying a threaded wing nut 21. Each eye-bolt 20 comprises screw-threaded shank 20a and an enlarged, generally annular, eye-defining head 20b. By reference to the drawings it will be seen that the inner end portions of the rails 11 and 12 are notched or bifurcated at 22 to receive the eye-defining heads of the eye-bolts 20 and that the hinge pins 19 pass loosely through the eyes of the bolts 20. Also, by reference to the drawings, it will be seen that the rails 14 and 15 of the gate section 10 are each longitudinally slotted at 23 to receive the threaded shank portions 20a of the eye-bolts 20 and that the said eye-bolts 20 are provided with shoulder portions 24 that engage the inner surfaces of rails 14 and 15 in opposition to the wing nuts 21, to maintain the gate section 10 sufficiently spaced from the adjacent inner end portion of the gate section 9 to insure free pivotal action between the sections on the axis of the hinge pin 19. The shoulder portions 24 of the eye-bolts 20 may be integrally formed therewith but preferably, and as shown, are defined by washers telescopically applied to the shanks 20a of the bolts 20 and seated against the eye-defining head portions 20b thereof. With this arrangement longitudinal extending and retracting adjustments of the gate structure may be readily achieved by merely loosening the wing nuts 21 and slidably adjusting the hinge eye-bolts 20 in the slots 23 and then re-tightening the wing nuts 21 to positively retain the desired adjustable position of the eye-bolts 20 in the slots 23. It will also be evident that tightening of the wing nuts 21 to lock the sections 9 and 10 in a predetermined position of longitudinal adjustment with respect to one another will not in any way hamper pivotal swinging movements of the gate sections 9 and 10 relative to one another about the axis of the hinge pin 19. It will be seen, however, that in all positions of adjustment of the eye-bolts 20 in the slots 23 the inner end portions of the rails 14 and 15 overlap the rails 11 and 12 of gate section 9 sufficiently to positively arrest pivotal swinging movements in one direction to a condition wherein the sections 9 and 10 are close to parallelism with one another, see particularly Figs. 3 and 4. It will be obvious that the wing nuts 21, together with the shanks 20a of the eye-bolts 20, constitute releasable anchoring means.

In the drawings, the gate sections 9 and 10 are shown in their operative conditions, but it will be obvious that the structure may be collapsed for compact storage, without disturbing the condition of longitudinal adjustment of the sections, by merely pivotally swinging the sections approximately 180° with respect to the positions shown so that the two sections are disposed in side by side relationship throughout their major portions of their lengths. Of course, collapsing for compact storage may also be achieved by loosening the wing nuts 21 and sliding the eye-bolt shanks 20a in the slots 23 when the retaining of a previously selected longitudinal adjustment is not a factor.

To condition the gate structure for use in a doorway or other passage of a given width, the sections 9 and 10 are generally adjusted, by sliding action of the bolts 20 in the slots 23, to a combined length slightly greater than the width of the opening. When thus adjusted, the resilient friction pads 17 are properly positioned against the door jambs or other surfaces defining the opening or passage while the parts are positioned substantially as shown by dotted lines in Fig. 3, following which the

intermediate portions of the gate sections are moved in toggle fashion to the operative position shown by full lines in Fig. 3, thereby placing the friction pads 17 and gate structure under great compression pressure.

As the sections 9 and 10 are forcibly moved from the partially collapsed position shown by dotted lines in Fig. 3, wherein the said sections are disposed at a considerable angle to one another, toward their operative positions shown by full lines in Fig. 3, the end to end distance between the outer ends of the non-compressible rails 11, 12, 14 and 15 is effectively elongated, thereby compressing the resilient friction pads 17 to establish tight frictional anchoring of the gate structure against accidental displacement. Preferably, and in the structure illustrated, the gate sections 9 and 10 move pivotally somewhat beyond their dead center positions of true parallelism when passing from the dotted line position of Fig. 3 to the operative stop position shown by full lines in Fig. 3, so that the compressive pressure applied thereto by the then compressed resilient friction pads 17 tends to continue pivotal movement between the sections in the direction of their stop positions which, in turn, tends to retain the gate sections 9 and 10 against accidental displacement from their operative positions. Otherwise stated, when the gate section 9 and 10 are in their operative stop positions shown by full lines in Fig. 3, the axis of the hinge pin 19 is spaced from or offset from the vertical plane that intersects the centers of the friction pads 17 in the direction opposite from the direction that the said hinge pin 19 is spaced from said plane when the sections 9 and 10 are positioned as shown by dotted lines in Fig. 3. With this arrangement, the gate tends to retain itself in and against accidental displacement from an operative position. However, as a further precaution against accidental displacement of the gate, I provide, in Figs. 1-5, releasable fasteners indicated by 25. These releasable fasteners may take various different forms but in the arrangement illustrated in these figures, each releasable fastener 25 comprises a spring clip anchored one to the free end portion of top rail 14 of gate section 10 and the other anchored to the rail 15 of gate section 10. Anchoring of the spring clip anchoring devices 25 to their respective rails 14 and 15 is shown as being accomplished by means of screws 26 and integrally downturned barbs 27. The spring clips project across the adjacent overlapping portions of the rails 11 and 12 of gate section 9 and are equipped at their outer ends with detents 28 that engage the outer side portions of the rails 11 and 12. Also the spring clips are provided outwardly of the detents 28 with inclined projections 29 that serve as cams to lift the spring clips over the associated rails when the sections are moved toward their operative positions and which can also be utilized as finger grips to release the spring clip anchoring devices 25. The spring clips are preferably stiff enough to make release by infants or small children difficult or impossible and the fact that there are two such fasteners located one at the top of the gate structure and the other at the bottom of the gate structure provides maximum assurance against release of both at the same time by a small child or infant presenting no great problem to adults.

#### *Description of Figs. 6-11*

In these Figures 6-11 the gate sections and some parts of the connecting structure are alike or correspond closely to those of Figs. 1-5 and have, therefore, been indicated by like reference characters. However, in Figs. 6-11 parts corresponding generally to parts in Figs. 1-5 but shown in greater detail or having some additional feature or characteristic are indicated by like reference characters plus a prime mark.

The releasable fastener 25' of Figs. 6-11 serves the same purpose as the releasable fastener 25 of Figs. 1-5 but takes a considerably different form. The releasable fastener 25, for releasably locking the gate sections 9

and 10 against relative pivotal swinging movements, is of inverted U-shape comprising a long vertical leg 26, a short vertical leg 27, and a horizontal connecting portion 28, see Fig. 11. As will be seen by reference to the drawings, there are two of these releasable fasteners 25' one working in connection with the upper rails 11 and 14 and the other working in connection with the lower rails 12 and 15. As will be further seen by reference to the drawings, these releasable fasteners 25' are applied in inverted positions, one with respect to the other. The long leg 26 of the upper fastener 25' extends through and is journaled in the upper rail 14 of gate section 10 and the long leg of the lower fastener 25' is similarly journaled in the lower rail 15 of gate section 10. Applied on the inwardly extended end portions of the long legs 26 are coil compression springs 29 held in place by threaded nuts 30. The releasable fasteners 25' are shown in their operative positions by full lines and one thereof is shown in its released or inoperative position by dotted lines in Fig. 9. To release the upper fastener 25' it is forcefully raised against the yielding action of its spring 29 to bring the free end of the short leg 27 above the plane of the tops of the rails 11 and 14 and then turned 90° or more on the axis of leg 26. The lower fastener 25' is released in a similar manner but by forcefully lowering the unit against the action of its spring 29.

In Figs. 6-11 the eye-bolts 20 take precisely the form shown in Figs. 1-5, each comprising a screw-threaded shank 20a and an enlarged generally annular eye defining head 20b providing a generally arcuate surface upon which the shoulder defining washer, indicated by 24' is seated. The shoulder defining washer 24' is, in fact, like the shoulder defining washer 24 of Figs. 1-5, but is shown in axial section to make evident the fact that its central aperture 31 is of sufficiently greater diameter than the encompassed portion of the eye-bolt shank 20a to allow free angular movements of the eye-bolt shank therein.

The wing nut 21' of Figs. 6-11 is broadly similar to the wing nut 21 of Figs. 1-5 but is shown as having a generally arcuate inwardly facing surface to allow free rocking movements thereof on an engaged surface intermediate the same and the shoulder defining washer 24'.

A new and important feature of the structure of Figs. 6-11, as compared to Figs. 1-5, is the addition of an anti-slip washer 32 on the shanks 20a of the eye-bolts 20 intermediate the wing nuts 21' and the adjacent surfaces of the slotted rails 14 and 15 of the gate section 10. In the preferred form illustrated, these anti-slip washers 32 are of concavo-convex form, whereby to define relatively sharp, generally annular, marginal gripping surfaces 33 for engagement with their respective gate section rails 14 and 15 and whereby to define generally arcuate outer seating surfaces for the nuts 21'; the latter cooperating with the generally arcuate seating surfaces of the wing nuts 21' to allow free rocking action of the nuts 21' on the anti-slip washers 32. By reference particularly to Figs. 8 and 9, it will be seen that the axial apertures 34 of the anti-slip washers 32 are of sufficiently greater diameter than the adjacent portions of the eye-bolt shanks 20a to allow angular movements of the bolt shanks 20a therein.

In order to securely anchor my improved gate structure, or other gate structures of this same general character, in a doorway or other opening, it is generally necessary to place the gate structure under very high compression pressures between spaced surfaces defining opposite sides of the opening; this pressure being created by tightening the clamping wing nuts 21 or 21' while the parts are positioned as shown by dotted lines in Fig. 3 and then forcefully moving the parts to the position shown by full lines in Fig. 3. A serious problem encountered in earlier structures of this kind was to so positively lock the sections in various lengthwise adjusted conditions that

the gate sections 9 and 10 would retain such adjusted position under the applied pressure.

In the gate structures disclosed in the several figures hereof, any tendency of the adjusted gate sections to slip with respect to one another results in a further and more positive locking of the gate sections against such longitudinal displacement by virtue of the following function, to wit: By reference to Figs. 4-8 it will be seen that the eye-bolt stems 20a are disposed substantially normal to the longitudinal axis of the gate section 10. These views show the general relationship of the elements after initial tightening of the wing nuts 21-21' and before application of sufficient endwise pressure to cause any appreciable slippage of the gate sections relative to one another.

Fig. 9 shows the gate sections in a slightly shifted position with respect to Figs. 4 and 8 as a result of severe endwise compression, such as is caused by moving the gate sections from the dotted line position of Fig. 3 to the full line position of Fig. 3. Now by reference to Fig. 9 it will be seen that the gate section 9 together with the hinge pin 19 and the eye-defining portion of the head 20b and the shoulder defining washer 24' have shifted somewhat to the right, as a result of compression, while the outer not-equipped end portion of the eye-bolt stem 20a and anti-slip washer 32 have remained substantially stationary. Clearly, by this action the stem 20a of the eye-bolt has partaken of angular movement within the slot 23 due to the fact that the shoulder-defining washer has a flat surface adjacent the gate section 10 which provides less resistance to slippage of that end of bolt 20 than does the anti-slip washer 32 which is substantially slip-proof. Obviously, when the bolt moves from the position shown in Fig. 8 to the position shown in Fig. 9, the clamping action between opposite surfaces of the rail 14 of gate section 10 is greatly increased rapidly to a point where further slippage of the gate sections relative to one another is positively arrested and this, in fact, before any material or detrimental slippage has occurred. Of course, it is important that the shoulder defining washer 24' be free to rock on the stem 20a and shoulder defining head 20b, that the bolt be free to move angularly in the anti-slip washer 32, that the nut 21' be free to rock on the washer 32, and that the washer 32 sets up greater resistance to sliding action than does the washer 24'. While present in all forms of the invention shown it is, nevertheless, greatly enhanced and improved by the structure of Figs. 6-11.

My novel device has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a commercial embodiment, it should be clear that same is capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. In a gate for closing passageways of different widths, a pair of similar vertically disposed gate sections having adjacent inner end portions disposed in close overlapping side by side relationship and having resilient friction pad equipped outer ends adapted to engage and frictionally anchor to opposite parallel passageway-defining surfaces, a vertical axis hinge pin carried by and located adjacent the inner end portion of a first one of said gate sections, a horizontally elongated slot in the other gate section, a stop shoulder equipped eye-bolt, the eye of said bolt receiving said hinge pin and the bolt extending through and working in said slot in the other gate section, the shoulder of said eye-bolt having a surface seated against the adjacent inside surfaces of the other gate section adjacent the slot therein, said threaded eye-bolt being provided with a threaded clamping nut on its outer end portion for cooperation with the side of the other gate section opposite said bolt shoulder to releasably clamp the eye-bolt to said other gate section, the said eye-bolt shoulder being positioned on the eye-bolt to allow free swinging movements of said gate sections relative to one

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another when the other gate section is clamped between the bolt shoulder and nut, and a releasable fastener associated with the overlapping portions of the gate sections to lock the same against pivotal movements on the hinge pin axis from a condition of general parallelism.

2. The structure defined in claim 1 in which the eye-bolt defines a seating surface in addition to that defined by said shoulder, and in which the eye-bolt shoulder comprises an apertured washer applied on the eye-bolt and having inner and outer side seating surfaces the former of which is seated against the said additional seating surface of said eye-bolt and the latter of which is seated against the said other gate section, the aperture in said washer being of sufficiently greater diameter than that of the bolt to allow and the adjacent seating surfaces of said shoulder-defining washer and bolt being so contoured relative to one another as to allow free angular rocking action of the eye-bolt in said shoulder-defining washer, and an apertured washer applied on the eye-bolt between its said clamping nut and the said other gate section with its inner surface seated against the latter and its outer surface seated against the nut, the aperture in the last said washer being of sufficiently greater diameter than that of the bolt to allow and the adjacent surfaces of the last said washer and nut being so contoured relative to one another as to allow free angular rocking movements of the bolt in the last said washer, the side of the shoulder-defining washer seated against the said other gate section being relatively flat and smooth and the side of the other washer seated against the other gate section being contoured to define a slippage reducing gripping surface

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portion rendering said other washer more resistant to sliding action than the shoulder-defining washer, whereby under compression pressures applied to the gate sections from the ends thereof such as will produce slippage of the shoulder-defining washer on the said other gate section the last said washer will retain its position on the other gate section and cause the bolt to partake of angular movement in the slot of the other gate section, thereby rapidly increasing the clamping action of said washers on the other gate section and arresting further slippage of the gate sections relative to one another.

3. The structure defined in claim 2 in which said washer between the nut and said other gate section has a concave inner surface contour facing the other gate section and a convex outer surface contour facing the nut, the radially outer marginal edge portion of said washer being generally annular and defining the said slippage reducing gripping surface portion, and the convex outer surface contour of said washer providing said contour relationship between said washer and nut allowing said free angular rocking movements of the bolt in said washer.

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