July 23, 1929. J. R. JACKSON, JR 1,721,998

COLLAPSIBLE GATE

Filed March 18, 1927

Fig. 3.

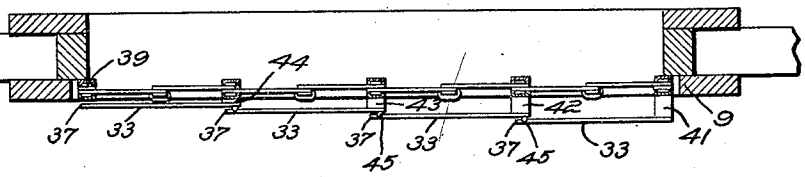


Fig. 1.

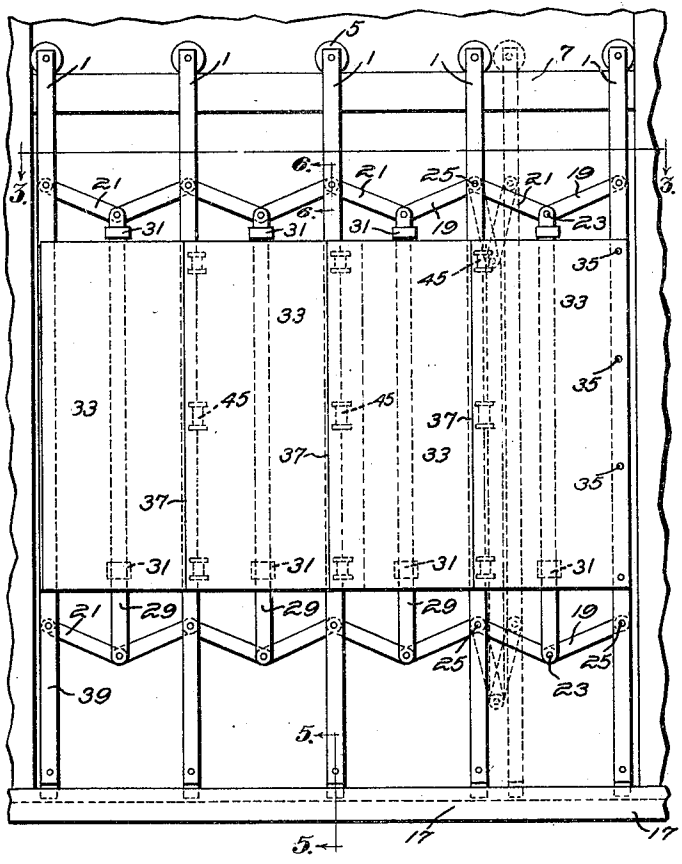


Fig. 2.

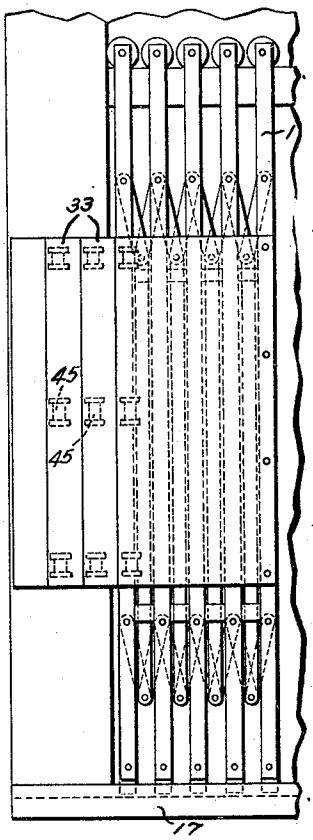


Fig. 4.

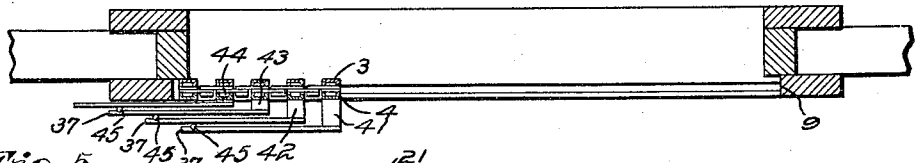


Fig. 5.

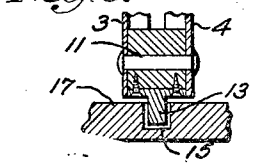
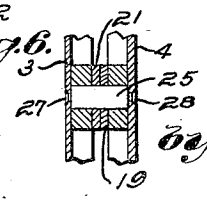


Fig. 6.



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UNITED STATES PATENT OFFICE.

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COLLAPSIBLE GATE.

Application filed March 18, 1927. Serial No. 176,446.

This invention aims to provide an improved collapsible gate that shall be safe and easy of operation.

In the accompanying drawings, I have shown an illustrative embodiment of my invention, wherein

Fig. 1 is a front elevation of the gate shown extended;

Fig. 2 is a front elevation of the same shown collapsed or folded;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal section taken substantially on the line 3—3 of Fig. 1 with the gate collapsed;

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 1 illustrating in detail the lower end of one of the supporting members of the gate; and

Fig. 6 is a transverse section taken on the line 6—6 of Fig. 1 showing the method of connecting a pair of cross links with a supporting member.

In the particular embodiment of my invention selected for purposes of illustration and shown in the drawings is a gate comprising a series of spaced upright members 1 each composed of spaced channel-like elements 3 and 4 arranged with their open faces toward each other. The upper extremities of said channel elements are separated by a roller 5 rotatably mounted between said elements to roll along the top of a track 7 which supports said channel elements and by pasing between them prevents the upright members from twisting or turning.

The track 7 is supported at opposite ends upon the door frame 9 in any appropriate manner. The lower ends of the upright members 1 are properly spaced by filler blocks 11 secured between the lower extremities of the elements 3 and 4. Each filler block has a downwardly extending foot 13 arranged to travel in a groove 15 formed in the threshold 17 of the door, thus properly guiding said members during their movements along the track 7.

The members 1 are operatively connected by means, such for example as links, which are designed to maintain said members in parallel relation particularly during their lateral movements but allow the several members of the series to be moved successively and independently for portions, at least, of their travel from open to folded positions and from folded to open positions.

By reason of the above arrangement the upright member shown at the extreme right of Fig. 1 may be moved along the track 7 to the position shown in dotted lines in said figure against the second upright member thereof without imparting movement to the latter until contact between the two has taken place, then the first two members will move along said track together until the second contacts with the third and so on until all of the upright members have been moved from the positions shown in Fig. 1 to the positions occupied thereby in Fig. 2. This permits the gate to be started toward its folded position progressively from one to another position or station thereof or by the movement of only a small part thereof rather than by initial movement of the entire structure, which latter type of operation would require the inertia of the entire number of gate sections to be overcome at the start.

To the above end I provide between each adjacent pair of upright members 1 at least two pairs of links 19 and 21, one pair being arranged near the upper ends of the supporting members and the other pair being near the lower ends thereof. The links 19 and 21 are pivotally connected together at 23 and each link is in turn pivoted at 25 to an upright member 1. A convenient arrangement of the pivotal connections for the links 19 and 21 will be seen in Fig. 6, wherein the studs forming the pivots 25 are shouldered at opposite end 26, forming a body having a length sufficient to space the two elements 3 and 4 of the upright member 1 the desired distance apart and the reduced ends 27 and 28 are respectively riveted or secured in any appropriate manner to said elements 3 and 4. The pivots 25 for all intermediate upright members constitute pivots for two links, namely the links 19 and 21, while the studs 25 of the endmost supporting members support but a single link.

To further assist in maintaining the members 1 in the aforesaid parallel relation, means are provided for causing the links 19 and 21 of the upper and lower sets to move in unison. For this purpose I provide a connecting link 29 between the pivot 23 of the upper pair of links and the like pivot 23 of the lower pair thereof, said connecting link

29 lying parallel with and between adjacent upright members 1. The link 29 is arranged to move vertically relatively to said upright members when said links 19 and 21 are swung from one position to another during the opening and folding of the gate, or from the positions occupied thereby in Fig. 1 to those shown in Fig. 2.

Cushioning means are arranged between the various members of the gate to lessen noise due to impact between adjacent members during the folding or collapsing of the gate. In this connection I provide resilient collars 31, one of which encircles the upper end of the rod 29 near the pivot 23 and another of said collars encircles the said rod near the lower end thereof, said collars being thick enough to engage the adjacent edges of the members 1, as shown most clearly in Fig. 2, when said upright members are moved into closed relation. It is however to be understood that the invention is not limited to this type and arrangement of cushioning means.

In all gates of the collapsible type where there are spaces between movable elements which widen and narrow as the gate is opened or closed, there is danger of persons being crowded or pushed against them and their clothing caught and torn between the contracting members. To guard against this I have provided a series of plate sections 33 arranged along the exposed side of the gate in overlapping relation to each other so as to fold with the gate. In the present example the plates 33 are carried respectively by the movable members 1 to which they are secured by screws 35.

In Fig. 1 the right hand member 1 being the movable edge of the gate, constitutes the support for the first section 33, the second member 1 from the right carries the second section 33 and so on throughout the series, each of said plates having its free edge 37 directed toward the left in said figure or toward the non-movable member 39 at the left hand end of the gate so that when the gate is wide open none of said plate sections will protrude beyond the movable edge of said gate.

It will be apparent that by reason of the overlapping of the plates 33 said plates must be supported at different distances from their supporting members, and to accomplish this said plates are offset from said supporting members by separators 41, 42, 43 and 44 interposed respectively between said plates and their supporting members. The separator 41, which is interposed between the plate 33 of the right hand supporting member, is the thickest, as this plate is the outermost plate of the series measured laterally from the plane of the members 1, while the successive separators 42, 43 and 44, counting leftward from 41 (see Figs. 3 and 4) gradually decrease in thickness in accordance with the decrease in the depths of the spaces between the succeeding plates and their supports.

The free edges 37 of the protecting plates are provided with cushioning means to prevent said free edges from striking against the next plate of the series and causing unnecessary noise, and to this end rollers 45 are pivotally arranged at desired points between the overlapping portions of adjacent plates. These rollers may be formed of any suitable material such for example as rubber and may, as previously stated, be provided at any desired point along the edge of said plates, but herein I have shown three such rollers, see Fig. 1. It is however to be understood that the invention is not limited to the particular type nor to the specific arrangement of cushioning means herein shown.

The plates 33 are shown as extending vertically only part way of the height of the gate, said plates being placed at points where the arms of bystanders would most likely come in contact with the gate, but here again the invention is not limited to the lengths nor proportion shown nor to the particular number of sections herein represented, as the upright gate members might be increased or decreased in number to conform to openings of different widths. Furthermore, said sections 33 are shown herein as made of plain sheets of material, such for example as metal, although this form has been shown merely for convenience.

The invention is not limited to the particular embodiment shown.

Claims.

1. A gate comprising a series of spaced laterally movable members, at least two pairs of links interposed between adjacent laterally movable members to allow said members to be moved successively, and constituting the sole connections between said members, means for connecting said pairs of links together to cause said links to move in unison and to maintain said members in parallel relation, and overlapping guard plates carried respectively by said laterally movable members and extending rearwardly from their supporting members parallel therewith.

2. A folding gate comprising, in combination, a series of laterally movable gate members, means interposed between said gate members to maintain the latter parallel during folding and unfolding movements of said gate, guard means including overlapping perpendicular plates secured to said gate members, and anti-friction means for separating said guard means during their folding movements.

3. A folding gate comprising, in combination, a series of laterally movable gate members, means interposed between said gate members to maintain the latter parallel during folding and unfolding movements of

said gate, guard means including overlapping plates secured in perpendicular relation to said supporting members, and anti-friction means arranged between adjacent guard members.

4. A folding gate comprising, in combination, a series of laterally movable gate members, means to guide said members laterally, means including upper and lower sets of links and rods connecting said links to maintain said gate members in a state of parallelism, and cushioning means including resilient bands encircling said links to prevent them from striking together.

5. A collapsible gate comprising, in combination, a series of upright laterally movable gate members, a track from which said members are suspended, guide means for the lower ends of said supporting members, means for maintaining said supporting members in parallel relation, guard means for said gate supporting members including overlapping perpendicular plates carried respectively by said gate members and anti-friction means arranged at the rear edge of each of said plates, and in engagement with the next plate of the series.

6. A collapsible gate comprising, in combination, a series of upright laterally movable gate members, a track from which said gate members are suspended, guide means for the lower ends of said gate members, means for maintaining said supporting members in parallel relation, guard means for said gate members including overlapping plates carried respectively by said gate members, and roller means arranged at the free edge of the outermost plate of each overlapping pair of plates to prevent contact between said overlapping plates.

In testimony whereof I have signed my name to this specification.

JOSEPH R. JACKSON, JR.