Dec. 6, 1966 M. H. STAPLETON 3,290,014

ADJUSTABLE GATE APPARATUS

Filed April 13, 1964 2 Sheets-Sheet 1

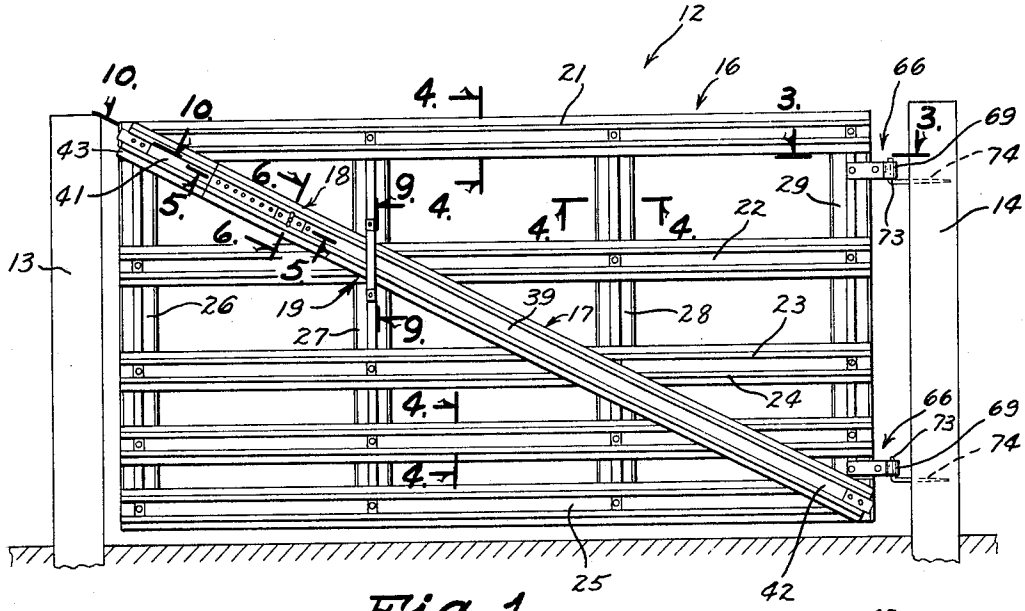


Fig. 1

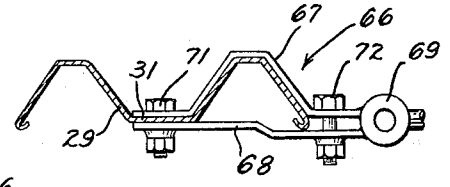


Fig. 3

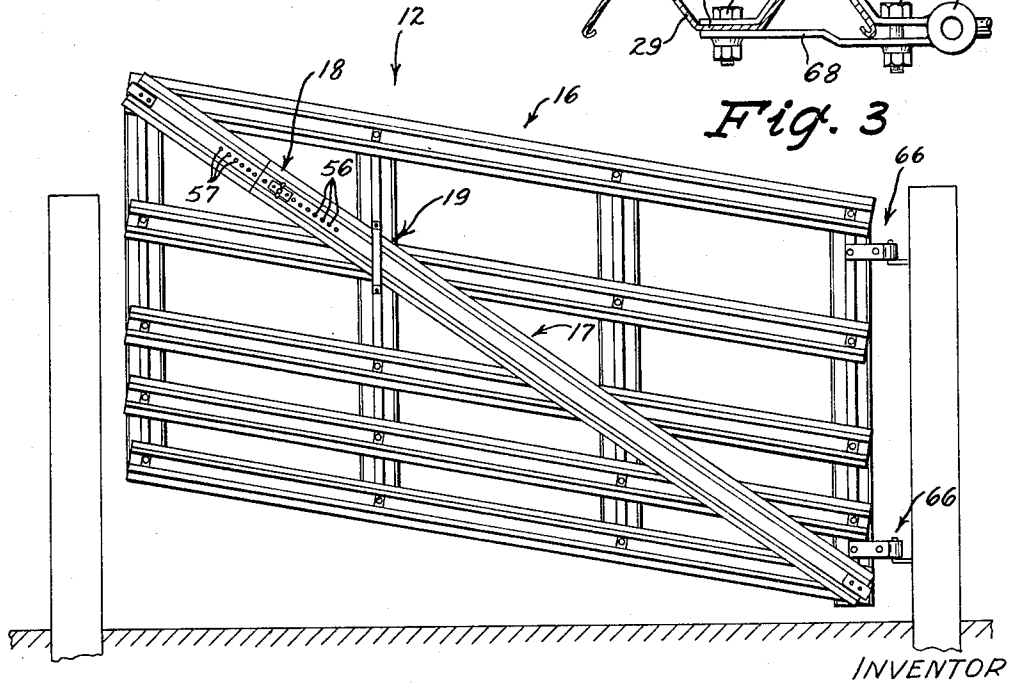


Fig. 2

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ADJUSTABLE GATE APPARATUS

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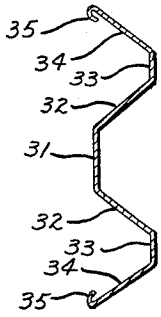


Fig. 4

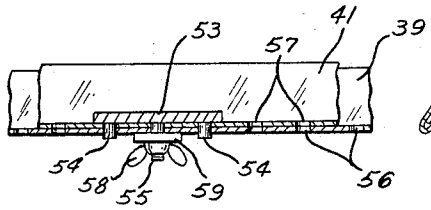


Fig. 5

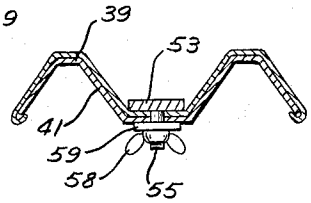


Fig. 6

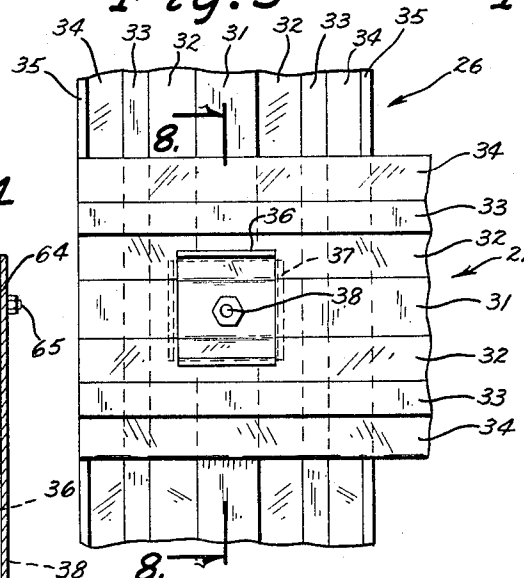


Fig. 7

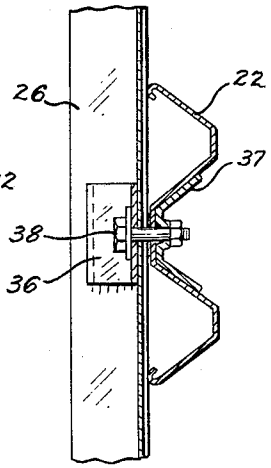


Fig. 8

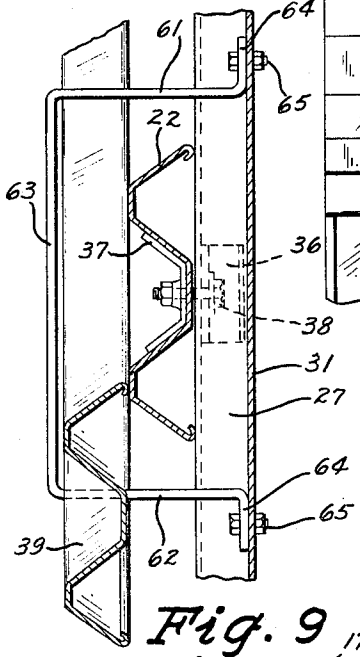


Fig. 9

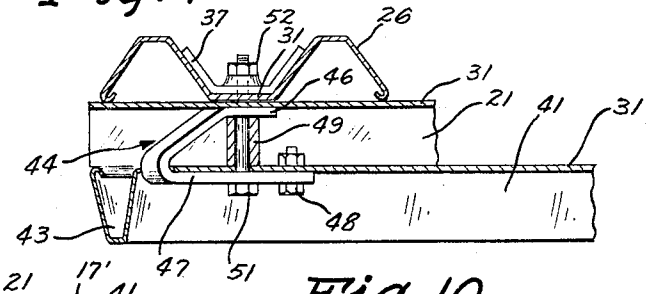


Fig. 10

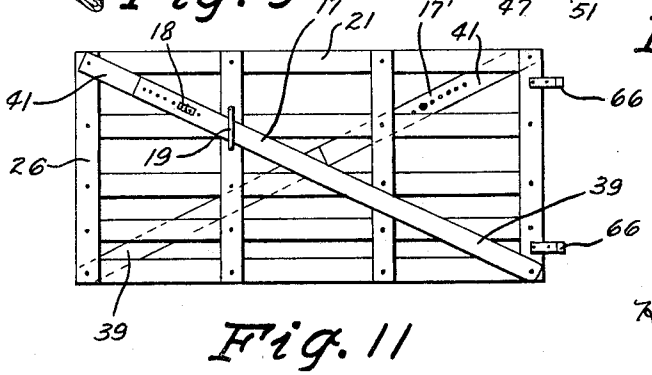


Fig. 11

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United States Patent Office 3,290,014 Patented Dec. 6, 1966

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ADJUSTABLE GATE APPARATUS

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Filed Apr. 13, 1964, Ser. No. 359,138
1 Claim. (Cl. 256—73)

This invention relates generally to an apparatus for controlling movement through a gate, and relates more particularly to a gtate apparatus which is not only movable horizontally about a stationary post, but is also movable upwardly and downwardly within a vertical plane, relative to said post.

It is an object of this invention to provide an improved gate apparatus.

Another object of this invention is to provide a gate apparatus which is readily adjustable as to its vertically moved position.

Still another object of this invention is to provide a gate apparatus which is easy to transport.

Yet another object of this invention is to provide a vertically collapsable gate apparatus whereby compression and/or tension is selectively imposed upon the gate apparatus.

Another object of this invention is to provide a gate apparatus wherein all basic structural elements are identical in cross section, providing thereby a gate apparatus which is economical to manufacture, easy to assemble, and effective in use.

These objects, and other features and advantages of this invention will become apparent hereinafter from the following description when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a front elevational view of the gate apparatus of this invention, shown in mounted position between a pair of posts;

FIG. 2 is a view similar to FIG. 1, but showing the gate apparatus suspended in a vertically raised position;

FIG. 3 is an enlarged cross-sectional view taken along the line 3—3 in FIG. 1;

FIG. 4 is an enlarged cross-sectional view taken along the lines 4—4 in FIG. 1;

FIG. 5 is an enlarged, fragmentary view taken along the line 5—5 in FIG. 1;

FIG. 6 is an enlarged sectional view taken along the line 6—6 in FIG. 1;

FIG. 7 is an enlarged, elevational view of a detail of FIG. 1;

FIG. 8 is a sectional view taken along the line 8—8 in FIG. 7;

FIG. 9 is an enlarged view taken along the line 9—9 in FIG. 1;

FIG. 10 is an enlarged view taken along the line 10—10 in FIG. 1; and

FIG. 11 is a reduced front elevational view of a modified gate apparatus.

Referring now to the drawings, the gate apparatus of this invention is indicated generally at 12 in FIG. 1 and is shown in assembled, mounted position between a pair of stationary posts 13 and 14.

The gate apparatus 12 comprises basically a frame unit 16, a longitudinally telescopically adjustable slide unit 17 for placing the frame unit 16 either under compression or tension, a locking unit 18 for releasably locking the slide unit 17 in one of a plurality of adjusted positions, and a limit bracket 19 attached to the frame unit 16 and embracing the slide unit 17 for limiting the telescopic movement of same.

The frame unit 16 includes a plurality, five in this structure, of elongated horizontal panels 21, 22, 23, 24, and 25, arranged as best illustrated in FIG. 1 in a parallel manner, with the vertical spacing therebetween gradually lessening toward the ground. The frame unit 16 includes further a plurality, four in this instance, of upright panels 26, 27, 28, and 29. It will be noted that the upper and lower horizontal panels 21 and 25, form a rectangular outline with the inner and outer upright panels 26 and 29.

The length of all the horizontal panels is identical, as is the length of all the upright panels. Furthermore, the cross section of all horizontal and upright panels is identical as illustrated by FIG. 4. Referring to FIG. 1, it will be seen that FIG. 4 is taken across both a horizontal panel 21, and an upright panel 27. Each panel comprises in cross section a straight base portion 31 (FIG. 4), a pair of straight inner portions 32 diverging from the ends of the base portion 31 at equal angles, a pair of straight mid portions 33 parallel to the base portion 31 and lying within the same plane, and a pair of straight side portions 34 extended as illustrated outwardly from the ends of the mid portions 33 and diverging relative to each adjacent inner portion 32 at the same angle relative to the parallel base and mid portions. At the outer end of each side portion 34, a flange 35 is reversely rolled relative to the side portion 34. The material for the panels is preferred as being #24 to #18 gauge galvanized steel.

The panels are all pivotally connected to each other, as best illustrated in FIGS. 7 and 8, by a pair of joint clips 36 and 37 through which is passed a nut and bolt fastener 38. Both clips 36 and 37 are right angular in plan view (FIG. 7), and have diverging legs 39*a* and 39*b* (FIG. 8). Clip 36 has a punched hole 39*c* for the fastener, whereas clip 37 has a shoulder 39*d* which is broached. Each pair of clips 36 and 37 are assembled with their legs 39*a* and 39*b* nested in a complementary manner with the inner portions 32 of the panels, and with their bases flat against the base portion 31 of the panel. By this arrangement, the entire frame unit 16 is collapsible or expandible within a single plane, as within the vertical plane when mounted as shown in FIG. 1.

To maintain the frame unit 16 in a rigid condition above the ground so that it may be swung horizontally about the post 14, the slide unit 17 is provided. This unit comprises an elongated outer panel 39 (FIGS. 1 and 6), whose cross section is identical to the cross section of the horizontal and vertical panels, and an elongated inner slide panel 41 identical with the outer panel 39 except for the elimination of the flanges 35. The outer and slide panels are telescopically arranged, with the lower end 42 (FIG. 1) of the outer panel 39 pivotally connected to the junction of the vertical panel 29 and the horizontal panel 25, and with the upper end 43 of the slide panel 41 pivotally connected to the junction of the vertical panel 26 and the horizontal panel 21.

As the connection between each end of the slide unit 17 and the frame unit 16 is the same, only one will be described. As best illustrated in FIG. 10, the pivotal connection includes a reversely bent bracket 44, a short leg 46 of which is placed against the base portion 31 of the horizontal panel 21, and a long leg 47 which is placed against the base portion 31 of the slide panel 41. The longer leg 47 is secured to the slide panel 41 by a fastener 48, and the shorter leg 46 is held in place by means of a spacer 49 extended between the leg 46 and the rear surface of the slide panel base portion 31. A bolt 51 is inserted through both legs of the bracket 44, both base portions of the panels 21 and 41, including the base portion 31 of the vertical panel 26 and a joint clip 37. A nut 52 is threaded onto the bolt 51 for pivotally securing all these elements together.

The locking unit illustrated generally at 18 in FIGS. 1 and 2 is shown in detail in FIGS. 5, 6 and 9. This unit includes a rectangular plate 53 which has integral therewith a pair of pegs 54 at each end thereof on either side of a

stud peg **55** the exposed end of which is threaded. Each of the outer and slide panels, **39** and **41** respectively, of the slide unit **17** are provided with a plurality of apertures **56** and **57** (FIGS. 2 and 6), respectively. Upon aligning the apertures in the outer panel **39** with any group of the apertures in the slide panel **41**, whereby the respective outer and slide panels are placed in any predetermined, longitudinally adjusted relationship, the plate **53** with its three pegs **54**, **54** and **55** is insertable through any three adjacent aligned pairs of apertures (FIG. 5). A wing nut **58** is threadable onto the stud peg **55** for engaging a washer **59** and for locking the plate **53** in its inserted position.

The capability of the slide unit **17** to assume a longitudinally adjusted position is limited by the provision of the limit bracket **19** (FIGS. 1, 2 and 9). This bracket includes a pair of legs **61** and **62** parallel to each other and interconnected by a straight base piece **63**. The legs are provided with a pair of feet **64** for a flat engagement of the base portion **31** of the vertical panel **27**, the feet being attached to the base portion **31** by means of fastening devices **65**.

To swingably attach the frame unit **16** to the post **14** illustrated on the right side of FIGS. 1 and 2, a pair of hinge brackets illustrated generally at **66** in FIG. 1 are provided. Each hinge bracket includes a V-shaped plate **67**, the shape of which is such as to enable its flush engagement with the base portion **31**, one inner portion **32**, one mid-portion **33**, and one side portion **34**, of the rightmost vertical panel **29**, as viewed in FIG. 1. The bracket **66** includes also a relatively straight plate **68** one end of which is common with one end of the flush plate **67**, with both common ends being welded to a socket **69**. The opposite ends of the plates **67** and **68** are interconnected by a fastener **71**, and the plates are again interconnected adjacent the socket **69** by another fastener **72**. When so assembled, each hinge bracket **66** is placeable by means of its socket **69** upon the upstanding spindle **73** (FIG. 1) of an L-shaped holder **74** inserted into the post **14**.

Referring now to FIG. 1, the gate apparatus **12** is shown in its normal position, horizontally disposed above the ground, adapted to swing horizontally on the holders **74**, and held in compression by means of the slide unit **17**. Should it be desirable to raise the gate apparatus **12** to the vertically adjusted position best illustrated in FIG. 2, the operator need merely unloosen the locking unit wing nut **58** so as to remove the pegs **54** and **55** from their apertures. When the removal is effected, the outer and slide panels **39** and **41** are movable relative to each other until the gate apparatus **12** is placed in a parallelogram condition as desired by the operator. Then, the locking unit **18** is manipulated to reinsert the three pegs into the aligned apertures **56** and **57** of the panels **39** and **41**, with the wing nut **58** tightened down to clamp the locking unit **18** in place. The gate apparatus will remain in this position (FIG. 2) until the locking unit **18** is again released.

Should it be desirable to not only place the gate apparatus **12** under the compression of the slide unit **17**, but also under a tension, another slide unit **17'** can be installed on the opposite side of the gate apparatus **12** as best illustrated in FIG. 11. It will be understood that whether or not a particular slide unit **17** places the gate apparatus under compression or tension is determined by the longitudinally adjusted nature of the slide unit **17**.

Although a preferred embodiment and one modification of the invention has been described and disclosed hereinbefore, it is to be remembered that other modifications and various alterations may be made thereto without departing from the true spirit and scope of the invention as defined in the appended claim.

I claim:

A gate apparatus comprising in combination:

a normally right angular frame including a quartet of members having identical cross sections, said members pivotally interconnected at their ends whereby the frame is movable in a vertical plane into any one of a plurality of parallelogram formations;

each member including in cross section a straight base portion and a pair of straight inner portions diverging from the ends of the base portion at equal angles;

means including a pair of telescopically connected elements adjustable longitudinally as to each other for changing their overall length, said elements having a cross section substantially identical to the cross section of said members, the opposite ends of the elements secured to and interconnected between diagonally opposite junctions of the ends of said members and capable of selectively supporting said frame in any one of said formations;

said pivotal interconnections each comprising a U-shaped bracket having a pair of legs placed respectively against the base portions of one of said members and said element adjacent thereto, a tubular spacer disposed between said base portions, a joint clip placed against the base portion of the other member on a side thereof opposite said other base portion side, and a fastener inserted through and interconnecting said legs, spacer and clip; and

removable means releasably locking said elements in any one of a plurality of longitudinally related positions.

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