

1,229,523.

4 SHEETS—SHEET 1.

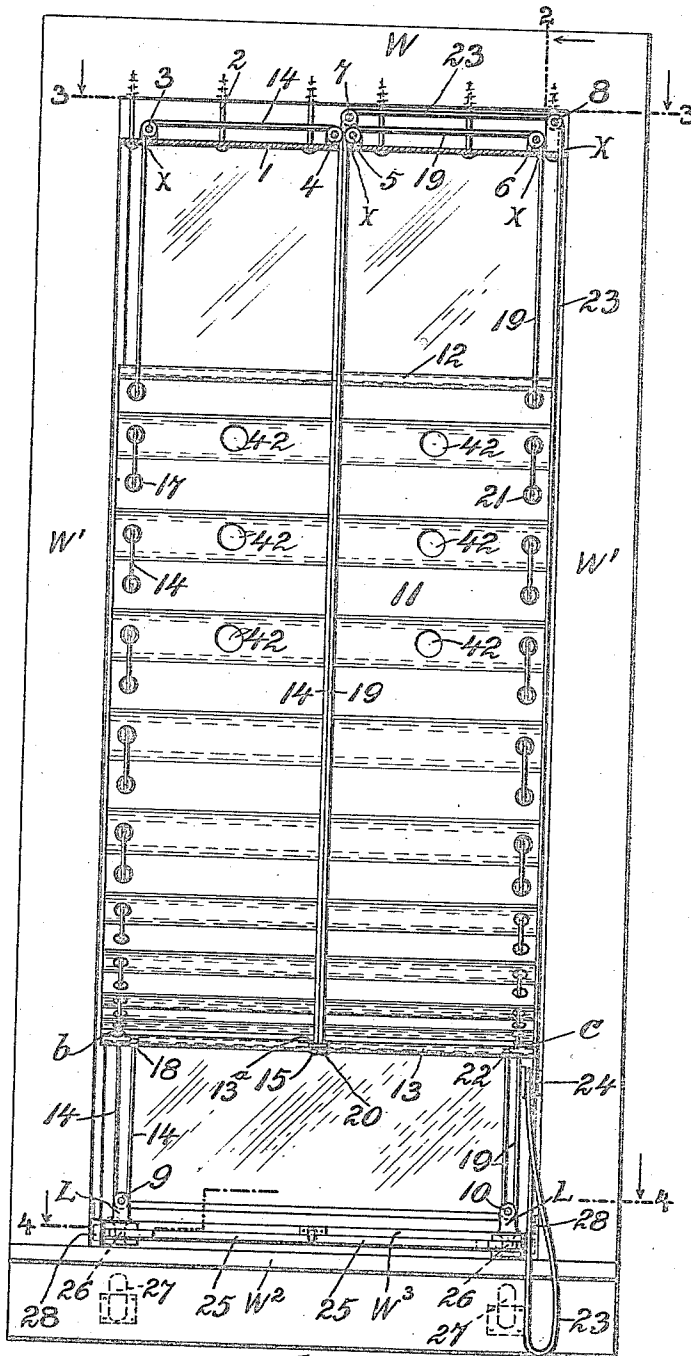


Fig. 1.

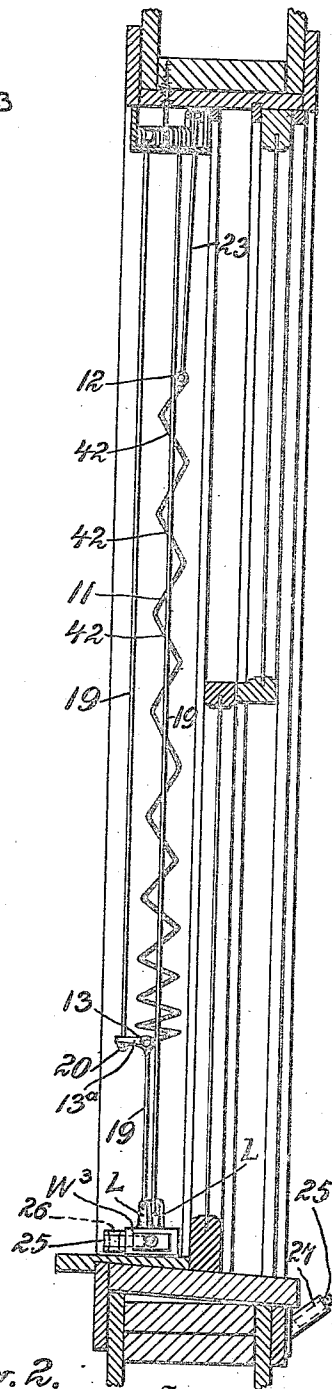


Fig. 2.

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 ADJUSTABLE CLOSURE FOR WINDOW OR OTHER OPENINGS OR PASSAGES.
 APPLICATION FILED MAY 29, 1915.

1,229,523.

Patented June 12, 1917.
 4 SHEETS—SHEET 2.

Fig. 3.

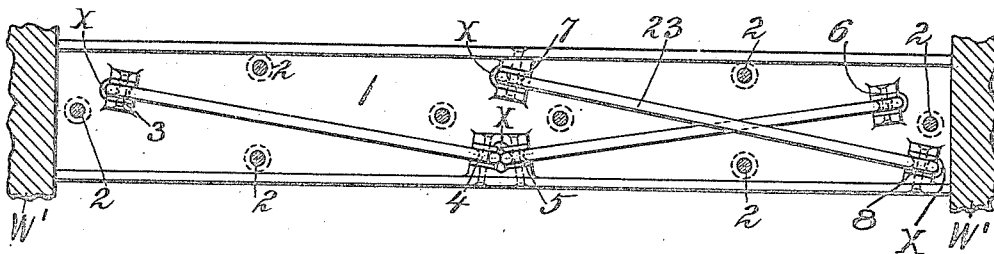


Fig. 4.

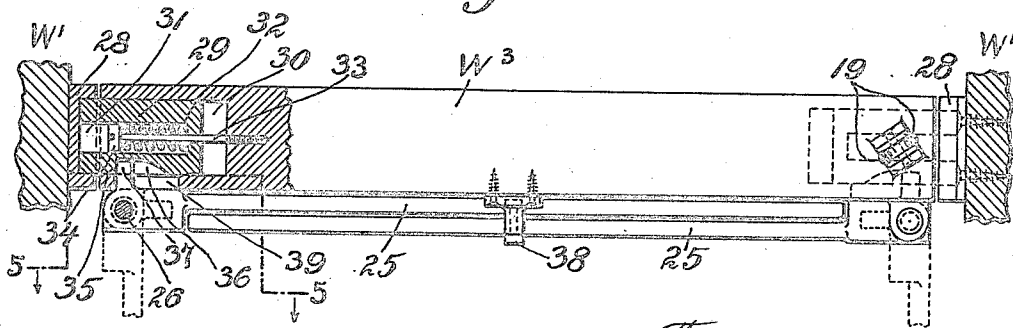


Fig. 5.

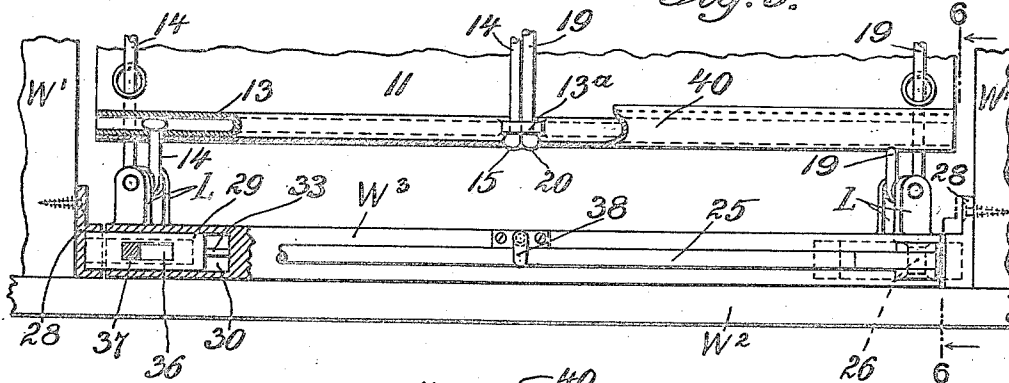
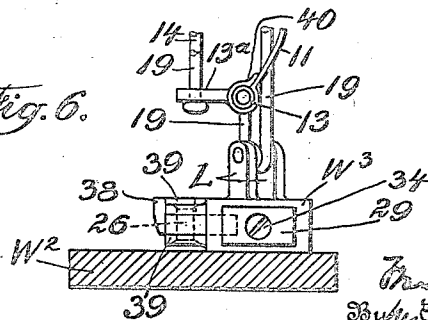


Fig. 6.



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4 SHEETS—SHEET 3.

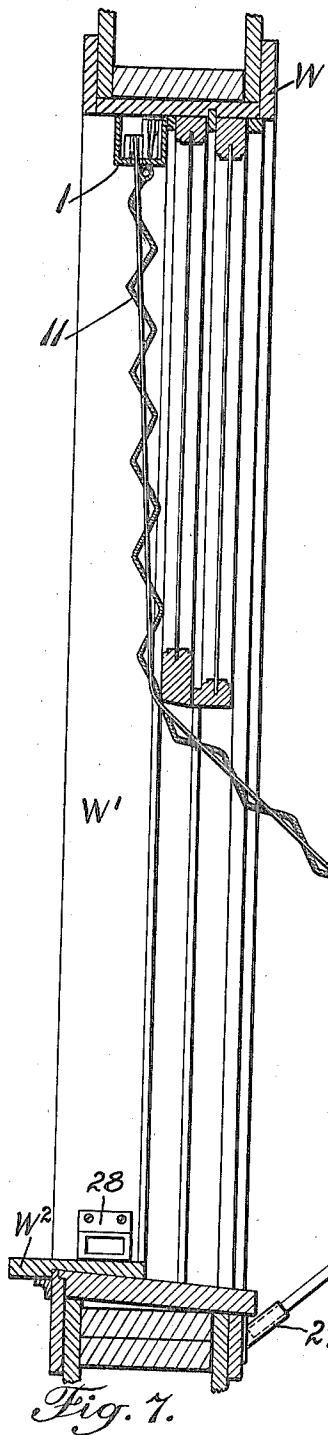


Fig. 7.

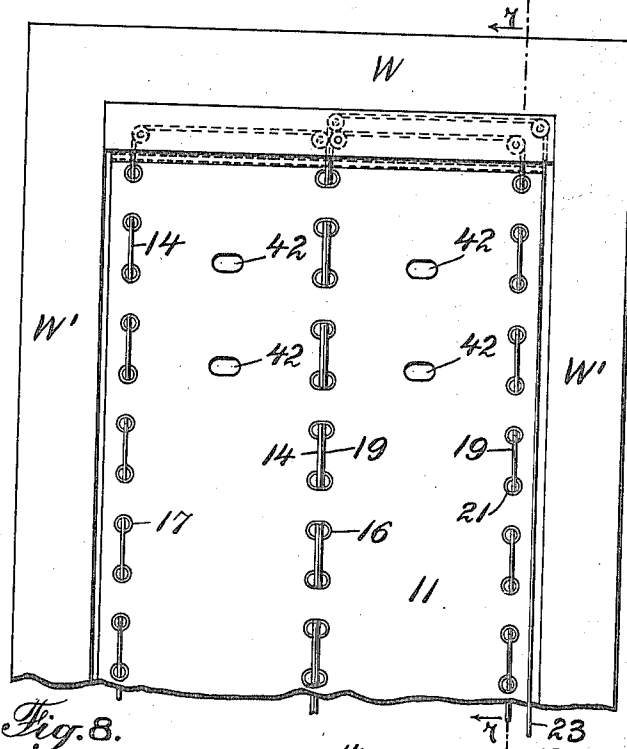


Fig. 8.

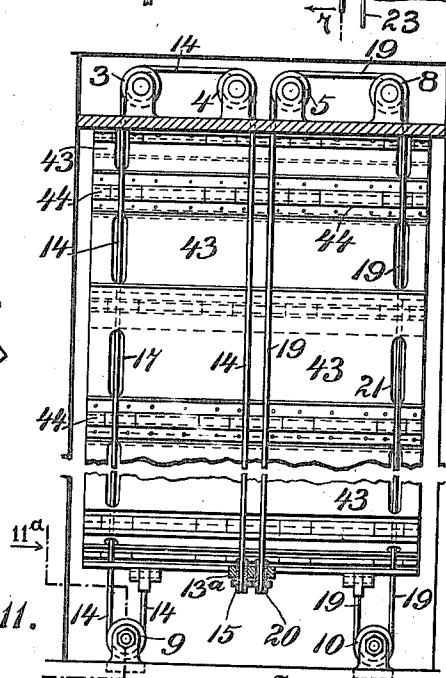


Fig. 11.

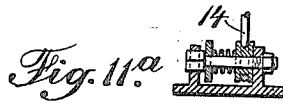


Fig. 11a.

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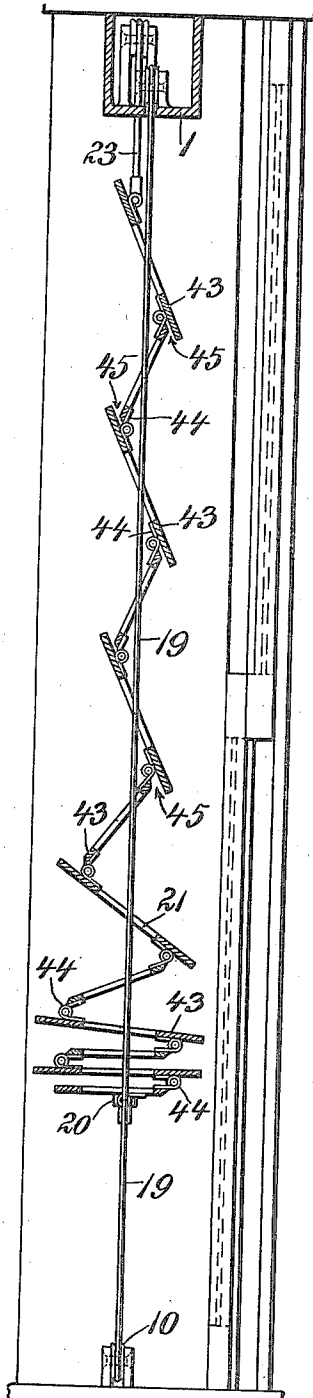


Fig. 10.

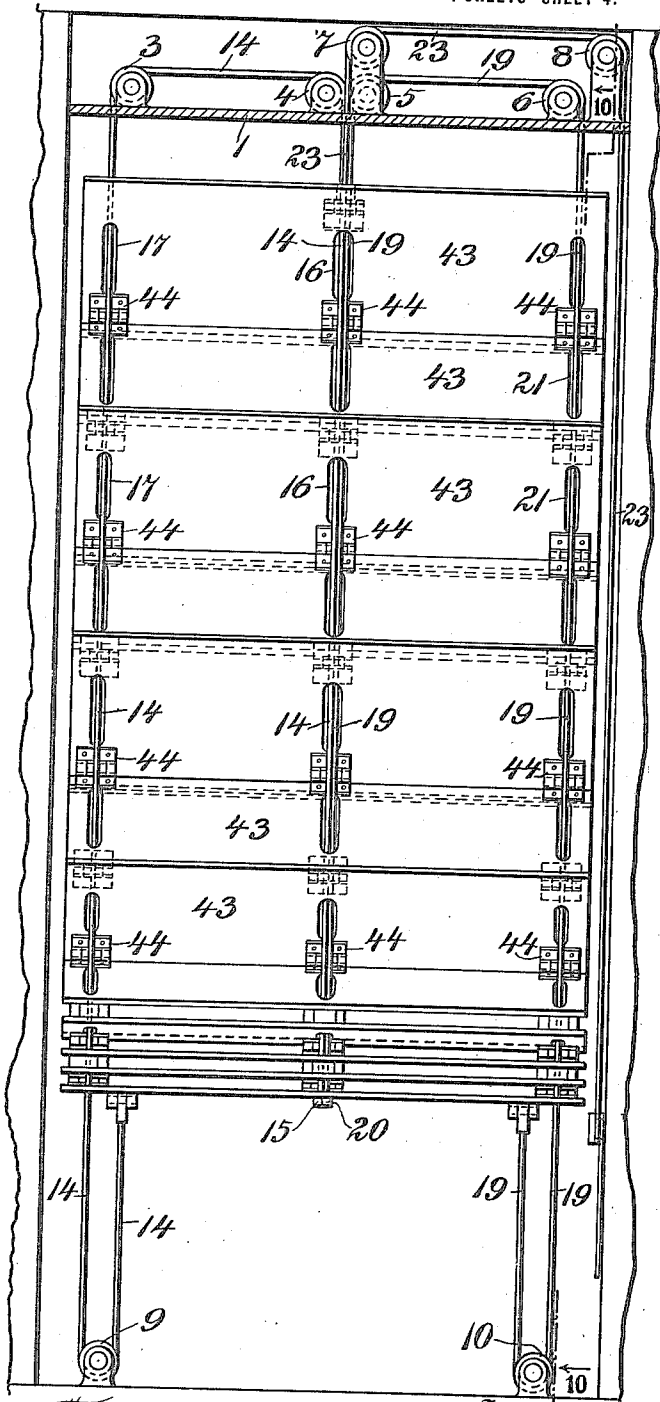


Fig. 9.

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UNITED STATES PATENT OFFICE.

FRANK N. ROEHRICH, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO GEORGE B. FRENCH,
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ADJUSTABLE CLOSURE FOR WINDOW OR OTHER OPENINGS OR PASSAGES.

1,229,523.

Specification of Letters Patent.

Patented June 12, 1917.

Application filed May 29, 1915. Serial No. 31,096.

To all whom it may concern:

Be it known that I, FRANK N. ROEHRICH, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Adjustable Closures for Window or other Openings or Passages, of which the following is a specification.

10 The object of this invention is to produce an adjustable closure for use as a shade, curtain, or wind-break, for windows or other openings or passages of all kinds, in a simple and efficient manner.

15 In some of its forms the construction is such that the closure can be raised or lowered at either end, or both raised and lowered so as to gather it between its upper and lower ends.

20 The construction is also such that when desired the lower portion of the closure can be used as an awning. The awning-forming elements of the construction are not essential elements of the invention in its broadest aspect, nor is the provision for moving the top portion of the closure relatively to its bottom an essential feature of the invention in its broadest aspect.

25 The closure forming the shade, curtain or wind-break, and the flexible closure-supporting guide and adjusting members of the construction may be made of metal so that the closures may be used for protection against fire, burglary, and mobs. The construction may be also such that the closure, whether made of fabric, metal or wood, will permit air to pass through it when it is expanded to close an opening.

30 I shall first describe that form of the invention which relates particularly to closures for windows in buildings and cars, and for the openings in piazza, sleeping-porch and like constructions, and wherein the closure member will ordinarily be made of fabric and embody the awning-forming features of this invention.

35 Referring to the accompanying drawings forming a part hereof and illustrating the principle of this invention in the best mode now known to me,

Figure 1 is an inside view of a window casing provided with one form of my new adjustable closure and mounting therefor, the troughed mounting support therefor be-

ing shown in longitudinal section and exterior sockets for the unfolded struts of the awning bar being shown in dotted lines.

Fig. 2 is a vertical central section at line 2—2 of Fig. 1, of what is shown in Fig. 1, the upper troughed mounting support being shown in cross section.

Fig. 3 is a view partially in section at line 3—3 of Fig. 1, looking down into the trough of the mounting support, and showing in plan the upper bearings for a pair of closure-supporting guides, portions of such guides, bearings for a closure-adjusting cord, and a portion of such cord.

Fig. 4 is a view partially in section at line 4—4 of Fig. 1 looking down on the awning-bar and the upper sides of a pair of folded awning-bar struts. A portion of the awning bar is cut away together with a portion of a stationary socket, to illustrate the construction of an end lock for the awning bar, the other end of which is provided with a similar locking mechanism.

Fig. 5 is a front elevation, portions of one of the stationary sockets and of the wall of a locking tongue socket in an end of the awning bar being broken away for greater clearness, and a portion of an end of a tubular bottom bar of the closure being broken away to show a method of attaching one end of a closure-supporting guide to said bottom bar. The view also shows the way of attaching each end of the two closure-supporting guides to the bottom bar of the closure midway between the ends of such bottom bar.

Fig. 6 is a view, partially in section, through a window sill or railing, and shows an end view of the awning bar provided with a pulley support and locking device together with portions of one of the closure-supporting guides.

Fig. 7 is a view partially in section at a line corresponding to line 2—2 of Fig. 1, and shows an ordinary double-sash window with the lower sash raised and the closure and awning bar pushed out into awning-forming position and held in such position by the folding struts attached to the awning bar, one of such struts being shown in this view with the free end of the strut inserted in an exterior wall socket.

Fig. 8 is a detail showing a plain instead of a plaited closure, and provided between

its side margin holes with a row of holes midway between them for passage of the portions of the closure-supporting guides attached to the bottom bar of the closure 5 midway between its ends. In this view the upper end of the closure is drawn tight to the mounting support.

Fig. 9 is a front elevation of one form of the invention in which the closure is made 10 up of a plurality of transversely extending rigid strips either of metal or wood for example, these strips being connected by hinges and one margin of a strip overhanging the opposed edge of an adjacent strip 15 with an air space between them. In this form the holes through the closure for passage of the flexible supporting guides are shown elongated transversely of the width of the rigid strips.

Fig. 10 is a sectional view of what is shown in Fig. 9 at line 10—10 thereof. In Figs. 9 and 10 the upper end of the closure is shown provided with means for adjusting the upper end of the closure independently of the position or adjustment of the 20 bottom end of the closure.

Fig. 11 is a front elevational view of another form of the closure in which it is formed of rigid strips hinged together so 30 that the air spaces shown in other figures will be eliminated. In this view the upper end of the closure is fixed to the mounting support, the means for adjusting the upper end of the closure being omitted, and the 35 portions of the supporting guides intermediate the margins of the closure being wholly at one side of the closure. In this form wire cables are indicated for the supporting guides. In this form the hinges extend clear 40 across the closure and thus cover the air spaces referred to; and the pulleys 9 and 10 are friction pulleys.

Fig. 11^a is a section of one of the friction pulleys at line 11^a—11^a of Fig. 11.

Referring to Figs. 1 and 2 of the drawings, W is the lintel or upper horizontal member of an opening, W', W' the vertical side posts, and W² the sill or railing of the opening as the case may be. These parts 50 are merely typical of framework of the opening to be screened.

An upper mounting-support 1, shown attached by screws at 2 to the overhead member W of the opening, is provided with a 55 number of bearings shown as pulleys which are indicated by 3, 4, 5, 6, 7 and 8. The bearing or pulley 3 is near one end of the support 1, the bearings or pulleys 6 and 8 near the other end thereof, and the bearings or pulleys 4, 5, and 7 are grouped midway 60 between the ends of the support the under side of which is provided with openings α adjacent the bearings for passage of the closure-supporting guides and for the adjusting means for the upper portion of the

closure, described below. Bottom bearings 9 and 10, each shown in the form of a pulley, are provided, bearing 9 being in vertical alinement with bearing 3, and bearing 10 being in vertical alinement with bearing 6. 70 In the form of the invention now specifically referred to, there is a transverse horizontal bar W³ which may be called the awning bar and which is in this form of the invention detachably connected to the sill or 75 railing W² and carries the bearings 9 and 10. If the awning bar is not used, the bearings 9 and 10 may be connected to the sill or railing. The closure 11 has a transverse stiff upper edge formed by a top bar 12 and a transverse stiff bottom edge formed by a 80 bottom bar 13. The collapsible closure here shown is of accordion-plaited fabric forming a regularly foldable closure. A cord 14 forming a closure-supporting guide has one 85 end secured to a lug 13^a of the bottom bar 13 midway between the ends thereof at 15 and thence extends upwardly past the front side of the closure midway between its side edges and passing the top bar 12 midway 90 between the ends thereof, and thence upwardly through a hole α in the support, thence over the bearing 4, to and over the bearing 3, and thence downwardly through 95 another hole α , and through a vertical series of preferably eyeleted holes 17 in a side margin of the closure, being reeved in and out through these holes, and thence past the bottom bar, downwardly and over the bearing 9, and thence upwardly to the bottom 100 bar 13 to which its other end is fixed at 18. If desired, the closure-supporting guides instead of passing the side of the closure may be reeved in and out through a series of vertical holes 16 midway between the marginal 105 holes 17 and 21 as shown in Fig. 8. Another and corresponding cord 19, also forming a closure-supporting guide, has one of its ends attached to the lug 13^a at 20, and extends upwardly past the front side of the closure 110 and the top bar, over the bearing 5, and thence outwardly to and over the bearing 6, thence down through a hole α in the support 1, and downwardly through the preferably eyeleted holes 21 in the other side margin 115 of the closure, being reeved in and out through these holes and passing the bottom bar 13 to and over the bearing 10, and thence upwardly to the bottom bar 13 to which its other end is attached at 22. Thus the bot- 120 tom edge or bar 13 of the collapsible closure 11 is supported by the pair of supporting guides in a level condition in all its positions of adjustment; and assuming that the top bar 12 is supported in any desired stationary position, the lower portion of the closure may be readily pulled down or raised 125 by either a downward or upward movement given to the bottom stiff edge or bar 13. Whenever the bottom edge is moved either 130

upwardly or downwardly, the supporting guides move on their bearings. The length of the closure is greater than the linear distance between the top and bottom bars 12 and 13 when they are in positions other than the extreme upper position of the top bar and the extreme lower position of the bottom bar, and thus whether the closure is plaited or non-plaited, it is always collapsible or foldable when not fully distended. The top edge of the closure may be held stationary directly against the under side of the support 1, or be fixed to either support 1 or even to the lintel W if it is not desired to lower the upper portion of the closure. But as shown, the upper portion of the closure may be adjusted to and held stationary at any desired position between the support and the lower portion of the opening, by means of the adjusting cord 23, one end of which is fixed to the top bar 12 midway between the ends thereof, and passes thence upwardly in line with the guide cords 14 and 19 to and over the bearing 7, and thence outwardly to and over the bearing 8, and thence downwardly or otherwise into an accessible position to a side cleat or other cord fastening device 24.

Thus the upper portion of the closure may be raised or lowered independently of its lower portion; the lower portion of the closure may be raised or lowered independently of its upper portion; and the entire closure may be gathered in any desired position between the top and bottom of the opening.

The side margins of the closure are held in alinement by the vertical portions of the supporting guides 14 and 19 which pass through the parallel series of holes 17 and 21 in such side margins. All the holes through which any of the cords or equivalents pass are larger than the cords so that there is a free and easy relative movement of the closure and cords in making adjustments.

The supporting guides are tensioned in position and constantly taut throughout their lengths, except when the awning bar W^s, if it is used, is out of opposition to the mounting support.

By attaching the bearings 9 and 10 to the detachable awning-bar W^s, the closure and the guide cords together with that portion of the adjusting cord 23 which is between the top bar 12 and the support 1, can be pushed with the bar W^s outwardly to form an awning, the bar W^s being held in its outward position by the pair of unfolded struts 25, one end of each of which as now shown is hinged at 26 to the interior side of each end portion, the free ends of the struts being inserted respectively in a socket 27 fixed to the outside of the building. Locking devices are provided to hold the awning bar W^s in horizontal position, and each comprises a stationary socket 28 secured in each corner

formed by a side post and the sill or railing, and a locking tongue 29 at each end of the awning bar W^s.

In the construction as shown (Figs. 4, 5 and 6) the bearings or pulleys 9 and 10 are each journaled in and between a pair of up-standing metal lugs L, L, forming a pulley carrier, which are integral with the metal awning bar. If such bar is of wood, the pulley carrier will be attached thereto. Each end of the awning bar is formed with a recess 30 which is rectangular in cross-section, and in this recess a locking tongue 29 is slidably mounted. The tongue has a bore 31 extending from its outer end part way to its inward end. A coiled spring 32 is mounted in this bore and held under tension therein against the bottom wall thereof by a screw 33, the head 34 of which overlaps the outer end of the coiled spring, its body passing through the opening of the coiled spring, and its inward end being screwed into a threaded hole tapped in the bottom wall of recess 30. On its laterally inward side, the tongue is formed with a shoulder 35 forming the outer end of a side clearance-recess 36 in which a lug 37 at the butt end of a strut 25 and projecting outwardly therefrom at right angles thereto has room to travel in an arcuate path when the strut is moved on its pivot 26. When a strut is folded against or in parallelism with the inward side of the awning bar, the lug 37 presses against the shoulder 35 and forces the locking tongue 29 endwise into the stationary socket 28 against the tension of the coiled spring; and when the strut is turned on its pivot 26 to bring the strut into right-angular position to the awning bar, the lug 37 travels in the clearance 36, the tension of the spring then pushing the locking tongue toward the bottom of the socket 30 and withdrawing it from the stationary socket 28 completely into the socket 30. By unfolding the two struts, each end of the awning bar is unlocked; it can be pushed outwardly into awning-forming position, and the free ends of the struts be mounted in the wall sockets 27 (Figs. 1 and 2). When the awning bar is disconnected from the wall sockets, and swung inwardly between the stationary sockets 28, and the struts are folded into parallelism with the awning bar, the strut lugs, pushing against the tongue shoulders will push the locking tongues 29 into the stationary sockets 28 and hold the awning bar in proper verticality with the upper bearings for the closure-supporting guides. In their folded position the struts are held in place by a clip 38 pivoted to the awning bar. The inward wall of each socket 30 is recessed at 39 opposite the clearance 36 for passage thereof of the lug 37.

The bottom bar 13 is conveniently made of a thin metal tubing and inserted in a bottom pocket of the closure, this pocket being

formed by stitching the bottom edge of the closure to the bottom of the material at 40 and the lug 13^a being brazed to the bar and projecting from a hole through a wall of the pocket, the wall of which and of the tubular bottom bar being perforated for knotting the ends of the supporting guides within the chamber of the bar at 18 and 22 (Figs. 1 and 5). The other ends of these guides are knotted at 15 and 20 (Figs. 1 and 5) where they pass through a hole in the lug 13^a. The butt ends of the struts are each mounted between the fork members 39 which are integral with the awning bar and project laterally thereof and each strut pivot 26 passes through holes in the fork arms and an aligned hole in the butt end portion of the strut. In the form shown the awning bar and the struts are of metal, but as will be plain to mechanics the construction may be varied to suit different kinds of material.

The described construction may be varied in numerous details without departure from the invention, one distinct advantage of which is the use of portions of the supporting cords as guides for the side margins of the closure. This obviates the use of grooves or other fixed guides therefor, and makes a simple and cheap guiding means adapted for ordinary house windows, piazzas, porches and the like. The tension with which the supporting guides are installed remains constant in all positions of the closure. If the guides unduly stretch in use they may be tightened up.

If as shown in Figs. 1, 2 and 7, the closure is of accordion plaited fabric, the bends form a kind of hinge between the flat or strip-like portions of the fabric; and this consideration leads to very useful other forms of this invention, described below; it being here noted that the strip portions of the plaited fabric may be formed with air-holes in all desired portions, if preferred, as at 42 in Fig. 1. The better arrangement for ventilated collapsible closures is shown in Fig. 9 where rigid strips are shown hinged together with air spaces between overlapping strips.

By freeing the locking tongues from the stationary sockets, the awning bar is readily pushed outwardly into awning-forming position, and it is also lockable firmly in rigid position on the sill or railing to keep the closure-guiding run of each supporting guide 14 and 19 vertical respectively between the bearings 3 and 9 and between the bearings 6 and 10, when the closure is to be raised or lowered or otherwise vertically adjusted. The closure and mounting may be mounted on overhead structures for shading market stands and the like on sidewalks.

Obviously this closure construction may be applied to passageways and decks of ships by securing the bearings 9 and 10 to

the deck or flooring and by mounting the support 1 on some overhead bar or stringer corresponding to the lintel W, thus forming an adjustable wind-break. Where the shades or curtains are of very light material, stationary rather than roller bearings in the form of pulleys may be readily provided, and it is obvious that non-plaited material of a collapsible nature such as silk for example, may be used instead of the plaited material forming the closure 11 (see Fig. 8).

As shown in Fig. 9, the closure may consist of strips 43 of any desired rigid material, the edges being hinged together by metal hinges 44, and the margin of one strip overhanging the edge of an adjacent strip and forming air-spaces 45 between the strips. Here wire cables are used for the supporting guides, and the holes 16, 17, and 21 are elongated widthwise of the various strips; but by changing the style of the hinges, the edges of the strips may butt-joint (Fig. 10). The construction just mentioned, if the strips are of metal and either with, but preferably without, the awning-forming feature, is adapted for use as metallic closures for factory, warehouse, garage, and stable windows and the like. In such, and in fact in all installations, the top edge of the collapsible closure may be permanently fixed to the lintel or the like as in Fig. 11.

When the construction is made of metal or even in other cases, the side margins of the closure may travel in vertical guide-ways if desired, and the lower edge of the bottom cleat corresponding to the stiffening bottom bar 13 may be locked down, if desired, to the window or other sill.

It is not necessary in any form of the invention that the adjusting cord or means for the upper portion of the closure be used, but this is desirable in many cases. One advantage of the construction is that no cords extend downwardly from the middle of the bottom bar or lower edge of the closure to the window sill to give the construction an unsightly appearance in this respect.

An advantage of the construction when it embodies the awning bar is that it may be used as a shade awning for ordinary sash windows when the lower sash is raised, as well as for casement windows. Whenever any portion of the closure, whether top or bottom, is raised or lowered, the closure-supporting guides move simultaneously on their bearings and the entire weight of the closure is borne by the supporting guides and stiff bottom bar or edge of the closure.

In all forms of the invention, each supporting guide runs horizontally over two pulleys, bending over both, and also bends and runs on one lower pulley; and the walls of the marginal holes of the closure, together with intermediate portions of the

closure, if it be flexible, bear on the portions of the supporting guides reeved in and out through the holes. The result is that although the closure in consequence of its weight, always tends to gravitate to the awning bar, sill or railing, yet such tendency is resisted by the friction of the parts referred to. The closure may be said to be balanced; and in heavy metallic forms the corner bearings down becomes a substantial counterweight which adds to the frictional resistance tending to prevent gravitation of the bottom portion of the closure when it is adjusted upwardly away from the awning bar, sill or railing.

In Fig. 11 the upper end of the closure is fixed by a hinge such as 44 to the overhead member; and the ends 15 and 20 of the supporting guides, in this case supposed to be wire cables, are severally secured in nuts threaded into interiorly-threaded holes in a bearing 13^a carried by the lower edge of the closure. By this arrangement the tension of the supporting guides 14 and 19 can be regulated as desired, or increased in case the cables stretch. In the construction shown in Fig. 11, some or all of the pulleys may be ordinary friction pulleys such as indicated in Fig. 11^a, where the pulley shaft is provided with a spiral spring which acts as a brake on the pulley mounted on the shaft.

What I claim is,—

1. The combination of the frame-work of an opening with an adjustable closure therefor; flexible supporting guides for the closure; bearings for the guides at both ends of the closure, the bearings at one end being mounted on an awning bar; a stationary lock-forming device at a portion of the frame-work opposite each end of the awning bar; foldable struts carried by each end portion of the awning bar; supplementary locking devices carried by each end portion of the awning bar and severally constructed to interlock with the stationary locking de-

vices, the locking devices carried by the awning bar being severally operatively connected with the struts; and stationary means for holding the free ends of the struts to hold the awning bar in awning-forming position.

2. The combination with top and bottom corner bearings, of a pair of bearings intermediate the top corner bearings; a flexible closure having stiff top and bottom members; a pair of cords an end of each of which is attached to and extends downwardly from an end portion of the bottom member, thence over one of the bottom corner bearings, thence upwardly through a series of holes in the corresponding margin of the closure, thence over one of the top corner bearings, thence to and over one of the intermediate bearings, and thence downwardly to an intermediate portion of the bottom bar; the portions of each cord running from the intermediate bearings to an intermediate portion of the bottom bar being opposed to the closure between its edges; and the portion of each cord which runs through the marginal holes of the closure being reeved in and out therethrough; a lateral projection on the bottom bar between the ends thereof; a cord attached thereto and extending upwardly over a top bearing therefor; said top bearing; said latter cord extending therefrom to and over a top corner bearing therefor; said top corner bearing; the said cord extending thence downwardly into an accessible position for raising and lowering the bottom of the closure; and means for holding the free end of said cord in a desired position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, this 24th day of May, 1915.

FRANK N. ROEHRICH.

Witnesses:

A. BLAKE,
EDWARD E. BLACK.