

Feb. 4, 1947.

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2,415,200

FRAMELESS SCREEN

Filed June 14, 1945

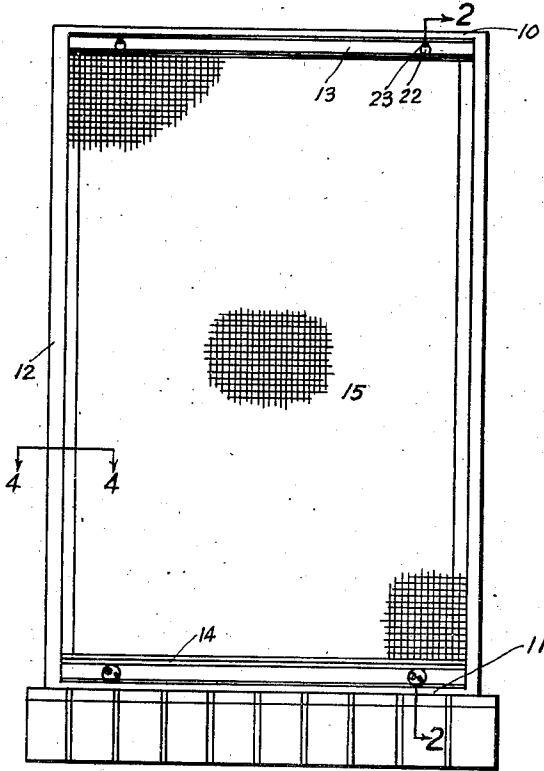


Fig. 1

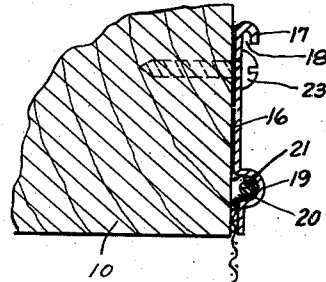
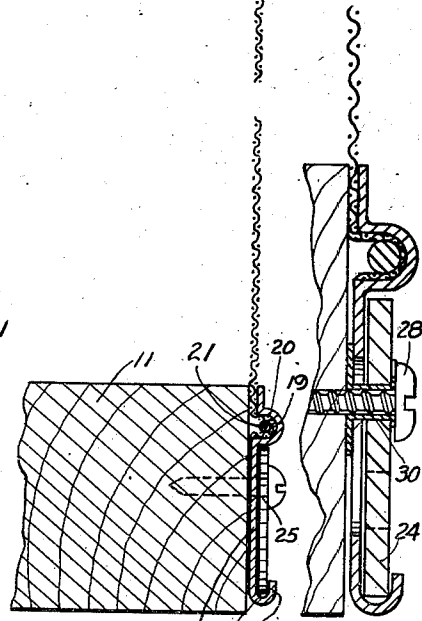


Fig. 2 Fig. 5

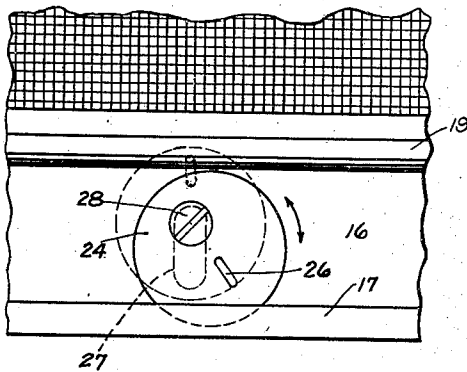


Fig. 3

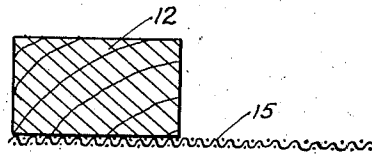


Fig. 4

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2,415,200

FRAMELESS SCREEN

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Application June 14, 1945, Serial No. 599,440

6 Claims. (Cl. 160—328)

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This invention relates to frameless screens, such as are used to prevent the entrance of insects in houses, apartments, and buildings of any character.

One object of the invention is to provide an improved frameless screen of very simple form that may be applied or removed by simple operations, that may be made and sold at low cost, which is not likely to get out of order in service, and which provides simple means for applying adjustable tension to the wire cloth for the purpose of keeping it taut.

Another object is to provide an improved screen of this kind including upper and lower rigid members between which the wire cloth is stretched, said members being of such form and arrangement as to enable them to be made of metal bars or strips of like cross section, thus reducing cost.

Still another object is to provide improved cam means for adjusting or varying the tension applied to the wire cloth.

Further objects of the invention in part are obvious and in part will appear more in detail hereinafter.

In the drawing, which represents one suitable embodiment of the invention,

Fig. 1 is an elevation, of a window equipped with the improved screen, the view being taken from the outside of the building;

Fig. 2 is a sectional elevation, on a larger scale, on the line 2—2, Fig. 1;

Fig. 3 is an enlarged detail elevation illustrating the operation of one of the cam devices;

Fig. 4 is a detail sectional plan view on the line 4—4, Fig. 1; and

Fig. 5 is a detail section, corresponding to Fig. 2, but on a larger scale, showing a modification.

Referring to the drawing, the window, shown more or less conventionally, includes head and sill members 10, 11 and vertical side jambs 12 surrounding the usual window opening, in which are mounted sash members of any suitable form (not shown). The frameless screen forming the subject matter of the present invention includes more or less rigid and strong top and bottom members 13, 14 between which a panel 15 of wire cloth is mounted, supported and stretched. Members 13, 14 preferably are made of sheet metal bent or drawn to shape by appropriate forming operations, the two members having identical cross sectional shapes, as shown. This materially reduces the over-all cost, since plain metal strips may be rolled or formed to the desired shape in long lengths, and be so stocked,

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the long lengths being cut into shorter pieces and appropriately modified, as desirable or necessary, to adapt them for use either as top or bottom members, as will be readily apparent.

Any suitable cross sectional shape may be employed, but the drawing shows, solely for purposes of illustration and in no sense of limitation, a form including a relatively wide flat body portion 16 bent back upon itself to provide a front return flange 17 forming a channel or groove 18, and near to but short of its opposite edge being pressed out to form a hollow bead or rib 19 presenting a channel 20 open at the back of the strip. Flange 17 and rib 19 serve to reinforce the formed bar and materially increase its resistance to bending, either in or across the general plane of the body portion.

The wire cloth, of proper width, is cut to the proper length, and is attached more or less permanently to the top and bottom members in any suitable manner, as by the use of a spline 21 made of any suitable material, such as soft metal, say lead, copper or aluminum, or even a non-metal, and which is driven or forced into channel 20 with an underlying portion of the wire cloth, to lock the cloth more or less permanently in place.

The top member 13 of the screen requires no other modification in form than that necessary to adapt it in any suitable manner for removable attachment to the head of the window frame. It is shown as provided with several buttonhole slots 22 to receive the shanks and heads of screws 23 screwed into the head. These may be wood screws, when the head is of wood, or machine screws or bolts, when of steel. By screwing them down tight the upper member is solidly locked in place, but may be removed when necessary or desirable.

The lower member 14 of the screen frame is provided at spaced points, with combined screen holding and tension adjusting devices, two thereof being shown, although any number may be used. Each of these includes a cam disc 24 provided, off center, with a screw hole 25 therein, and also provided with any suitable means by which it may be turned, such as an attached T handle, a square or other noncircular projection serving as a wrench hold, or any equivalent. The drawing shows a radial screw driver slot 26 punched out for the purpose. This disc is of such diameter that when inserted in place with an edge beneath flange 17, as shown in Figs. 1 and 2, it extends clear across from the bottom of channel 18 to the rib 19. Rib 19, therefore,

in addition to its reinforcing effect, serves two distinct purposes, providing on one face of the bar the necessary channel 20 to receive the wire cloth holding spline 21, and on the other face of the bar providing a shoulder or abutment to confine and receive the thrust of an edge portion of the tension producing cam disc 24. The bottom member 14, at each cam, is provided with an elongated vertical slot 27 through which the securing screw 28 extends into the exposed face of the sill.

While it is possible to use the screen here described on the inside of a building, such use would be the exception rather than the rule, because it does not lend itself so readily to sash manipulation except, possibly with special sash operating mechanism such as employed in metal windows. The invention therefore is better adapted for use on the outside of the window rather than on the inside and is so shown.

It may be applied directly to the outside exposed surface of the window frame, or to the outer surface of the outermost stop used to confine and guide the sash. In the latter case a suitable member should be attached to the upper horizontal surface of the window sill to which the lower member of the screen may be fastened, weep holes being provided for water drainage. The drawing, however, shows the screen fastened directly to the outer exposed surfaces of the window frame.

Assuming that the screen is assembled with a wire cloth panel of proper dimensions, the upper horizontal frame member 13 is applied to the head of the window frame by slipping it over the heads of securing screws 23 fastened at the proper points, and permitting the upper frame member to drop and engage the screws in the narrow ends of the button hole slots. These screws can then be tightened if desired to clamp the upper member flat against the head of the window frame. The lower frame member 14 now lies opposite the vertical outwardly facing surface of sill 11. With the cams turned up, as shown in dotted lines in Fig. 3, securing screws 28 are passed through the screw holes in the cams and through the elongated slots 27 into the sill, as shown in Fig. 2. Each of the several cams is then rotated by the means provided therefor, such as by a screw driver inserted into the radial slot 26, the eccentricity of the cam disc providing the necessary cam effect to move the lower member 14 of the frame downwardly and thus apply tension to the wire cloth panel. When sufficient tension has been secured the several screws 28 passing through the lower frame member are tightened up to maintain the tension and hold the parts in place.

As finally assembled in the window the vertical side edges of the wire cloth panel closely hug the outer exposed surfaces of the jamb members 12, lying flat against the same, as indicated in Fig. 4.

In the form shown in Figs. 1 and 2 the cam disc is a loose part entirely separate from the lower frame member 14, except as secured thereto by the screw 28. Fig. 5 shows a modification in which each cam disc is more or less permanently secured to the lower frame member 14 by a hollow rivet 30 about which it rotates and through which the screw 28 passes. But either form is satisfactory as will be readily understood.

The screen described is of simple form, can be made and sold at low cost and is readily attached with ordinary tools and with little if any modification in window construction. It is also

capable of being removed by simple operations either for replacement of wire or for storage, for example, during winter months.

Other advantages of the invention will be apparent to those skilled in the art.

What we claim is:

1. A frameless window screen, comprising relatively rigid top and bottom members and a wire cloth panel connecting said members, one of said members being provided with upper and lower abutments and a vertical slot between them, a cam disc lying in a vertical plane between said abutments and over said slot and having an off center opening, and a combined pivot and securing device extending through said disc opening and said slot and adapted to be forced into the window frame, the cam disc being adjustable about said device as a pivot to apply tension to the panel.

2. A frameless window screen, comprising relatively rigid top and bottom members and a wire cloth panel connecting said members, one of said members being provided with upper and lower abutments and a vertical slot between them, a cam disc lying in a vertical plane between said abutments and over said slot and having an off center opening, and a combined pivot and securing device extending through said disc opening and said slot and adapted to be forced into the window frame, the cam disc being adjustable about said device as a pivot to apply tension to the panel, the other of said members being adapted for detachable connection to the window frame, and said two members being made of sheet metal of like cross section.

3. A frameless window screen, comprising a wire cloth panel, a rigid member attached to one edge thereof and adapted for securement to the head of the window frame, and means for securing the opposite edge of the panel to the window sill and for applying tension to the panel, comprising a sheet metal strip attached along one edge to the panel and having a rib extending along the said edge and forming an abutment, said strip along its opposite edge being bent to form a flange providing an open channel, and a cam rotatable upon a horizontal axis and entering said channel and engaging said abutment, said cam being adapted for pivotal mounting upon the exposed face of the window sill.

4. A frameless window screen, comprising a wire cloth panel, a rigid member attached to one edge thereof and adapted for securement to the head of the window frame, and means for securing the opposite edge of the panel to the window sill and for applying tension to the panel, comprising a sheet metal strip attached along one edge to the panel and having a rib extending along the said edge and forming an abutment, said strip along its opposite edge being bent to form a flange providing an open channel, a cam rotatable upon a horizontal axis and entering said channel and engaging said abutment, said cam being adapted for pivotal mounting upon the exposed face of the window sill, the metal strip being provided opposite said cam with an opening elongated vertically, and a pivot screw on which said cam is mounted extending through said opening into the sill.

5. A frameless window screen, comprising a wire cloth panel, a rigid member attached to one edge thereof and adapted for securement to the head of the window frame, and means for securing the opposite edge of the panel to the window sill and for applying tension to the panel, com-

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prising a metal strip bent along one edge to form a hollow rib having an open channel and along its other edge to form a return flange providing a channel, spline means securing the edge of the panel in the channel of said rib, and cam means entering the channel of said flange and also engaging said rib and adjustable to apply tension to the panel.

6. A frameless window screen, comprising two relatively rigid members of like cross section each provided along one edge with a return flange and along the other edge with a hollow rib forming a channel, a wire cloth panel connecting said members, spline means securing opposite edges of the panel in the channels of said hollow ribs,

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and cam means upon one of said members confined beneath the return flange thereof and engaging the rib thereof and adapted for attachment to and adjustable upon the window frame for applying tension to the panel.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,972,539	Simpson	Sept. 4, 1934