

March 8, 1938.

L. K. LOEHR

2,110,145

ADJUSTABLE BLIND OR SCREEN

Filed June 6, 1936

6 Sheets-Sheet 1

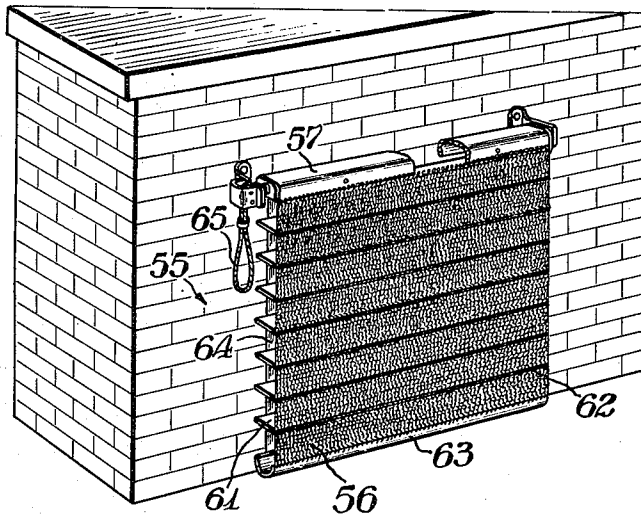


Fig. 12

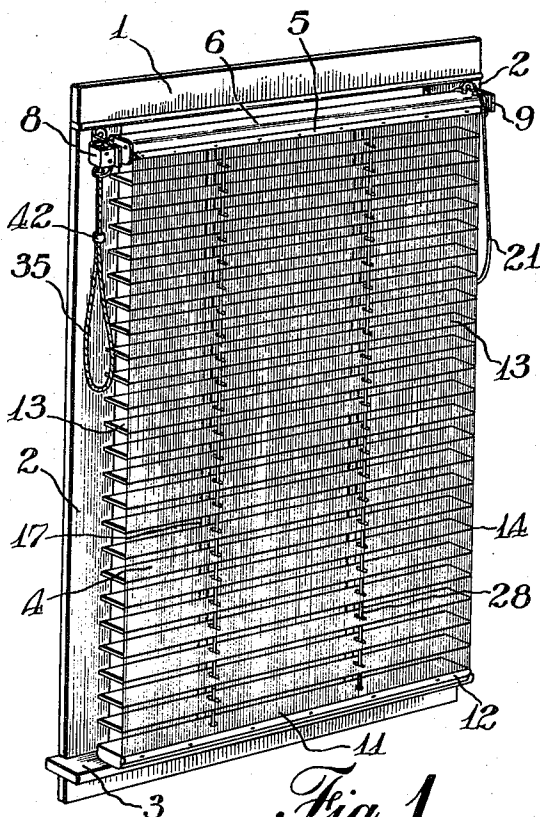


Fig. 1

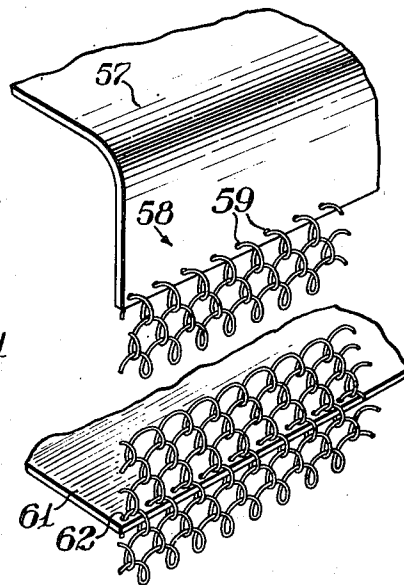


Fig. 13

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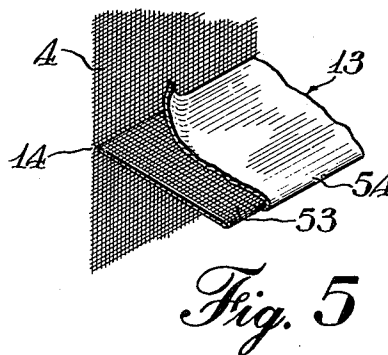
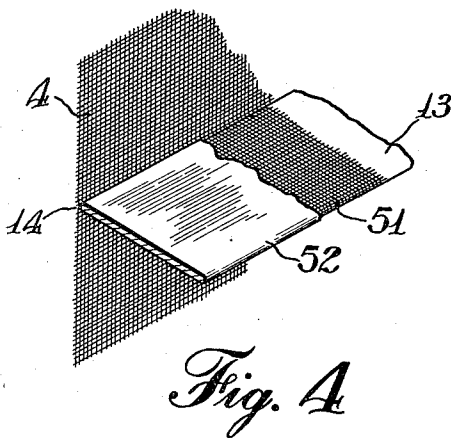
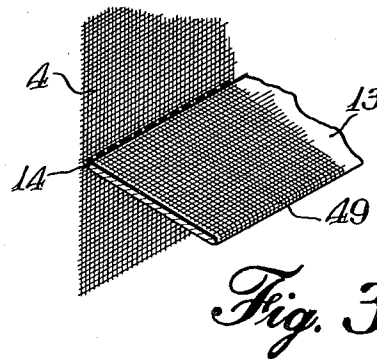
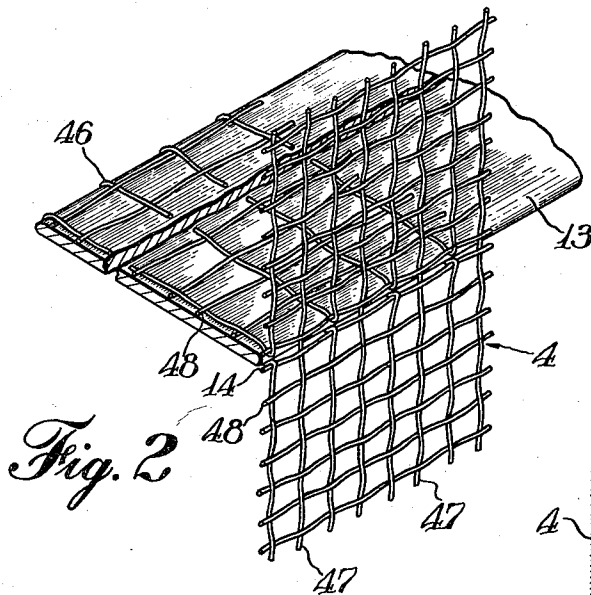
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6 Sheets-Sheet 2



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6 Sheets-Sheet 3

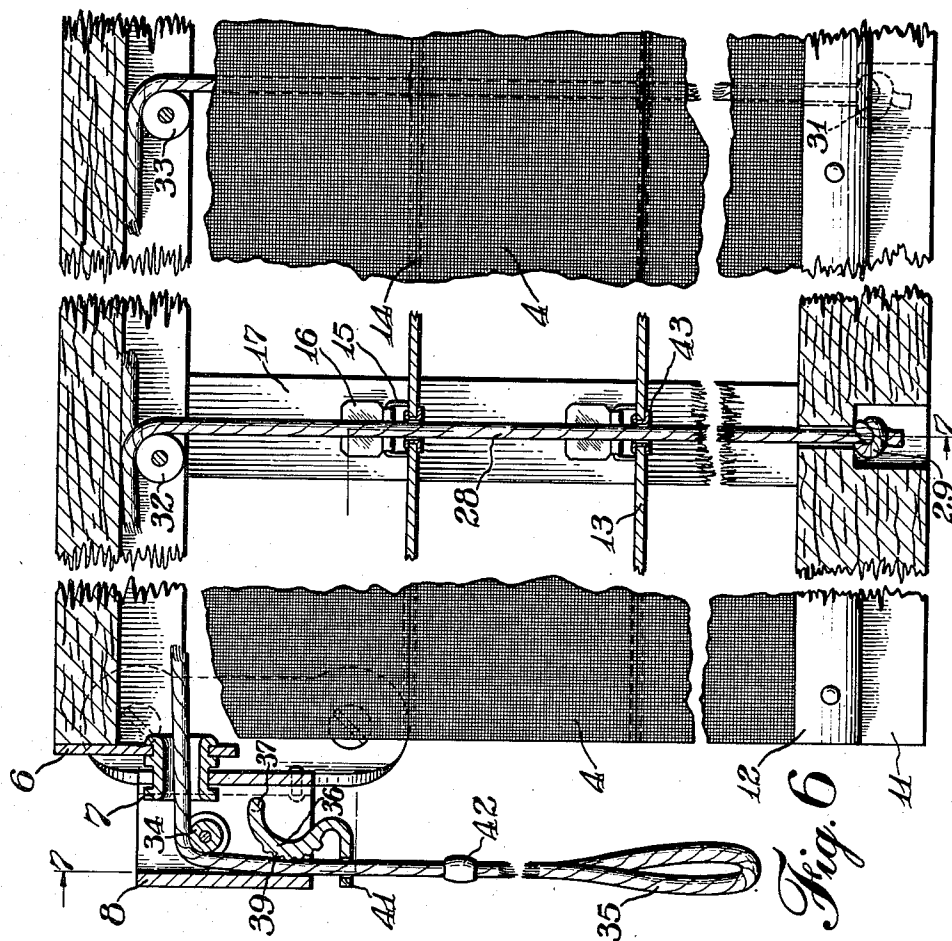


Fig. 6

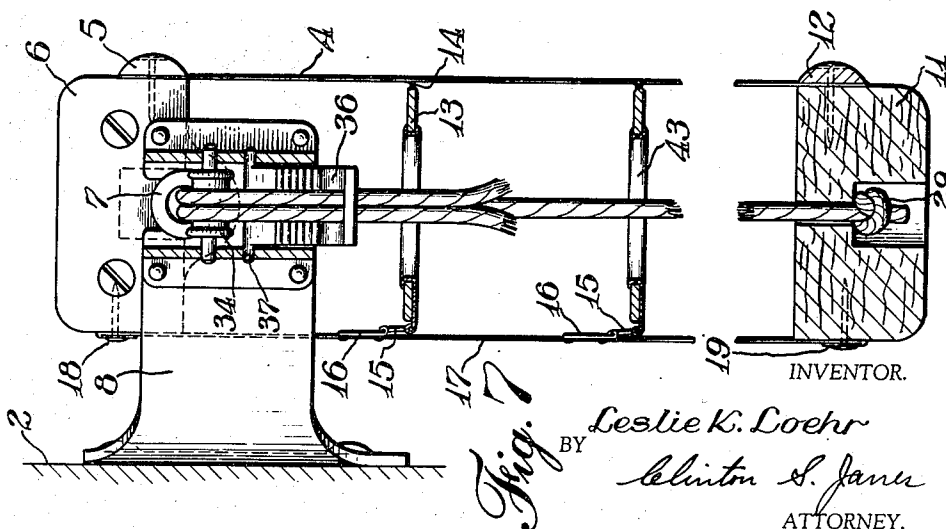


Fig. 7

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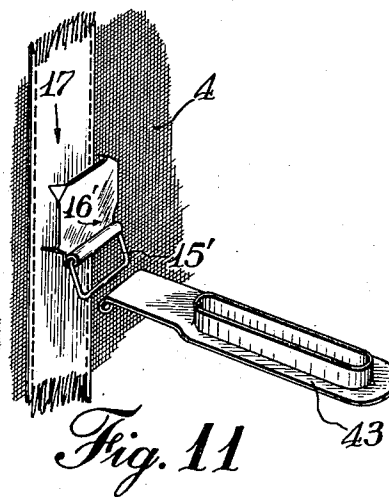
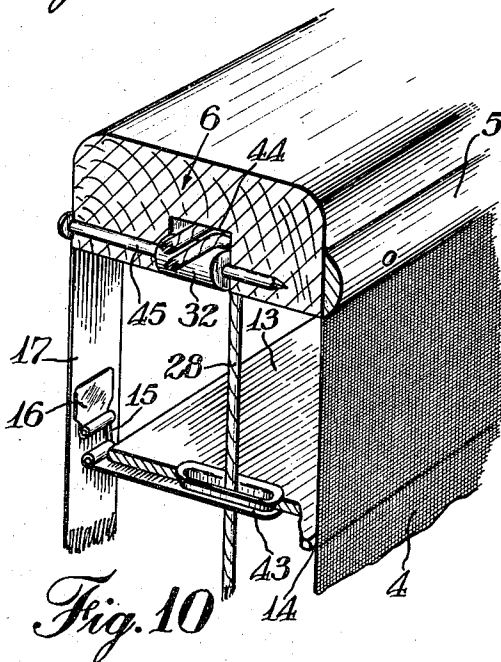
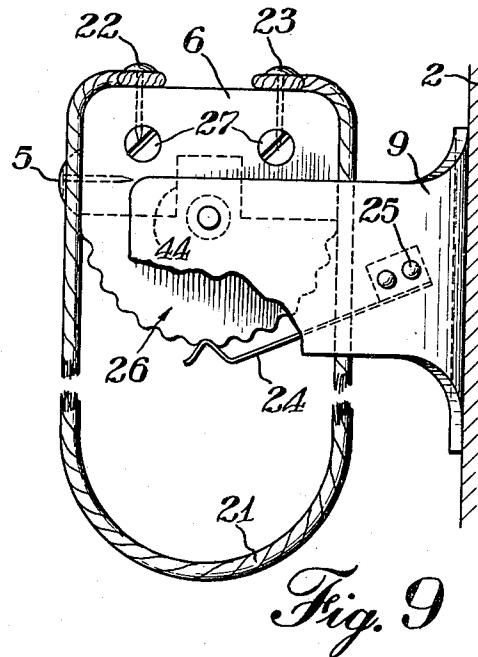
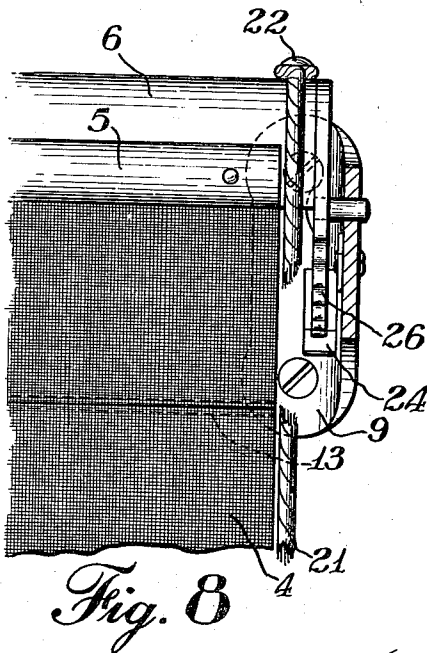
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ADJUSTABLE BLIND OR SCREEN

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ADJUSTABLE BLIND OR SCREEN

Filed June 6, 1936

6 Sheets-Sheet 5

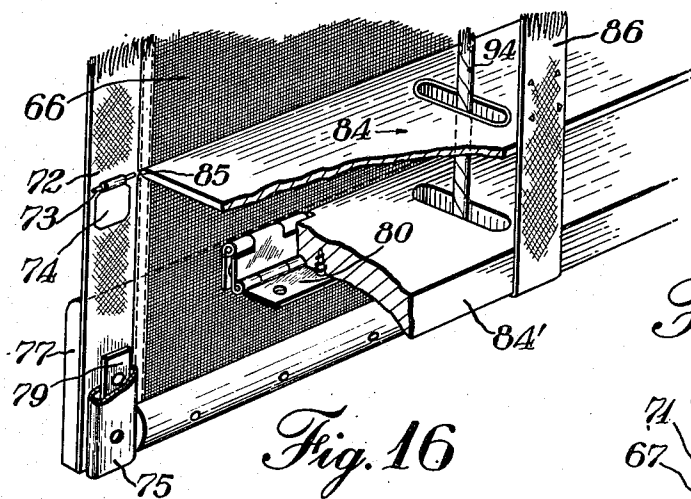


Fig. 16

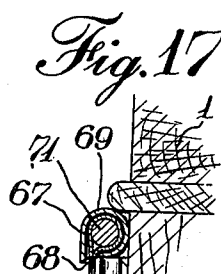


Fig. 17

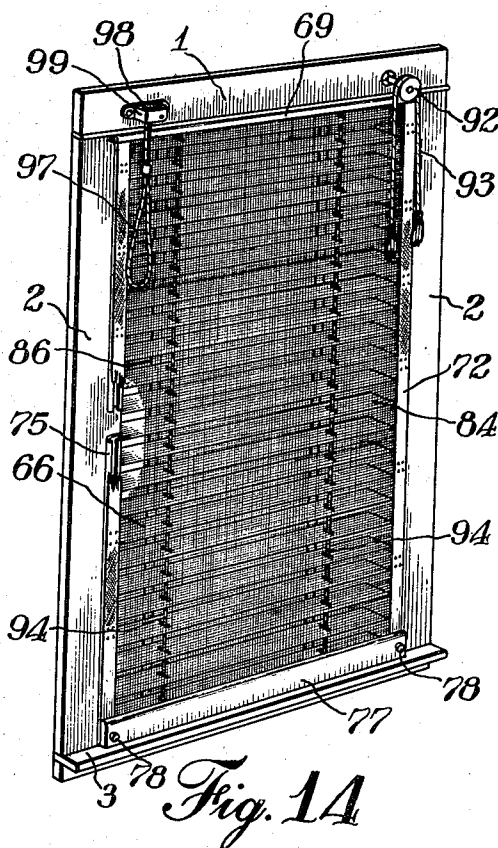
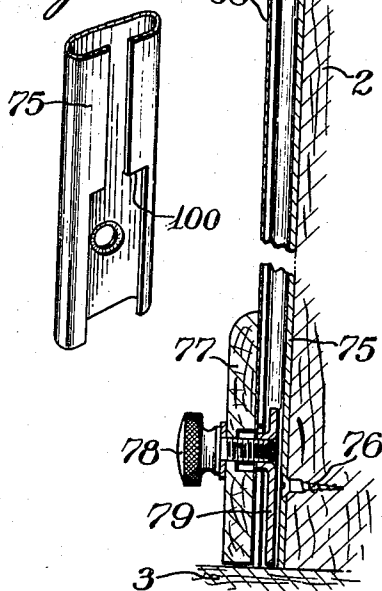


Fig. 14

Fig. 18



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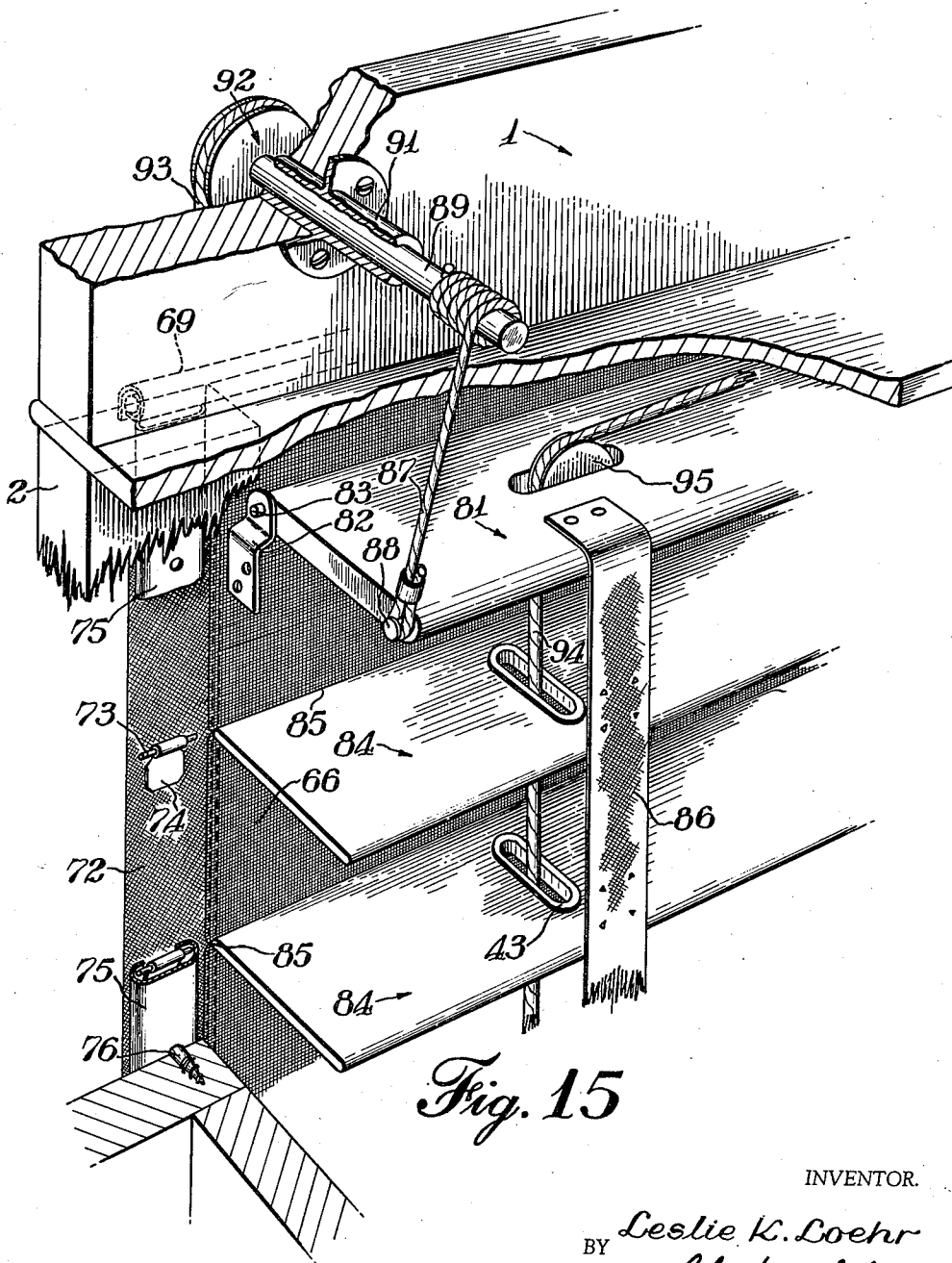
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ADJUSTABLE BLIND OR SCREEN

Filed June 6, 1936

6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,110,145

ADJUSTABLE BLIND OR SCREEN

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Application June 6, 1936, Serial No. 83,966

12 Claims. (Cl. 156—17)

The present invention relates to adjustable blinds or screens, and more particularly to that type of flexible screen employing adjustable shutters generally known as "Venetian blinds".

5 Devices of this character which are collapsible and embody tiltable slats or shutters to control the transmission of light and/or heat there-
through have achieved wide commercial accep-
tance, but their general use has been limited by
10 their high cost and their comparatively unattractive appearance except when used in conjunc-
tion with suitable draperies such as glass cur-
tains to soften their cold and harsh appearance.
Moreover, such devices as now manufactured are
15 in general heavy and difficult to install and re-
move for cleaning, and embody comparatively bulky and awkward appearing operating mecha-
nism.

It is an object of the present invention to pro-
vide a shutter-type or Venetian blind which is
20 simple in construction, efficient in operation and pleasing in design.

It is another object to provide such a device
which is so constructed as to permit the use of
25 more economical materials and arrangements.

It is a further object to provide such a device
which may be quickly and easily installed, and can
be readily taken down for cleaning and replaced.

It is another object to provide such a device
30 which lends itself to a wide variety of decorative
and artistic effects and adaptations.

It is another object to provide such a device
which combines the structure and functions of
shutter-type blinds with draperies preferably of
35 translucent nature.

It is a further object to provide such a device
which may furthermore be arranged to perform
the function of a screen closure for openings into
or over which it may be fitted.

It is a further object to provide such a device
40 which may simultaneously embody the character-
istics of a curtain, a blind and a screen, the cor-
responding functions of which are readily vari-
able to secure desired results.

Further objects, and advantages will be ap-
parent from the following description taken in
connection with the accompanying drawings in
which:

Fig. 1 is a perspective view of one preferred
embodiment of the invention as applied to a con-
ventional form of window;

55 Figs. 2, 3, 4, and 5 are fragmentary details in
perspective, showing on an enlarged scale various
optional methods of forming and incorporating
the slats or shutters of the blind.

Fig. 6 is a side elevation partly in section and
partly broken away of a blind embodying the
present invention, illustrating a preferred form
of mounting and folding or collapsing mechanism
for the blind.

Fig. 7 is an end view of the structure illus-
trated in Fig. 6, certain of the parts being broken
away for the sake of clarity;

Fig. 8 is a detail of the mounting bracket and
tilting mechanism;

Fig. 9 is an end view of the same with the
parts partially broken away for the sake of clar-
ity;

Fig. 10 is a detail in perspective of a portion of
the header bar and operating mechanism, show-
ing the method of mounting and operating the
shutters;

Fig. 11 is a fragmentary detail of the mounting
elements for a shutter, the parts being in dis-
assembled relation;

Fig. 12 is a perspective view of an embodiment
of the invention applied as a fire screen in front
of a fireplace;

Fig. 13 is an enlarged detail in perspective, il-
lustrating the method of attaching the header
bar and shutters illustrated in Fig. 12;

Fig. 14 is a perspective view of an embodiment
of the invention used as a screen closure for a
window;

Fig. 15 is an enlarged detail in perspective of
the operating means for the structure illustrated
in Fig. 14, parts being broken away for clarity;

Fig. 16 is a similar detail of the anchoring and
supporting means for the bottom of the screen il-
lustrated in Fig. 14;

Fig. 17 is an enlarged vertical section of the
structure shown in Fig. 14, showing particularly
the clamping and mounting means for the screen;
and

Fig. 18 is an enlarged detail in perspective of a
portion of the mounting track for the edge of the
screen.

Referring first to Fig. 1 of the drawings, there
is illustrated a conventional type of window com-
prising a top molding 1, side moldings 2 and sill 3.
According to the present invention, a drapery or
curtain of foraminous translucent material such
as a loosely woven textile material of suitable
properties is suspended in front of the window
opening and has a series of horizontally disposed
shutters or slats hingedly affixed thereto at one
edge and provided with controlling means so that
the shutters may be tilted to obstruct more or
less the passage of light through the blind.

As here shown, a curtain or body portion 4 55

for the blind is attached in any suitable way as illustrated at 5 in Fig. 7 to a horizontal header bar 6 which is pivotally mounted as by means of hollow trunnions 7 (Fig. 6) journaled in end brackets 8 and 9 fixed to the side moldings 2 (Fig. 1) of the window. A base or weight bar 11 is attached as indicated at 12 (Fig. 7) to the bottom of the curtain in parallel relation to the header bar 6, and a series of shutters 13 are hingedly connected to the curtain as indicated at 14 at one edge thereof, and are pivotally connected as by means of links 15 and fasteners 16 to vertical straps or tapes 17 fastened at their ends to the header bar 6 and base bar 11 as indicated at 18 and 19 respectively. The shutters 13 are maintained at all times parallel to the header and base bars by means of their continuous connection at 14 along one edge to the curtain, and are caused to tilt with the header bar by virtue of the connections to the tapes 17. The shutters are vertically spaced a distance slightly less than their width so that when they are tilted to a maximum degree, they completely prevent the transmission of light through the blind.

The shutter 13 may be detachably connected to the curtain as shown in Fig. 11 by sewing a set of tapes 17 to the curtain 4 and connecting the grommets 43 to the tapes by links 15' and fasteners 16'. In this case, however, the advantage of a continuous connection between the curtain and the edge of the shutter is sacrificed, and it is therefore necessary to use a heavier and stiffer shutter as in the conventional type of Venetian blind.

Means for manually tilting the header bar 6 is provided in the form of a suitable cord 21 (Fig. 9) fastened at its ends near the opposite edges of the header bar as illustrated at 22 and 23, and means are provided for yieldably maintaining the pivotal adjustment of the header bar in the form of a spring detent 24 suitably fixed as at 25 to the mounting bracket 9 and arranged to engage the periphery of an arcuate scalloped plate 26 fixed as at 27 to the header bar.

Means are provided for folding or collapsing the blind by raising the base bar 11 thereof in the form of a cord 28 (Fig. 6) having its ends suitably attached as indicated at 29 and 31 to the base bar 11 and extending upwardly therefrom through the shutters 13 over the rollers 32 and 33 in the header bar and through the hollow trunnion 7. The loop of the rope 28 passes over a fair-leader 34 journaled in the bracket 8 and downwardly therefrom into convenient position for manual operation as indicated at 35. An automatic brake or clamping device for the cord is preferably provided in the form of a curved wedging device 36 pivoted at 37 in the bracket 8 in position for the roughened portion 39 thereof to wedge the cord against the face of the bracket 8. The loop 35 of the cord traverses an opening 41 of the brake member 36 whereby drawing the loop to the right, as illustrated in Fig. 6, will release the brake and permit free movement of the cord; whereas when the cord is let go or moved to the left, the brake will become effective to retain the cord in adjusted position. A ring 42 is preferably clamped on the loop 35 in order to insure equal motion of both strands thereof, thereby maintaining the horizontal position of the base bar 11.

The internal arrangement of the cord 28 is best illustrated in Fig. 10 which shows the cord traversing the grommet or mounting nipple 43 of a shutter and traversing a channel 44 in the header

bar 6. A suitable mounting for the spool 32 in this channel is illustrated in the form of a pivot pin 45 mounted in the header bar.

Figs. 2, 3, 4, and 5 illustrate various forms of shutters or slats which may be used for controlling the transmission of light through the curtain or screen. In Fig. 2, the body of the curtain or screen 4 is woven so as to form loops 46 therein for retaining a slat 13 of thin wood, cardboard or any other suitable material. As illustrated, these loops 46 are formed by holding out of the weave every other thread of the warp while the loop is made, the weft threads 48 continuing in the loop the same as in the body of the curtain or screen. In Fig. 3 the loop 49 in the curtain is formed simply by sewing together or otherwise suitably attaching the edges of the loop. In Fig. 4 a loop 51 of the curtain is impregnated with suitable opaque or semi-opaque plastic material 52 which when hardened forms a shutter or slat. In Fig. 5 a similar result is secured by covering a loop 53 of the curtain with adhesive material 54 adapted to impart sufficient stiffness and opacity thereto to perform its desired function.

In Figs. 12 and 13 a fire screen constructed according to the present invention is used to cover the opening of a fireplace 55. As there shown, a curtain or screen 56 of woven loops of metallic wire or other suitable material is attached to a header bar 57 in the form of a metallic channel member, preferably being laced to one edge 58 thereof as indicated at 59. Slats 61 of steel or other suitable material are laced to the screen at intervals as indicated at 62 parallel to the header bar, and a base bar 63 is similarly attached to the bottom of the curtain. The bars and slats are maintained in parallelism by means of flexible metallic tapes 64 in the form of chains or any other suitable arrangement, and a manually operable chain 65 is provided for raising and lowering the screen in the same manner as the cord 28 previously described, so that a separate description thereof is deemed unnecessary.

Inasmuch as the header bar 57 is at such height as to be readily tiltable manually, a cord attachment for that purpose is not needed. It is therefore only necessary to provide a detent operating similarly to the detent 24 of Fig. 9 to maintain the header bar 57 in adjusted position.

Referring now to Fig. 14 of the drawings, there is illustrated an embodiment of the invention which combines the functions of a curtain, blind and screen closure for an opening. As here shown, the body 66 of the device is formed of suitable material such as wire screen of proper mesh to perform the desired function. This screen is attached to the top of the window in any suitable manner to make a tight joint therewith. As shown in Fig. 17, this is accomplished by forming a loop 67 in the end of the screen 66 and inserting it in the opening 68 of a channel member 69 fixed at the top of the window, the loop being retained therein as by means of a rod 71 passed through said loop after the loop is inserted in the channel member 69.

Flexible tapes 72 are attached to the edges of the screen 66 and are provided with fastening means in the form of pins 73 (Fig. 15) mounted in clips 74 fixed to the tapes and arranged to be slidably received in channel track members 75 fixed to the side moldings 2 of the window as by means of screws 76.

A base bar 77 (Figs. 14 and 17) is suitably fixed to the bottom of the screen and is provided with

clamping means in the form of bolts 78 engaging blocks 79 slidably mounted in the tracks 75.

A header bar 81 (Fig. 15) is suitably hinged to the moldings of the window as by means of brackets 82 supporting pins 83 in the header bar, and shutter members 84 of any suitable character are hinged at one edge as at 85 to the screen in any preferred manner in parallel relation to the header bar.

Flexible tapes 86 are attached to the header bar and pivoted to the slats or shutter members to maintain the parallelism thereof. Means for tilting the header bar is provided in the form of a cord 87 attached as by means of a pin 88 to the free edge of the header bar 81 and arranged to be wound on a rotary shaft 89 journaled as indicated at 91 in the top molding 1 of the window and provided with an operating wheel 92 actuated by a suitable cord 93. Means for locking the shaft in adjusted position may be provided if necessary, but ordinarily the friction of the journal bearings 91 will be sufficient to retain the shutters in adjusted position.

Means for raising or lowering the screen when desired are provided in the form of cords 94 attached to the bottom shutter member 84' (Fig. 16) which is hinged by means of a double hinge 80 to the base bar 77. Cords 94 traverse the shutters 84, passing over pulleys 95 and passing through the upper molding 1 of the window. The loop 97 of the cords passes over a fair-leader 98 journaled in a bracket 99 fixed to the molding 1 and depends therefrom in suitable position for manual actuation.

The operation of the various embodiments of the invention is believed to be in general clear from the foregoing description. In the embodiment shown in Fig. 1, the height of the curtain is adjusted by pulling or releasing the loop 35 of cord 28 whereby the base bar 11 is raised or lowered. The amount of light to be permitted to traverse the blind is regulated by tilting the slats or shutters 13 by means of the cord 21 to secure any desired degree of illumination.

In the fire screen illustrated in Figs. 12 and 13, the slats or shutters 13 may be tilted to permit the radiant energy to pass directly through the screen or to be deflected upwardly or downwardly merely by suitable manipulation of the header bar 57, whereas the screen may be raised or lowered by means of chain 65.

The screen illustrated in Figs. 14 to 18 inclusive is normally maintained tight by clamping the base bar 77 down against the sill 3, and the amount of light transmitted through the screen is then regulated by tilting the slats 84 by means of the cord 93. If it is desired to open the screen to raise or close the window for instance, it is merely necessary to loosen the bolts 78, whereupon the screen may be raised by pulling the loop 97 of cords 94. Attention is called to the fact that the guide pins 73 for the edges of the screen are arranged in axial alignment with the hinge connections 85 between the shutters 84 and the screen 66 so that when the screen is raised, the portions between the slats 84 can fold up away from the tracks 75.

If it is desired to take down for cleaning or any other purposes the blinds illustrated in Figs. 1 to 13 inclusive, it is merely necessary to dismount the header bars thereof from their supporting brackets. The screen-blind illustrated in Figs. 14 to 18 is almost as readily removable since it is merely necessary to loosen the bolts 78 holding the base bar 77 and slide out the rod 71 holding

the top of the screen in position. The screen may thereupon be slid down, the pins 73 emerging from the bottoms of the tracks 75 through the openings 100 therein (Fig. 18).

It will readily be appreciated that the curtain or screen forming the body portion of the blind may be formed of material having any desired decorative and artistic qualities. It is further to be noted that inasmuch as this body portion is transparent or translucent, the shutters back of the body portion are more or less visible therethrough and they may accordingly also be designed and colored to produce any desired decorative effects in conjunction with the drapery formed by the body of the blind.

Although certain embodiments of the invention have been shown and described in detail, it will be understood that other embodiments are possible and that various changes may be made in the design and arrangements of the parts without departing from the spirit of the invention as defined in the claims appended hereto.

What is claimed is:

1. A shutter type blind including an open mesh fabric curtain, a plurality of shutter elements, attaching members therefor comprising grommets fixed therein, means for detachably hinging said grommets to the curtain, and retractable means traversing said grommets and attached to the lowermost shutter element for progressively raising and collapsing said blind.

2. A combined curtain, blind and screen for an opening such as a window, comprising a sheet of foraminous material, means for detachably securing the edges of said sheet to the boundaries of said opening, and a series of shutters hinged at one edge to said sheet in parallel relation.

3. A combined curtain, blind and screen for an opening such as a window, comprising a sheet of flexible foraminous material, a series of shutters hinged at one edge to said sheet, means for detachably securing the top and bottom of said sheet to the corresponding boundaries of the opening, and means for pivotally and slidably securing the sides of said sheet to the side boundaries of the opening with the axes of the pivots aligned with the pivotal axes of the shutters.

4. In a shutter type blind a header bar, a curtain dependent therefrom, a series of shutters hinged to said curtain parallel to the header bar, a base bar at the bottom of the curtain, means including a hollow trunnion for pivotally supporting said header bar, and manually movable means traversing said trunnion and dependent from said header bar, passing through said shutters and attached to the base bar for raising and lowering the base bar.

5. A spark arrester and heat deflector including a tiltable header bar, a laced wire screen dependent therefrom, fire resisting shutters laced to said screen in spaced relation parallel to said header, and means for collapsing the screen.

6. Adjustable means for controlling the transmission of light and heat including a loosely woven curtain, a series of shutters hinged at one edge thereto through their length, and means for simultaneously adjusting the inclination of the shutters to the curtain while maintaining constant the overall length of the curtain.

7. In a combined curtain and shutter type blind, a flexible foraminous curtain having parallel loops formed therein dependent at one edge therefrom, and means for stiffening said loops and controlling the transmission of light through said loops.

8. In a combined curtain and shutter type blind, a loosely woven foraminous screen having parallel tubular loops formed therein and laterally dependent from the body of the screen, and
5 flat strips of light-obstructing material traversing said loops and continuously hinged thereby at one edge to the screen.

9. In a shutter type blind, a flexible loosely woven foraminous curtain having spaced parallel
10 loops formed therein dependent at one edge therefrom, said loops being flattened and coated with light-controlling stiffening material.

10. In a combined drapery and blind, a loosely

woven foraminous curtain, and a series of slats hinged thereto along one edge to form a shutter.

11. In a combined drapery and blind, a loosely woven foraminous curtain, and a series of slats continuously hinged thereto along one edge in
5 parallel relation to form a shutter.

12. In a combined drapery and blind for a window opening or the like, a loosely woven foraminous curtain, and a series of slats located on the outward side thereof and continuously
10 hinged thereto in parallel spaced relation.

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