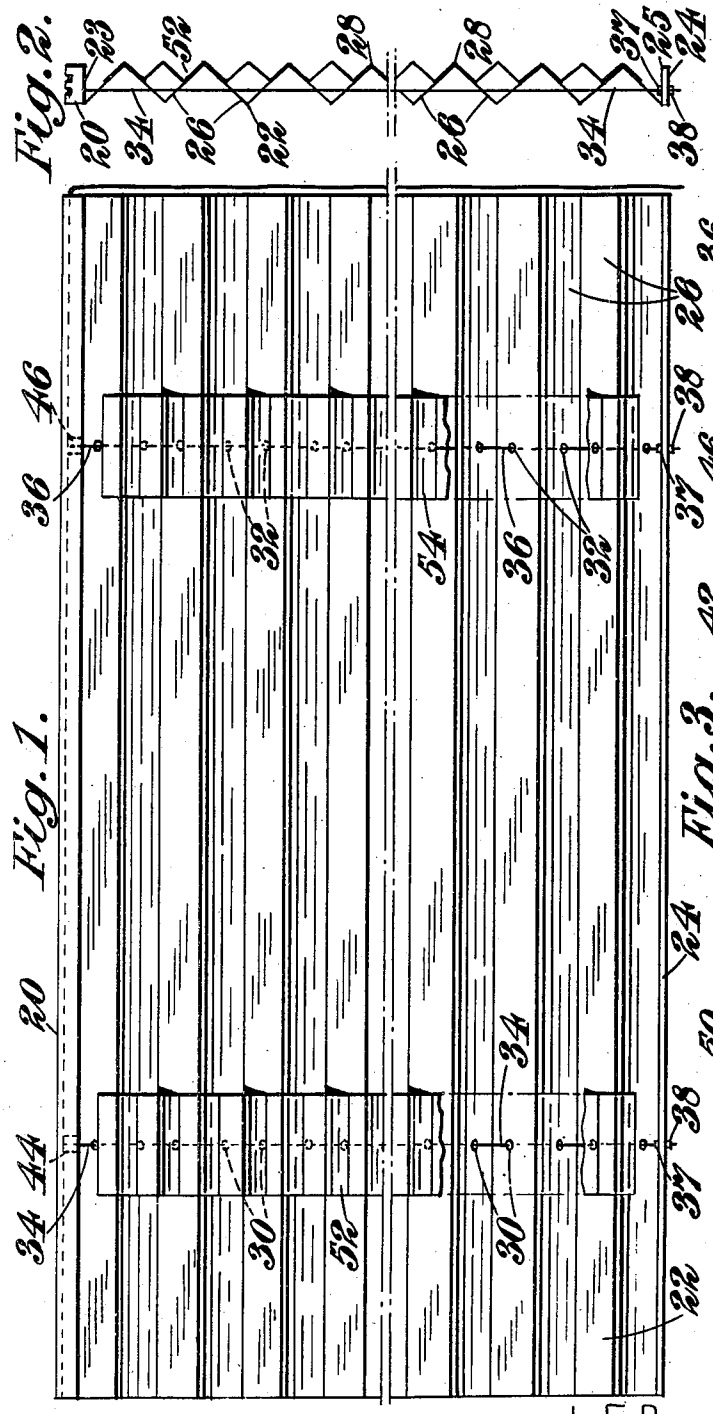
Sept. 2, 1941. L. F. DONNER 2,254,820

BLIND

Filed Dec. 9, 1940 3 Sheets-Sheet 1



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ATTYS.

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BLIND

Filed Dec. 9, 1940 3 Sheets-Sheet 2

Fig. 4.

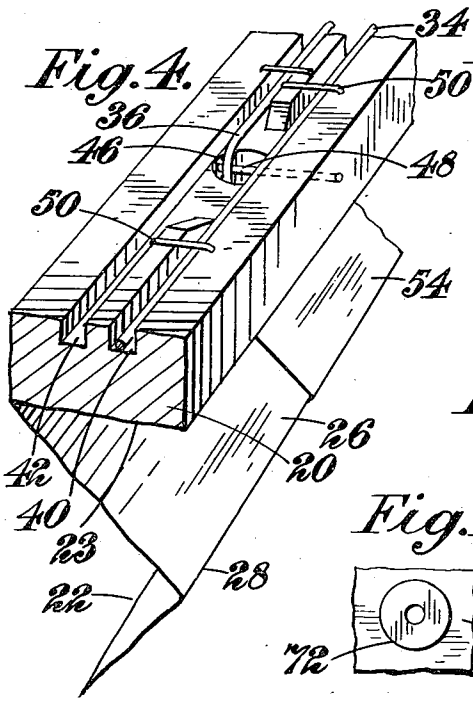

Fig. 5.

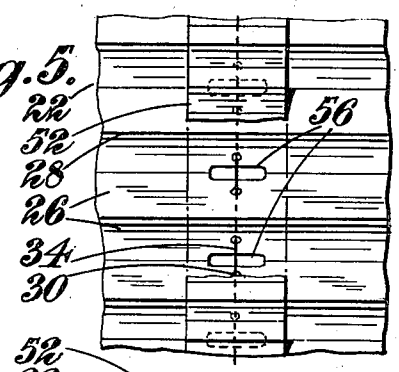

Fig. 6.

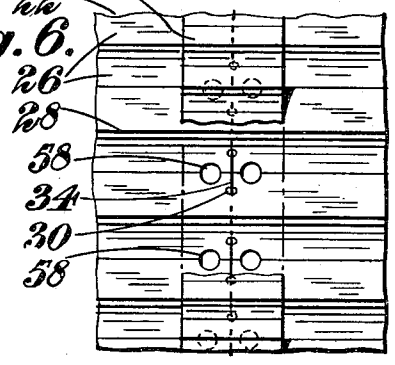

Fig. 12.

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Filed Dec. 9, 1940 3 Sheets-Sheet 3

Fig. 7. Fig. 8. Fig. 9.

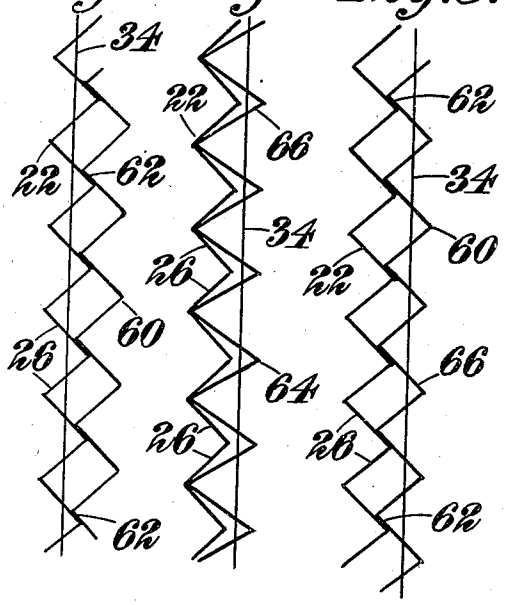


Fig. 10.

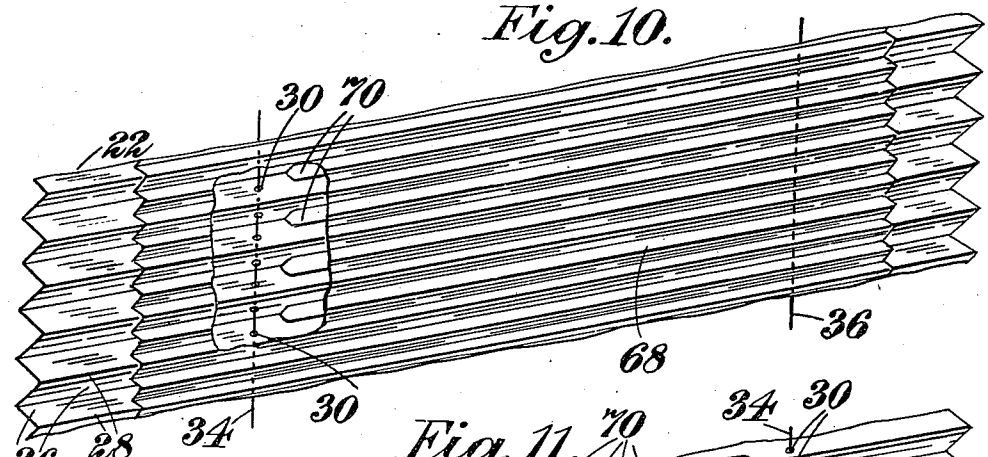
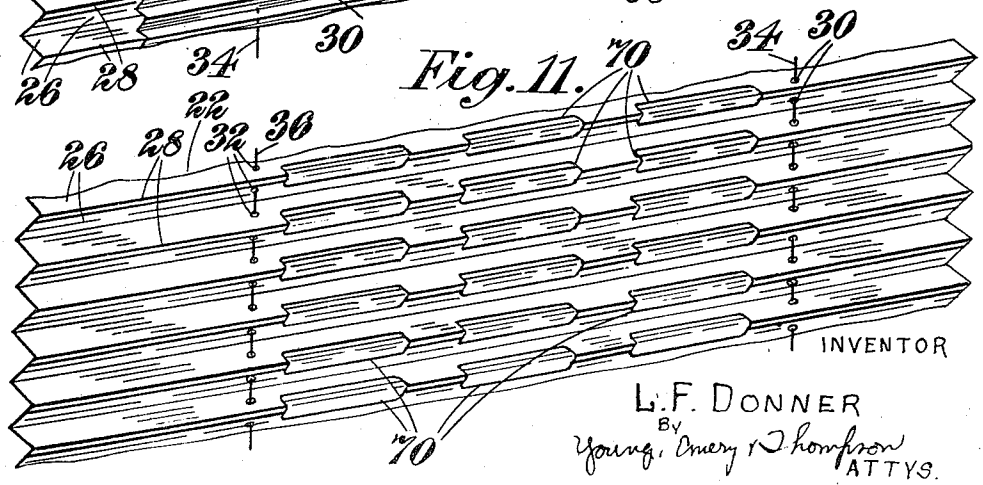


Fig. 11.



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Patented Sept. 2, 1941

2,254,820

UNITED STATES PATENT OFFICE

2,254,820

BLIND

Lawrence Frederick Donner, Perivale, England

Application December 9, 1940, Serial No. 369,337
In Great Britain December 14, 1939

7 Claims. (Cl. 156—10)

This invention relates to blinds of the type (hereinafter referred to as the type described) comprising a sheet of preferably opaque foldable material, for use with windows and the like for preventing light from entering through them, which sheet, preferably composed of paper, has pleats providing a plurality of parallel transverse strips arranged in a row extending from end to end of the sheet, and one or more flexible ties that are operatively connected to the two end strips and serve to gather the strips together and draw the sheet into a folded compact form.

The invention has for its main object to provide an improved construction of blind of the type described which can be used for black-out purposes in the event of air raids, and can be manufactured at a low cost.

Heretofore, the transverse strips have been formed or provided with holes or eyelets arranged in one or more longitudinal rows through which the tie or ties extended, and according to a feature of the present invention one or more masking longitudinal pleated strips, preferably also composed of paper. are fixed to the front or back of the sheet and serve to mask the holes therein, for rendering the blind light-tight.

In an alternative construction according to the invention, each of the masking strips has perforated portions of its pleats lying in spaced relation with the pleats of the sheet at one side of the latter, and the tie or ties extend through one or more rows of holes in said perforated portions of the masking strip or strips.

The number of pleats in each pleated masking strip may be twice the number of pleats in said sheet, and alternate pleats of the masking strip or strips may be secured to successive pleats of the sheet.

The invention also provides an improved blind as set forth above having masked ventilating apertures to provide ventilation through it.

In such a blind, the said sheet may have ventilating apertures formed in it by removing parts of its folds or pleats that lie spaced away in front of or behind said masking strip or strips.

A convenient construction of ventilated blind may comprise two pleated sheets arranged one in front of the other, one of which sheets constitutes a mask for masking holes or perforations in the other sheet through which one or more ties extend, one of which sheets has ventilating apertures formed in it by removing parts of its folds or pleats that lie spaced away in front of or behind imperforate portions of the other sheet.

One embodiment of the invention and modifications thereof are diagrammatically illustrated by way of example in the accompanying drawings, wherein:

Figures 1 and 2 are elevations taken at right angles to one another showing one construction of blind according to the invention, Figure 2 being taken as viewed from the left-hand side of Figure 1,

Figure 3 is a plan view thereof, and

Figure 4 is a detail perspective view drawn to a scale larger than that of Figures 1 to 3;

Figures 5 and 6 are elevations showing modifications of the blind shown in Figures 1 to 4 and provided with ventilating apertures;

Figures 7, 8 and 9 are side elevations showing other modified constructions of blind;

Figure 10 is an elevation showing another modified construction of ventilated blind as viewed from one side thereof, parts being shown broken away, and

Figure 11 is an elevation thereof as viewed from the opposite side;

Figure 12 is a detail view showing a reinforced hole in the blind.

Like reference characters designate like parts throughout the several views.

Referring first to Figures 1 to 4, a blind suitable for use in connection with air-raid precautions comprises at the top a batten **20** forming a support, to which one end of a pleated sheet of opaque stiff foldable material **22**, hereinafter referred to as paper, is attached at **23**, as by an adhesive, a slat **24** of substantially the same width as the batten being attached at **25**, as by an adhesive, to the bottom of the sheet. The batten and slat may be of any convenient length and width, e. g. 3 to 6 ft. long and 1¼ inches wide, and the sheet, when extended, may be of any convenient length. e. g. 6 ft. Owing to the piece of paper **22** in the form of a sheet being pleated by making transverse creases **28** in it alternately from opposite sides, it comprises a plurality of transverse strips or bands **26**, e. g. about 1½ inches wide, arranged in a row extending from end to end of the sheet, each pleat being defined by crease lines and constituted by two adjacent strips **26** united at a crease line between them. The pleats are each perforated to provide two parallel rows of perforations or holes **30**, **32** arranged extending from end to end of the sheet in spaced relation at opposite sides of the middle of the sheet. Two ties, **34**, **36** constituted by cords or the like, extend through the rows of holes and serve for folding and unfolding the

blind concertina-fashion in known manner into and out of its compacted folded condition, in which the paper strips 26 are gathered together and lie flat one against another. Each tie may be secured to the slat in any convenient manner, as by knots 37, 38 made in the tie at opposite sides of the slat. As described so far the blind is known in itself.

As shown most clearly in Figures 3 and 4, the upper face of the batten 20 has formed in it two grooves 40, 42 for the ties, which grooves open downwards through two leading-in holes 44, 46, one in line with each row of perforations 30, 32. Each of these leading-in holes has a metal pin 48 extending transversely across it, over which a tie runs, and the lower end of each leading-in hole may be countersunk. Staples 50 serve for retaining the ties in the grooves. By pulling the depending ends of the ties, the blinds can be folded and released in the manner of a Venetian blind. As the ties, especially after being in use for even a short time, do not close the holes or perforations 30, 32 light-tight, the blind as described so far cannot be used for black-out purposes.

In order to make the blind suitable for black-out purposes and to shut off all light that passes through the holes 30, 32, two longitudinal pleated masking strips 52, 54 of like material, preferably paper, are fixed to either side of the extended sheet 22 overlying the two rows of holes from end to end thereof. The number of pleats in each of these pieces 52, 54 constituting masking strips may be equal to the number of pleats in the sheet 22, but as shown in Figures 1 and 2, the pitch of the pleats in each masking strip may be twice that of the pleats of the sheet 22; in other words, the number of pleats in each masking strip is twice the number of pleats in the sheet 22, and alternate pleats of each masking strip are secured to successive pleats of the sheet. In this construction, a V-shaped fold or pleat of the sheet 22 has secured to it a W-shaped folded portion providing two pleats of a masking strip, the sides of the W being affixed to the inside of the V at the upper portions of the sides of the V, as clearly shown in Figure 2.

In some cases ventilation apertures may be formed in the sheet 20 behind a mask either in line with the holes for the ties, as shown at 56 in Figure 5, or at either side of a row of holes, as shown at 58 in Figure 6.

The modified blind shown in Figure 7 is similar to that described above with reference to Figures 1 to 4, but differs therefrom in that each pleated masking strip 60, one for each tie, has a number of pleats equal to the number of pleats of the sheet 22. In this construction the width of the pleats of the sheet 22 and those of the masking strip 60 are substantially equal, and they are so affixed together that the lower part of a V-shaped portion of the masking strip is affixed to the upper part of a pleat of the sheet 22, as shown at 62, whereby when the blind is extended, the greater part of the masking strip is arranged in spaced relation to the sheet 22.

In the modified blind shown in Figure 8, a pleated masking strip 64 has perforated portions of its pleats lying in spaced relation with the pleats of the sheet 22 at one side of the latter, and a tie 34 extends through a row of holes in the perforated portions. The number of the pleats 66 of the masking strip 64 is equal to the number of pleats 26 of the sheet 22, but the width of the pleats 66 is greater than that of the pleats 22, so that the perforated portions of the pleats 66 lie in front of the pleats 26. The pleats of the sheet 22 and of the masking strip 64 are affixed together symmetrically nested one in the other.

The modified construction of blind shown in Figure 9 is similar to that described above with reference to Figure 7, but differs therefrom in that the tie 34 extends through a row of holes provided not in the sheet 22, but in the parts of the pleats 66 of the pleated longitudinal masking strip 60 that lie in spaced relation in front of the sheet 22.

The modified construction of blind shown in Figures 10 and 11 is similar to that described above with reference to Figures 1 and 2, but differs therefrom in that a single pleated longitudinal masking strip 68 is provided instead of the two masking strips 52, 54. This strip 68 is constituted by a sheet of paper, and there are thus two pleated sheets of paper arranged one in front of the other; the sheet 68 constitutes a mask for masking the holes 30 in the sheet 22. Portions of the pleats 26 of the sheet 22 are cut away to provide rows of ventilating apertures 70 lying behind the masking strip 68. These rows of ventilating apertures 70 are arranged in parallel relation extending from end to end of the blind, and may be arranged in any convenient spacing, so that the apertures 70 may be of any convenient size.

Wherever a hole or perforation is provided in the sheet 22 or in a mask for receiving a tie it may be reinforced by means of a metal eyelet. Alternatively, as shown in Figure 12, an eyelet in a pleat may be constituted by a piece of sheet material 72, e. g. paper or linen, preferably circular, having in it a hole and affixed to the pleat 26 with the holes in register one with the other.

When the blind is sufficiently narrow one tie may be sufficient for use in closing and opening it. Also, when the blind is of considerable width, more than two ties may be provided. Further, although stiff opaque paper is preferably used for making the blinds described above, in some cases other materials that can be pleated, such as stiffened linen or canvas or like woven fabric, or paper lined therewith, may be employed. If desired, the strips constituting masks may be of a colour different from that of the sheet on which they are fixed.

I claim:

1. In a blind of the character described, the combination of two superposed pieces of pleated foldable material each having a plurality of parallel transverse strips arranged in a row extending from end to end of the blind with the pleats of one piece affixed to pleats of the other piece in spaced relation, one of which pieces is perforated to provide a longitudinal row of holes extending in the direction of length of the blind, a tie that extends freely through said holes in the perforated piece and is operatively connected to the two strips at opposite ends thereof, the other of which pieces constitutes a mask for masking said holes.

2. In a blind of the character described, a combination of parts as set forth in claim 1, wherein the pleats of the two pieces differ in width, and the pleats of greater width have said row of holes.

3. In a blind of the character described, the combination of two superposed pieces of pleated foldable material each having a plurality of parallel transverse strips arranged in a row extending from end to end of the blind with the pleats of one piece affixed to pleats of the other piece in spaced relation, one of which pieces is perforated to provide a longitudinal row of holes extending in the direction of length of the blind, a tie that extends freely through said holes in the perforated piece and is operatively connected to the two strips at opposite ends thereof, the other of which pieces constitutes a masking piece for said holes and has twice the number of pleats of the perforated piece, alternate pleats of which masking piece are affixed to successive pleats of the perforated piece.

4. In a blind of the character described, a combination of parts as sets forth in claim 1, wherein a V-shaped pleat of the perforated piece has affixed to it a W-shaped folded portion providing two pleats of the masking piece, the outer sides of each W-shaped fold being affixed to the inner sides of a V-shaped fold at the upper portions of the sides of the V.

5. In a blind of the character described, a combination of parts as set forth in claim 1, wherein one of said pleated pieces has ventilating apertures arranged so as to be masked by the other pleated piece.

6. A blind of the character described comprising in combination two sheets of pleated material superposed one on the other in spaced relation, each of which sheets has a plurality of parallel transverse strips arranged in a row extending from end to end of the blind with the pleats of one sheet affixed to pleats of the other sheet, one of which sheets is perforated to provide two parallel rows of holes in spaced relation extending in the direction of length of the blind, two ties extending freely each through one row of holes and connected operatively to the two strips at opposite ends of the perforated sheet, the other of which sheets constitutes a mask for masking said holes, one of which sheets has ventilating apertures formed in it by removing parts of its folds that lie spaced away from imperforate portions of the other sheet.

7. A blind of the character described comprising the combination with a sheet of foldable material having pleats providing a plurality of parallel transverse strips arranged in a row extending from end to end of the sheet, which strips have holes arranged in at least one longitudinal row extending in the direction of length of the sheet, and at least one tie each extending through a said row of holes, and each operatively connected to the two end strips for gathering the strips together and drawing the sheet into a folded compact form, of at least one pleated longitudinal masking strip of foldable material affixed in spaced relation to pleates at a side of the sheet and arranged to mask the holes therein.

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