

Aug. 7, 1928.

J. W. ISHERWOOD ET AL

1,679,526

HATCH COVER

Filed June 15, 1925

10 Sheets-Sheet 1

*Fig. 1.*

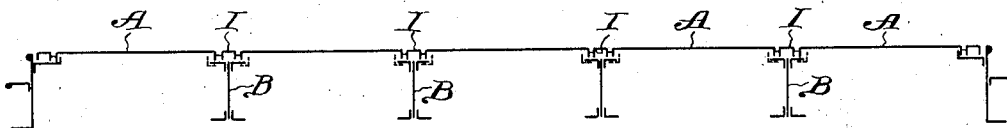
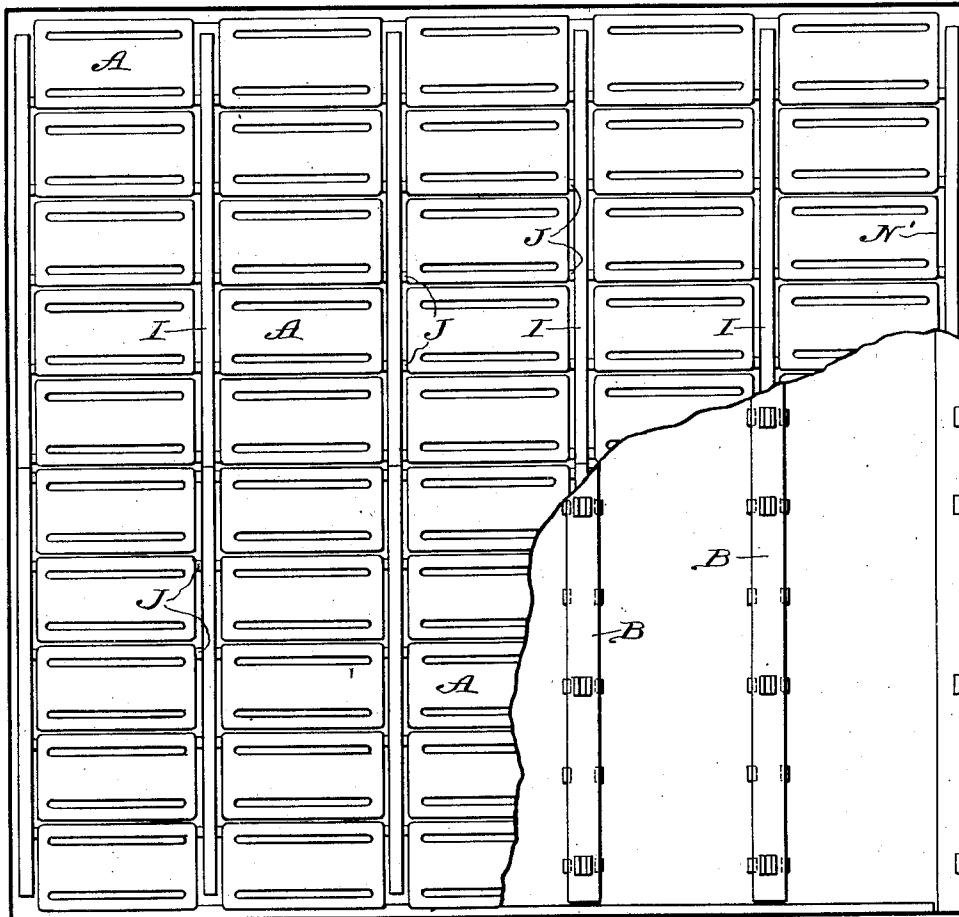


*Fig. 2.*

Inventors,  
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Aug. 7, 1928.

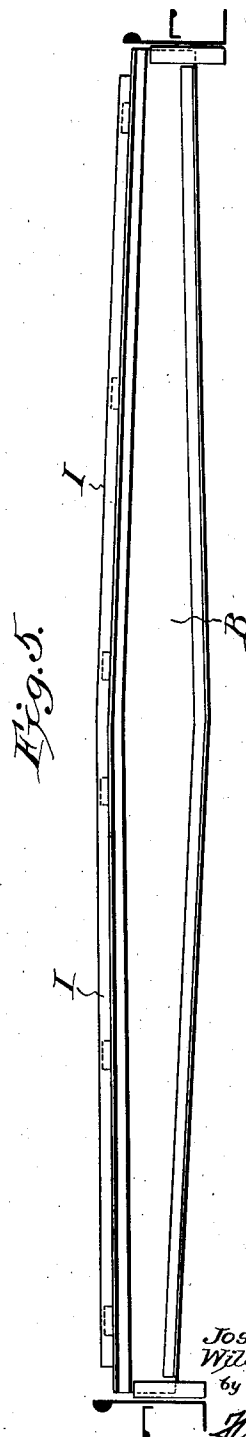
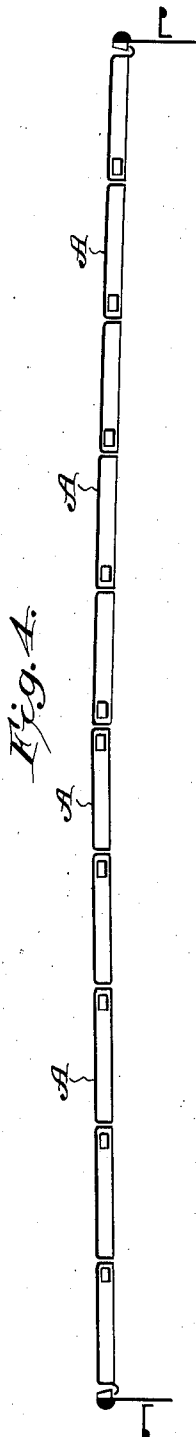
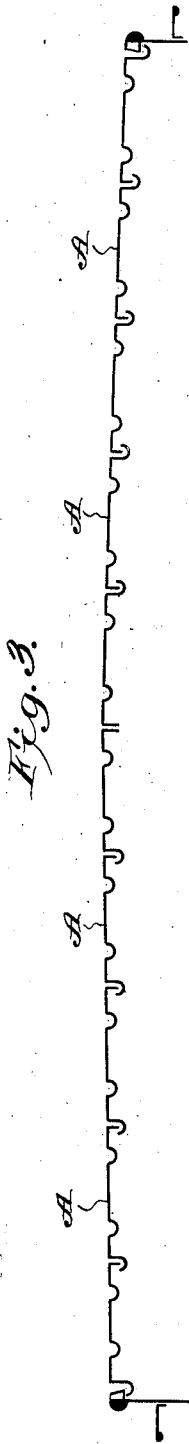
J. W. ISHERWOOD ET AL

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10 Sheets-Sheet 2



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J. W. ISHERWOOD ET AL

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*Fig. 6.*

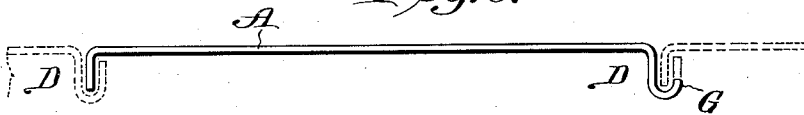


*Fig. 7.*

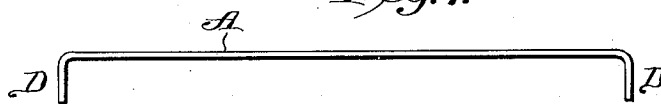


*Fig. 8.*

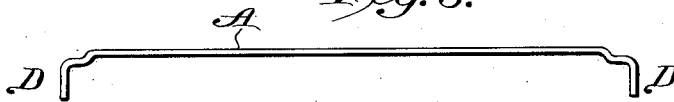


*Fig. 9.*

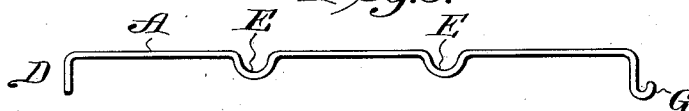


*Fig. 10.*

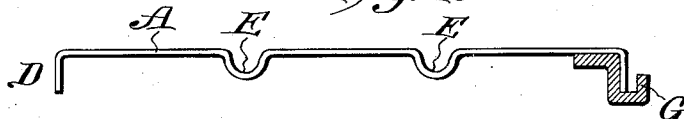


*Fig. 11.*

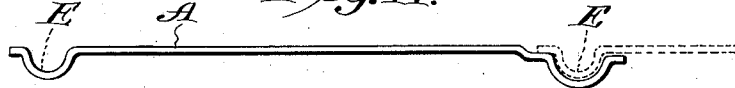


*Fig. 12.*



Inventors,  
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Aug. 7, 1928.

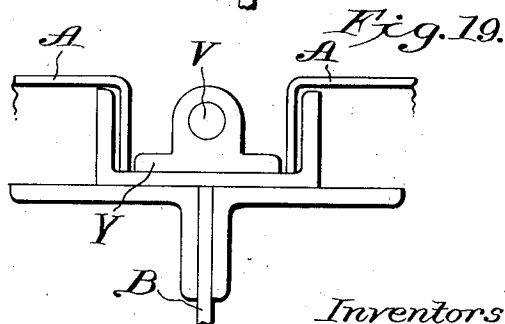
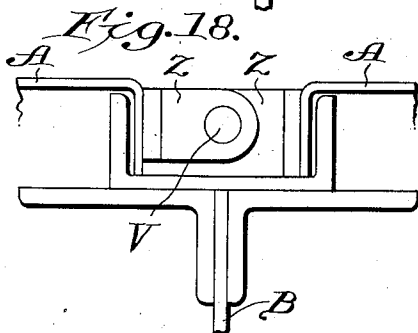
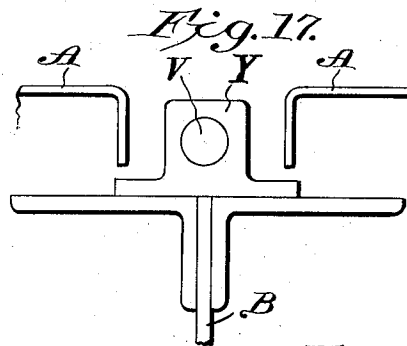
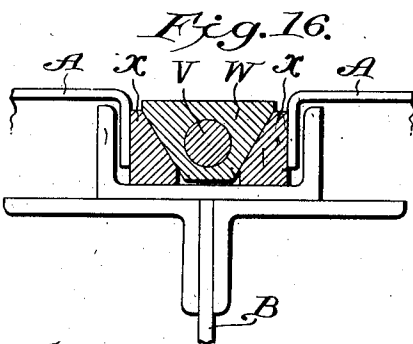
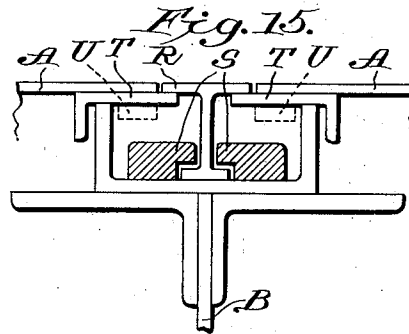
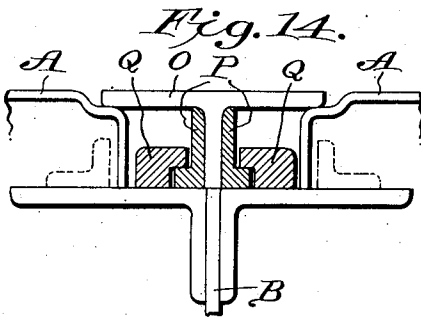
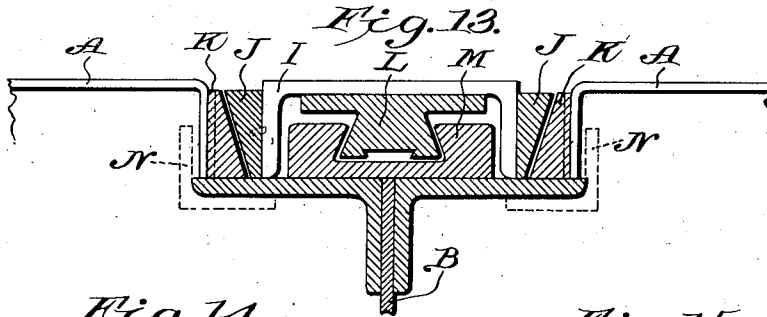
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Inventors,  
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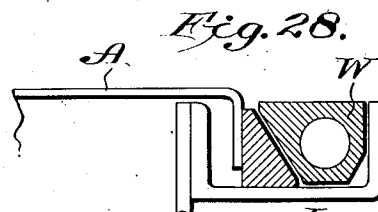
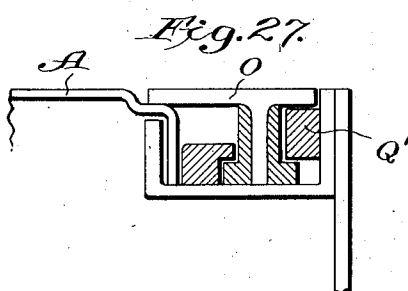
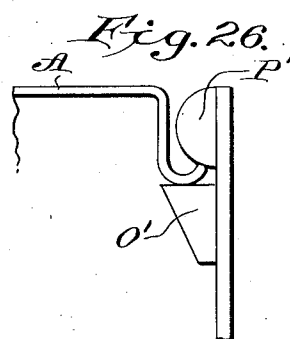
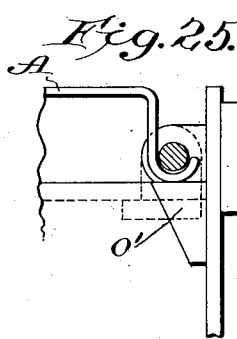
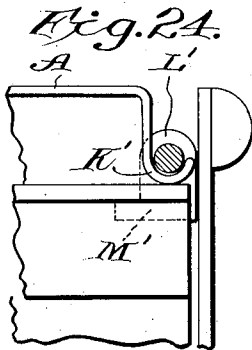
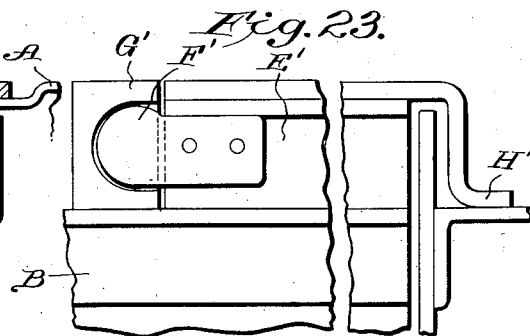
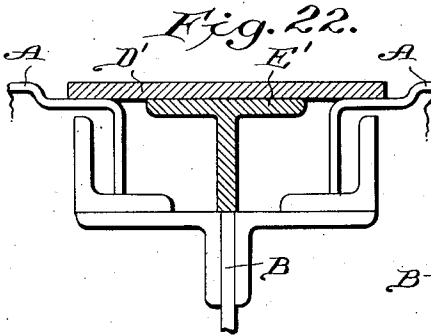
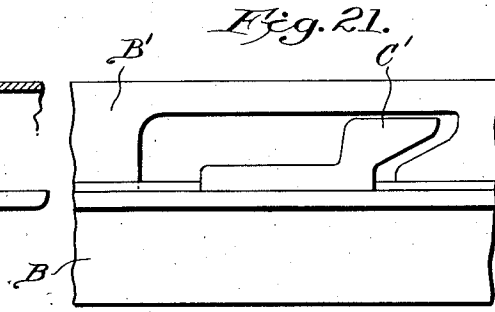
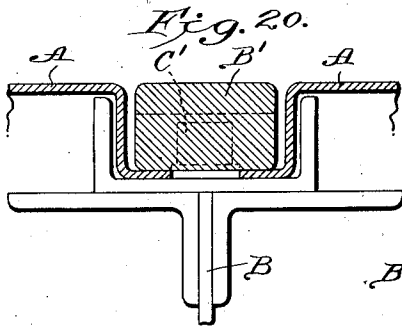
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HATCH COVER

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10 Sheets-Sheet 5



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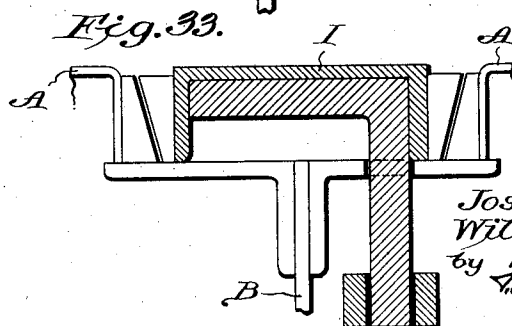
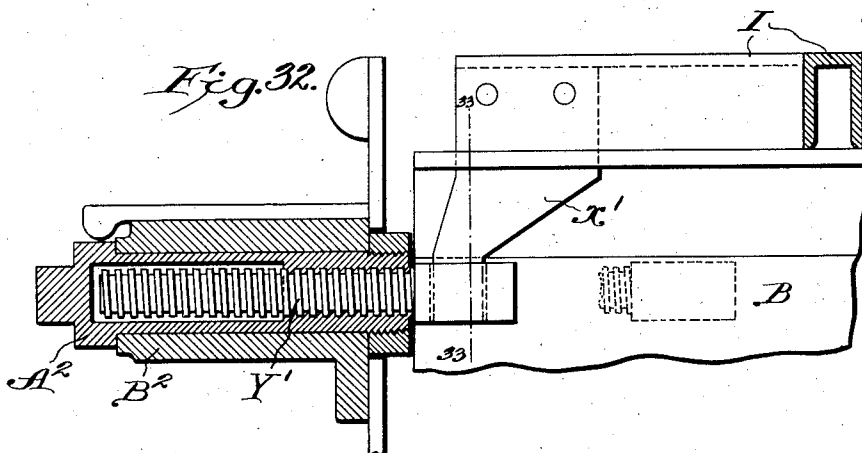
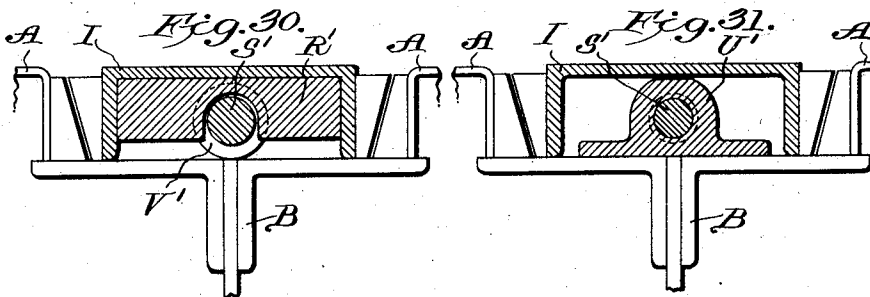
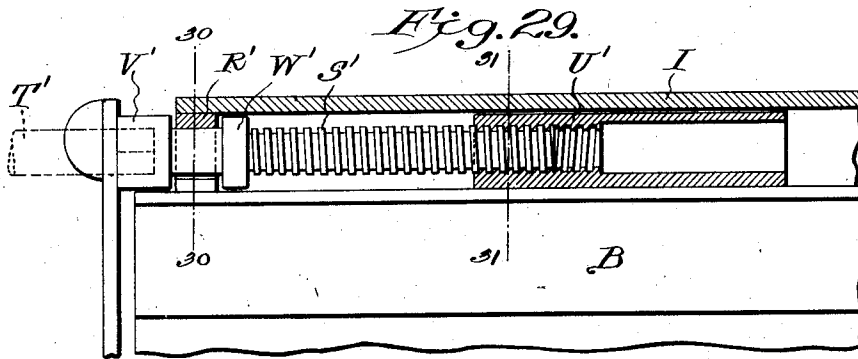
1,679,526

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HATCH COVER

Filed June 15, 1925

10 Sheets-Sheet 6



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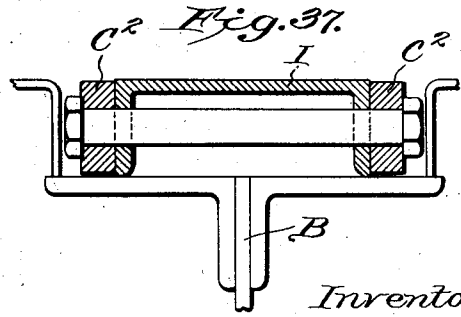
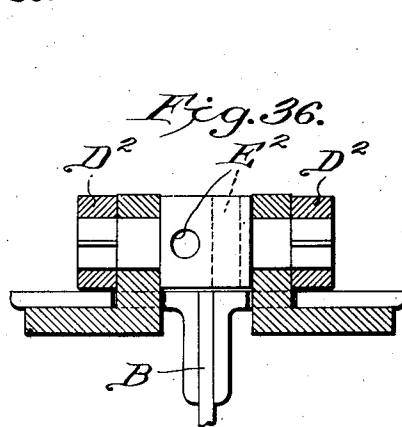
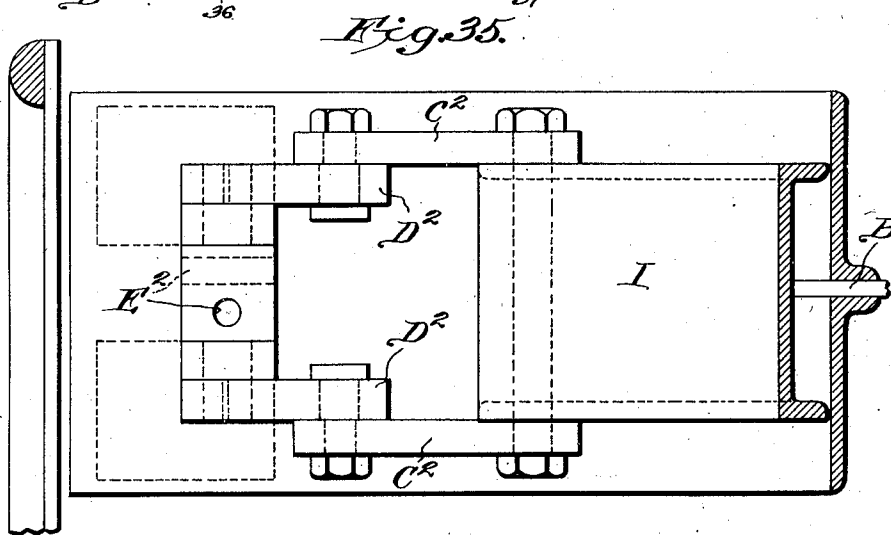
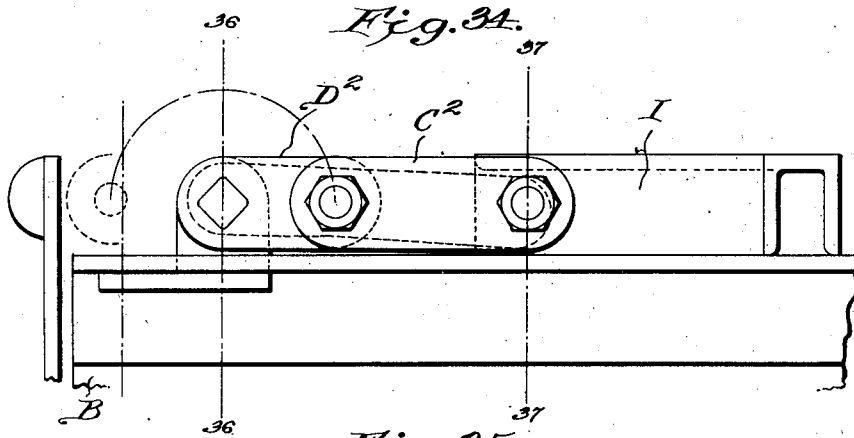
1,679,526

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HATCH COVER

Filed June 15, 1925

10 Sheets-Sheet 7



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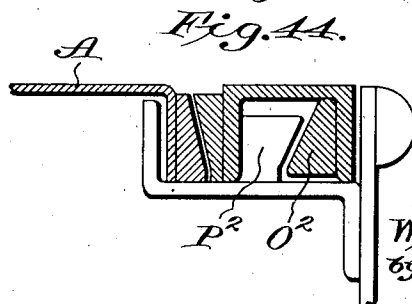
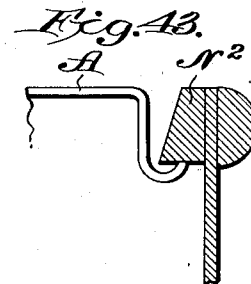
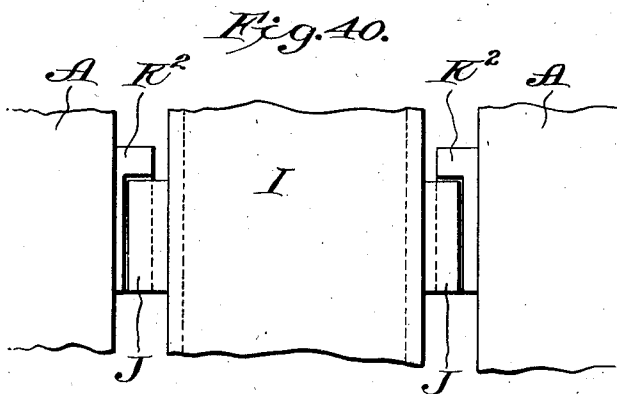
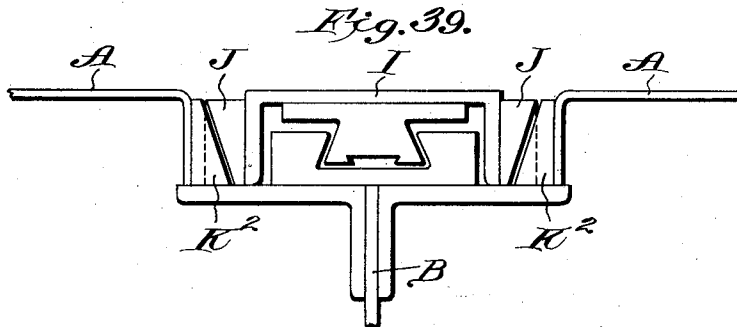
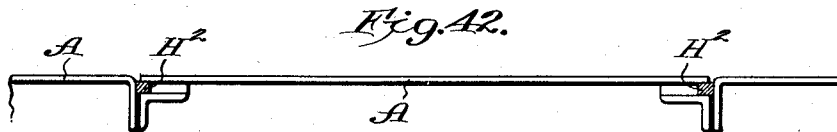
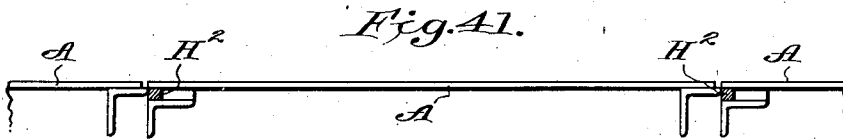
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1,679,526

HATCH COVER

Filed June 15, 1925

10 Sheets-Sheet 8



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Filed June 15, 1925

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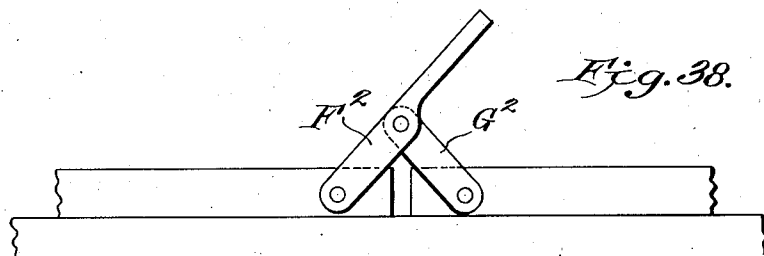


Fig. 38.

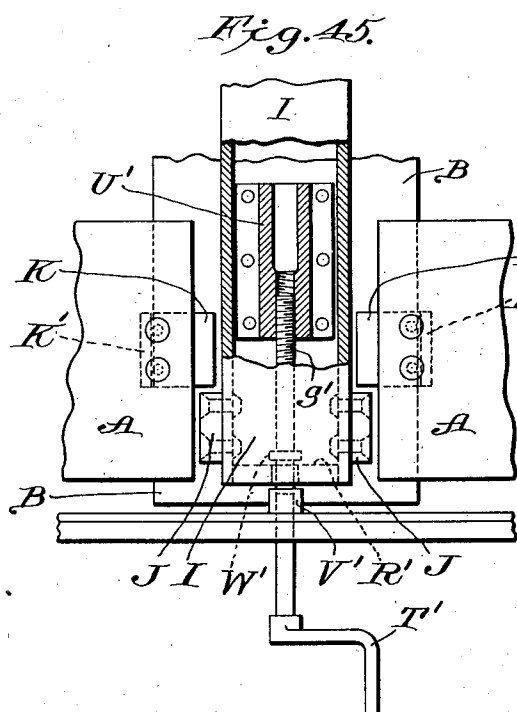


Fig. 45.

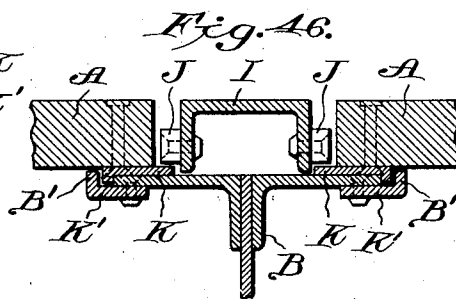


Fig. 46.

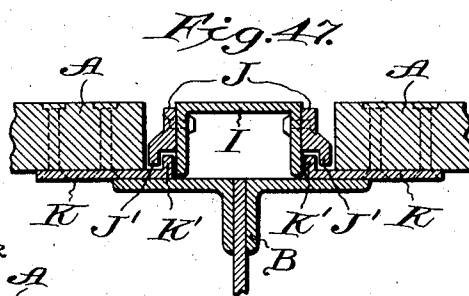


Fig. 47.

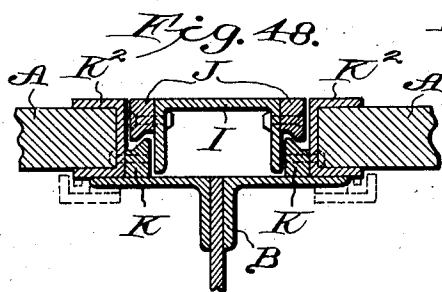


Fig. 48.

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**Aug. 7, 1928.**

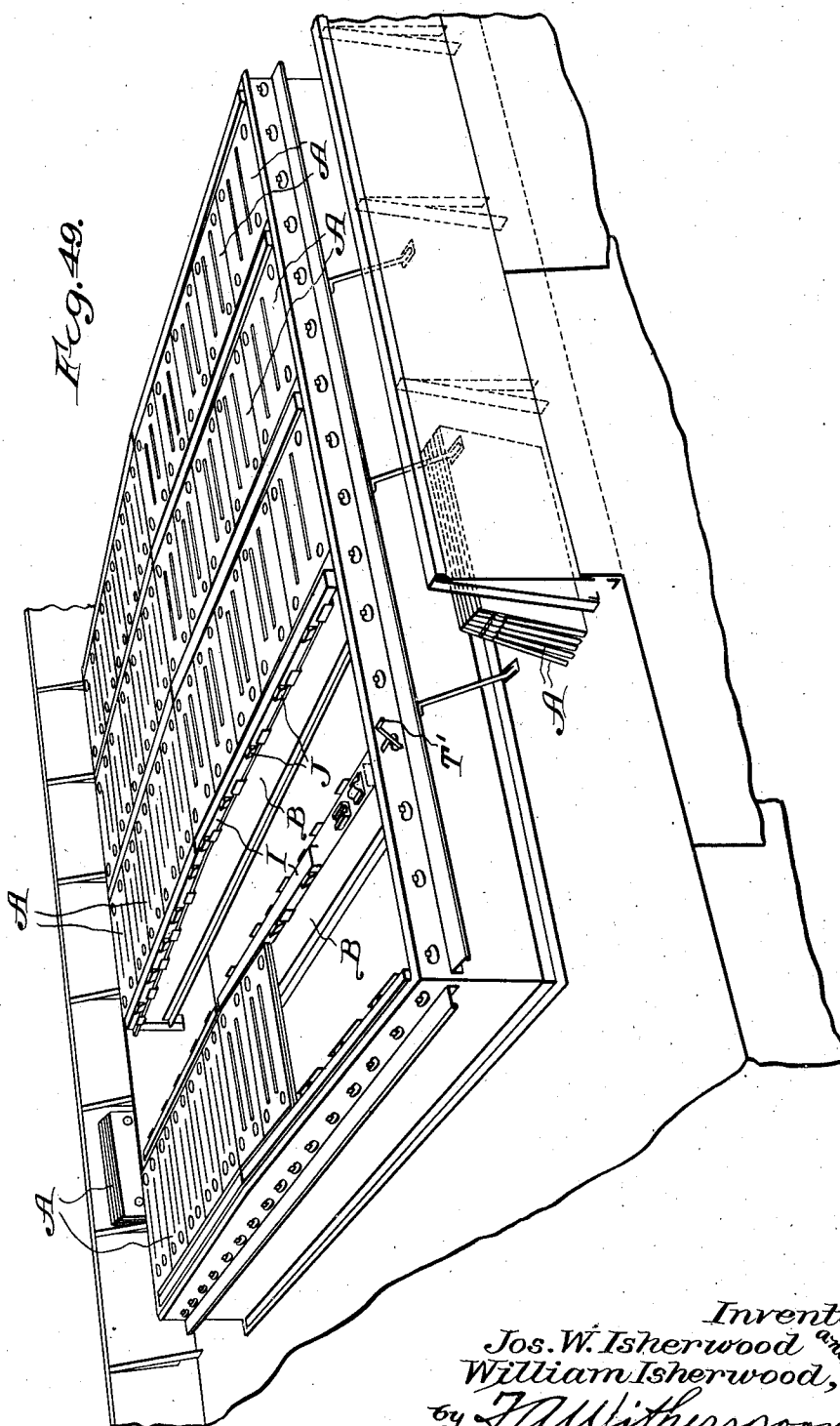
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HATCH COVER

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10 Sheets-Sheet 10



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Patented Aug. 7, 1928.

1,679,526

# UNITED STATES PATENT OFFICE.

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## HATCH COVER.

Application filed June 15, 1925, Serial No. 37,247, and in Great Britain May 4, 1925.

This invention is for improvements in or relating to hatch covers for floating vessels.

The object of the present invention is to provide a hatch cover comprising sections

5 which must, as a rule, be comparatively small and light, as otherwise as in the case of a self-trimming collier for example it is impracticable to stow them on the ship during the loading and unloading operations.

10 A hatch cover constructed according to the present invention is comprised of a plurality of comparatively small sections and means for locking the sections in position.

This may be effected by a sliding bar having means for engaging the sections and means for moving the bar.

15 In one form of construction the bar is so arranged that the first movement thereof unlocks the sections, while a further movement thereof allows the sliding bar to be removed.

20 The sliding bar may be actuated by screw gear or by other suitable means, and may also be so arranged that towards the end of its travel it engages projections on the sections whereby said sections are caused to butt against one another.

In a modification we provide means for locking each individual section.

30 The hatch covering may be provided with projections on its side or end, adapted to engage the side or end of a section.

The sections when made of metal are preferably provided with flanged or double flanged edges, so as to make them interlocking or practically so, and may if desired be fitted with grooves for the purpose of strengthening them.

40 Metal sections can be made in various ways, shaped by pressing or by other means well known to iron workers. If desired the sections can be constructed of rolled or cast plates, or the sections may be of cast steel or other suitable material in one casting or partly so.

45 It is obvious that the covers can be made with stiffening angles in lieu of flanges when and where desired.

In order to secure the hatch cover or one or more of the sections comprising it, we provide locking means which may conveniently comprise wedge shaped pieces, wedge bars, preferably of iron or steel, or locking pins engaging in eyelets of iron or steel,

55 which can be actuated by levers, screw gear or other mechanical means; it will, however, be obvious that other means of fastening can be adopted.

60 Preferably the sections are so arranged that the upper surfaces of the cover and fastenings are flush in order to prevent damage to the tarpaulins, which can be fitted above the hatch cover and secured by convenient means, for the purpose of preserving water-tightness.

65 The flush surface can be obtained by the use of channels or Z bars or their equivalent at the upper edges of the coamings, and on such of the web plates that support the covers, as may be required to suit the length of the hatches adopted.

70 In the accompanying drawings which illustrate the invention, Figure 1 is a plan, Figure 2 a fore and aft section, and Figures 3, 4 and 5 athwartship sections of a hatch cover constructed according to this invention. Figures 6 to 12 show cross sections of various types of sections of which a cover is formed. Figures 13 to 28 are local cross-sections through the webs and coamings, shewing various methods for locking the sections in position. Figures 29 to 38 are detail views shewing various means of operating the sliding bars, Figures 30 and 31 being sections on the lines 30—30 and 31—31, Figure 29, 35 Figure 33 a section on the line 33—33 in Figure 32 and Figures 36 and 37 sections on the lines 36—36 and 37—37; Figures 34 and 35. Figure 39 is a cross-section and Figure 40 a plan shewing means for drawing the sections together. Figures 41 and 42 shew in section alternative forms of sections of which a cover is formed. Figure 43 is a local section of a side coaming and a section, and Figure 44 shews an alternative method of securing the sections at the hatch end. Figure 45 is a sectional plan shewing the invention applied to sections made of wood. Figure 46 is a section of Figure 45. Figures 47 and 48 are sections of modifications. 100 Figure 49 is a perspective view shewing the general arrangement.

Figures 6 to 48 are drawn to a larger scale than Figures 1 to 5 and 49.

105 In these Figures, A are metal sections of which a hatch cover is formed, and B are webs or hatch framing for supporting the sections.

The sections are of steel plate or other suitable material of requisite thickness and stiffened by turning down or flanging the edges as shewn at D in Figures 6, 7, 8, 9 and 10 and/or with grooves or corrugations as shewn at E in Figures 9, 10 and 11, or by attaching angle or other bars as at F in Figure 12.

Additional stiffness and interlocking can be obtained by double flanging or stiffening the edges as at G in Figures 6, 9 and 10. The hook or corrugation thus formed on one section interlocks with that on the adjoining section and serves to hold it in position.

The hook portion may be of a casting or of rolled or pressed steel of long or short lengths fixed to the plate as shewn in Figure 10.

The sections may be secured at their ends by various methods such as are shewn in Figures 13 to 23, and they may also be secured at the side and end hatchway coamings as shewn in Figures 24 to 28.

In Figure 13 the sections are held in position by a sliding channel bar I, to which wedge shaped pieces J are attached and which engage with similar wedge shaped pieces K attached to the sections A. Wedge shaped pieces L, secured to the channel bar I, engage with undercut pieces M secured to the web B. The wedge pieces K on the sections are shorter than the wedge pieces M on the webs, and so arranged that these sections can be disengaged while the wedge shaped pieces L on the channel bar are still in engagement with the undercut pieces M on the web. By further lateral movement of the channel bar, these pieces L can also be disengaged and the channel bar lifted off when desired. N are angle lugs riveted to the web to position the sections A.

In Figure 14 the sections A are secured by a sliding bar O of T section to which locking pieces P are secured and which engage with locking pieces Q secured to the web.

In Figure 15 the sections are secured by a sliding bar R of I section, which engages with locking pieces S fixed to the web. In this case angle bars T are secured to the sections and stops U secured to the angle bars T to position the sections.

In Figures 16 and 17 the sections A are secured by a sliding circular bar V on which locking pieces W of wedge shape are secured. These engage with wedge pieces X secured to the sections. The bar V is slidably mounted relatively to the web by means of brackets Y.

In Figures 18 and 19 eyeplates Z are fixed to the sections. A portable rod or rods V engage with the eyeplates Z and with the brackets Y to lock the sections in position.

In Figures 20 and 21, the sections A are double flanged as shewn and are secured by a sliding bar B<sup>1</sup> which in the locked position engages wedge pieces C<sup>1</sup> secured to the web.

tion engages wedge pieces C<sup>1</sup> secured to the web.

In Figures 22 and 23 the sections are held in position by a built up bar consisting of a plate D<sup>1</sup> riveted to a T bar E<sup>1</sup>. The bar is held at one end by a projection F<sup>1</sup> which is riveted to the bar and fits into a socket G<sup>1</sup>, secured to the web, if a bar extending the length of the hatch, or a single bar be employed, or to the web at its centre, if two bars be employed. The other end of the bar or bars is secured to an angle bar on the hatch side at H<sup>1</sup>.

As additional security the sections may be secured at the sides at J in Figure 1 as shewn in Figure 24. The section is turned up at K<sup>1</sup> and is secured by a bolt L<sup>1</sup> which is held in place by eyeplates M<sup>1</sup> which are fixed to the web.

The bolts L<sup>1</sup> may be in short lengths and arranged at the joint of two sections so that one bolt secures the corners of two sections.

The ends of the sections at N<sup>1</sup> in Figure 1 may be secured as shown in the Figures 25 to 28.

In Figure 25 the sections are secured similarly to Figure 24, except that the eyeplate is secured to the hatch side instead of to the web, and the section rests on a projection O<sup>1</sup>, fixed to the hatch side.

In Figure 26 the end of the section A rests on a projection O<sup>1</sup>, secured to the hatch side and is held down by a projection P<sup>1</sup> which is also secured to the hatch side.

Figure 27 is similar to Figure 14, except that the sliding T bar O is cut away slightly at one side to suit the coaming. Q<sup>1</sup> is a locking piece secured to the coaming to engage with the locking piece on the sliding T bar.

Figure 28 is similar to Figure 16 except that the sliding wedge shaped piece W is cut away on one side to suit the fixed channel bar on the coaming.

The sections A may be secured at the sides J or ends N<sup>1</sup> in Figure 1, by the methods shown in Figures 27 and 28. Also the channel bar for supporting the section may be secured to the coaming inside the hatch, as shown in Figure 27, or secured outside the hatch as shown in Figure 28.

Figures 29 to 37 show means for actuating the sliding bars. These drawings are made to suit a sliding bar of channel section but the same arrangements can be modified to suit any of the sliding bars previously described.

Referring to Figures 29, 30 and 31 there is disclosed a thrust piece R<sup>1</sup> secured to the sliding channel bar I, as well as a screw S<sup>1</sup> operated by a key T<sup>1</sup> and working in a nut U<sup>1</sup> which is secured to the web, said screw adapted to move the channel bar in either direction by the collars V<sup>1</sup> and W<sup>1</sup> bearing on the thrust piece R<sup>1</sup>.

The thrust piece  $R^1$  is made so that the sliding bar I can be removed when required.

In Figures 32 and 33 a lug  $X^1$  is secured to the sliding channel bar I. This lug fits into an eye on a screw  $Y^1$  which is made to travel in the nut  $A^2$  secured in the casting  $B^2$ .

In Figures 34 to 37, links  $C^2$  are attached at one end to the sliding channel bar I and at the other end to cranks  $D^2$ . The cranks are provided with holes  $E^2$  which can be engaged by a lever and turned thereby to move the sliding channel bar I.

In Figure 38 a lever  $F^2$  is pivoted to one portion of a sliding bar and to one end of a link  $G^2$  which latter is pivoted to another portion of a sliding bar. When the lever  $F^2$  is depressed, the two portions of the bar are forced into the locked position; this method may conveniently be employed for locking a pair of sections in position.

In order that the cover may be practically watertight the sections A thereof can be forced or drawn together by providing the locking pieces on the sections with a projection  $K^2$ , Figures 39 and 40.

The sliding bar I is actuated by the screw gear or other means. The locking piece J on the channel bar comes in contact with the projection  $K^2$  and moves the sections until they are all butting.

If the sections are forced towards the centre of the hatch, stops are provided to position the centre sections, and projections  $N^2$  are preferably fitted at the side of the coaming to maintain the watertightness of the cover and prevent the cover lifting, as shewn in Figure 43.

Figures 41 and 42 are views of sections similar to those shewn in Figures 6 to 12, but in this case greased hemp or other material is inserted in a recess as at  $H^2$ .

By pressing or wedging the sections together with the screw gear as shewn in Figures 29 to 37, or by fitting wedge pieces between the side covers and coaming, the hatch can be made practically watertight.

The sections A, as shewn in the drawings, are (for convenience in handling) for lengths corresponding to a spacing of hatch webs of about 6 ft. it will of course be obvious that the covers can be made long enough to extend over one or more hatch webs.

The arrangements shewn in the drawings are suitable for athwartship web plate supports without fore and afters. It will be obvious, however, that analogous arrangements may be adopted with fore and aft hatch webs or with the old arrangement of web plates and wood or iron fore and afters.

Figure 44 shews an additional method for securing the sections at the hatch end. The sliding bar is of small channel section and is slidably mounted relatively to the web by

wedge shaped pieces  $O^2$  engaging wedge shaped pieces  $P^2$ . This method can be adapted to the arrangement shewn in Figures 24 to 28.

In Figures 45 and 46 A are sections which are made of wood and form a hatch cover. B is a web which extends across the hatchway and supports the sections.

I is a sliding channel bar having locking pieces J secured thereto and a thrust piece  $R^1$  which is engaged by collars  $V^1$ ,  $W^1$  fast on a screw  $S^1$  which can be operated by a key  $T^1$ .  $U^1$  is a nut which is secured to the web. The sections A are provided with metal locking pieces K which in the position shewn in Figure 45 are not engaged or locked by the locking pieces J on the bar I while in Figure 46 the locking pieces J and K are shewn in their locked position. The locking pieces K are provided with downwardly extending flanges  $K^1$  which are engaged by L pieces  $B^1$  which are fast on the web B and serve to position the sections A.

In Figure 47 the locking pieces J are provided with downwardly extending flanges  $J^1$  which engage upwardly extending flanges  $K^1$  on the locking pieces K the flanges  $J^1$  serving to position the sections A.

In Figure 48 the sections A are positioned as well as locked in position by forming the locking pieces J and K of wedge shape in cross section. The locking pieces K are fast on U shaped pieces  $K^2$  secured to the sections A. An alternative arrangement for positioning the sections A is shewn in dotted lines.

In Figure 49 which shews the general arrangement some of the sections A have been removed and stacked. It will be observed that although the hatch shewn is wide, there still remains sufficient room to allow persons to pass between the hatch and the sections when they are stacked.

#### Claims:

1. In a hatch, the combination of a cover comprising small sections, and wedging means including a sliding bar for simultaneously locking a plurality of sections together.

2. In a hatch, the combination of a cover comprising small sections, wedging means including a sliding bar for simultaneously locking a plurality of sections together and to said hatch and means to move said bar whereby when said bar has been moved to unlock the sections, a further movement thereof frees said bar and allows it to be removed.

3. A metal hatchway comprising hatch framing and coaming, a plurality of cover sections of comparatively small size, each having one or more flanged edges, and means coacting with said flanges by which said sections can be simultaneously locked in position.

4. A metal hatchway comprising hatch

framing and coaming, a plurality of cover sections of comparatively small size, each having one or more flanged edges, and means coacting with said framing and said flanges by which said sections can be simultaneously locked together in position.

5. In a hatch, the combination of a cover comprising small sections, and wedging means for simultaneously locking a plurality of sections together.

6. In a hatch, the combination of a cover comprising small sections, wedging means for simultaneously locking a plurality of sections together; and means for actuating said wedging means.

7. In a hatch, the combination of a cover comprising small sections, and means for simultaneously locking a plurality of sections to the hatch framing in interlocked relation, said means being readily removable when said sections are unlocked.

8. In a hatch, the combination of a cover comprising small sections, and stationary and movable wedging means for simultaneously locking a plurality of sections together.

9. In a hatch provided with a framing, the combination of a cover comprising interlocking sections, and wedging means adapted to engage a section for simultaneously

locking said section to another section and to said framing.

10. A metal hatchway comprising hatch framing and coaming, a plurality of cover sections of comparatively small size, each having a depending member extending along an edge portion thereof, and means coacting with said members by which said sections can be simultaneously locked in position.

11. In a hatch the combination of a cover comprising small sections, and wedging means for simultaneously locking a plurality of sections to the hatch framing in interlocked relation.

12. In a hatch the combination of a cover comprising small sections, and wedging means for simultaneously locking a plurality of sections together to said hatch in interlocked relation.

13. In a hatch the combination of a cover comprising interlocking small sections, and wedging means for simultaneously securing a plurality of sections in interlocked relation.

In testimony whereof we affix our signatures.

JOSEPH WILLIAM ISHERWOOD.  
WILLIAM ISHERWOOD.