

No. 834,287.

PATENTED OCT. 30, 1906.

E. H. FREY.
SECTIONAL COVER FOR HATCHWAYS.

APPLICATION FILED MAR. 27, 1905.

2 SHEETS—SHEET 1.

Fig. 1

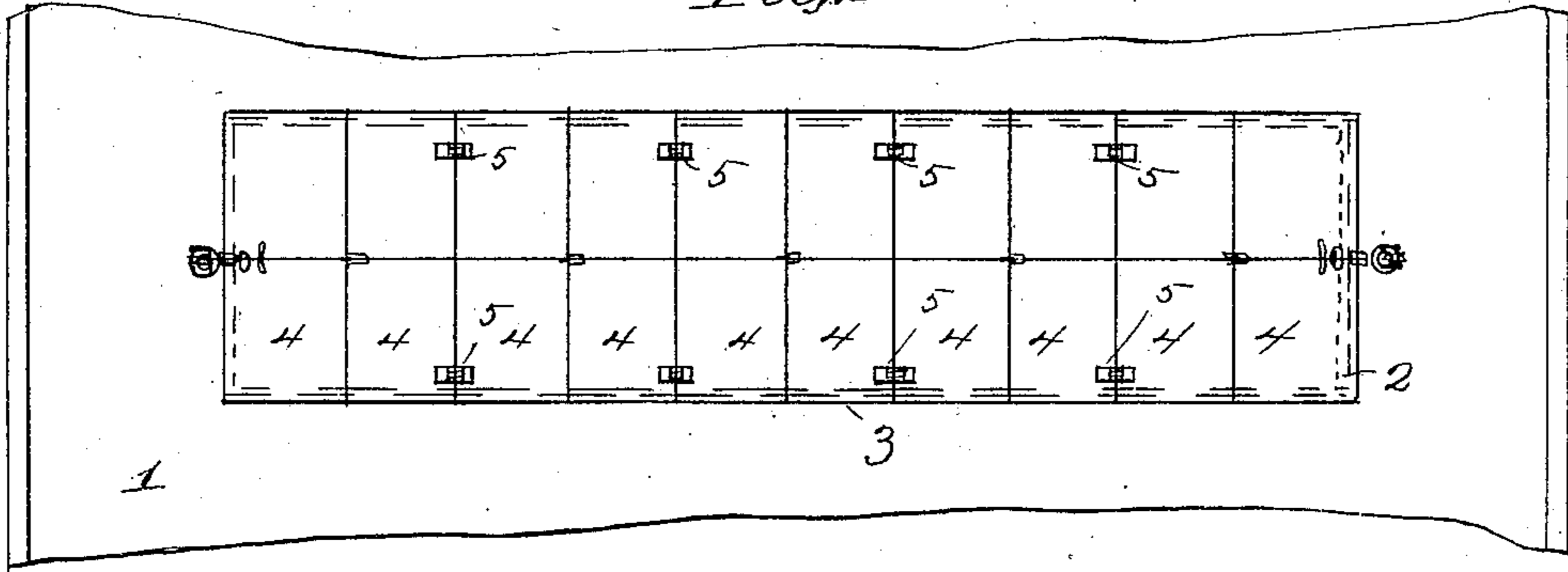


Fig. 2

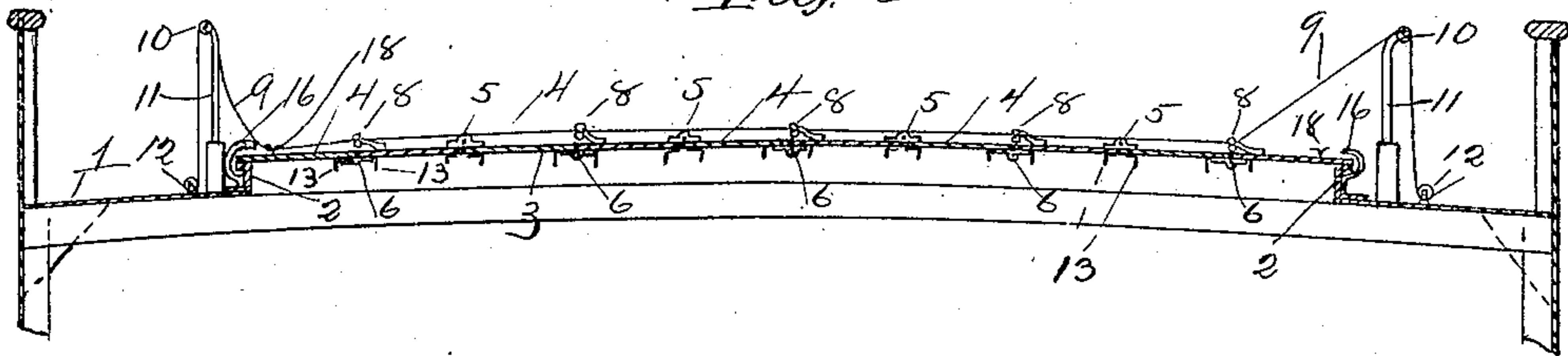


Fig. 3.

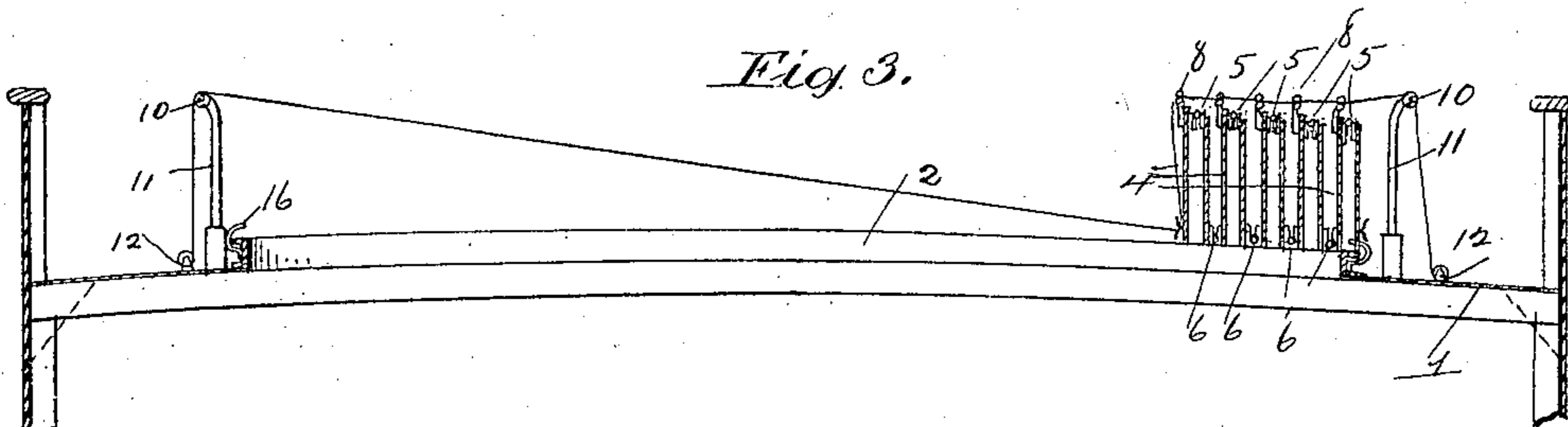


Fig. 4.

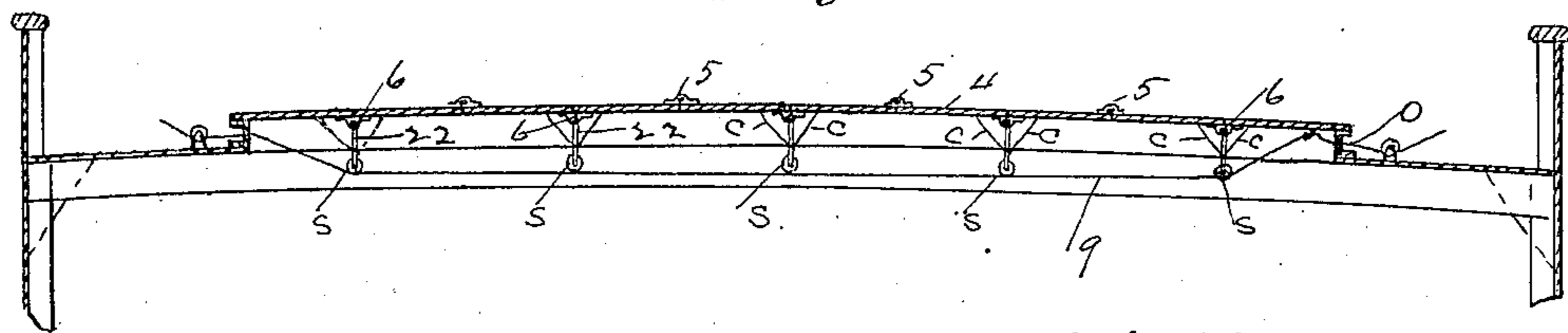
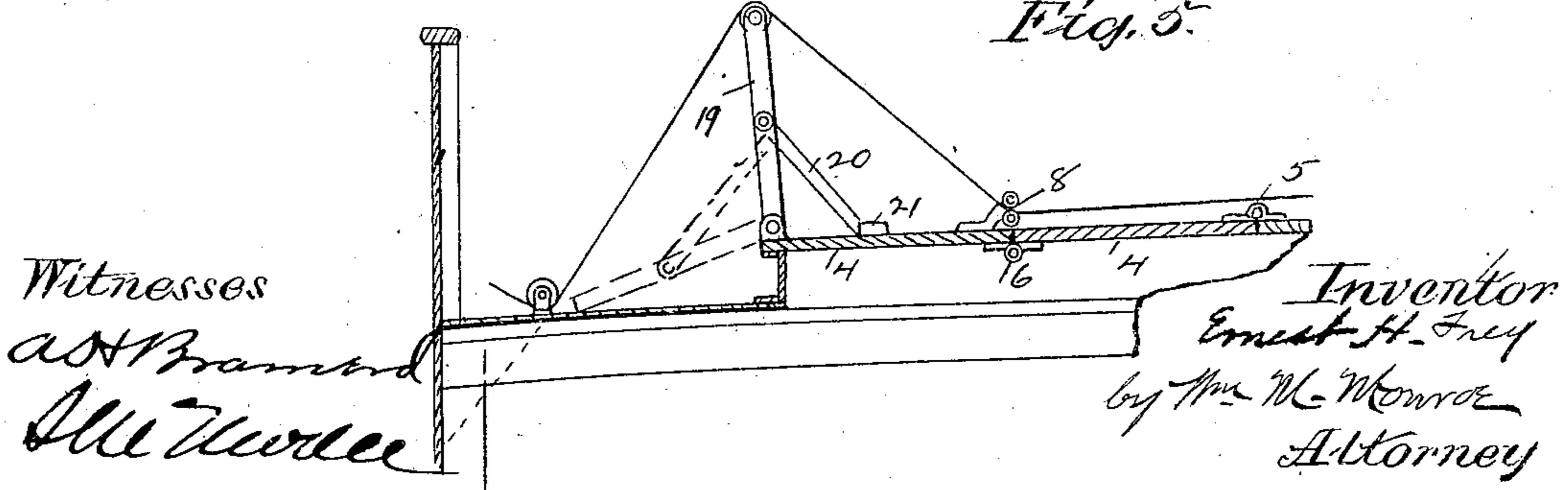


Fig. 5.



Witnesses
at Test
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2 SHEETS—SHEET 2.

Fig. 8

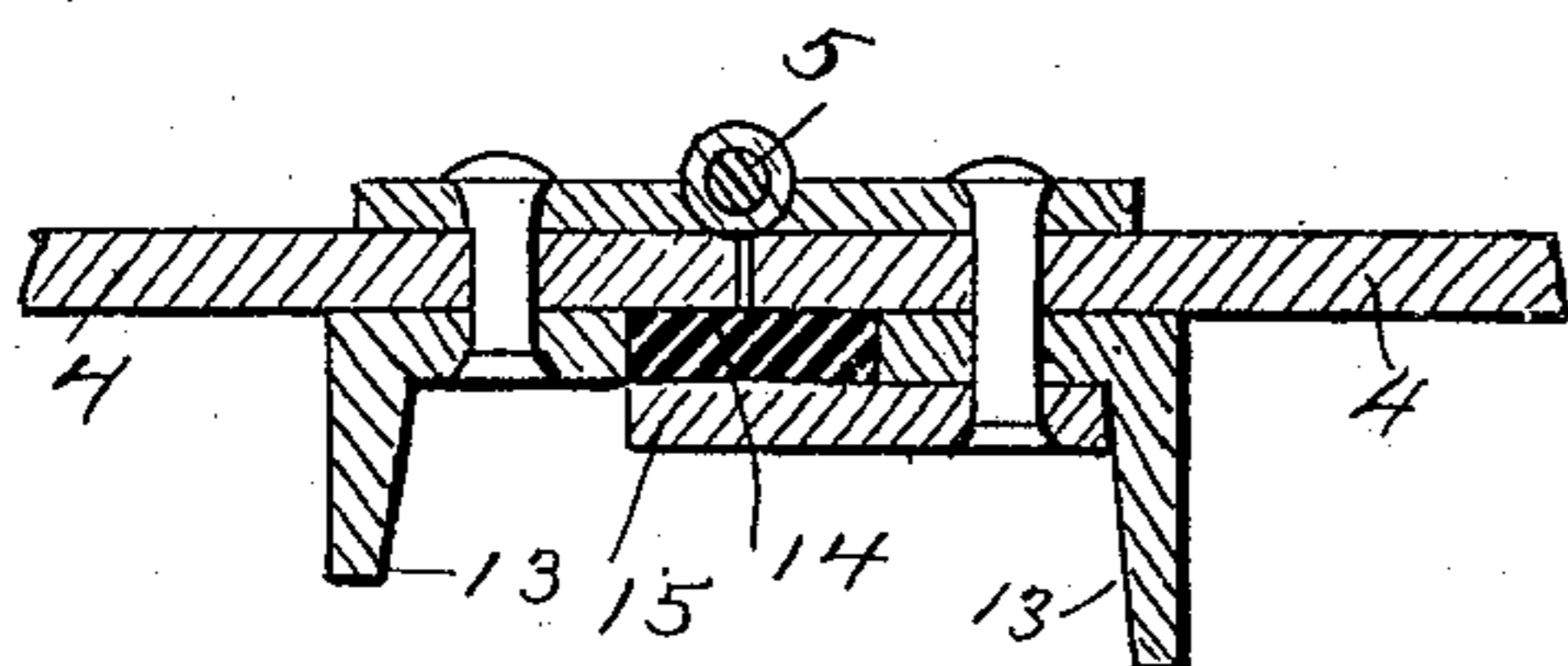


Fig. 9

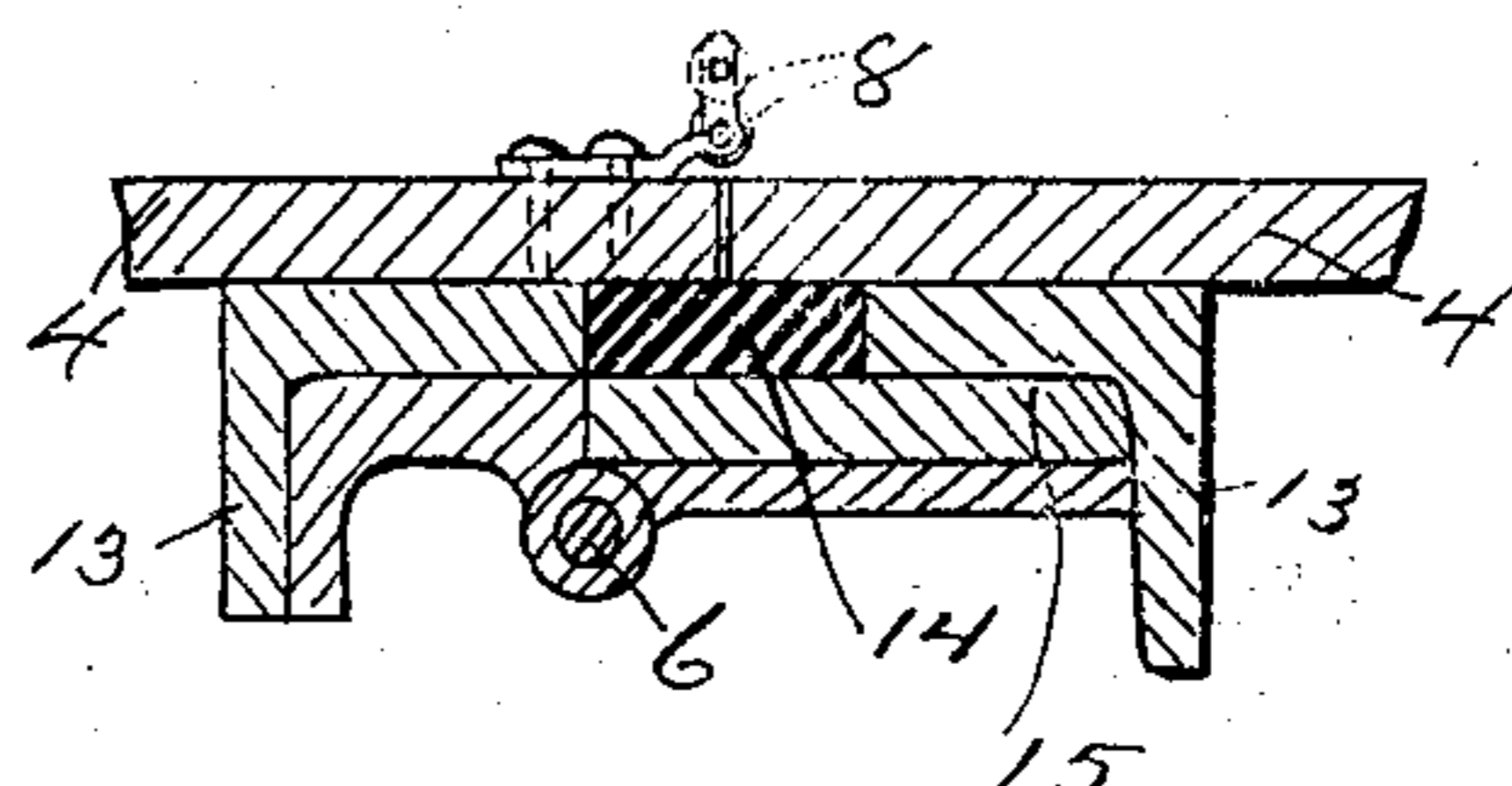


Fig. 10.

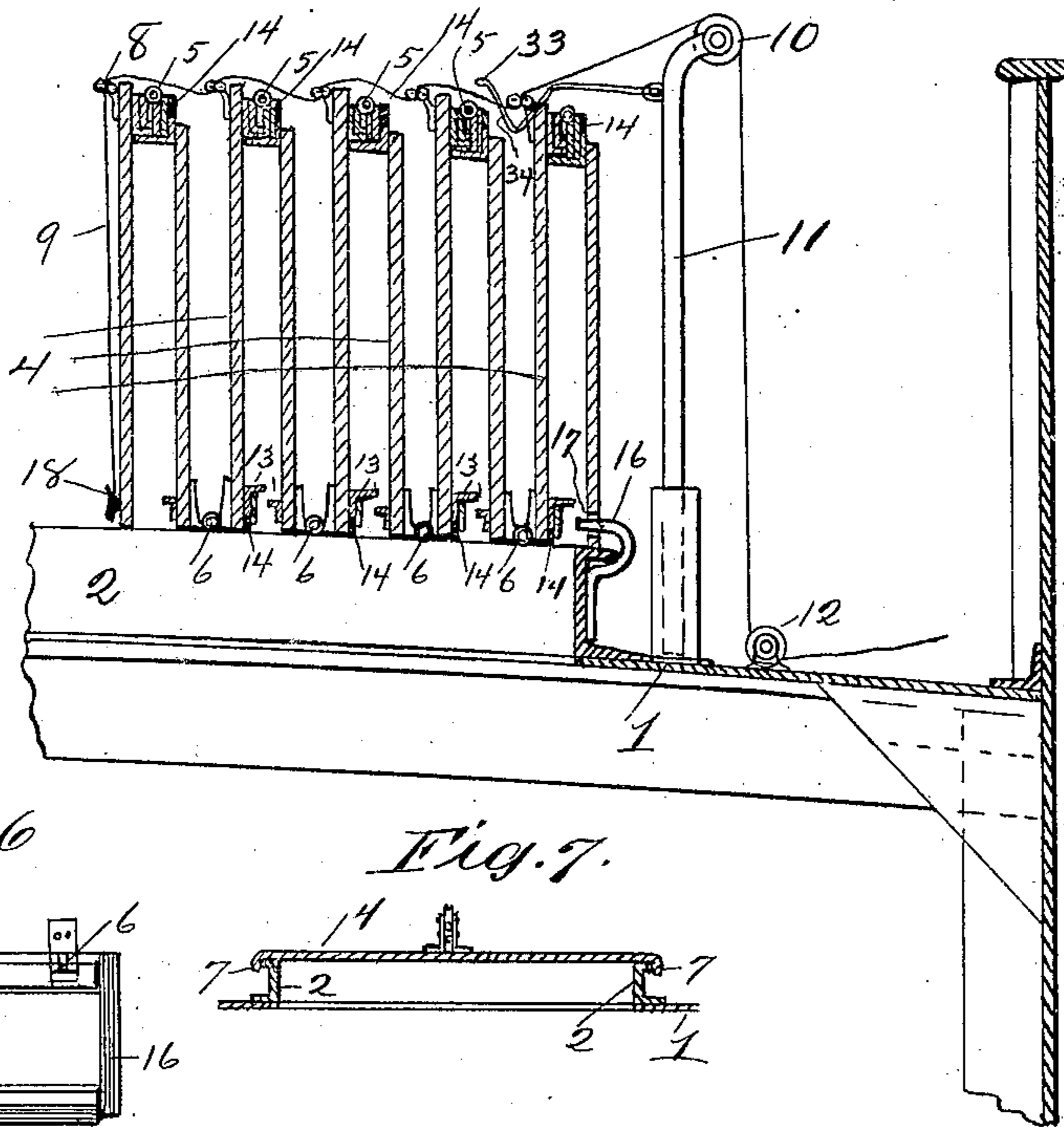


Fig. 6

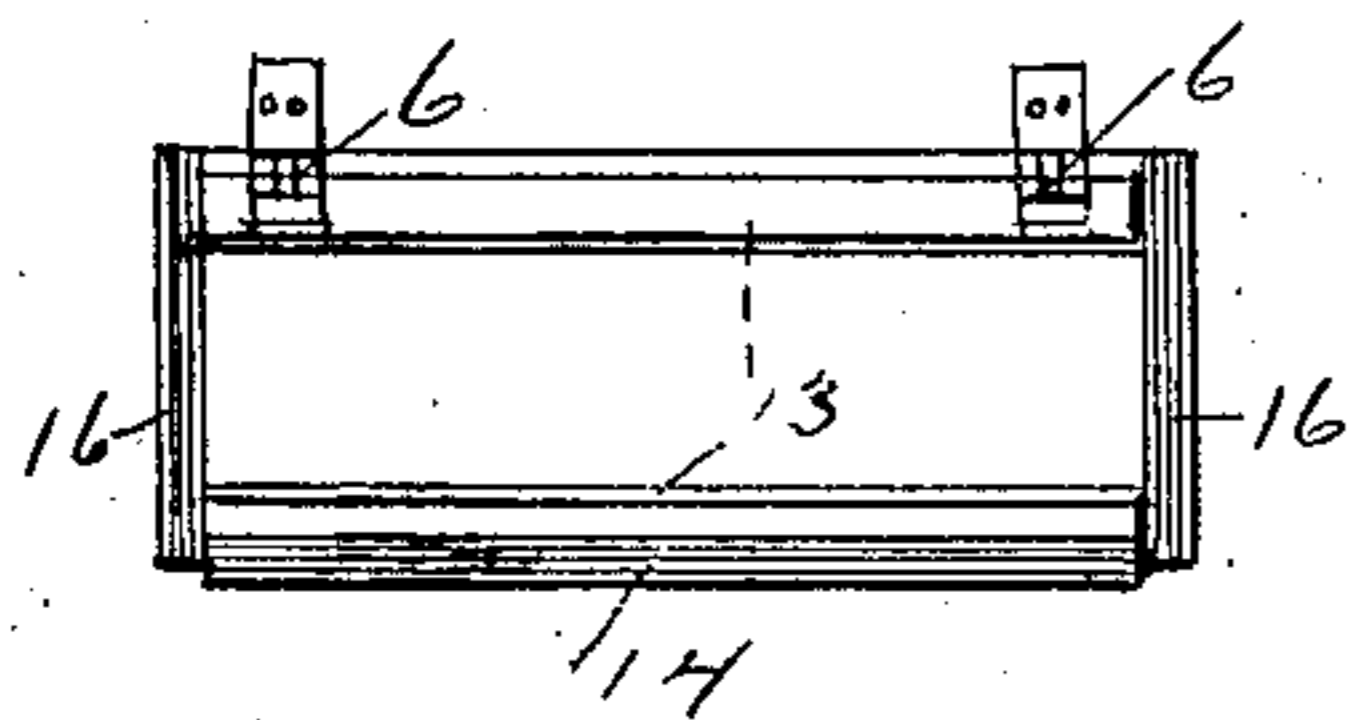


Fig. 7.

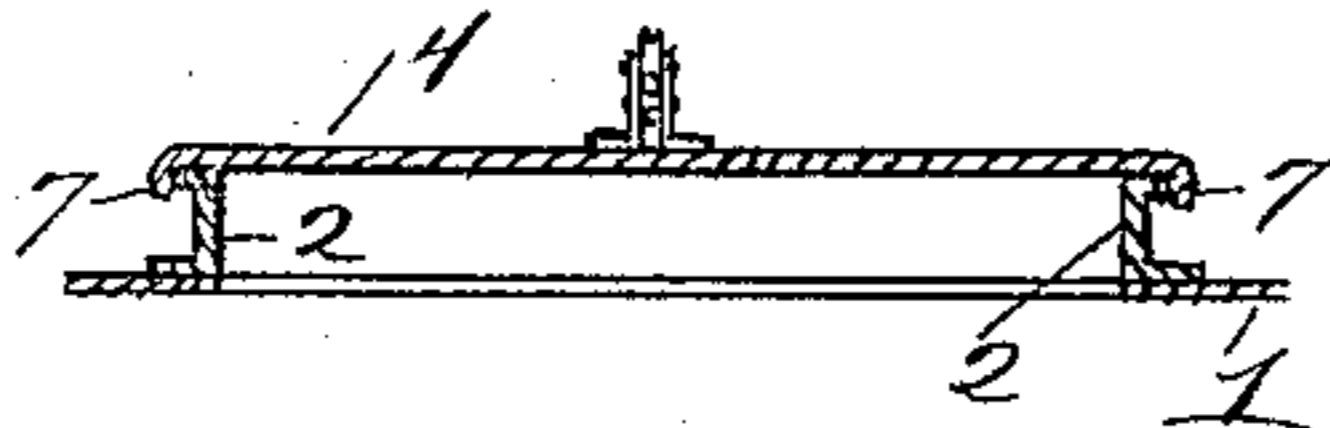
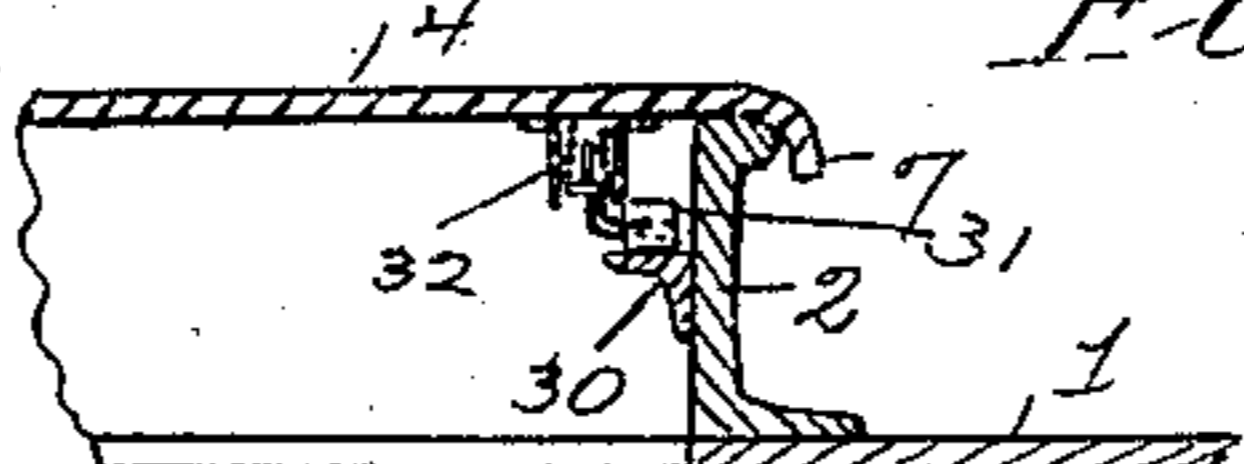


Fig. 11



Witnesses

J. M. Kille
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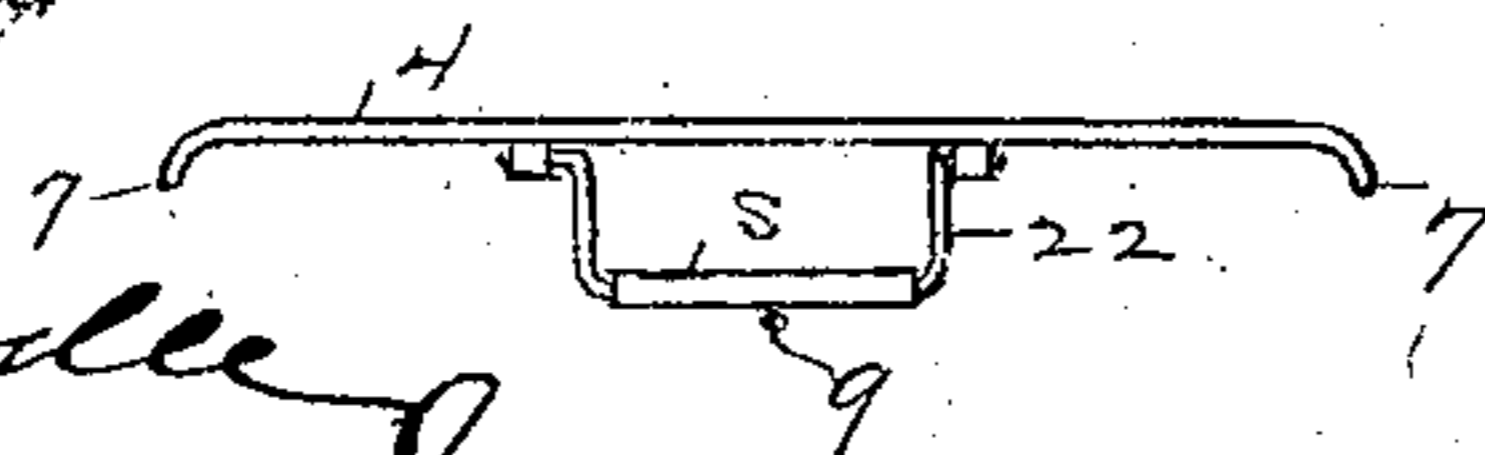


Fig. 12

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UNITED STATES PATENT OFFICE.

ERNEST H. FREY, OF CLEVELAND, OHIO.

SECTIONAL COVER FOR HATCHWAYS.

No. 834,287.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed March 27, 1905. Serial No. 252,287.

To all whom it may concern:

Be it known that I, ERNEST H. FREY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Sectional Covers for Hatchways, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of the invention are to provide means for facilitating the handling of hatch-covers for the hatch-openings of freight or other vessels, whereby this work can be done quickly and in a simple and efficient manner.

Since vessels are now being built of increasingly large dimensions and with many hatch-openings, the removal and replacing of the covers in the shortest possible time with the least amount of handling has become a matter of vital necessity. The increasing size of hatch-openings in modern vessels also makes a divisional cover a matter of necessity. I accomplish these results by means of a sectional cover, the separate divisions being flexibly secured together to permit of folding the sections together, and in the various devices for lifting and drawing together the sections on edge in a compact folded form, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 shows a plan view of the device. Fig. 2 is a transverse section of deck and hatch-covering, showing the sections extended to cover the hatch-openings and the device for gathering together and folding the sections arranged above the cover. Fig. 3 is a similar view showing the sections folded together. Fig. 4 is a similar view showing the device for gathering the sections together and folding them arranged underneath the cover. Fig. 5 shows a modification of the operating device shown in Figs. 1 and 2. Fig. 6 shows the bottom of one of the sections. Fig. 7 is an end view of the cover. Figs. 8 and 9 are sectional views showing the hinges. Fig. 10 is an enlarged portion of Fig. 3. Fig. 11 is an enlarged section showing rollers under the cover, and Fig. 12 is an end view of one of the sections shown in Fig. 4.

In these views, 1 is the deck of the vessel; 2, the coaming which encloses the open hatchway 3. The cover for the hatch-opening is

shown to comprise sections 4, flexibly united together, so that they can be folded alternately in opposite directions. This is most conveniently performed by means of hinges 5 and 6, one set having its pivotal points above the cover and the other set arranged alternately therewith, having pivotal points underneath the cover, thus enabling the sections to fold back to back, as seen in Fig. 3. These sections lie upon the coaming and their ends 7 are turned over the flange of the coaming to shed water readily. (See Fig. 7.) On every alternate joint of the sections there are mounted in suitable beamings the rollers 8 in pairs, between each pair of which passes a line 9, which may be a chain or wire rope. This line also passes over a pulley 10 upon a post 11 at each end of the hatch-opening, and thence the line passes under pulleys 12 at the foot of each post, and from thence the line runs to any convenient source of power, such as a drum or windlass upon the deck.

The pulleys upon the posts give an elevation to the line which acts when hauled from either end to give an initial rise to the first joint between the sections, to which the double rollers are attached. This act raises and folds the first two sections together, and as soon as the line tightens it raises and folds in turn the next two sections, and so on until all the sections are folded together at one end of the hatch-opening. The line can be hauled from either end and the sections folded together at either end of the hatch-opening desired, which is a very desirable quality of the device, permitting the unloading of cargo from either side of the vessel without obstruction from the folded covers.

The hatch-covers should be made of as light material as possible compatible with stiffness and are shown of sheet metal, and they are stiffened by means of angle-bars 13, riveted on the under side near their meeting edges. The ends of these bars also serve as guides, and they are made a little shorter than the sections, so that their ends engage the inner sides of the coaming and maintain the sections in true alinement. The angle-bars have an additional function—that of retaining in place the packing-strips 14, by means of which water-tight joints are formed between the meeting edges of the sections. (See Figs. 8 and 9.)

A flat metal strip 15 is riveted to the angle-bar and extends somewhat beyond it, thus clamping down the packing-strip. This

packing-strip is formed of rubber or other elastic packing. It extends beyond the edge of the section to which it is attached and abuts against the angle-bar on the adjacent section, thus making a tight joint when the hatches are closed.

Lateral strips of packing 16, Fig. 6, rest upon the sides of the coaming and insure tight joints when the usual clamps are put on. A tarpaulin may be thrown over all, if desired, since the construction does not prevent its use.

When the hatches are to be opened, it is of course necessary that the outer edge of the cover should find an abutment to strike against to prevent it from slipping over the edge of the coaming. To accomplish this and to also form a hinge upon which the outer section can turn, hooks 16 are secured to the edge of the coaming, which enter openings 17 in the edges of the outer sections as soon as they begin to rise, and thus hold them firmly in place. Upon each end section are placed keepers 18, to one of which the line is secured when that section becomes the outer section for closing or opening.

The posts at the end of the hatchway can be placed in sockets for removal or can be hinged so that they can be folded out of the way when not in use, or they can be pivoted upon the end covers, as shown in Fig. 5. In this view the posts 19 are provided with brace-bars 20 abutting against a shoulder 21 on the section, and they fold back with the section and rest on the deck at the lower end. The brace-bars then serve to prevent the folded sections from falling over upon the deck, as shown in dotted lines.

In Fig. 4 the line is seen placed under the cover. Here the end posts are dispensed with and struts 22 are employed to give the joints the initiatory lift, so that the pull upon the line will erect the sections in turn and fold them together while drawing them to the end of the hatch-opening, and openings at *c* can be made in the coaming to let the line through.

The lifting-struts are U-shaped bars hinged to the under sides of the sections, and a sleeve *s* connects them. The sleeve serves the purpose of an antifricition-roller. (See Fig. 12.) Two small chains *c* are shown holding the struts rigidly in place; but they fold up within the sections when they are folded together.

Many additional parts can be employed or modifications made without departing from the spirit of the invention. For instance, ledge-bars 30 can be added to the inner sides of the coaming, upon which rollers 31 upon the under sides of the sections can travel. These rollers have adjustable spring-bearings 32 of sufficient strength to support the sections out of contact with the coaming, and thus prevent friction upon and wear of the

packing-strips, and yet not too rigid to prevent clamping the covers tightly upon the coaming. (See Fig. 11.) Latch-bars 33 are also shown pivoted upon the posts for the purpose of securing the folded sections in their vertical position. These latch-bars are shown to be provided with inclined outer ends 34, so that the sections will lift up the latches of their own accord as they are hauled underneath them. The engaging edge of each latch is also inclined, so that while holding the sections in their vertical position the force applied to draw out the sections will lift the latches.

The device is operated as follows: Assuming the sections to be laid flat over the hatch opening and the clamps removed, the line being made fast to one end section of the cover and hauled from the other end, suitable power is applied and the line becomes taut and the tendency to straighten lifts the joint between the first two sections and the meeting edges of these sections a little and the force coming from the other end slides the other sections toward the lifting-sections, thus folding them together in the vertical position. The line then engages lower roller on the folded section and lifts the upper roller at the next joint, thus folding it up in the same way. This procedure continues until all the sections are brought together and stood on edge. To close the hatch, the line is attached to the outer section and the power applied from the other side of the ship. This straightens out the folded sections and spreads them over the hatch-opening in a horizontal position.

The advantages of the device are obvious, since the sections are folded together at the edge of the coaming, thus avoiding the obstruction of a pile of covers laid upon the deck and the interference occasioned thereby to the free passage of the deck and alleys between the hatchways.

Further advantages are found in the economy in time and labor effected by means of this appliance, and since vessels are now built with a large number of hatchways a large number of men would be required to remove and pile the covers on the deck or replace them in position.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the horizontal hatchway of a vessel, of a sectional cover therefor, hinges connecting the meeting edges of the sections, and means for drawing together and folding said covers vertically at one edge of said hatchway, and means for securing them in the vertical position the transverse edges of each cover being bent downward over the upstanding hatch to make the same water-tight substantially as described.

2. The combination with the horizontal hatchway of a vessel, of a sectional cover therefor, hinges at the meeting edges of said sections, arranged alternately above and below said sections, flexible means elevated at the ends of the hatchway above the same for drawing together and folding said sections at the edge of the hatchway, and means for folding the covers in the vertical position when drawn back, the transverse edges of each cover being bent downward over the upstanding hatch to make the same watertight substantially as described.

3. The combination with the hatchway and coaming of a vessel, of a sectional cover therefor, hinges at the meeting edges of said sections, arranged alternately above and below said sections, flexible means elevated at the ends of the hatchway above the same for drawing together and folding said sections at the edge of the hatchway, means for retaining the folded covers in the vertical position and means for sealing the joints between the sections, substantially as described.

4. In a hatchway-cover, a plurality of sections hinged together to fold upon one another, and means for drawing said sections together, consisting of pulleys upon alternate sections, a pulley and a raised standard therefor adjacent to the side of the hatchway, and a rope passing through said pulleys and secured to the terminal section, substantially as described.

5. The combination with the hatchway of a vessel, and coaming therefor, of a sectional cover resting thereon, hinges connecting the meeting edges of said sections, and arranged alternately above and below said sections, and a rope and pulley device for drawing and folding together said sections, rubber packing underneath the meeting edges of said sections, and securing-plates underneath said packing, substantially as described.

6. The combination with sectional covers, of flexible connections therefor, pairs of double rollers upon alternate sections, and a line passing between said pairs of rollers, the transverse edges of each section being bent downwardly over the upstanding hatch to exclude water therefrom substantially as described.

7. The combination with sectional covers hinged together to fold back to back, of a line engaging alternate sections and means for giving an initiatory lifting movement to successive joints of the sections, the transverse edges of each cover being bent down-

ward over the upstanding hatch to make the same watertight substantially as described.

8. The combination with sectional covers for a hatchway, hinged together, of antifriction-rollers, secured to alternate sections, a line passing between said rollers, and elevated pulleys adjacent to the end sections over which said line passes, whereby an initiatory lifting movement is given the first sections.

9. In combination with a hatch and coaming, a series of sectional covers therefor flexibly secured together, friction-rollers upon alternate sections, a post adjacent to the end of the hatch, a line passing over the sections and secured to the outer one, and engaged by said rollers, and a roller in said post over which said line passes, whereby an elevated point for the successive lifting and drawing together of the sections is secured, substantially as described.

10. The combination with a hatch-coaming and a series of sectional covers flexibly secured together, of hooks upon the ends of the hatch-coaming, and corresponding openings in the outer edges of the covers, the transverse edges of each section being bent downwardly over the upstanding hatch to exclude water therefrom substantially as described.

11. The combination with a hatch-coaming, and a series of sectional covers therefor flexibly united together, of double rollers secured to alternate sections at their joints with adjacent sections, a line passing through said rollers, end posts and elevated pulleys thereon, and means for securing the line alternately at each end of the series of sections, substantially as described.

12. The combination with a hatch-coaming, of a series of cover-sections thereon flexibly united together, a line passing over said series of sections and engaging therewith at alternate joints, and means for giving an initiatory lift to alternate joints of said sections in succession, when the line is tightened, and for drawing the sections together, the transverse edges of each section being bent downwardly over the upstanding hatch to exclude water substantially as described.

In testimony whereof I hereunto set my hand this 13th day of March, 1905.

ERNEST H. FREY.

Witnesses:

WM. M. MONROE,
GEO. S. COLE.