

W. G. WEBB & J. H. BARNARD.
FASTENING MEANS FOR SCREEN PLATES.
APPLICATION FILED JUNE 16, 1908.

959,979.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

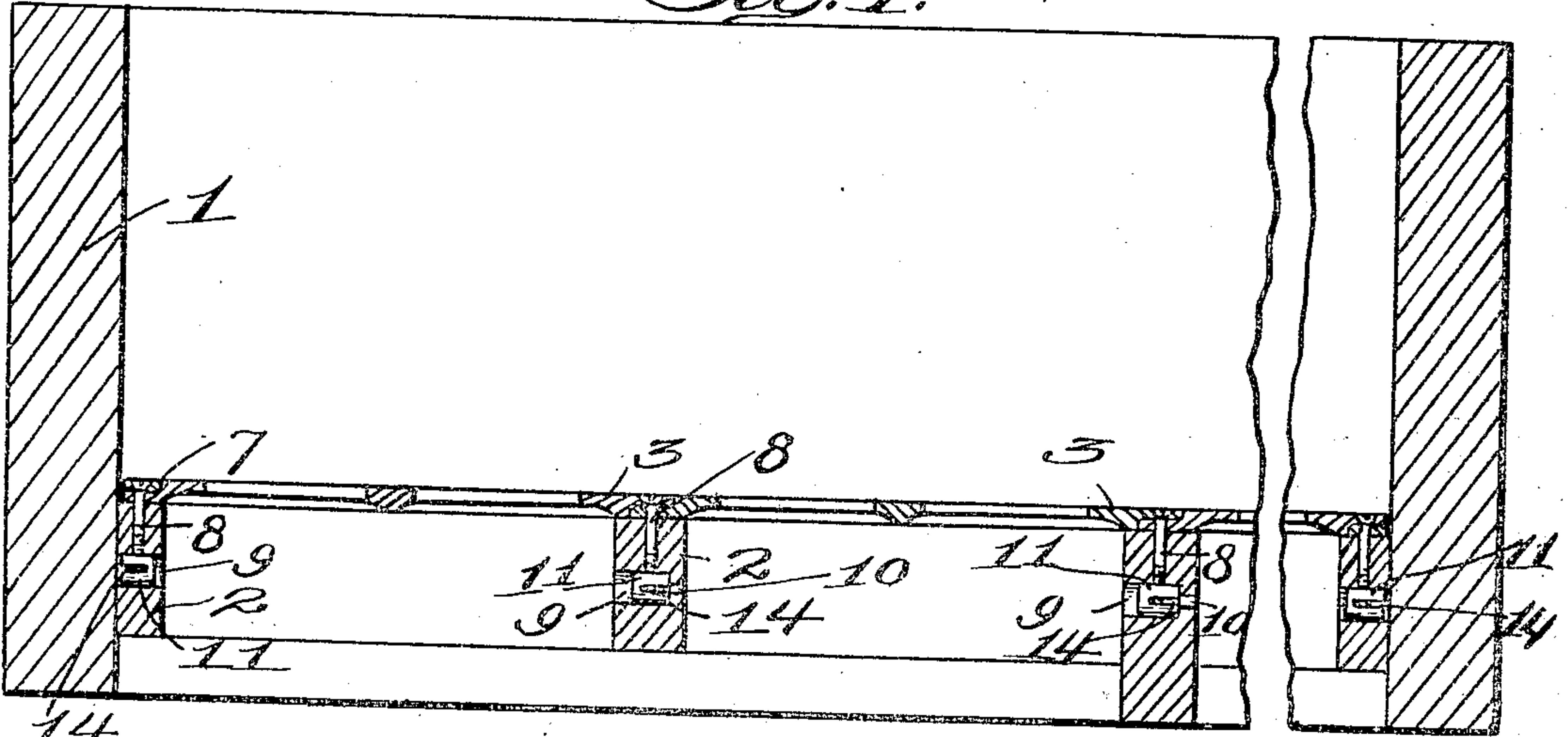


Fig. 2.

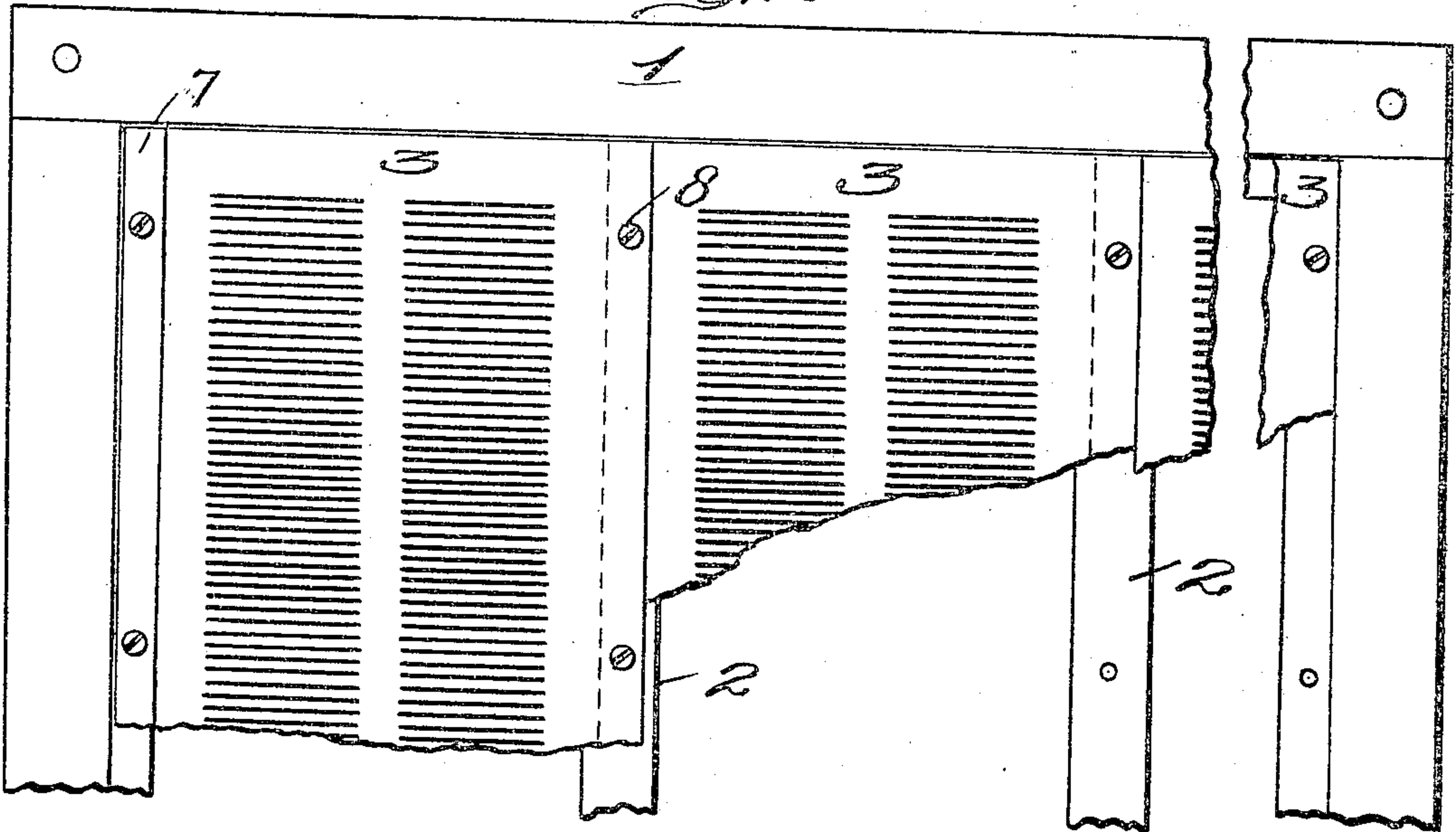


Fig. 3.

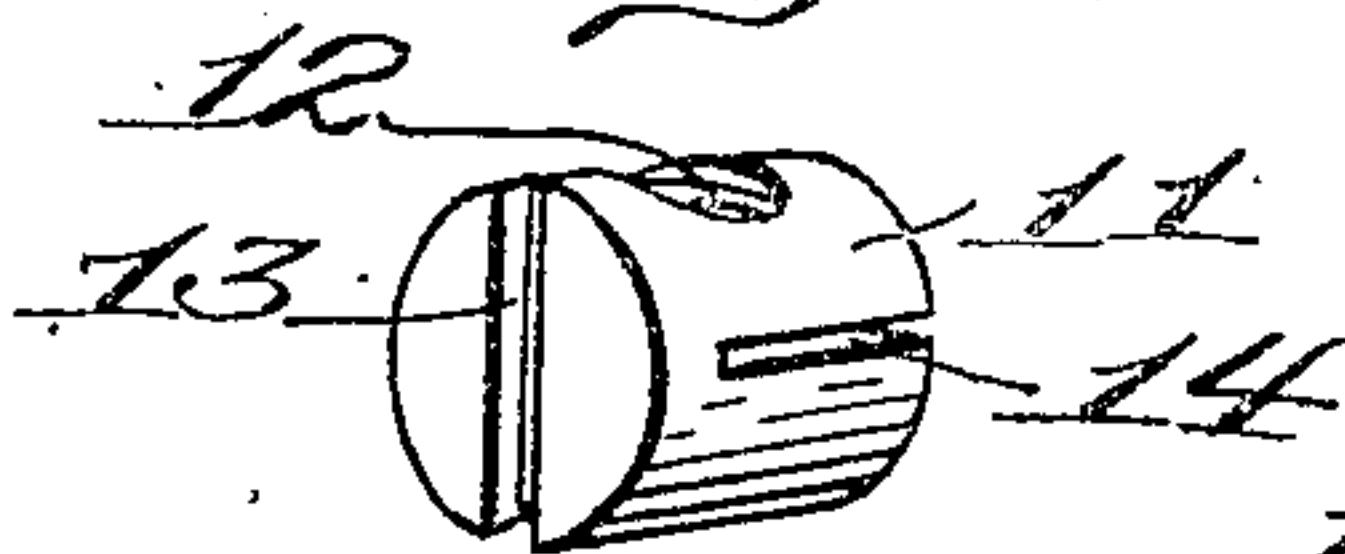


Fig. 4.

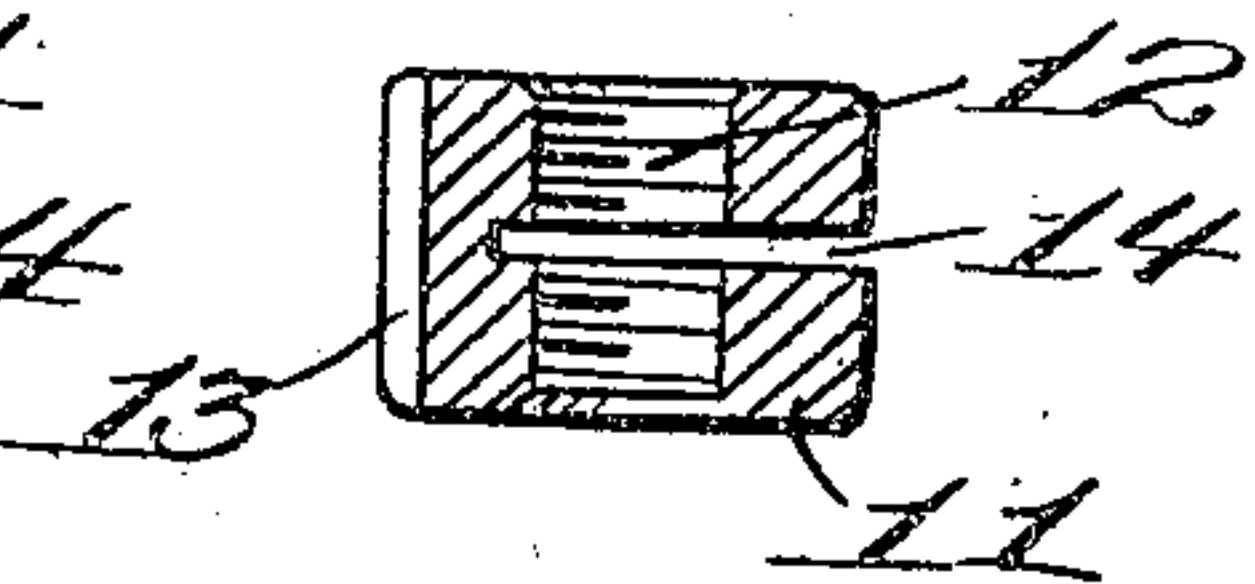
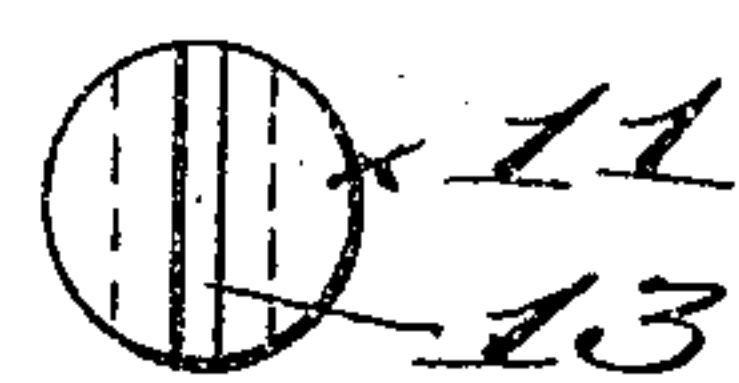


Fig. 5.



Witnesses:

E. H. Kessler

J. B. Kessler

Inventors
William Webb
John H. Barnard

By James L. Norris

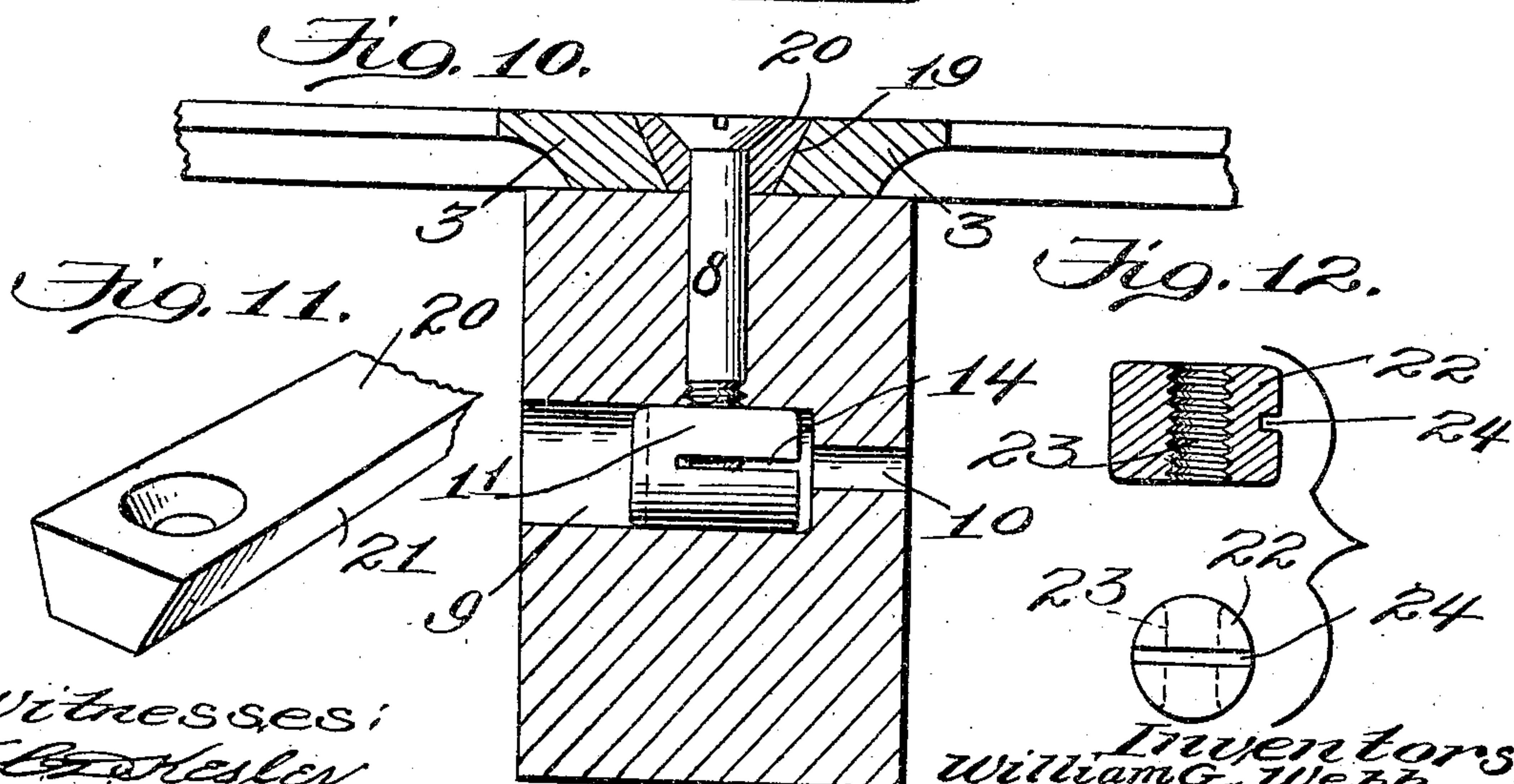
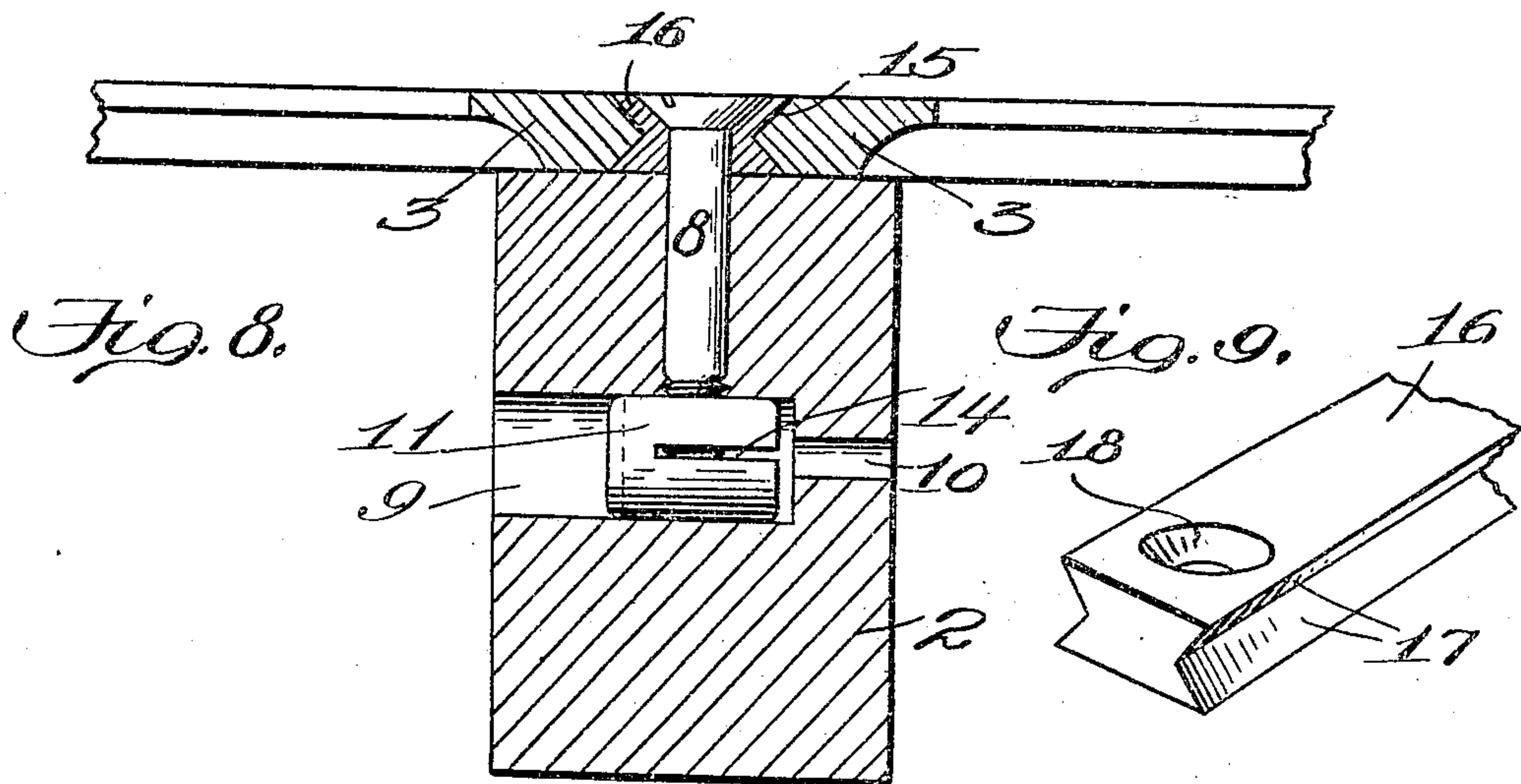
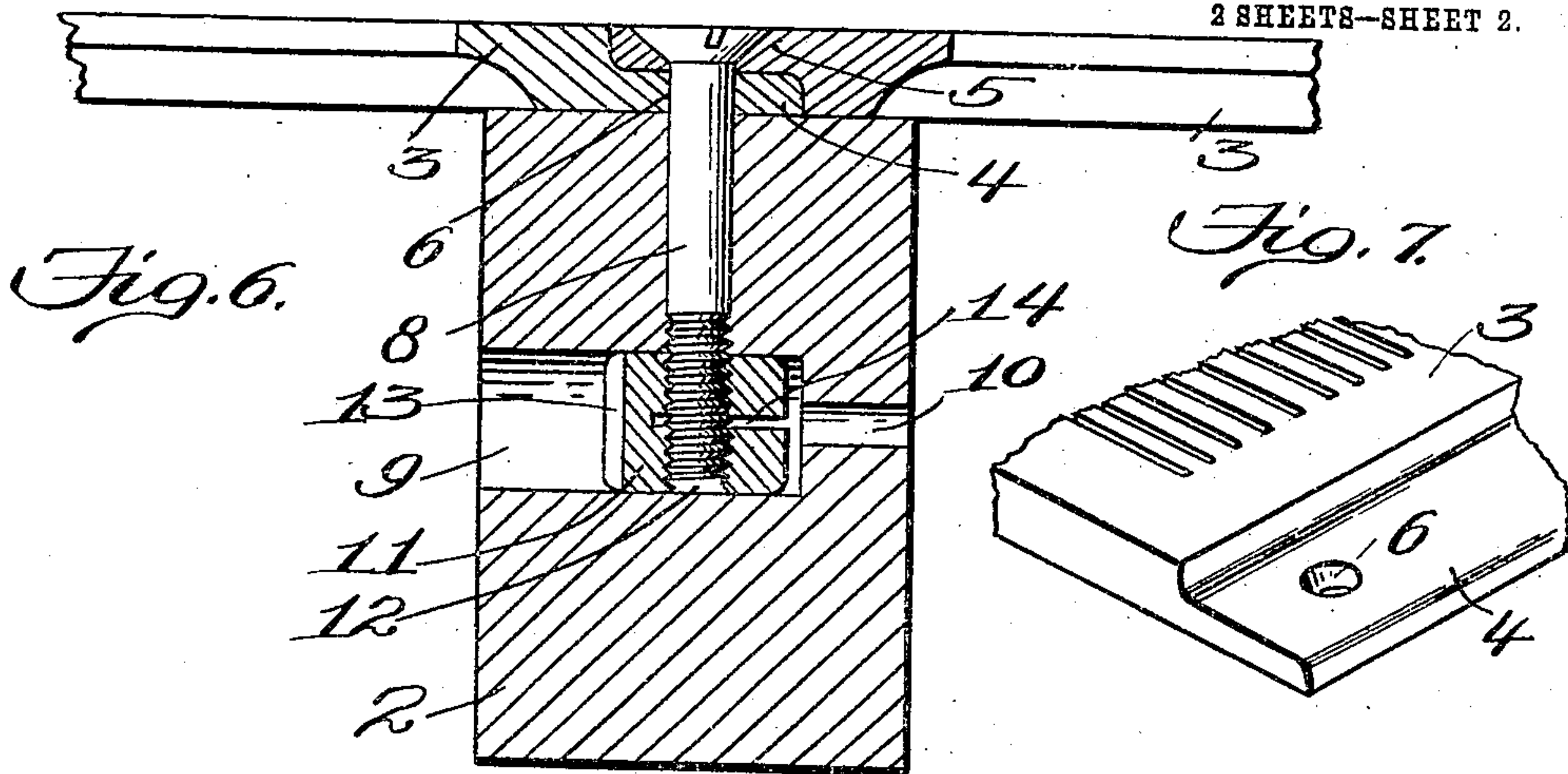
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2 SHEETS—SHEET 2.



Witnesses:
Charles Hester
J. B. Keeler

Inventors
William G. Webb
John H. Barnard
By *James L. Norris*

UNITED STATES PATENT OFFICE

WILLIAM G. WEBB, OF GLENS FALLS, AND JOHN H. BARNARD, OF SANDY HILL,
NEW YORK.

FASTENING MEANS FOR SCREEN-PLATES.

959,979.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed June 16, 1908. Serial No. 438,785.

To all whom it may concern:

Be it known that we, WILLIAM G. WEBB and JOHN H. BARNARD, citizens of the United States, residing, respectively, at
5 Glens Falls and Sandy Hill, in the counties of Warren and Washington, respectively, State of New York, have invented new and useful Improvements in Fastening Means for Screen-Plates, of which the following is
10 a specification.

The present invention relates to improvements in fasteners for screen plates generally, and especially of the type used in paper and pulp mill machinery, and it has for
15 its object primarily to provide simple and improved means for fastening or securing the flat screen plates in position upon the appropriate supporting frame whereby a secure joint between adjacent plates is insured, and it is possible to keep the apparatus in good repair by handling or holding
20 in reserve relatively few parts, the fastening means being such as to enable a defective or worn plate to be readily removed and replaced by another one, and rendering
25 it possible to easily tighten the joints between the plates should such joints loosen because of vibration or from other causes.

Another object of the invention is to provide an improved fastening of this character whereby it is possible to secure the adjacent screen plate edges by means of a single row of fastening screws or bolts so that the underlying bars of the supporting plates
35 may be made relatively light, and the labor and expense of providing a large number of screws and bolts and corresponding apertures in the supporting bars and screen plates is obviated.

A further object of the invention is to provide improved means for applying the nuts to the screen supporting bars and also to provide an improved form of nut which facilitates the positioning thereof so as to
45 receive the screw or bolt and also serves to automatically lock itself to the screw or bolt so as to eliminate or minimize the tendency of the nuts or screws to loosen.

To these and other ends, the invention
50 consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.
55

In the accompanying drawing:—Figure 1 is a sectional view of a vat provided with a number of screen plates which are mounted and fastened therein in accordance with the present invention; Fig. 2 is a plan view of
60 the portion of the vat and the screen plates as shown in Fig. 1; Figs. 3, 4 and 5 are detail views of a nut which is preferably employed to secure the screws or bolts which fasten the screen plates; Fig. 6 is a detail
65 sectional view on an enlarged scale showing the manner of mounting and securing the screen plates in accordance with that form of the invention shown in Figs. 1 and 2; Fig. 7 is a detail perspective view of one
70 edge of a screen plate showing such edge reduced in thickness to form a lap joint; Figs. 8 and 10 are views similar to Fig. 6 showing other forms of joints for uniting and securing adjacent screen plates in accordance
75 with the present invention; Figs. 9 and 11 are perspective views of portions of the locking strips or rails such as used in connection with the joints shown in Figs. 8 and 10, respectively; and Fig. 12 is a detail view
80 of another form of nut which may be employed.

Similar parts are designated by the same reference characters in the several views.

The present invention provides means for
85 uniting and securing the adjacent edges of screen plates and analogous parts as used in various connections, although it is particularly adapted for use in securing the screen plates such as employed in pulp vats
90 which are used in connection with paper-making machinery.

In the drawing, we have shown several forms of the invention, but it will be understood that these forms are merely certain
95 specific embodiments of the invention, and that the invention is not necessarily so limited, certain modifications in the specific construction of the parts and changes in the relative relation thereof being contemplated
100 whereby the invention may be applied to the best advantage in each particular case. It is to be observed, however, that in all forms of the invention shown in the present instance, the adjacent edges of the screen
105 plates are secured by a single row of screws or bolts so that the labor of applying and removing the plates is minimized, and supporting rails of relatively small size may be employed.
110

In the present instance, the screen plates are mounted within a vat or other suitable receptacle 1, the latter having a supporting frame formed in the lower portion thereof which is composed of a suitable number of cross bars 2 upon which the edges of the screen plates 3 rest. These screen plates are preferably composed of flat metal sheets which may be of the standard size and are slotted as usual for the passage of the material to be screened. In the present instance, these plates extend transversely across the bottom of the vat, and in that form of the invention shown in Figs. 1, 2, 6 and 7, one edge, the longitudinal edge in the present instance, of each plate is provided with a lower tongue 4, the thickness of which is equal substantially to half the thickness of the adjacent portion of the plate and projects laterally therefrom a suitable distance to provide an efficient joint, and the opposite edge of the plate is provided with a corresponding upper or overhanging portion or tongue 5 which is also of a thickness equal substantially to half the thickness of the adjacent portion of the plate and is of the same length as the lower tongue or portion 4. These upper and lower tongues or portions are preferably substantially rectangular in form excepting that their edges are by preference curved so as to insure the maximum strength. In assembling the plates, the overhanging tongue or portion 5 of one plate is fitted over the lower tongue or portion 4 of the adjacent plate which rests upon the top of the appropriate supporting rail 2, a similar joint being provided between the edges of all the plates. These cooperating tongues or reduced portions of the plates thus form a lap joint, and the upper and lower tongues are provided with apertures 6 which register when the tongues are assembled to form the joint. The upper edges of the end plates, of course, have no adjacent plate to cooperate therewith, and in that instance, a strip 7 may be provided which is equal to the dimensions of the respective tongue so as to fill the recess provided at the top or bottom thereof as the case may be.

Into the registering apertures of the cooperating tongues are fitted screws or bolts 8 which are preferably provided with flat heads which are adapted to lie flush with the upper surface of the plates, and for this purpose, are countersunk. In some cases, it may be possible to employ an ordinary wood screw, the threaded end of which enters the rail 2 which is usually of wood, but it is preferable to employ a machine screw for this purpose, the lower end of which is threaded as usual.

The present invention provides an improved means for applying a nut to the screw whereby the latter is secured in

place, it consisting in providing an aperture 9 which extends into the supporting rail 2 from one side thereof, this aperture being preferably formed by boring a cylindrical hole. A relatively smaller aperture 10 may extend into the aperture from the opposite side of the rail for a purpose to be hereinafter mentioned. Into this aperture in the rail is fitted a nut 11 which is preferably of cylindrical form, it being convenient to construct these nut sections of a rounded rod. This nut is provided with a tapped opening 12 which extends therethrough on an axis transverse to the axis of the cylinder and is adapted to receive the threaded end of the screw or bolt. In order to facilitate the positioning of the nut so as to enable the threaded end of the screw or bolt to readily enter it, the nut is preferably provided at one or both ends with a slot 13 which, in that form of the invention shown in Figs. 3 to 6, inclusive, extends parallel to the tapped opening of the nut, these slots being adapted to receive a screw-driver or other implement whereby the nut may be rotated or otherwise manipulated so as to bring the threaded opening into position to receive the threaded end of the screw or bolt, the screw-driver being inserted either from the open end of the aperture 9 or through the reduced opening 10 at the opposite side of the supporting bar or rail. In order to eliminate or minimize the tendency of the nut to loosen because of the vibration of the screen, this nut is preferably provided with a slot 14 which is formed therein on a diameter transverse to the tapped opening therein and projects slightly beyond the same, a wedge being driven into this slot so as to slightly spread the upper and lower sections of the nut, or, the slot can be closed by compressing the nut sections, as shown in Fig. 4, this spreading or closing of the nut sections being accomplished before the application of the nut to the bolt. As the screw or bolt is entered in the tapped opening of the nut, a binding action will be produced between the screw and the tapped portions of the nut, and this binding action will tend at all times to prevent loosening of the screw or bolt with respect to the nut.

In that form of the invention shown in Figs. 8 and 9, the edge of each plate is provided with a pair of reversely-beveled edges 15 which, when the plates are assembled, are slightly separated from one another, and a locking rail or strip 16 is provided, the opposite longitudinal edges of which are provided with reversely-inclined walls or surfaces 17 which are adapted to cooperate with the correspondingly inclined walls formed on the cooperating edges of the screen plates. This locking bar or strip is interposed between the adjacent edges of the

screen plates, it being introduced by arching the plates or otherwise manipulating them, and the locking bar or strip is provided with a suitable number of apertures 18 which receive the row of fastening screws or bolts 8 which may be applied in the same manner shown in the preceding form of the invention. In this form of the invention, displacement of the plates is obviously prevented by means of the cooperating inclined walls formed respectively on the edges of the plates and the locking bar or strip.

In that form of the invention shown in Fig. 10, the edges of the plates to be secured are provided with beveled or inclined walls 19, the wall of one plate being inclined in reverse relation to that on the adjacent wall of a cooperating plate, and the plates in this instance, are secured by means of a locking bar or strip 20 having on each longitudinal edge an inclined or undercut wall 21, the wall on one edge of the strip or bar being inclined in reverse relation to that on the opposite edge thereof, and the locking bar in this instance also is held down or secured by means of the row of screws or bolts 8.

If preferred, a nut of the construction shown in Fig. 12 may be employed instead of that shown in the preceding figures, the nut in this instance, comprising a cylindrical body 22 having a tapped opening 23 for the threaded screw end, and this nut is provided preferably with a slot 24 which extends into one end of the nut in a plane transverse to the axis of the threaded opening, this slot being adapted to receive the end of a screw-driver or other appropriate implement whereby the nut may be turned or otherwise manipulated so as to facilitate the introduction of the screw or bolt into the threaded opening thereof.

The present invention provides improved means for securing or fastening screen plates and other suitable devices in position, and in each form of the invention shown, a single row of screws or bolts serves to secure the adjacent edges of each pair of plates so that a minimum number of screws or bolts may be employed, thereby cheapening the cost of construction and reducing the labor required in fitting these bolts and their cooperating nuts to the supporting bar or rail, and moreover, the improved joint formed between the adjacent edges of the screen plates not only serves to efficiently retain the plates in position, but also provides a flush and neat joint between the plates. Moreover, the improved manner of fitting the nut into the supporting bar or rail lessens the labor involved and in addition, it provides an improved form of nut which is capable of being readily manipulated so as to enable the screw or bolt to enter it, and in one form of the nut, the tendency of

the screw or bolt to loosen with respect thereto, is eliminated or minimized.

Screen fasteners constructed in accordance with the present invention are capable of being used in connection with screen plates or vats having supporting frames of any desired construction, and the improved fastener can be readily applied to old screens wherein the plates are attached by means of the usual wood screws by removing such wood screws and replacing them with the improved fastener. In the ordinary construction wherein wood screws are employed for securing the plates, considerable trouble is always experienced because of the breaking off of the screws or the loosening thereof due to vibration, and after the screws have once broken off or become loosened, it is practically impossible to apply a new screw to the same hole. These practical difficulties, however, are obviated by the present invention.

What is claimed is:—

1. The combination of a pair of screen plates having their adjacent edges engaging one another in overlapped relation, the overlapped portions of the plates having registering apertures, a frame having a supporting bar arranged beneath the overlapped portions of the plates, and fastening means extending through the registering apertures of the overlapped portions of the plates to lock such plates from relative separation or shifting movement, said fastening means being also secured to said supporting bar to hold said plates rigidly thereon.

2. The combination of a pair of screen plates having cooperatively arranged adjacent edges, a bar for supporting the plates and having a transverse cylindrical opening extending into the same from one side and also having a second opening leading into the opening first mentioned from the opposite side of the bar, screws for fastening the plates in cooperative relation with said bar, and a nut for each screw, said nut being of cylindrical form and arranged within the cylindrical opening of the bar, the nut having a diametrical tapped opening cooperative with its respective screw, the nut also having a diametrical tool-receiving slot exposed at one end thereof and a slot extending inwardly from its opposite end to a point beyond the tapped opening to form a second tool-receiving portion and also serving to divide the nut whereby a binding action is produced between the divided portions of the nut and the screw.

3. The combination of a pair of screen plates having cooperatively arranged adjacent edges, a bar for supporting the plates, a screw for securing the plates in cooperative relation with said bar, and a nut having a cylindrical exterior and provided with a diametrical tapped opening to receive said

screw, the nut being divided in the direction of its axial length by means of a slot extending transversely of its axis, the divided sections of the nut being sprung apart so as to
5 produce a binding action upon the spring when the latter is introduced into the nut.

4. The combination of a pair of screen plates having coöperatively arranged adjacent edges, a bar for supporting the plates
10 and provided with cylindrical openings extending inwardly from its opposite lateral sides, a screw for securing the plates in co-operative relation with said bar, and a cylindrical nut engaged in the correspondingly
15 formed aperture of the bar and having a

diametrical tapped opening coöperating with the said screw, the opposite ends of the nut being provided with slots to receive an appropriate implement introduced from either side of said bar whereby the nut may
20 be turned about the axis of its cylindrical form so as to receive the screw.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

WILLIAM G. WEBB.
JOHN H. BARNARD.

Witnesses:

TRUE M. AVERY,
MABEL R. WEBB.