

No. 697,299.

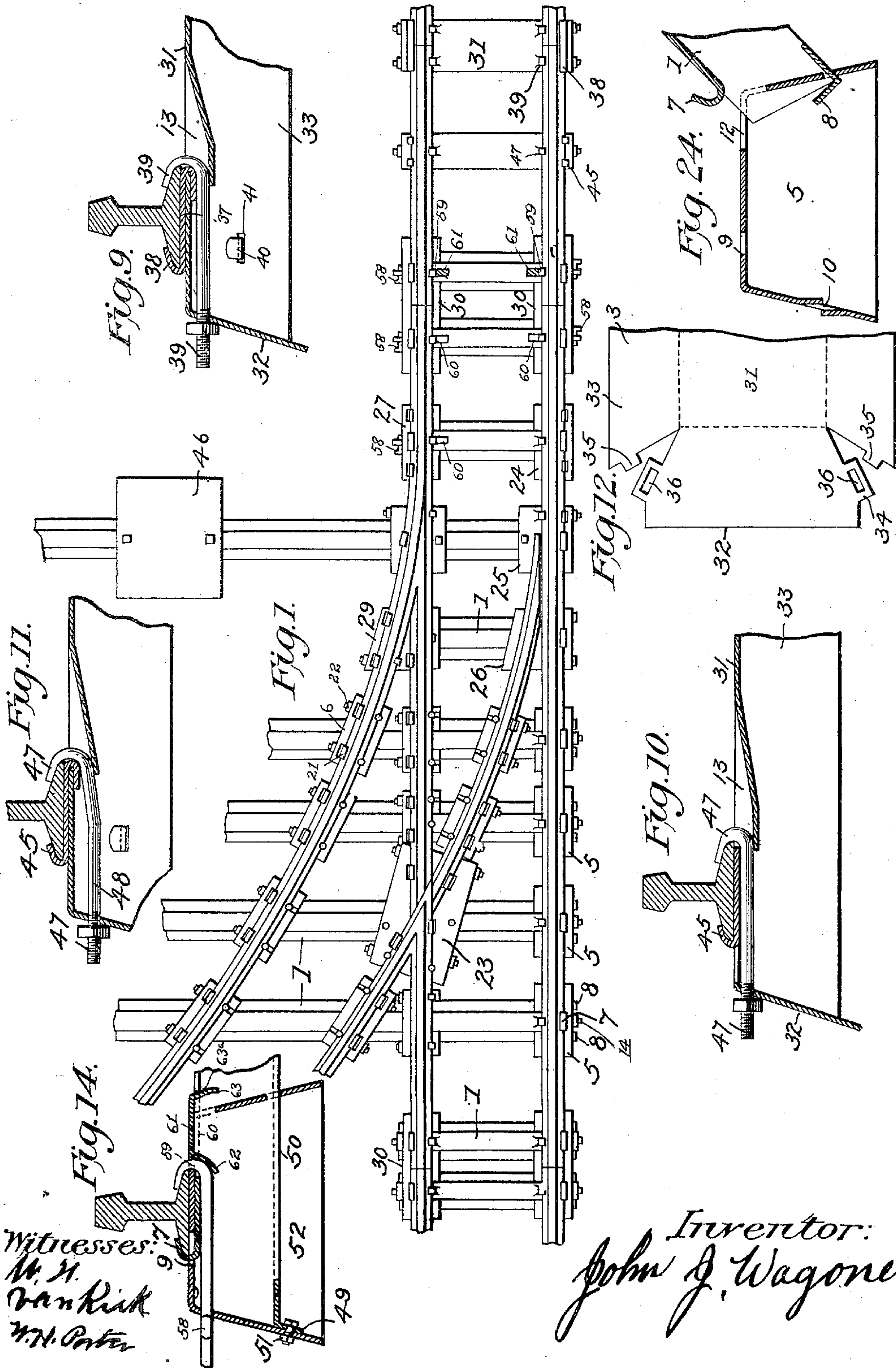
Patented Apr. 8, 1902.

J. J. WAGONER.  
METALLIC CROSS TIE.

(Application filed Aug. 21, 1901.)

(No Model.)

3 Sheets—Sheet 1.



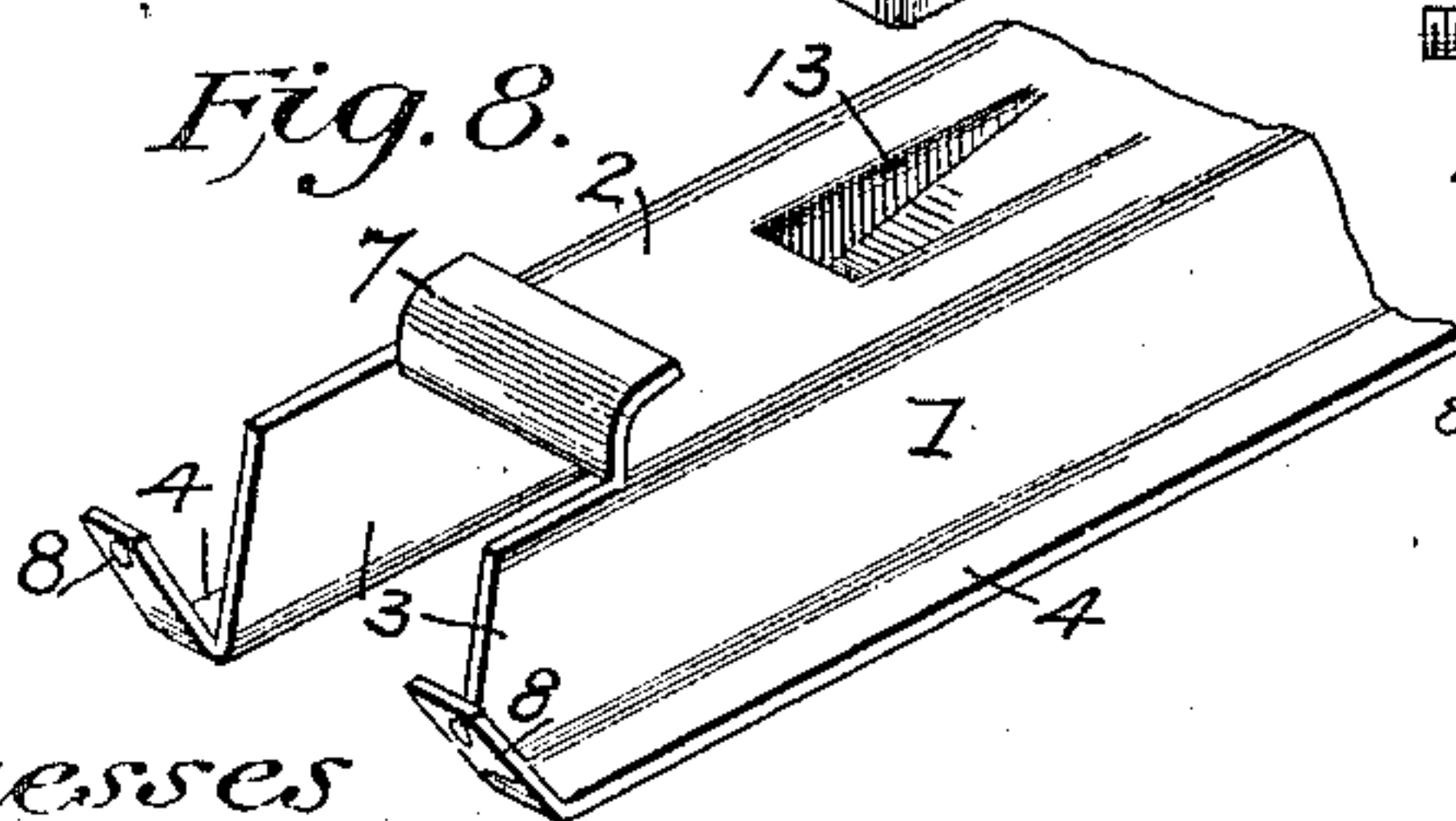
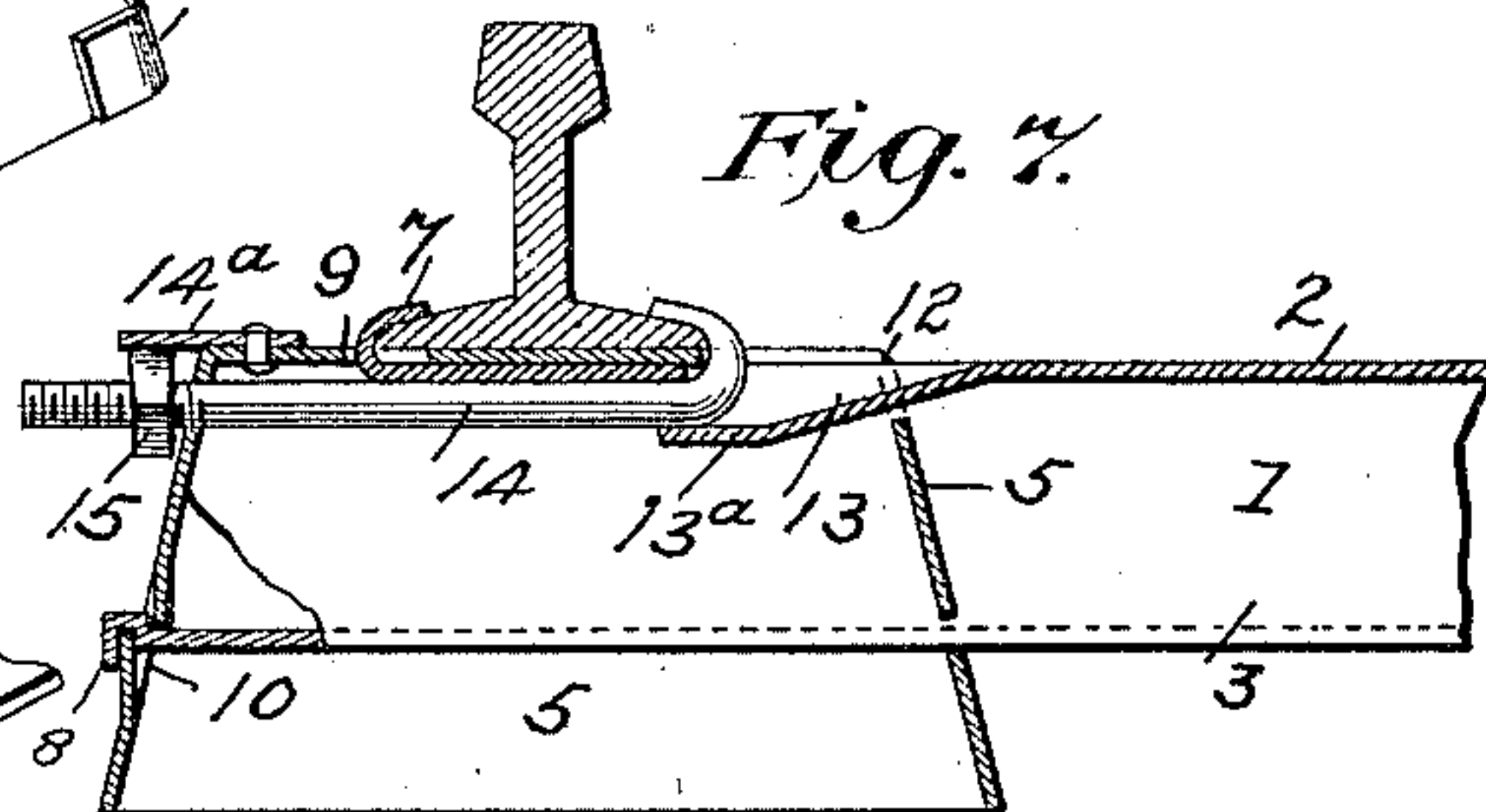
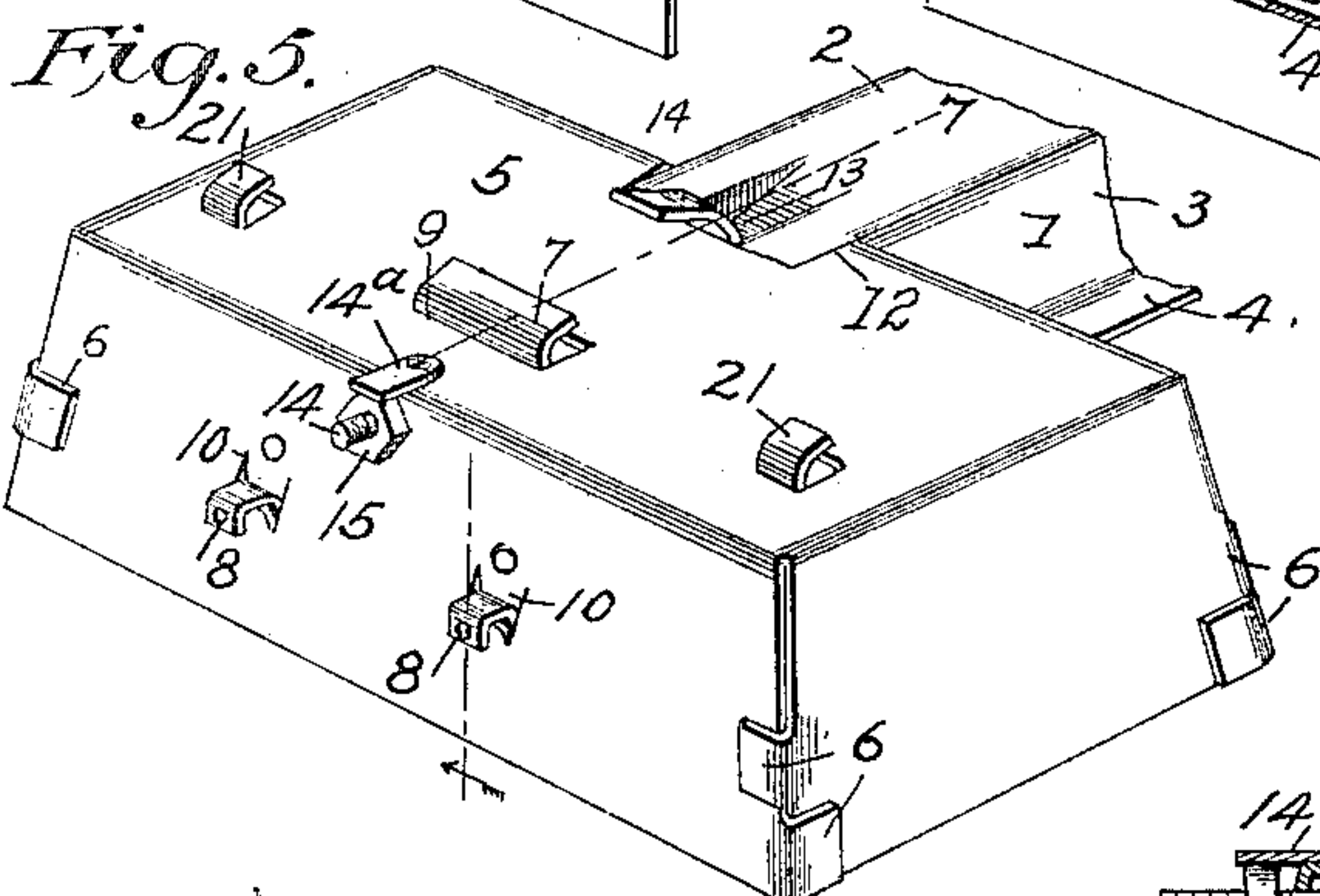
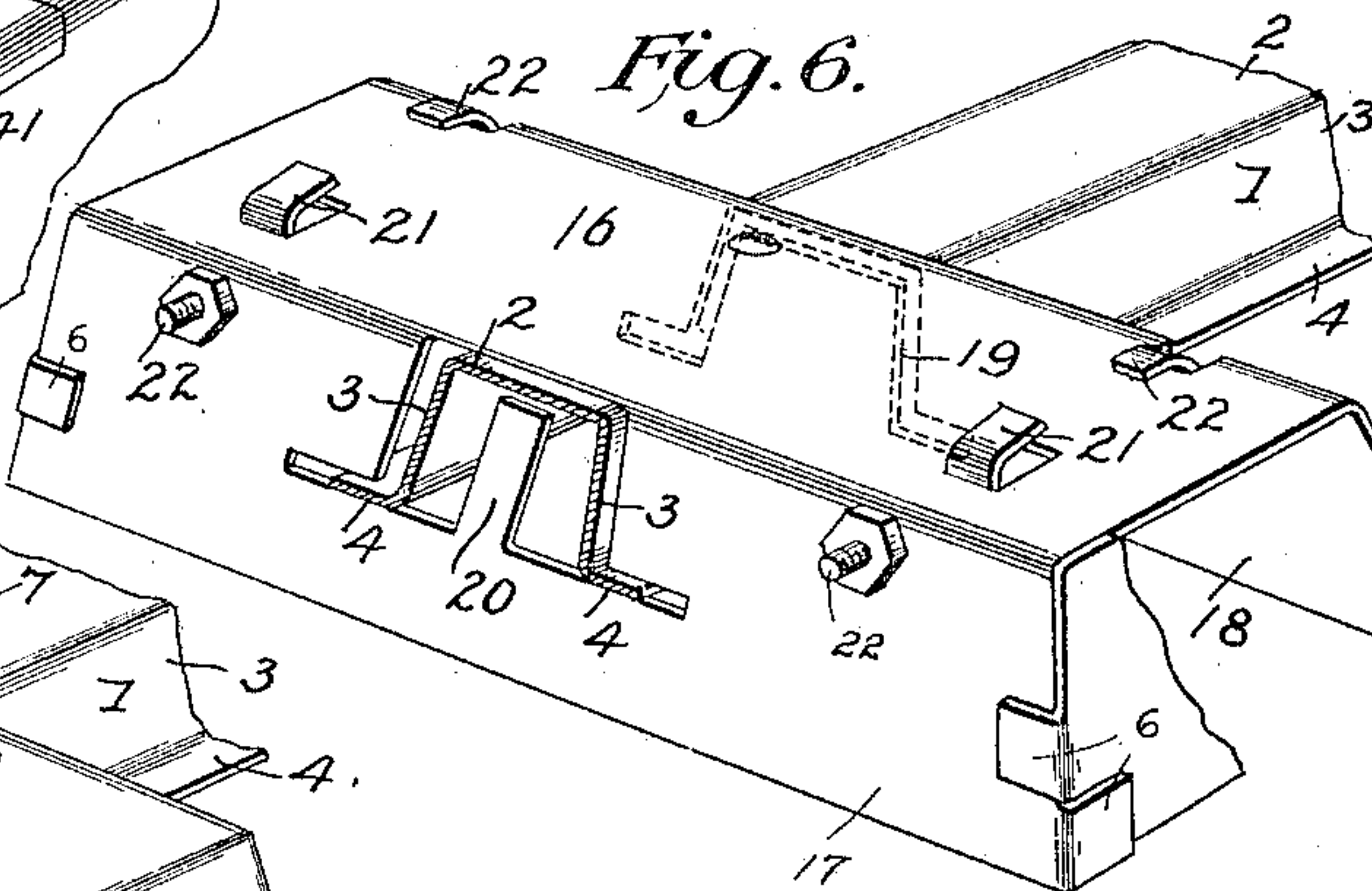
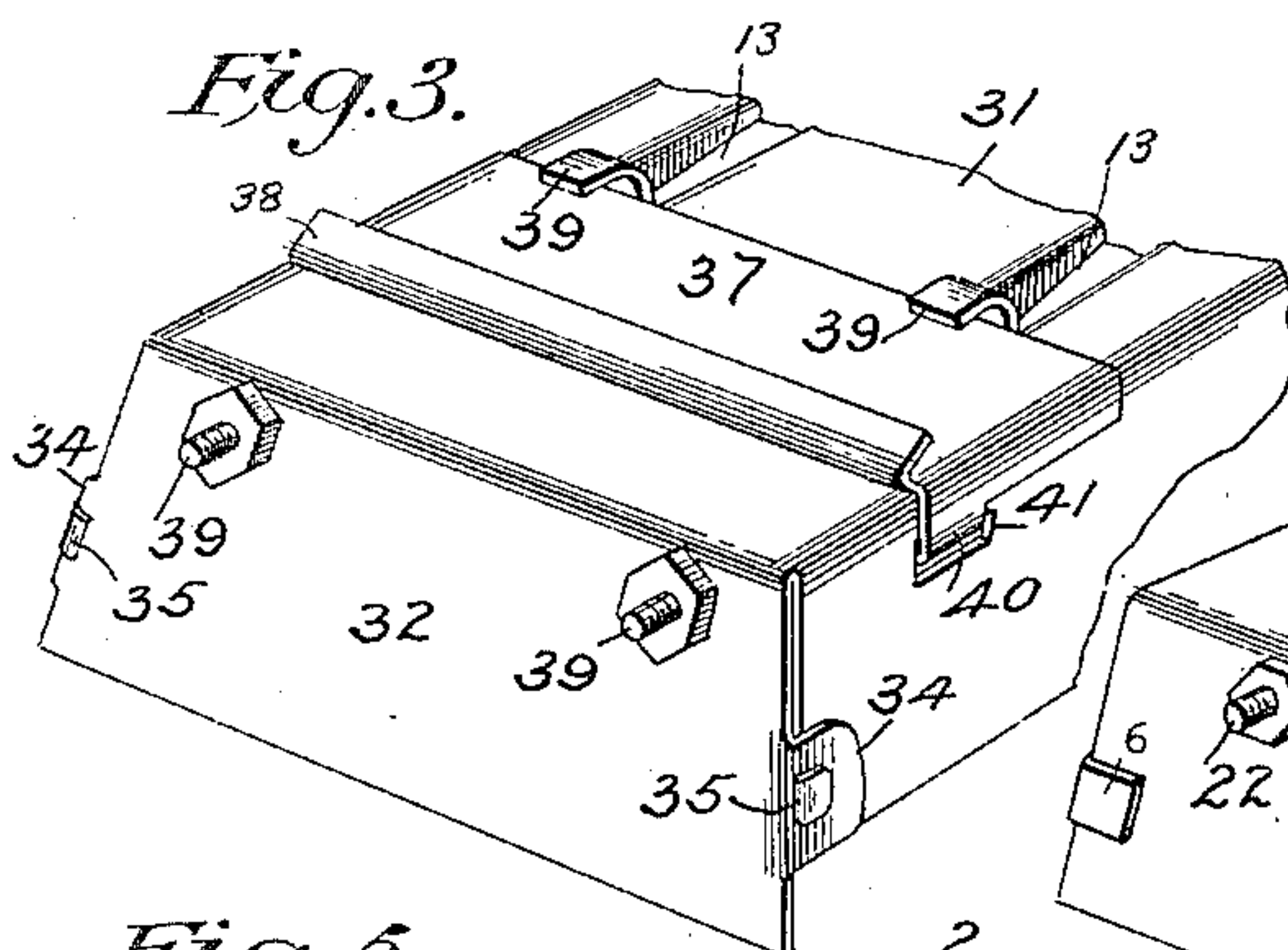
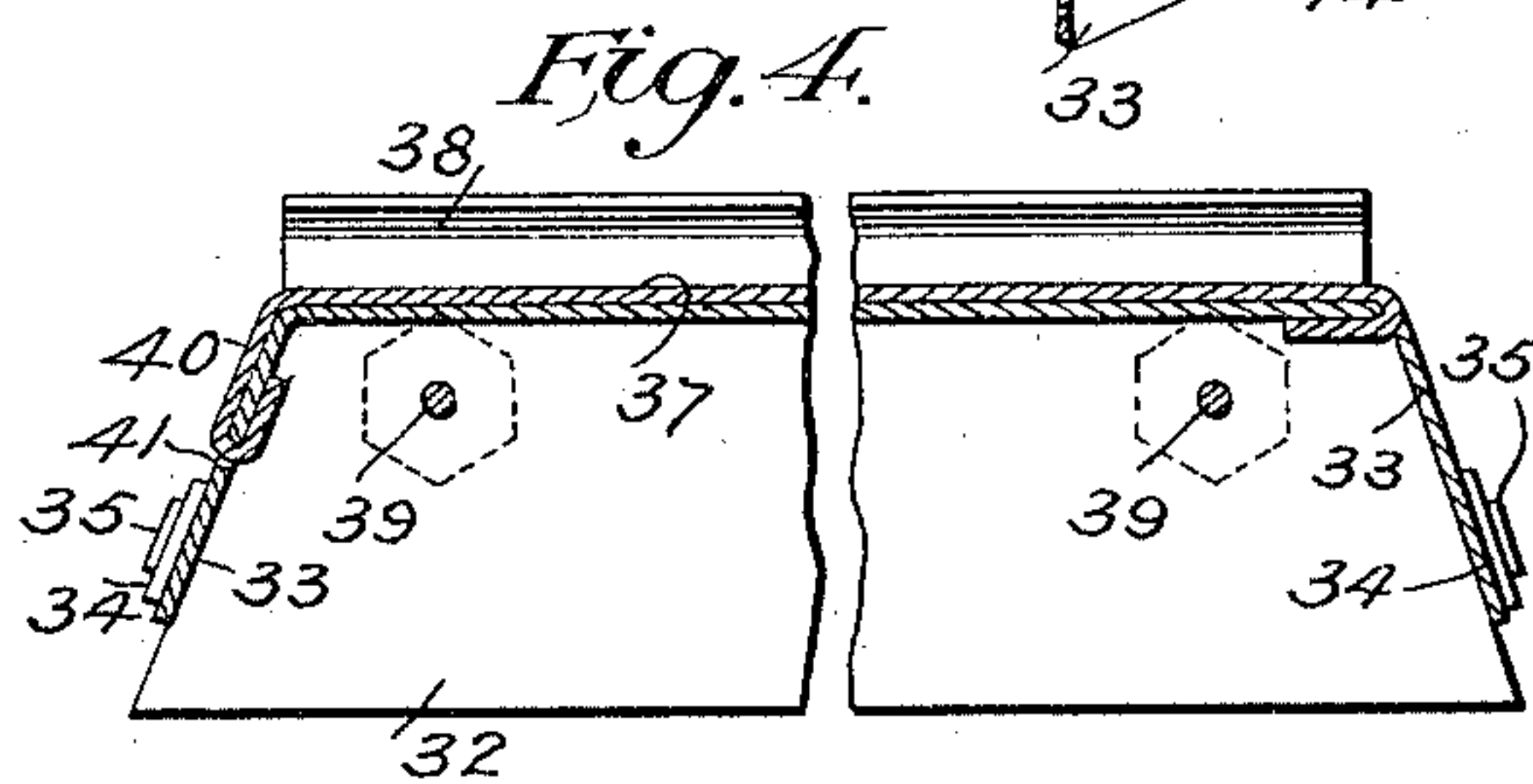
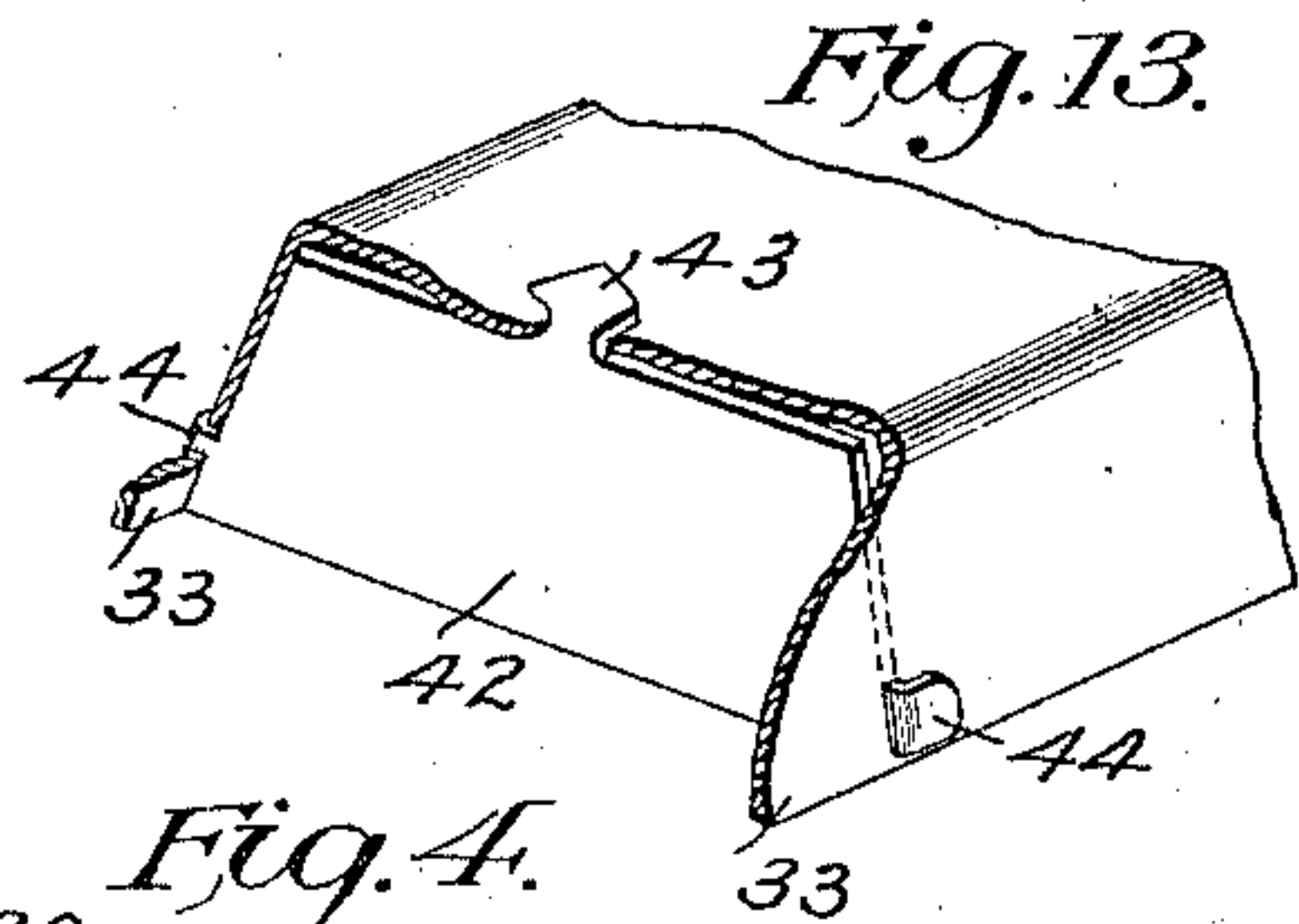
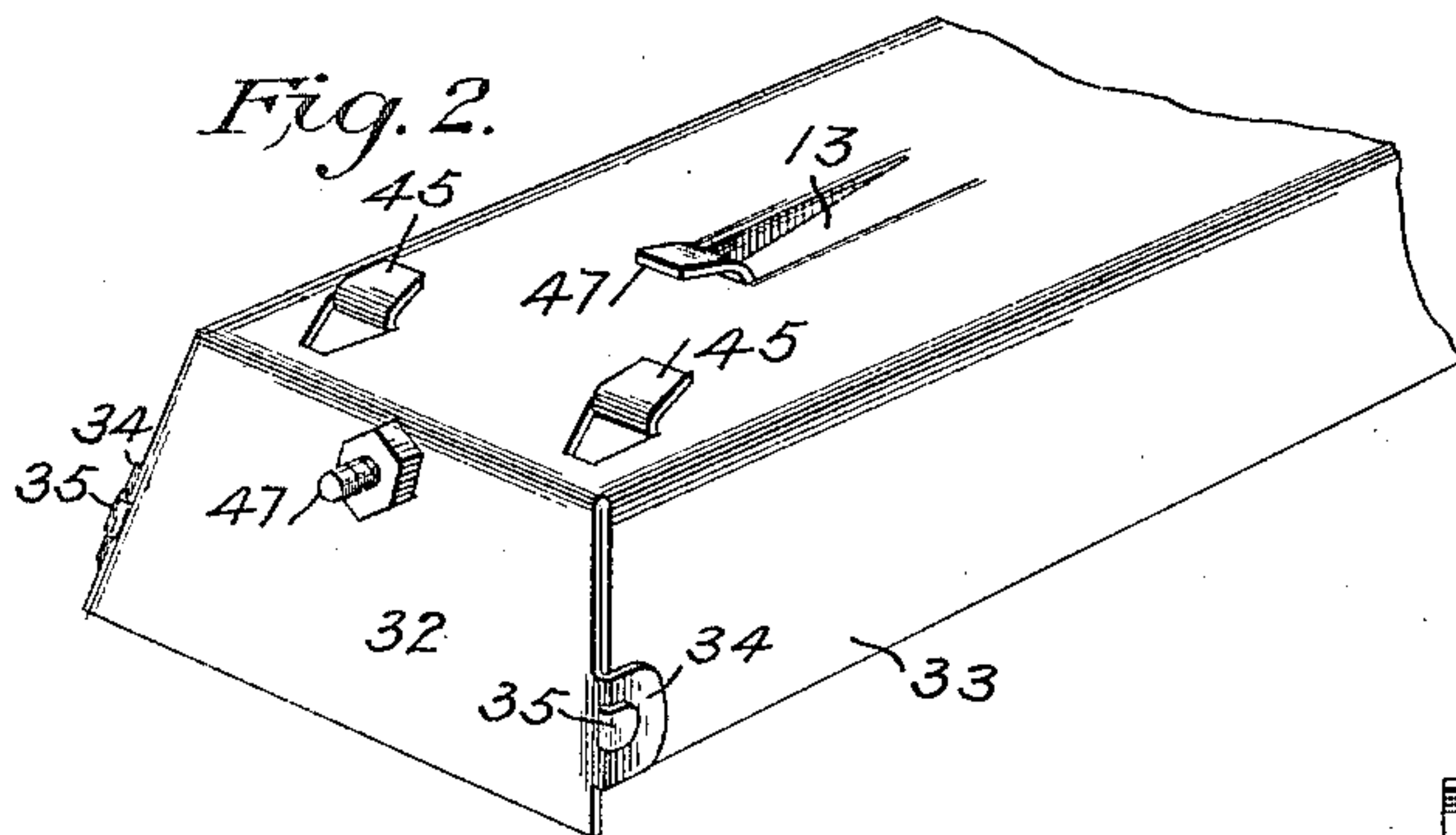
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(No Model.)

3 Sheets—Sheet 2.



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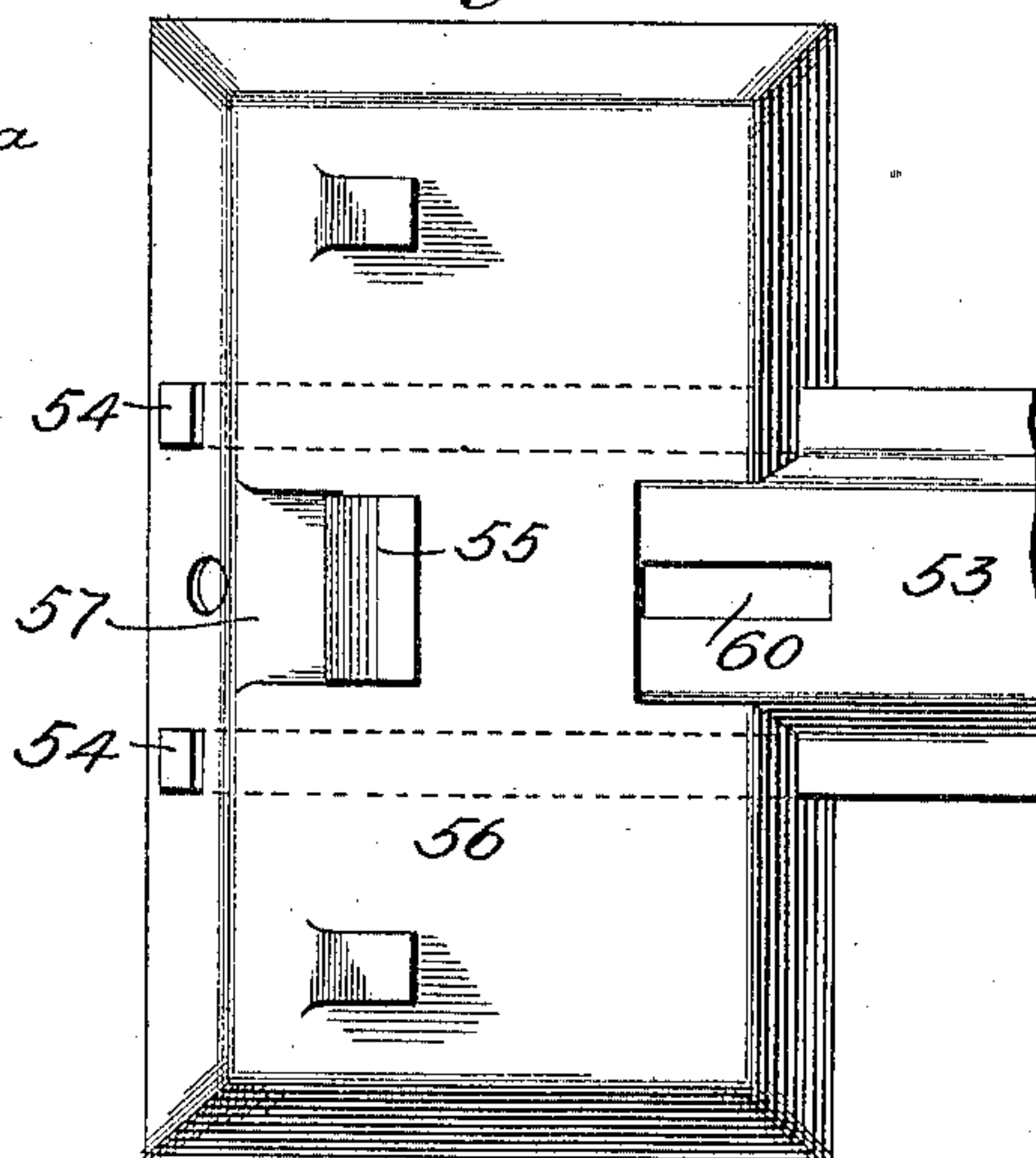
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**METALLIC CROSS TIE.**

(Application filed Aug. 21, 1901.)

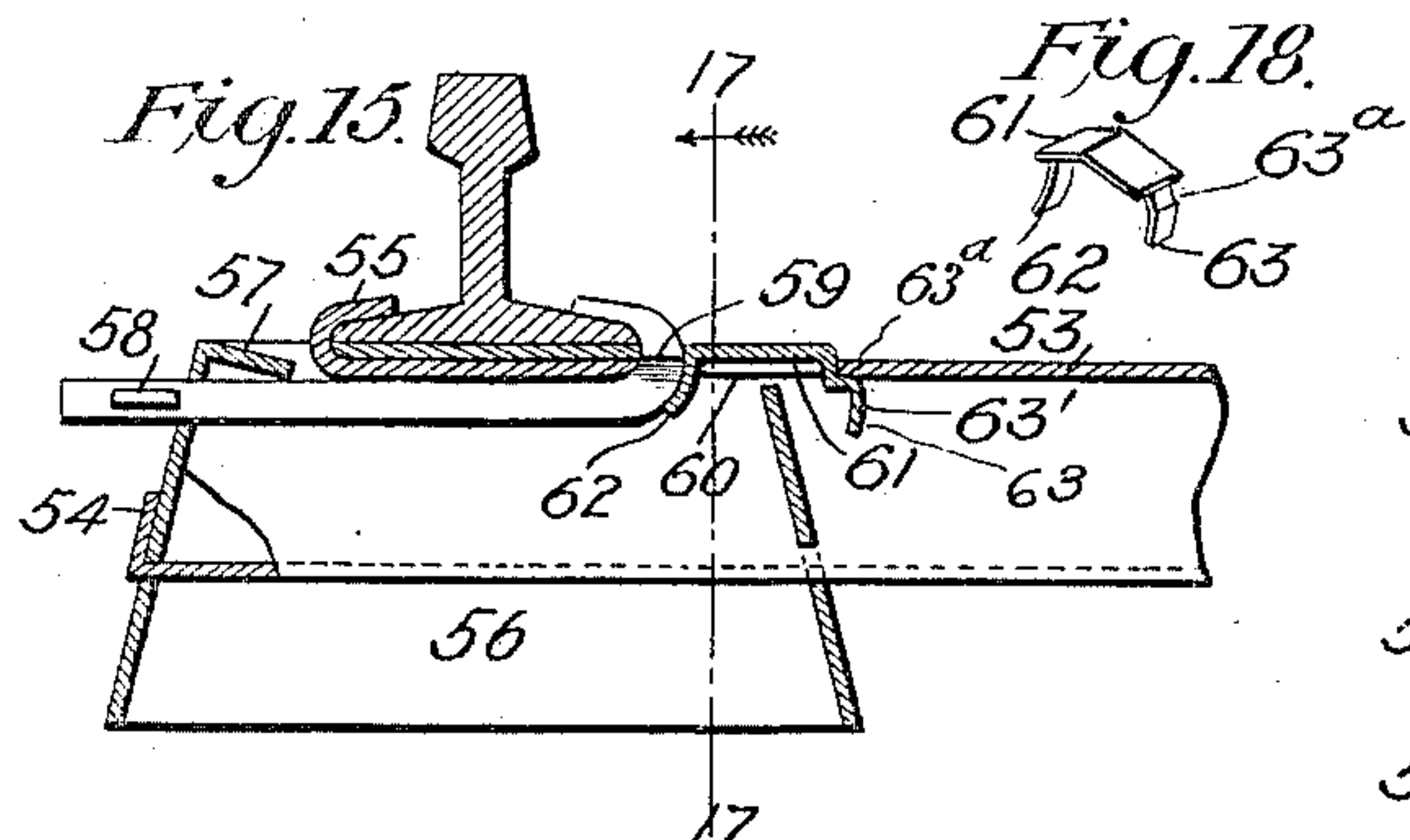
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*Fig. 16.*



*Fig. 15.*



*Fig. 18.*

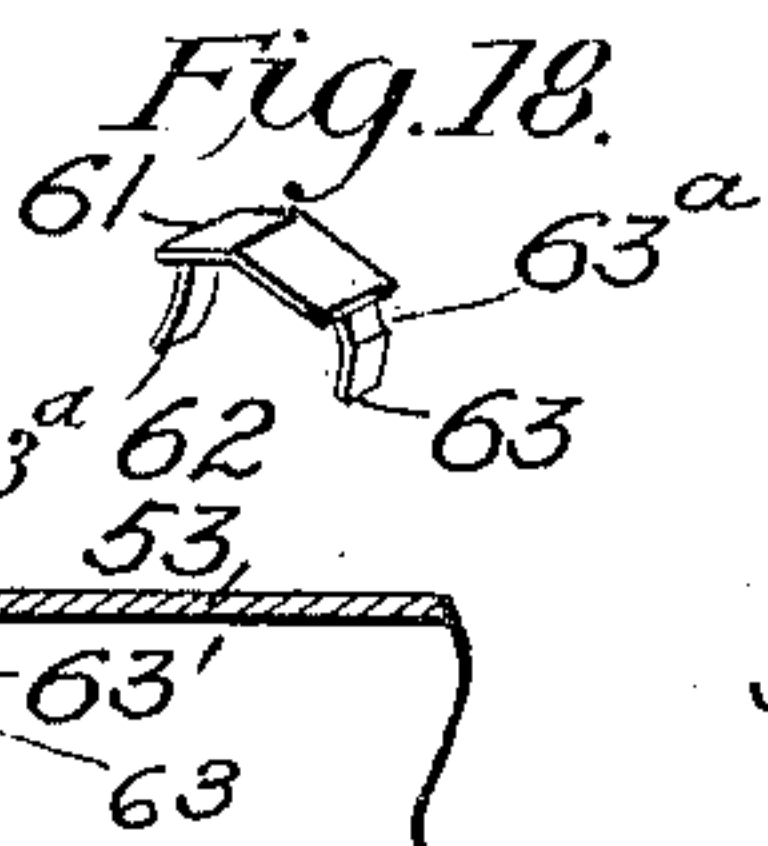
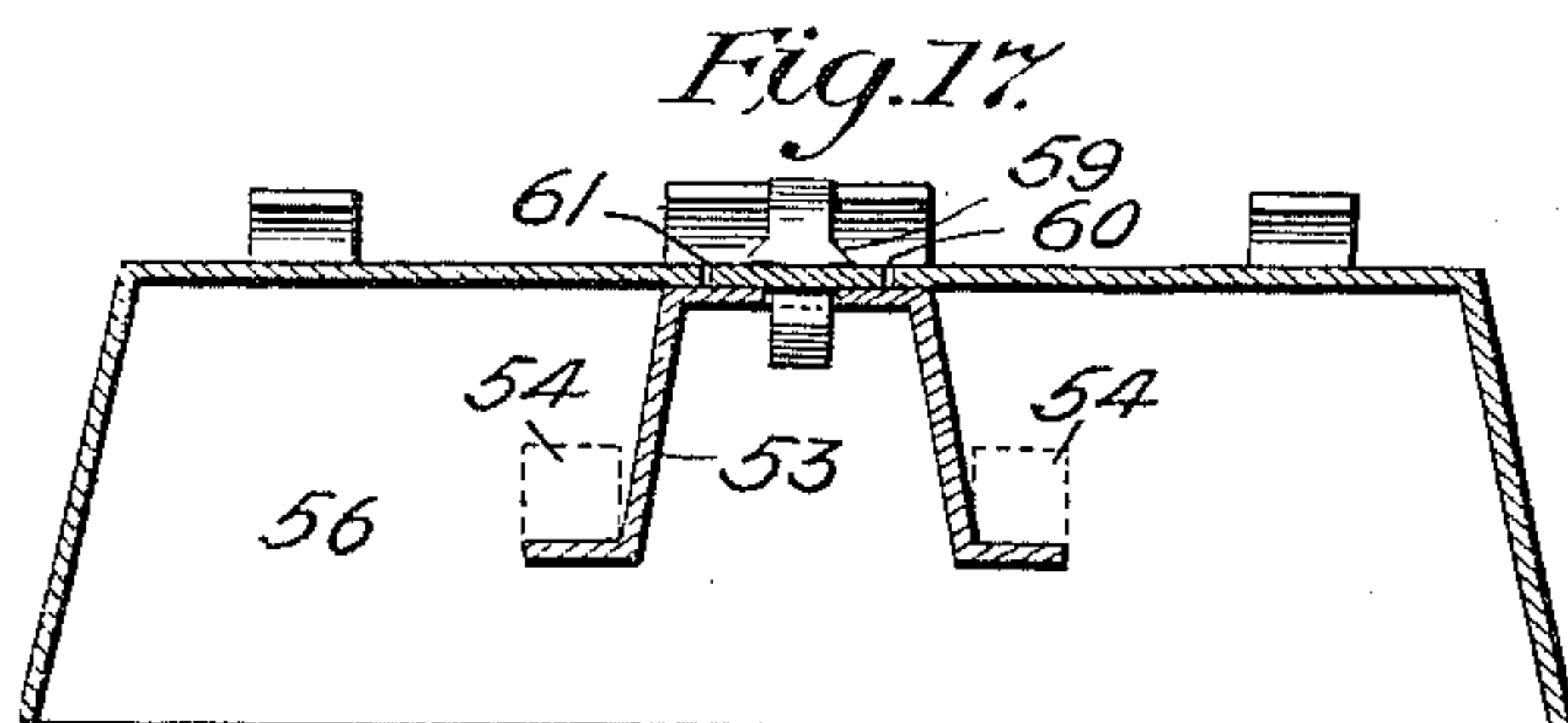
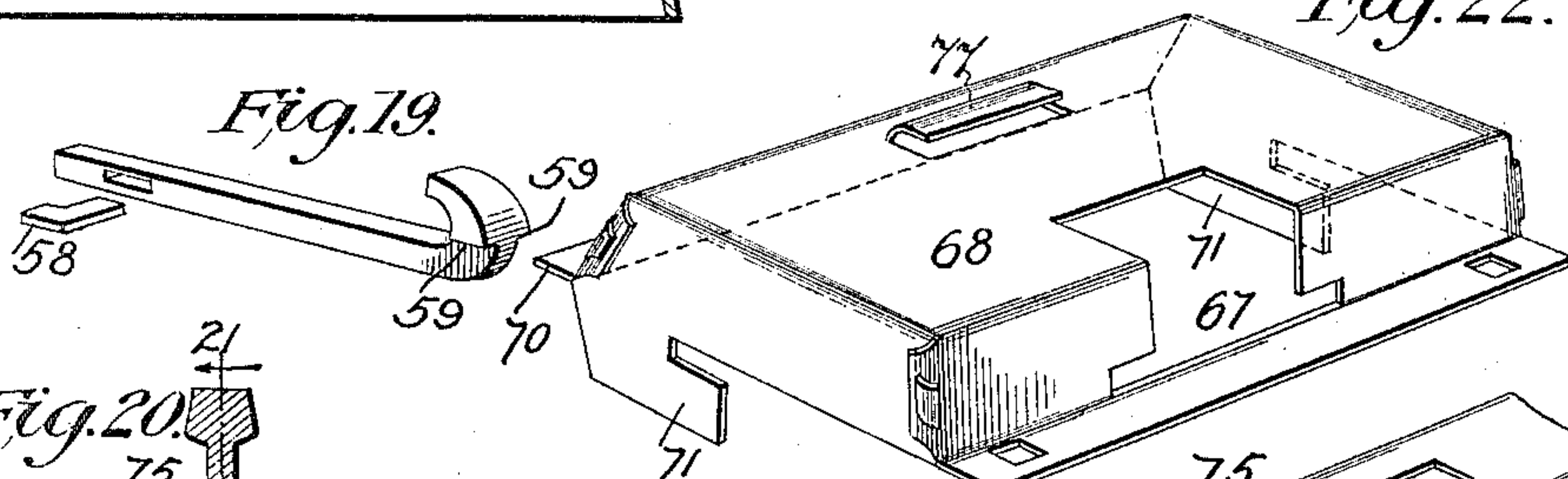


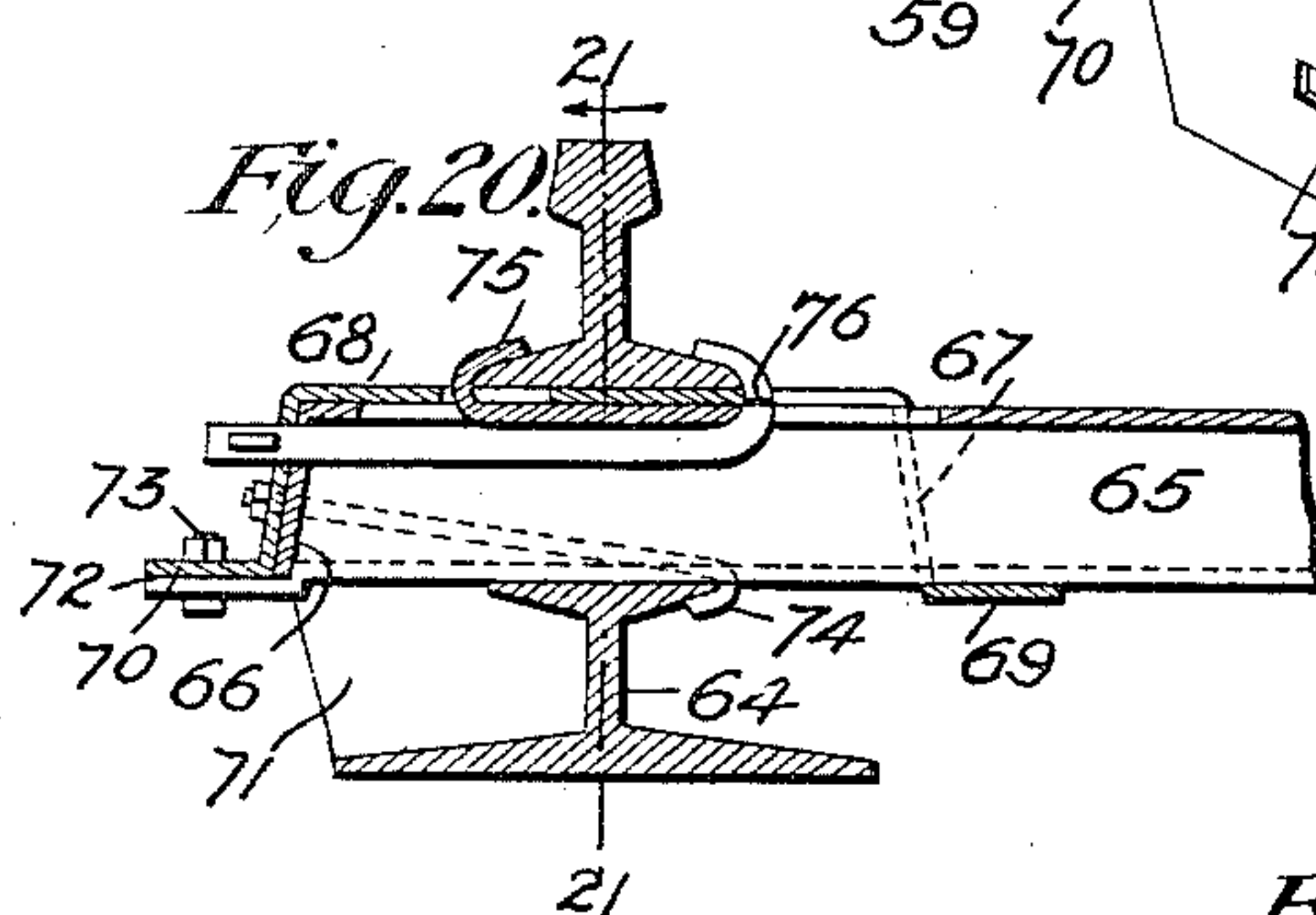
Fig. 17.



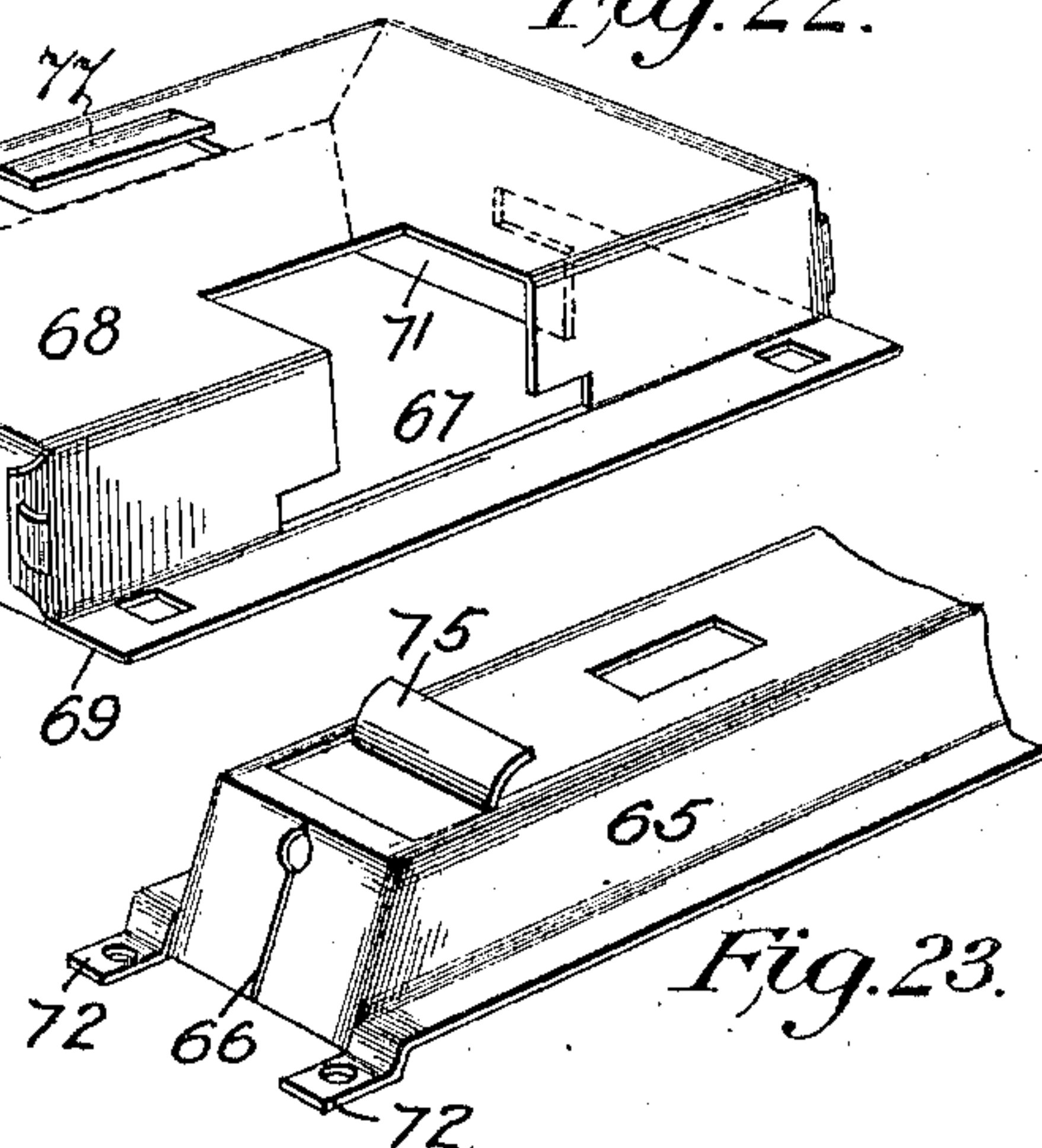
*Fig. 19.*



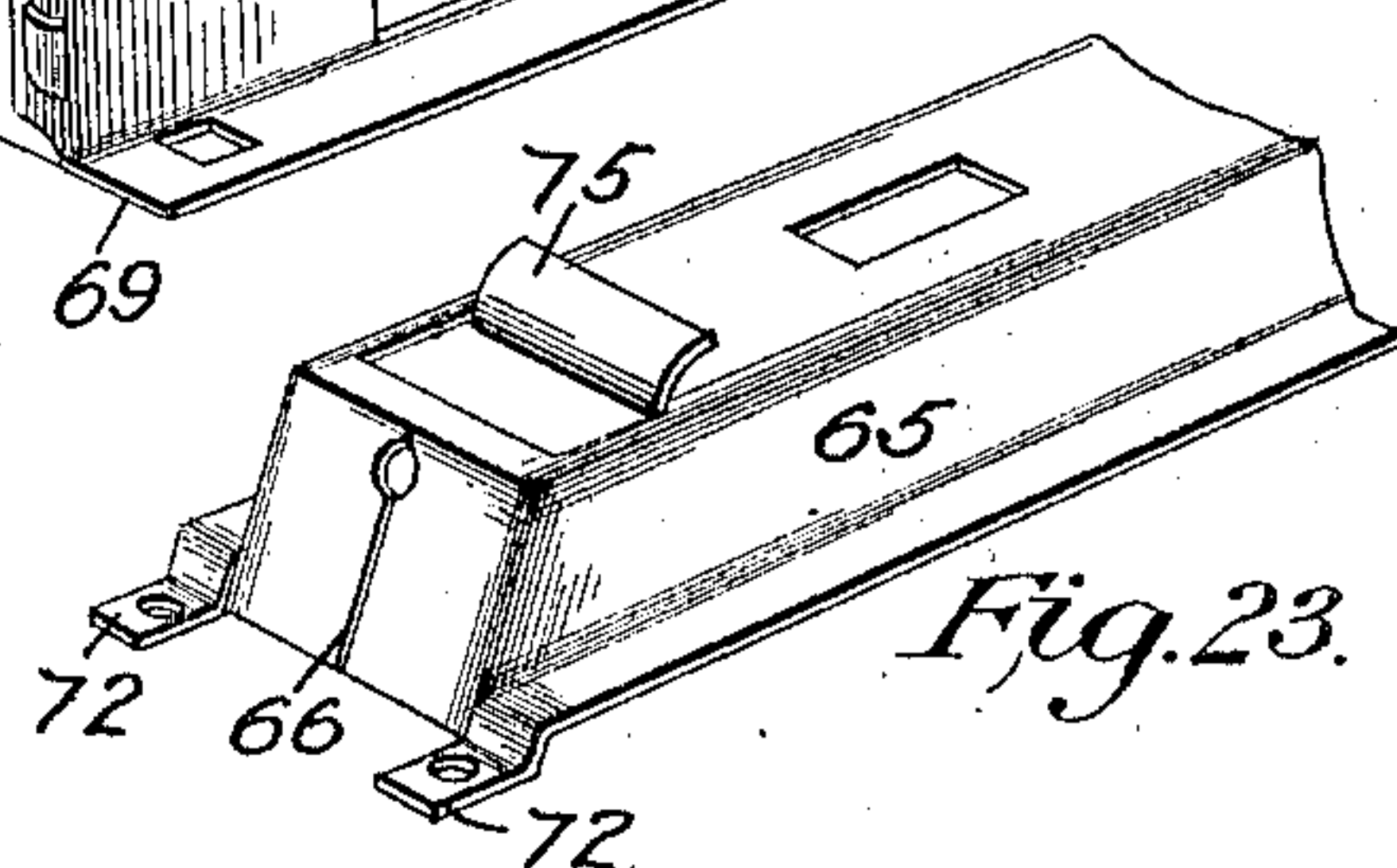
*Fig. 20.*



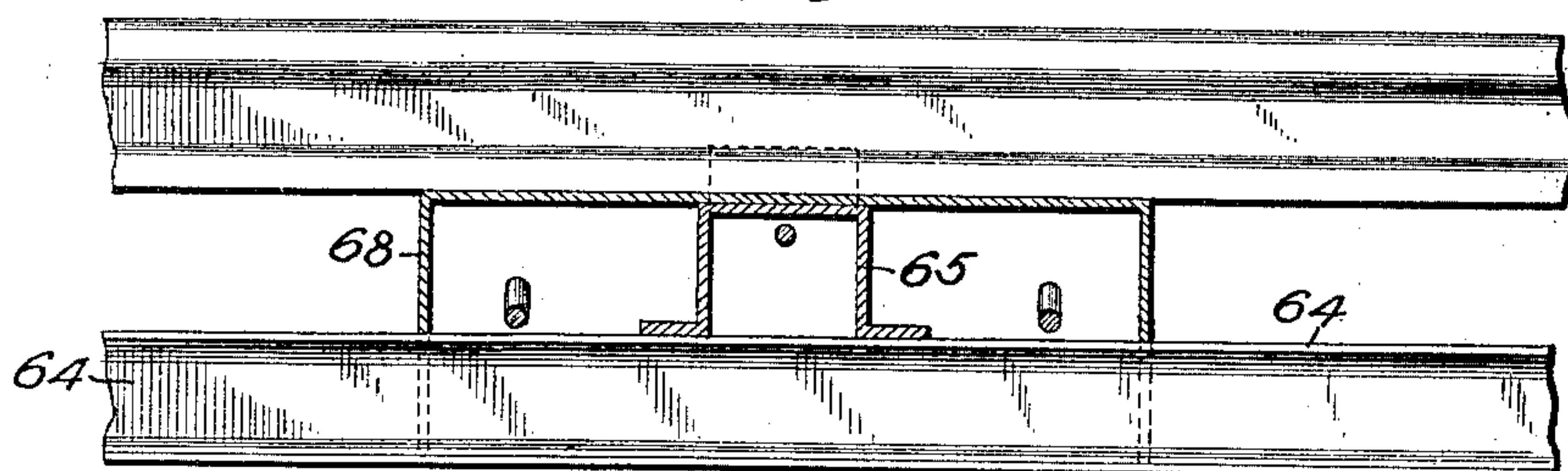
*Fig. 22.*



*Fig. 23.*



*Fig. 21.*



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# UNITED STATES PATENT OFFICE.

JOHN J. WAGONER, OF LEITERS FORD, INDIANA.

## METALLIC CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 697,299, dated April 8, 1902.

Application filed August 21, 1901. Serial No. 72,818. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. WAGONER, a citizen of the United States, residing at Leiters Ford, in the county of Fulton and State of Indiana, have invented a new and useful Metallic Cross-Tie, of which the following is a specification.

The invention relates to improvements in metallic cross-ties.

The object of the present invention is to improve the construction of metallic cross-ties and to provide a comparatively inexpensive one which will possess great strength, durability, and elasticity and which will enable the rails to be readily removed without disturbing the road-bed and without liability of breaking the rails or injuring the ties.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a plan view of a portion of a track provided with cross-ties constructed in accordance with this invention. Fig. 2 is a detail perspective view of one end of a cross-tie constructed in accordance with this invention and showing one means for clamping the rails. Fig. 3 is a similar view showing another means for clamping the rails. Fig. 4 is a transverse sectional view of the same. Fig. 5 is a perspective view of one end of a cross-tie, illustrating the preferred form of the invention. Fig. 6 is a similar view of the intermediate portion of the same. Fig. 7 is a sectional view on the line 7 7 of Fig. 5. Fig. 8 is a detail perspective view of the end of the cross-tie, the end casing or head being removed. Figs. 9, 10, and 11 are detail views illustrating means for engaging the rails. Fig. 12 is a detail view of one end of the blank from which the cross-tie shown in Fig. 2 is constructed. Fig. 13 is a detail view illustrating the arrangement of the transverse anchoring-bar of the double cross-tie. Fig. 14 is a sectional view of one end of a cross-tie, illustrating another modification of the invention. Fig. 15 is a similar view illustrating another modification of the invention. Fig. 16 is a plan view of the same, the bolt and the resilient key being removed. Fig. 17 is a sectional view on the lines 17 17

of Fig. 15. Fig. 18 is a detail perspective view of the resilient key. Fig. 19 is a similar view of the bolt. Fig. 20 is a sectional view of one end of the cross-tie, illustrating the manner of mounting the same on a longitudinal stringer. Fig. 21 is a vertical sectional view on the line 21 21 of Fig. 20. Fig. 22 is a perspective view of the head or end casing shown in Fig. 20. Fig. 23 is a detail view of one end of the cross-tie shown in Fig. 20. Fig. 24 is a sectional view illustrating the manner of introducing the tie in the head or end casing.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a metallic cross-tie constructed of sheet-steel or other suitable material and composed of a top 2 and sides 3, which are provided with outwardly-extending longitudinal flanges 4. This construction forms a hollow cross-tie, which may be filled with the material of which the road-bed is constructed. The cross-tie is provided at its ends with transversely-disposed end casings or heads 5, constructed of sheet metal or other suitable material and designed to be filled with broken stone or other heavy material for firmly anchoring the cross-tie. The transversely-disposed end casing or head, which is open at its bottom, is composed of a horizontal top and slightly-inclined sides and ends, which are connected at their adjacent edges by means of tongues 6, which are bent at right angles to embrace the adjacent walls of the casing or head to prevent the same from spreading. The cross-tie is cut away at opposite sides at each end to form top and side extensions 7 and 8, which are passed through top and side slots 9 and 10 of the transversely-disposed head or casing 5. The slot 9 is formed in the top of the head or casing 5, and the extension 7 is bent inward upon itself, as clearly illustrated in Fig. 5 of the accompanying drawings, to engage the adjacent bottom flange of a rail. The slots 10 are formed in the outer side wall of the casing, and the side extensions 8, which form continuations of the flanges 4, are passed through the said slots 10 and are bent against the exterior of the head or casing. The side extensions 8 are bent upward and the top extension or



tongue 7 is bent upward and backward to facilitate their introduction into their respective slots when assembling the parts. The walls of the side slots 10 are bent in opposite 5 directions, as illustrated in Fig. 7, to arrange the slots or openings conveniently for the tongues or extensions 8, and after the latter have been passed through the slots 10 they are bent downward. The inner side wall of 10 the head or casing 5 is provided with a slot 11, conforming to the configuration of the cross-tie and consisting of a transverse top portion, vertical sides, and bottom extensions or branches.

15 The top of the cross-ties is provided adjacent to the inner side wall of the casing 5 with a depression or groove 13, and it has an opening at the inner end thereof through which extends the shank of a hook bolt or rod 14, having 20 its engaging portion or bill arranged to receive the inner bottom flange of the rail. The outer end of the shank of the hook bolt or rod is threaded for the reception of a nut 15, and it extends through the outer wall of 25 the casing 5, as clearly illustrated in Fig. 7. By tightening the nut the bolt may be drawn outward into engagement with the rail, which is firmly clamped between the extension 9 of 30 the top of the cross-tie and the hook bolt or rod 14. When it is desired to remove the rail, the nut is unscrewed and the hook-bolt is driven inward sufficiently to carry its engaging portion or bill out of engagement with the 35 bottom flange of the rail, which may then be removed without disturbing the road-bed and without liability of breaking the rail. The hook-bolts are designed to be of sufficient length to enable them to be driven inward 40 clear of the rails without entirely removing the nuts from their outer portions. The inclined depression or groove of the top of the cross-tie forms a guide for directing the hook bolt or rod upward out of engagement with 45 the rail, and the said depression or groove is provided with a horizontal portion 13<sup>a</sup>, arranged beneath the engaging portion of the hook when the latter is in engagement with the rail.

50 The nuts of the bolts or rods 14 may be locked by pivoted plates 14<sup>a</sup>, mounted upon the top of the end casing or head and located at the outer side of the top slot 9 and adapted to be swung horizontally into and out of engagement with the upper face or edge of 55 the nut. The locking-plate 14<sup>a</sup> may be riveted or otherwise secured to the end casing or head, and when it is desired to unscrew the nut it is turned out of engagement with the same, and after the nut is screwed home it is 60 again swung to its engaging position.

The cross-tie 1 may be of any desired length, and it is provided with an intermediate rail-support 16, adapted to receive a switch-rail or the like and constructed of sheet metal or 55 other suitable material and consisting of a top and depending sides 17 and 18. The sides

are provided with openings to receive the cross-tie, and these openings, which are formed by slotting the side walls, conform to the configuration of the cross-tie. The walls or sides 70 17 and 18 are provided with upwardly-extending tongues 19 and 20, arranged between the sides of the cross-tie. The tongue 20 is narrower than the tongue 19 to permit the intermediate rail-support to be set at an angle for 75 the accommodation of switch-rails and the like. The top of the intermediate rail-support is provided at opposite sides of the cross-tie with integral rail-engaging tongues 21, which cooperate with hook-bolts 22 for en- 80 gaging the rails, and after the support 16 has been properly positioned with relation to the rails it may, if desired, be bolted or otherwise secured to the cross-tie to retain it in such position. 85

The number of intermediate rail-supports may be varied, and the length of the same may be changed to enable one or more rails to be mounted on the same support. In Fig. 1 of 90 the accompanying drawings the application of the cross-tie and the rail-supports to main rails and switch-rails is clearly illustrated. The intermediate support 23 is enlarged to receive the rails at the frog, and the end sup- 95 ports 24, 25, and 26 are extended to provide supporting-surfaces for the movable portion of the switch-rail. The end supports 27, 28, and 29 are located at the opposite side of the switch and are constructed in substantially 100 the same manner. The fastening devices for engaging the rails may be arranged in any suitable manner to correspond to the position of the rails, and the intermediate supports may be omitted when not required. One of 105 the rails may be extended to receive a support 46 for a switch-stand.

A pair of cross-ties may be connected by elongated heads or end supports 30 at rail-joints, or a cross-tie 31 of increased width 110 may be provided. The cross-tie 31 is provided with ends 32, which are connected with the sides 33 by means of tongues 34 and 35, the tongues 34 being formed integral with the end 32 and provided with slots or openings 115 for the reception of the tongues 35. The tongues 35 are formed integral with the sides 33 and are passed through the slots or openings 36 and are bent back upon themselves. The large tongues 34 are bent at right angles 120 and are arranged on the outer faces of the sides 33.

The cross-tie 31 is preferably provided with a chair 37, consisting of a plate provided at its outer edge with a flange bent inward over 125 the plate and forming a rail-engaging portion 38. The rail-engaging portion 38 is preferably located at the outer side of the rails, and the latter are engaged at their inner sides by hook-bolts 39, arranged similar to those 130 heretofore described and located adjacent to depressions or grooves, as clearly shown in Fig. 3. The chairs are provided with tongues



40, located at the ends of the plate and extending through slots 41 of the sides of the cross-tie, as clearly shown in Figs. 3 and 9; but tongues may be arranged in any other  
 5 suitable manner. The double or enlarged cross-tie is provided at its center with a transversely-disposed anchoring-plate 42, and the ends 32 are extended below the sides 33 to assist in holding the cross-tie against longitudinal movement. The anchoring-plate 42  
 10 is provided with tongues 43 and 44, located at the top and ends of the plate and extended through suitable slots of the top and sides of the cross-tie and bent against the outer  
 15 faces of the same. The end supports may be omitted when desired, and the cross-tie will then be constructed with an end piece similar to that described in connection with the double or enlarged cross-tie, and the rail  
 20 may be secured by integral tongues 45, arranged as illustrated in Fig. 2 and cooperating with hook-bolts similar to those heretofore described. The hook-bolt 47 (shown in Figs. 2 and 10) is located between the tongues  
 25 45, and it is provided with a straight shank; but, as illustrated in Fig. 11, the hook bolt or rod 48 may be provided with a slight bend. The sides and ends of the cross-ties instead of being connected by flanges or tongues 34  
 30 and 35 may be provided with tongues similar to those illustrated in Fig. 5. In forming the cross-tie with closed ends the blank is folded on the lines indicated in Fig. 11, and the sides and ends are provided with extensions to form the tongues 34 and 35.

In Fig. 14 of the drawings is illustrated one method of a rail-engaging device, a square shank-hook, as that illustrated in Fig. 19, forming a pair of shoulders 59, adapted to  
 40 rest upon the cross-tie at opposite side of the slot 60, provided at the outer end of its shank with a slot for the reception of an edge-tapering key 58. The hook is also engaged by an extension or resilient locking device, as that  
 45 illustrated in Fig. 18. The plate 61 is shortened by bending it up between its ends. The said ends are provided with depending tongues 62 and 63. Tongue 62 has a slight outer curve to engage the hook head or shoulders 59. Tongue 63 is provided with a latch or catch 63<sup>a</sup> for locking beneath the inner end of slot 60. The aforesaid specification is illustrated in Fig. 15. The extension or resilient key may be constructed of soft or annealed steel or  
 50 other tough metal that will remain in different positions where bent. Also is illustrated one end of a cross-tie, which is constructed substantially the same as that illustrated in Fig. 7 of the accompanying drawings, with  
 60 the exception that the extensions 49 of the bottom flanges of the cross-tie are bent downward and are arranged at the inner face of the outer side of the head or end casing. The depending extensions of the side flanges of the cross-tie 50 are perforated for the reception of bolts 51, which pass through perforations of the head or end casing 52. This form

of tie may be readily put together on the road-bed as the railroad is constructed or as new ties are required.

In Figs. 15 to 19, inclusive, of the drawings is illustrated another modification of the invention, in which the cross-tie 53 is provided at the ends of its side flanges with extensions 54, which are passed through slots in the outer  
 75 side of the head or end casing 56 and which are bent upward against the outer face of the same. The top tongue or extension 55, which after the parts are assembled is bent inward to engage the bottom flange of the rail, is designed to be arranged at a slight inclination to facilitate its introduction into the top slot of the cross-tie, and the side extensions 54 are designed to be arranged in a similar manner. The parts of the cross-tie are designed to be  
 85 assembled at the factory or other place where the ties are constructed, and the cross-tie is depressed at the outer side of the top slot to provide an inclined portion 57, which facilitates assembling the parts. The hook may  
 90 be constructed in any suitable manner; but in this form of the invention it is preferably provided at the outer end of its shank with a slot for the reception of the tapering key or wedge 58, and it is provided at its head or engaging portion with lateral projections 59,  
 95 forming a pair of shoulders adapted to rest upon the cross-tie at opposite sides of a longitudinal slot 60, through which the bolt extends. The bolt or hook is also engaged by  
 100 a resilient locking device 61, consisting of a plate bent between its ends and provided at the latter with depending tongues 62 and 63, designed to be arranged in the slot 60 to engage the hook or bolt and the tie at the inner  
 105 end of the slot. The tongue 62 is of an outer circular shape the size to fit against and beneath the hook head or shoulders 59. Tongue 63 has a latch or catch 63<sup>a</sup> for locking beneath the inner end of slot 60. The plate of the  
 110 resilient locking device is shortened by bending it, as shown in Fig. 18, and after the tongues have been introduced into the slots the plate is straightened. When it is desired to remove the resilient locking device, a sharp  
 115 instrument is introduced between it and the cross-tie to bend it back into its original shape, whereby it may be readily detached.

The cross-tie is also adapted for use on bridges and similar constructions, and a  
 120 stringer or ballast roll 64 is employed. The cross-tie 65, which is of the same general construction as those heretofore described, is composed of a top and sides, which are provided with longitudinal side flanges, and it  
 125 may have ends 66, or the latter may be left open, substantially as shown in Fig. 8. When the end of the tie is closed, as illustrated in Fig. 23 of the drawings, the opening 67 of the head or end casing 68 will conform to the  
 130 configuration of the tie and permit the passage of the same. The inner and outer sides of the head or end casing are provided with bottom flanges 69 and 70, and the ends 71,



which rest upon the stringer-rail 64, are provided at the outer side of the same with depending extensions 66, which conform to the configuration of the stringer, as clearly shown in Fig. 20. The head or end casing may be constructed of a single piece of heavy sheet metal, and the sides and ends may be connected by slot-and-tongue connections, substantially the same as those heretofore described. The extensions 72 of the side flanges of the cross-tie are secured by bolts 73 or other suitable fastening devices to the outer bottom flange 70 of the head or end casing. The depending supports or extensions 66, which conform to the configuration of the stringer 64, are held in contact with the same by means of hook bolts or rods 74, arranged at a slight inclination and extending downward and inward from the outer side of the head or casing, as clearly illustrated in Fig. 20. The bottom flanges of the head or end casing are provided with suitable openings for the reception of fastening devices for securing the head or end casing to the adjacent parts of a bridge or other structure on which it is employed. The ends of the cross-tie also rest upon the stringers, which extend longitudinally of the rails, and the joints of of the stringers are designed to be arranged at points between the rail-joints to provide solid supports for the latter and to prevent the track from moving sidewise out of line. The rail is clamped by means of a top tongue or extension 75 of the cross-tie and a hook rod or bolt 76, which may be constructed in any suitable manner. The tongue 77, which sustains and supports tongues or extensions 7 and 75 of the cross-ties, if desired, is of the same width as the latter.

It will be seen that the cross-tie is simple and comparatively inexpensive in construction, that it possesses great strength and durability, and that the parts may be readily separated and assembled by section-hands.

Various changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. A device of the class described comprising a railway steel cross-tie provided at the top with an inwardly-bent extension or integral tongues to engage the outer side flange of a rail, inner side of the rail having either slot or an inclined groove or depression disposed longitudinally of the cross-tie, and a rail-engaging square shank or bolt extending through the opening longitudinally of the cross-tie and having a hook located at the said slot or groove to engage the inner side flange of a rail, the outer end of the square shank or bolt is secured and fastened by a flat and edge-tapering key or nut, a transversely-disposed head or end casing which is open at its bottom, is composed of a horizontal top and

slightly-inclined sides and ends, which are connected at their adjacent edges by means of tongues which are bent at right angles to embrace the adjacent walls of the head or end casing, to prevent the same from spreading, when filled with the material of which the road-bed is constructed, said head or end casing being formed of a pot-casing from a single piece of heavy sheet-steel, substantially as described.

2. A device of the class described comprising a cross-tie composed of a top and sides provided with bottom flanges, with an open channel along its bottom, said cross-tie capable of supporting one or more transversal casings, said casing having openings through both sides receiving the cross-tie, a transversal casing to be set at different angles for accommodation of a switch or branch rail, the casing may be bolted or otherwise secured to the cross-tie, to retain it in such position, said casing being provided at opposite sides of the cross-tie with rail-engaging tongues and bolt-hooks substantially as described.

3. A device of the class described comprising a cross-tie provided with a top and having depending sides, said top being provided with an extension bent inward and arranged to engage a rail, and an end support disposed transversely of the rail and consisting of a casing provided with an opening receiving the cross-tie, said support being provided with a slot arranged to receive the extension of the top of the cross-tie, substantially as described.

4. A device of the class described comprising a cross-tie provided with sides and having an extension at its top bent to form a rail-engaging flange or tongue, an end support receiving the cross-tie and provided with a slot for the said extension, and a fastening device arranged to engage the rail and connecting the support and the cross-tie, substantially as described.

5. A device of the class described comprising a cross-tie provided with an inwardly-bent extension arranged to engage the outer flange of a rail, a rail-support receiving the cross-tie and provided with a slot or opening for the said extension, and a longitudinally-disposed fastening device connecting the support and the cross-tie and arranged to engage the inner side of the rail, substantially as described.

6. A device of the class described comprising a railway steel cross-tie provided with an inwardly-bent extension and projecting through a longitudinal opening at the top of the head or end casing arranged to engage the outer side flange of a rail and having a slot longitudinally of the cross-tie and a rod or square shank engaging hook or bolt extending through the slot with the outward portion of the hook or shoulders resting on each side of the slot and engaging the inner side flange of a rail, the said hook or bolt is locked by an extension or resilient key, the latter is shortened by bending it up between its ends, the said ends are provided with de-



pending tongues, and after the tongues have been introduced in the longitudinal slot of the cross-tie the extension or resilient key is straightened to engage the hook or bolt and the cross-tie at the inner end of the slot, to remove said extension or resilient locking device a sharp-pointed instrument is introduced by inserting it between its ends and the cross-tie to bend it back into its original shape, whereby it may be readily attached, the other end of the rod or square shank is secured and fastened by a flat and edge-tapering key at the outer side of the head or end casing to draw and to hold the outer edge of the longitudinal slot located in the top of said head or end casing, the outer edge of the slot to come in contact in the rear of the inwardly-bent extension or the outer side rail-engaging hook, for one purpose of strengthening and supporting the latter substantially as described.

7. A device of the class described comprising a steel cross-tie, composed of a top and sides provided with bottom flanges, said cross-tie forms a groove or a hollow channel open along its bottom, a head or end casing is provided with sides, ends and a top, the corners are secured or fastened by tongues and slots or other means to prevent the same from spreading, when tamped and compressed with crushed stones, gravel and other substances, the inner and outer sides of the head or end casing are provided with bottom flanges, the ends of said head or end casing and the cross-tie which rests upon the stringer or ballast roll, are provided at the head or end casing with a depending extension 71 which conforms to the configuration of the stringer or ballast roll, the said stringer or ballast roll is held in contact with the same by means of hooks or bolts arranged at a slight inclination and extending downward and inward from the outer side of the head or end casing, the aforesaid stringer or ballast roll is for the purpose of resting or locating on stone ballast, bridges and on any common road-beds, and to conform to the track and to release the strain from frogs, rail joints and junctions, and the joints of the aforesaid stringer or ballast roll are designed to be arranged at points between the rail-joints, by removing the stringer or ballast roll from the head or end casing the said head or end casing is provided with suitable openings in the bottom flanges for the reception of fastenings to bridges or other structures, by leaving the depending extension end 71 of the aforesaid head or end casing in full size and bending the same out (which is not illustrated) to correspond with the side flanges, the head or end casing can be applied on stone ballast, bridges and to any ordinary road-bed substantially as described.

8. A device of the class described comprising a cross-tie provided with top and side extensions, an end support receiving the cross-tie and provided with top and side slots for

the said extensions, the side extensions being bent against the support, and the top extension being bent over to engage one side of a rail, and means for engaging the other side of the rail, substantially as described.

9. A device of the class described comprising a cross-tie composed of a top and sides provided with bottom flanges, said cross-tie being cut away at the sides to form top and side extensions, a support consisting of a casing having an opening at its inner side to receive the cross-tie, and arranged at its outer sides to receive the cross-tie, and provided at its outer side with upper and lower slots for the said extensions, the top extension being bent over to engage one side of a rail, and means for engaging the other side of a rail, substantially as described.

10. A device of the class described comprising a cross-tie composed of a top and sides, and an intermediate support provided with sides having openings to receive the cross-tie, said support being provided at opposite sides of the cross-tie with rail-engaging devices, substantially as described.

11. A device of the class described comprising a cross-tie, an intermediate support provided with sides having openings to receive the cross-tie and capable of lateral adjustment, and an end support fixed to the cross-tie, substantially as described.

12. A device of the class described comprising a cross-tie, having a top and sides, and an intermediate support provided at opposite sides with openings conforming to the configuration of the cross-tie and forming interior tongues, substantially as described.

13. A device of the class described comprising a head or end casing composed of a top, ends and sides it forms a hollow basin in its under side, said head or end casing is locked or fastened together at the corners with tongues or other means, the head or end casing having an opening at its inner sides to receive the cross-tie, the latter is provided with bottom flanges the ends of said flanges are turned downward and fastened to the inner side of the outer wall by bolts or other means, the said cross-tie having at each end and top an inwardly-bent extension arranged to engage the outer side flange of a rail, the cross-tie can be provided with either a slot or inclined groove longitudinally of the cross-tie, and a hook bar or bolt extending through the opening and engaging the inner side flange of a rail, and provided at the outer side of the head or end casing or cross-tie with a key or nut for adjusting the same, the aforesaid head or end casing and cross-tie can be constructed for each, of a single piece of heavy sheet-steel or the head or end casing can be pressed or molded to construct a solid hollow basin substantially as described.

14. A device of the class described comprising a railway steel cross-tie provided with side flanges located at its bottom, an end casing or head provided at its inner wall with an



opening conforming to the configuration of the cross-tie, and having extension-slots to receive the bottom flanges, means for securing the end of the flanges of the cross-tie and the outside of the outer wall of the end casing or head with bolts or other means, or the end flanges may be turned down on the outer side of said wall as clearly illustrated, a railway steel cross-tie provided with an inwardly-bent extension or tongue at its top for engaging the outer side flange of a rail, having a longitudinal slot located on the inner side of the rail in the cross-tie, and a hook shank or bolt forming a pair of shoulders adapted to rest upon the cross-tie at opposite sides of the slot extending through the opening and engaging the inner side flange of a rail, the aforesaid hook shank or bolt is also engaged by a resilient locking device consisting of a plate, said plate is shortened by bending between its ends, and provided at the latter with depending tongues, and after the tongues have been introduced into the slot the plate is straightened to engage the hook shank or bolt and the tie at the inner end of the slot, the outer end of the hook shank or bolt is tightened by an edge tapering key or nut to draw and to hold the outer side tongues located at the top at each end of the head or end casing to engage the outer side flange of a rail substantially as described.

15. A device of the class described comprising a cross-tie, a head or end casing provided at its inner side with an opening conforming to the configuration of the cross-tie and receiving the same, the end of the cross-tie fitting against the inner face of the outer side of the head or end casing, and means for securing the end of the cross-tie to the outer side of the head or end casing, substantially as described.

16. A device of the class described comprising a railway steel cross-tie, composed of a top, depending sides and ends to form a hollow trough or channel along the under side of the entire length of the cross-tie, the sides and ends are fastened at the corners with tongues and slots or other means, the anchoring bar or plate is located in the center between the sides and the top of the cross-tie, said anchor-plate is provided with tongues located at the top and ends of the plate and extended through suitable slots at the top and sides of the cross-tie and bent against the outer side and top of the cross-tie for the purpose of holding the cross-tie from spreading, and to assist the same against longitudinal movement, the aforesaid cross-tie is provided with a rail-engaging saddle or chair located on top at each end of the cross-tie with flaps projecting downward on each side of the cross-tie, and fastened to the outer sides of the same by girth-

hooks that extend through an opening from the outer side walls of the cross-tie and turned upon the inner side of said walls, the inner side of said saddle or chair is provided with crooper-hooks which extend through the opening of the slots or grooves and turned back and under longitudinally of the cross-tie, and a rail-engaging hook or bolt extending through said slots or grooves to engage the inner side of a rail and fastened at the outer side by an edge-tapering key or nut substantially as described.

17. A device of the class described comprising a steel end support or casing the number of intermediate rail-supports may be varied, and the length of the same may be changed to enable one or more rails to be mounted on the same support or casing, the intermediate support or casing is enlarged to receive the rails at the frog and the end supports or casings are extended to provide a supporting-surface for the movable portion of the switch-rail, the end supports or casings are located at the opposite side of the switch and are constructed in the same manner, the supports or casings are provided with suitable openings in the sides to receive the cross-tie, a steel cross-tie is composed of a horizontal top and depending sides provided with bottom flanges, the said flanges are for the purpose of forming tongues or extensions to be bolted or fastened to the outer side wall of the end support or casing and to strengthen the sides, the cross-tie formed beneath a hollow sleeper to be filled with broken stones, gravel or other heavy material of which the road-bed is constructed, one or more of the cross-ties may be extended to receive a support for a switch-stand, the fastening devices for engaging the rails are provided with a slot located in the support or casing, or the cross-tie on the inner side of the rail may be arranged in any suitable manner to correspond to the position of the rails, a shank-engaging hook or bolt extending through the slot or opening with the outward portion of the hook or shoulders resting on each side of the slot and engaging the inner side flange of a rail, and provided at the outer end of said shank or bolt with a slot for the reception of a flat and edge-tapering key to be driven in said slot to draw and to hold the engaging hook in contact with the inner side flange of a rail, to be made or constructed of steel or other suitable material substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN J. WAGONER.

Witnesses:

D. M. SWINEHART,  
M. A. BAKER.