

No. 846,595.

PATENTED MAR. 12, 1907.

R. MOBLEY.  
FLUSH CAR DOOR.  
APPLICATION FILED FEB. 18, 1905.

2 SHEETS—SHEET 1.

Fig. 2.

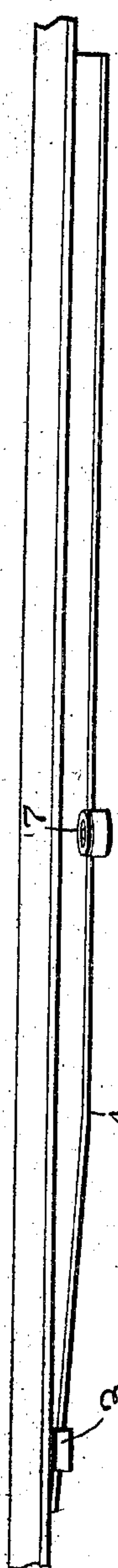


Fig. 1.

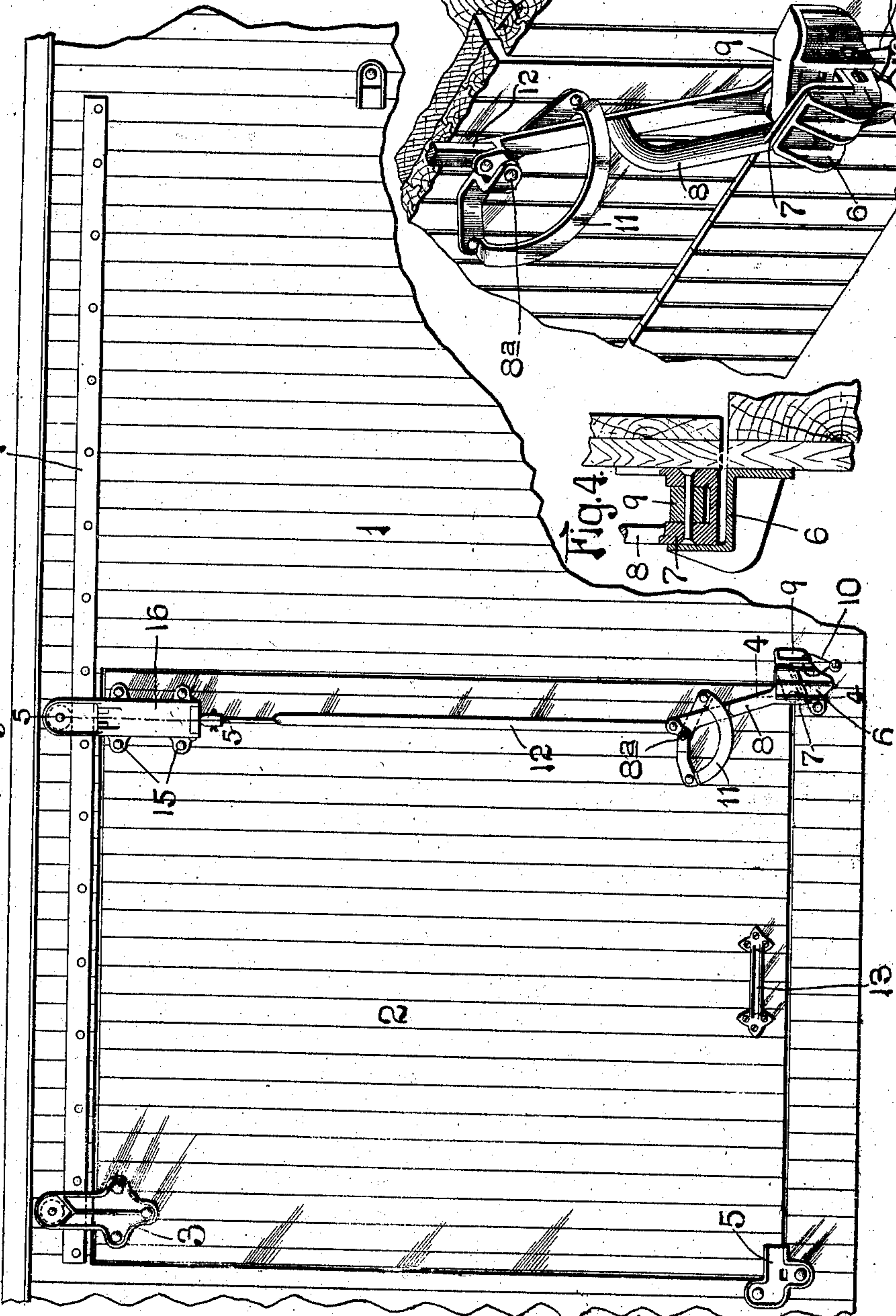
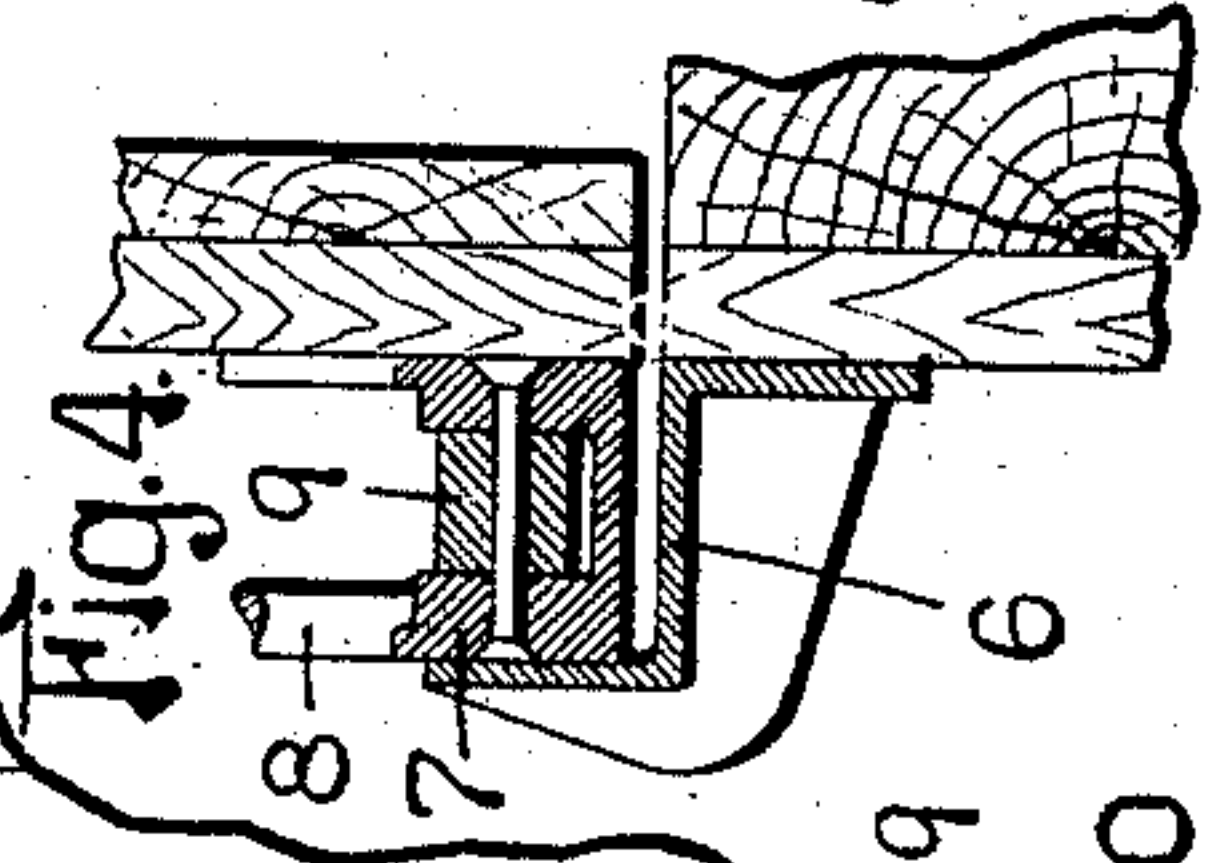
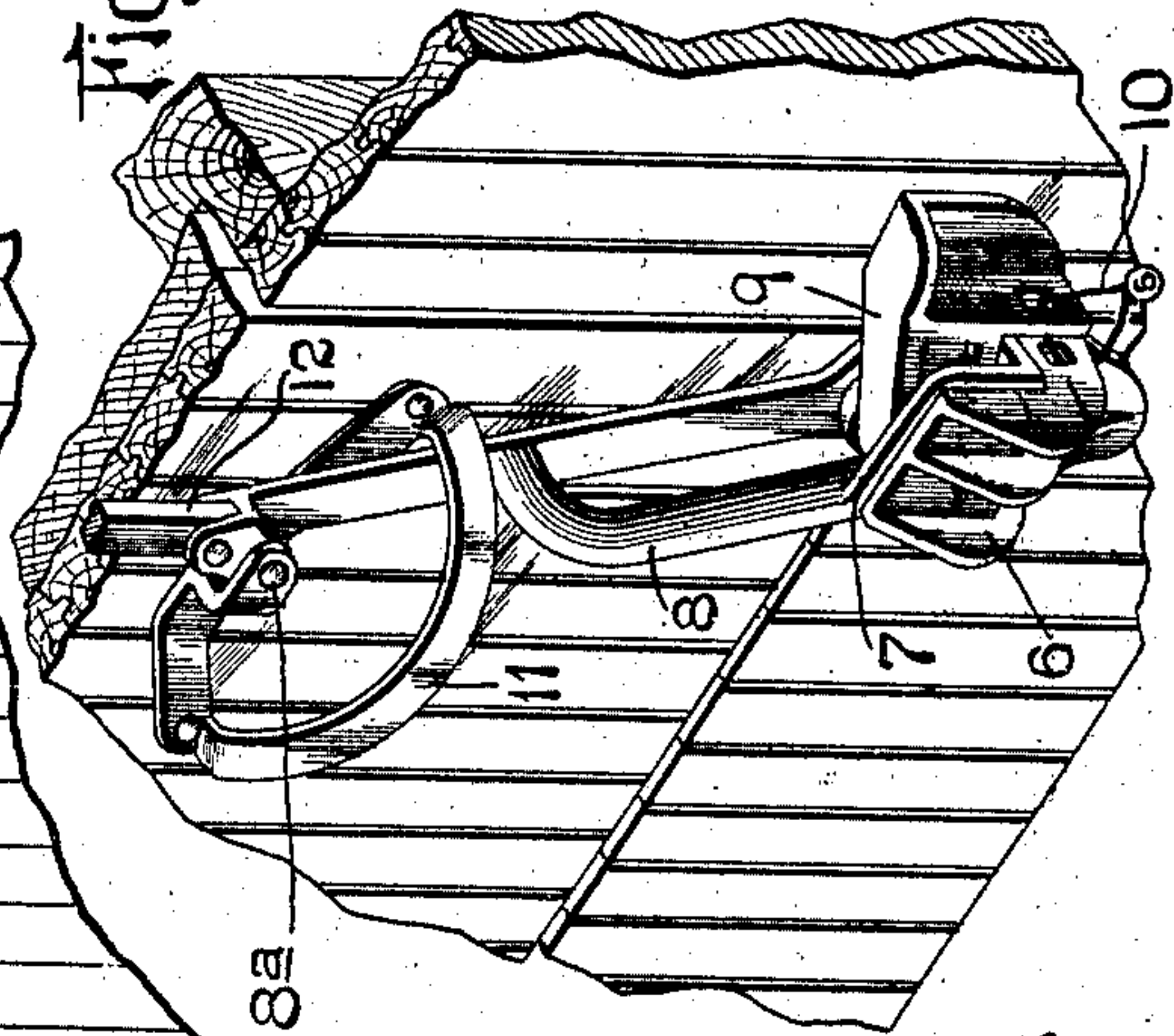


Fig. 3.



Witnesses  
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2 SHEETS—SHEET 2.

Fig. 5.

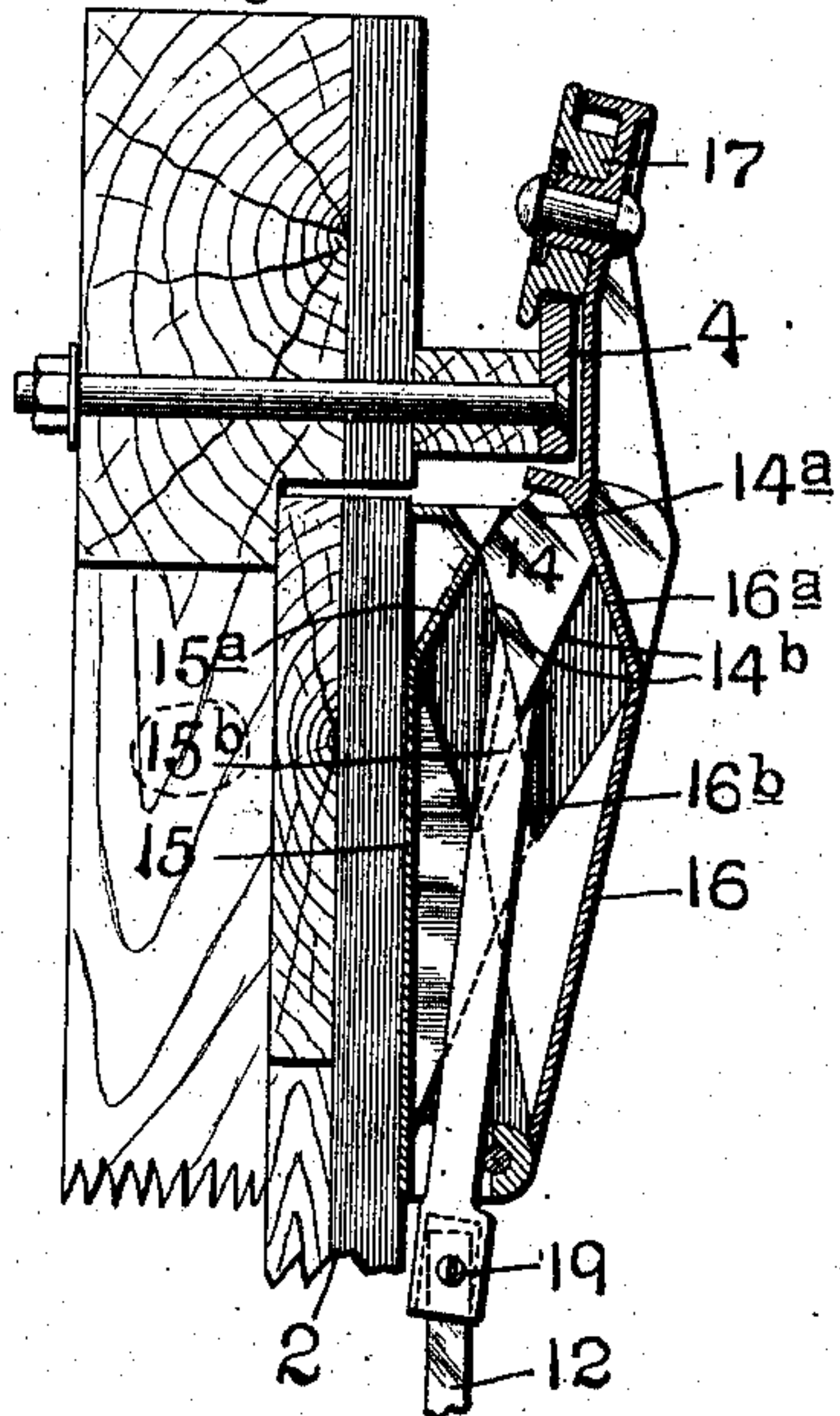


Fig. 6.

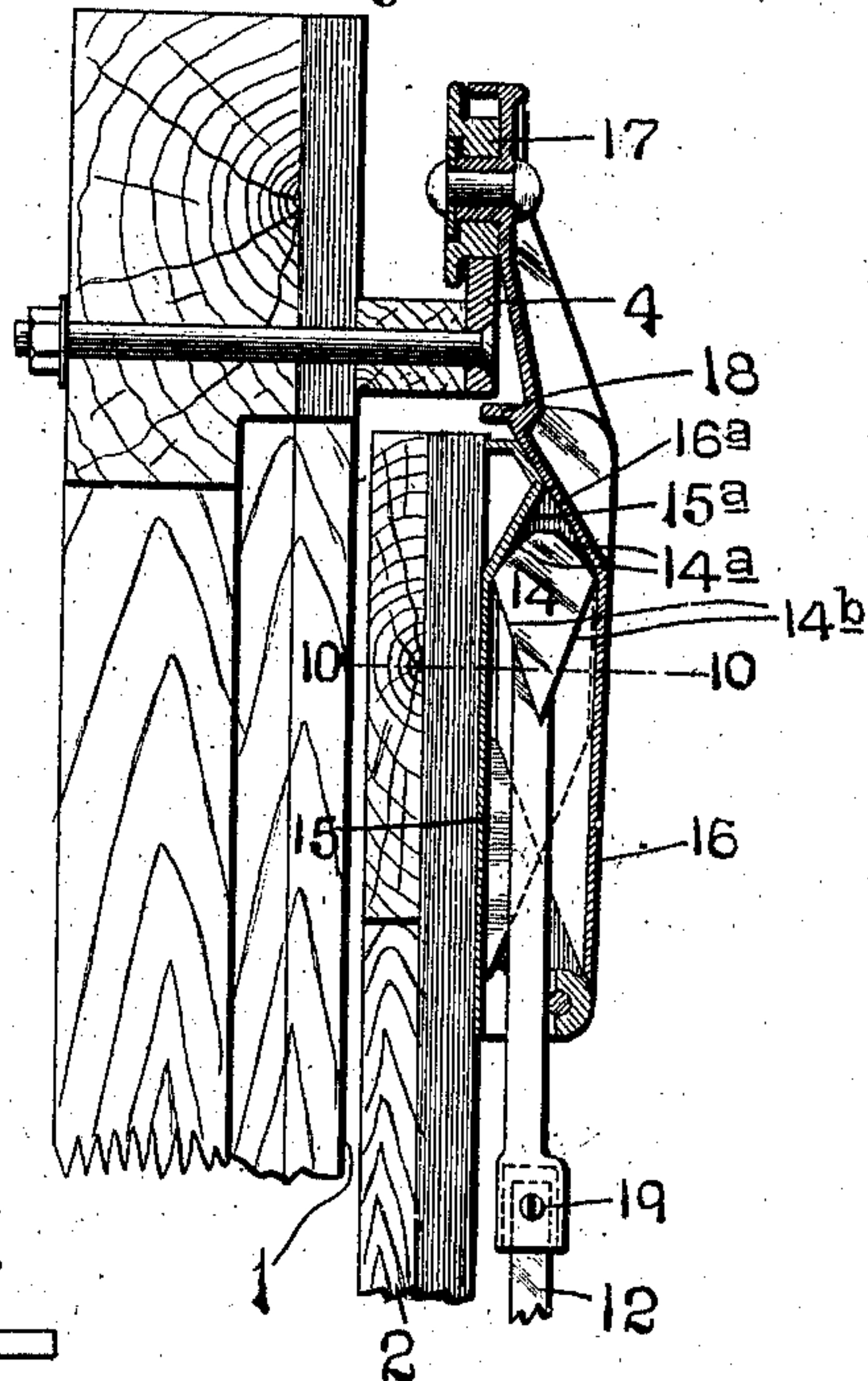


Fig. 7.

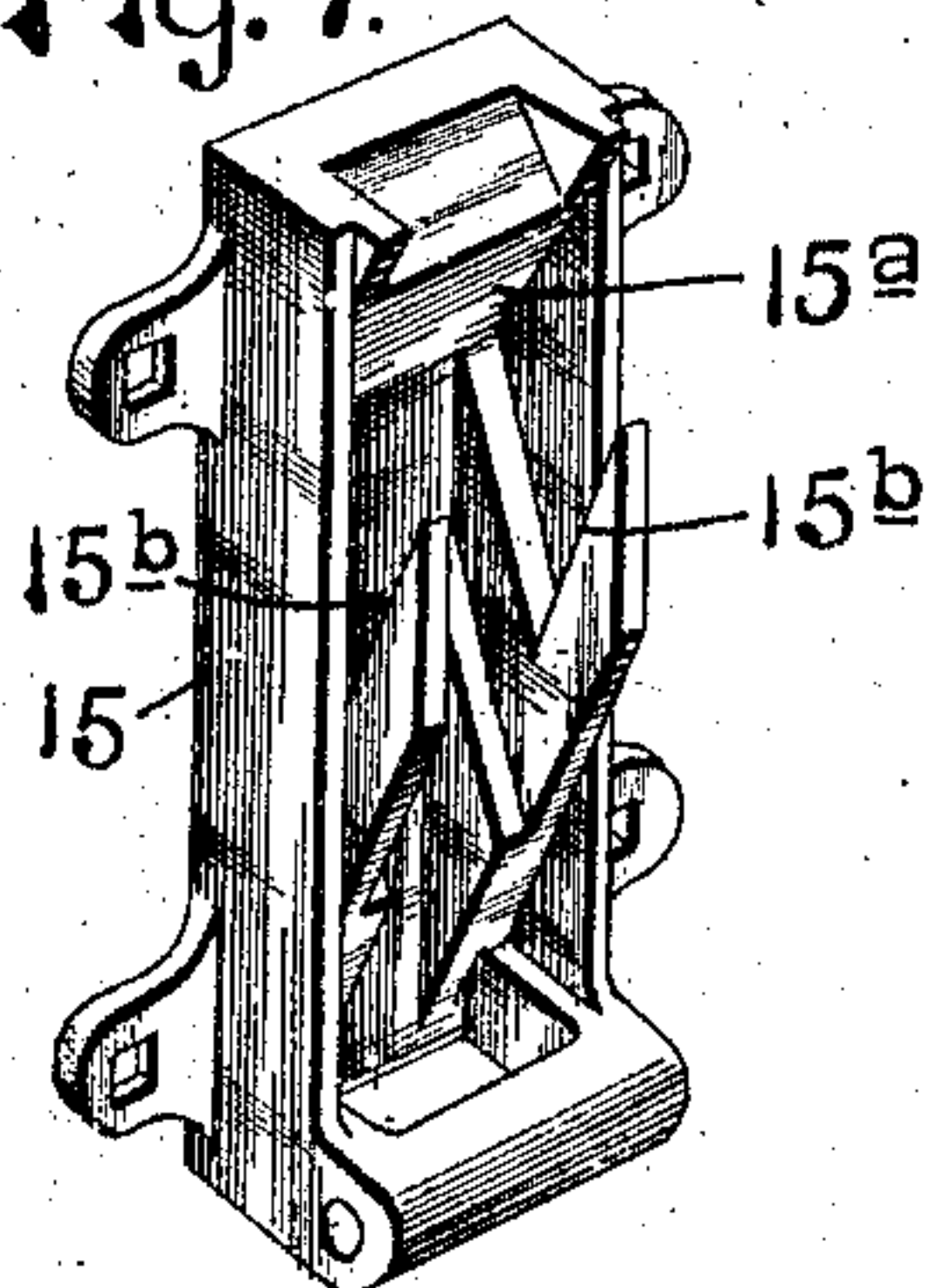


Fig. 11.

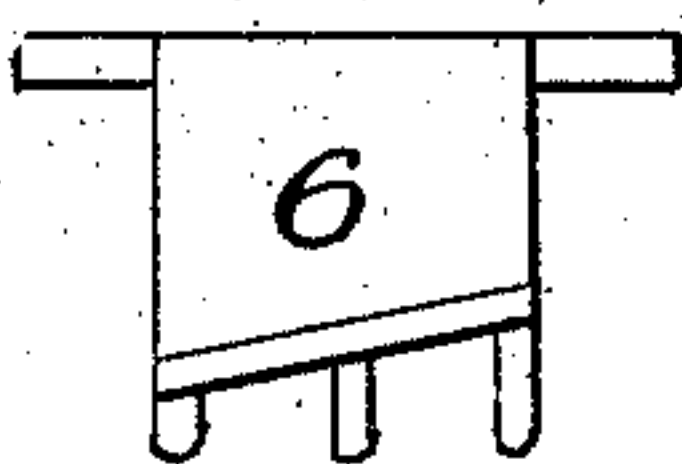


Fig. 9.

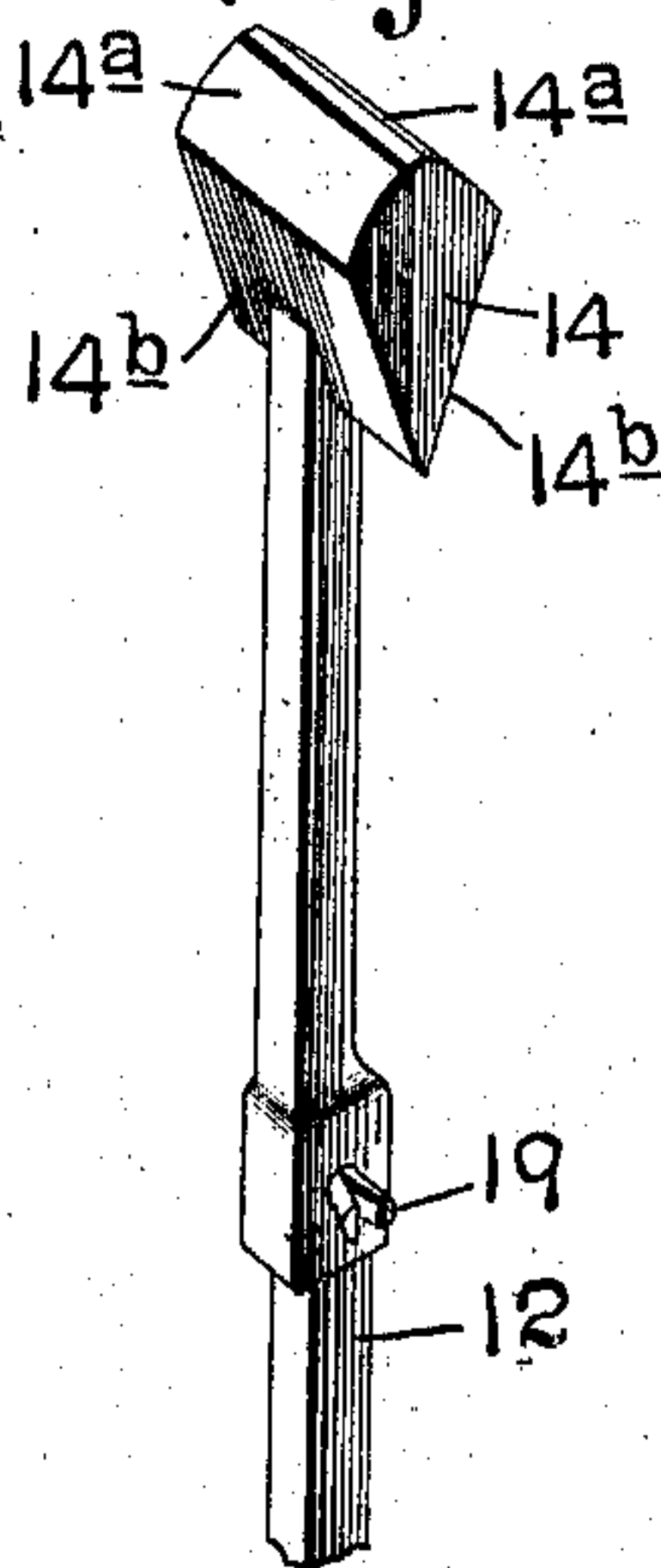


Fig. 8.

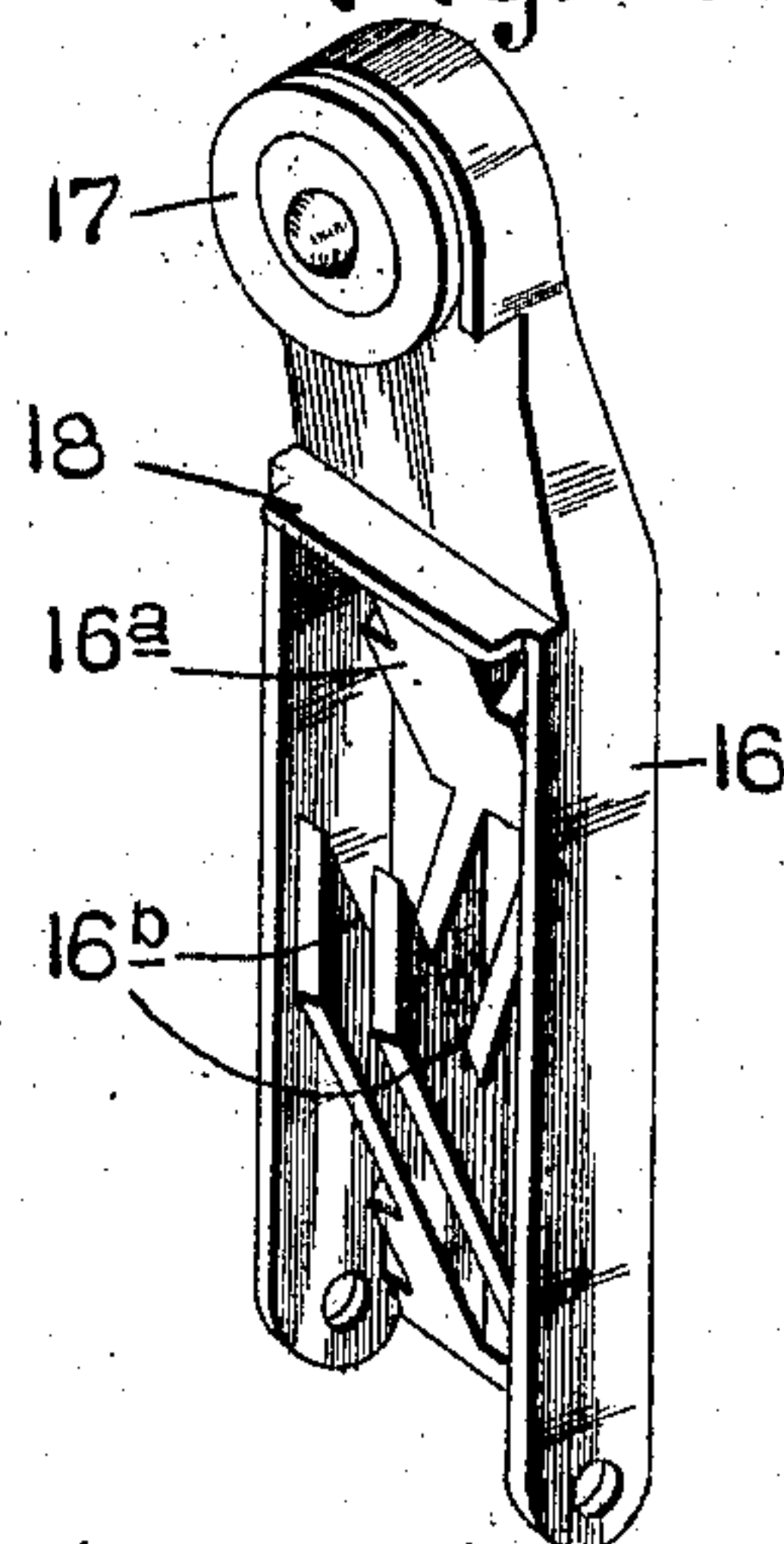
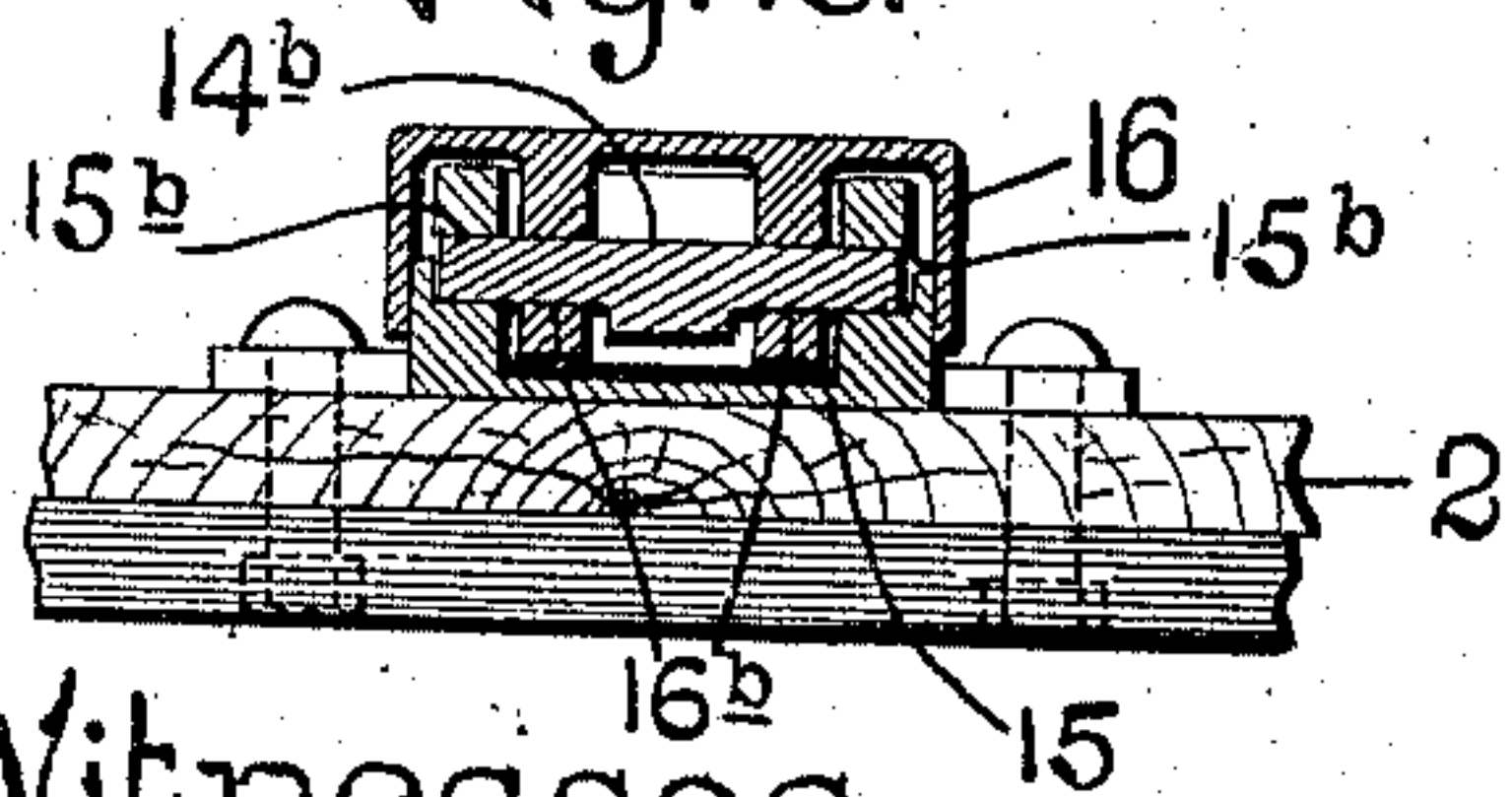


Fig. 10.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## FLUSH CAR-DOOR.

No. 846,595.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed February 18, 1905. Serial No. 246,304.

*To all whom it may concern:*

Be it known that I, RICHARD MOBLEY, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Flush Car-Doors, of which the following is 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, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view of a portion of a box-car, showing my improved door and its operating mechanism in position thereon. Fig. 2 is a top plan view of the hanger rail or track. Fig. 3 is a detail view of the locking mechanism for the lower edge of the door. Fig. 4 is a sectional view on the line 4 4 of Fig. 1. Fig. 5 is a sectional view on the line 5 5 of Fig. 1. Fig. 6 is a similar view showing the parts in a different position. Fig. 7 is a detail view of one of the hanger parts which is secured to the door. Fig. 8 is a detail view of the hanger part which carries the roller. Fig. 9 is a detail view of the wedge cooperating with the inclined faces of said hanger parts, and Fig. 10 is a cross-sectional view on the line 10 10 of Fig. 6. Fig. 11 is a plan view of the bracket-keeper, showing the arrangement of the cam-face thereof.

This invention relates to a new and useful improvement in flush car-doors, the object being to construct the fixtures which are mounted upon the flush door in such manner that the door will be positively locked in its closed position both at its upper and lower edges.

Another object is to simplify the construction of these fixtures so as to reduce their cost of manufacture, rendering them durable in service and practically waterproof.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will be hereinafter described and afterward pointed out in the claims.

In the drawings, 1 indicates the side wall of the car, and 2 the door, which door is hung at its forward edge by a hanger 3, whose roller cooperates with a rail or track 4, secured to the side wall of the car above the doorway. The forward end of this track recedes toward

the body of the car, as shown in Fig. 2, for the purpose of throwing the forward edge of the door into the opening flush with the side walls of the car. The lower forward edge of the door is held in position by the keeper 5. The rear edge of the door is provided with fixtures for moving said edge laterally into and out of the door-opening, the closed position of the door being that in which the door is flush with the side wall of the car, as shown in Fig. 5.

6 indicates a bracket secured to the car wall adjacent the lower rear corner of the door, with which cooperates a locking-wedge 7, carried on the lower end of an operating-handle 8, pivoted upon the door. Bracket 6, as shown in Fig. 11, has its vertical wall inclined or obliquely arranged with respect to the side wall of the car, so that when the wedge-block 7 cooperates therewith said wedge-block as it moves along said inclined or cam face to its home position forces the rear lower edge of the door securely home. This locking-wedge is provided with a pivoted member 9 having a depending perforated flange designed in the closed position of the door to drop behind the rear strengthening web of the bracket 6, which web is provided with an opening, and through these openings the seal-wire 10 is designed to pass, as shown in Fig. 3.

The upper end of the operating-handle of this locking-wedge is pivoted at 8<sup>a</sup> to the car-door in a suitable bearing, which bearing is provided with a curved extension 11, serving as a keeper for said handle. Connected to the handle near its pivotal point is a rod 12, which when the handle is swung to the left in Fig. 1 is moved downwardly, and when said handle is moved into engagement with the bracket 6 said rod 12 is moved upwardly. The lower edge of the door is provided with a handhold 13, which is designed to be grasped by the operator for the purpose of obtaining a purchase on the door to better enable the operation of the locking-wedge handle 8, said handle moving toward the door and away from said handhold in the closing position, both the handhold and said handle being in convenient reach of the operator.

The upper end of rod 12 carries a double-



inclined wedge-block 14, which, as shown in Fig. 9, extends on each side of the rod. This wedge-block operates between the companion parts of a roller-hanger, one of which, 15, is provided with an opening in its lower end wall for the passage of the upper end of rod 12, whereby said rod 12 is guided in its vertical movement. This lower end wall is perforated, as shown in Fig. 7, to receive a pivot-pin, whereby the companion part 16 of the hanger is pivotally connected to the part 15. The upper end of the hanger part 16 is provided with an inwardly-extending hood-flange serving as a guard for the hanger-roller 17, mounted in a suitable boss, said roller having a flange cooperating with the track 4, upon which the periphery of said roller rides, as shown in Figs. 5 and 6.

The parts 15 and 16 are preferably made of malleable iron, and each of said parts is provided with inclined faces for cooperating with the wedge-block 14, as follows: The hanger part 15 is provided with an inclined face 15<sup>a</sup> at its upper portion, and the hanger part 16 is provided with an inclined face 16<sup>a</sup> opposite the face 15<sup>a</sup>, said faces being appropriately recessed so as to interlock when the hanger is in the position shown in Fig. 6—to wit, the parts of the hanger are substantially parallel and the door open—so that both of said inclined faces 15<sup>a</sup> and 16<sup>a</sup> will have an extended bearing on the upper inclined faces 14<sup>a</sup> of the wedge-block. The function of these inclined faces 15<sup>a</sup> and 16<sup>a</sup> is to cooperate with the oppositely-inclined faces 14<sup>a</sup> of the wedge-block, so that when said wedge-block is forced upwardly, as shown in Fig. 5, the upper parts of the hanger are spread, forcing the upper edge of the door 2 inwardly in the door-opening. The hanger part 16 being suspended by its roller from the track 4 moves upon the track as a lever of the second order, causing part 16 and its roller to tilt, as shown in Fig. 5. Being pivotally connected to the door at a point near its upper edge through the part 15, the upper edge of the door is forced inwardly to its closed position. There is a stop 18 on the part 16 to limit the upward movement of the wedge-block 14, and the part 16 is cut away above the stop to accommodate the rail 4 and permit the inward swing of the part 16 in the closing movement of the door.

In order to accommodate the displacement of the wedge-block 14 due to the closing door and the movement of the parts above described, I prefer to provide a pivotal joint 19 in the rod 12.

15<sup>b</sup> indicate inclined faces on the part 15, which are formed on hook-like extensions, said faces cooperating with oppositely-inclined faces 16<sup>b</sup> on similar extensions of the part 16, these inclined faces 15<sup>b</sup> and 16<sup>b</sup> cooperating with the oppositely-inclined faces 14<sup>b</sup> of the wedge-block. The upper ends of

the hook-like extensions so cooperate with the faces 14<sup>b</sup> that they at no time are disengaged from said faces, the stop 18 preventing such a vertical movement of the wedge-block in an upward direction as would cause said wedge-block to pass from between the faces 15<sup>b</sup> and 16<sup>b</sup>. The inclination of the faces 16<sup>a</sup> and 15<sup>b</sup> and 15<sup>a</sup> and 16<sup>b</sup> is such that when cooperating with the inclined faces of the wedge-block 14 there is a sufficient amount of play to permit the free movement of the wedge-block without interference from the idle faces; but this clearance is preferably not such as to amount to any considerable lost play, as the pivotal connection between the rod 12 and the operating-handle 8 is such that but a limited amount of throw is imparted to the rod 12, and this throw must be sufficient when in an upward direction to cause the wedge-block to spread the parts 15 and 16 sufficiently to force the door tightly in its opening, the downward throw drawing said parts together, as shown in Fig. 6, so as to insure the door clearing the side wall of the car when moved along its supporting track or rail.

From the above construction it will be observed that I dispense with the use of lever-joints and other moving parts which are liable to bind or cramp in movement, my improved wedge action being positive and exerting considerable force not only in the closing but in the opening movement of the door. The closing movement of the door occurs as the wedge moves upwardly and is thus located at a point with respect to the fulcrum and resistance of the part 16 that sufficient power can be exerted upon the door to insure its home position. The opening movement resulting from the downward stroke of the wedge-block also insures a fully-open position of the door, gravity assisting the parts in maintaining this open position.

It is obvious that to swing the door to its extreme outer position, as shown in Fig. 6, the handle 8 will be operated to the left from the position shown in Fig. 1. This handle is held in this position while the door is moved on the track-rail 4, so as to give access to the doorway, and when the door is fully opened the handle 8 is released. The locking-wedge on the end of the handle serves as a weight to force the rod 12 upwardly, and in so doing the wedge-block 14 exerts a constant tendency to force the door inwardly, thus assisting gravity in causing door to impinge against the side wall of the car. This is an important feature, I consider, because when the door is open the switching of the car has a tendency to cause the door to move along the track-rail, and this tendency is overcome by the impingement of the door against the side wall of the car.

I am aware that minor changes in the con-



struction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

10 1. In a flush car-door, the combination with a bracket-keeper having an inclined or cam face, said keeper being secured to the side wall of the car near the lower rear edge of the door-opening, a lever mounted on the door and swinging in a plane parallel to the face thereof, said lever being provided with a locking-wedge cooperating with the inclined or cam face of said keeper, a roller-hanger pivotally connected to the upper rear edge of the door and suspending said door from the track-rail arranged on the side wall of the car, and means for connecting the said lever and for cooperating with the said roller-hanger for moving the rear edge of the door inwardly into its opening; substantially as described.

2. In a flush car-door, the combination with a bracket-keeper having an inclined or cam face, said bracket-keeper being secured to the side wall of the car adjacent the rear lower edge of the door-opening, a lever pivotally mounted on the car-door and movable in a plane parallel to the face thereof, said lever being provided with a locking-wedge cooperating with the inclined or cam face of said keeper, a pivoted part carried by said lever and having an opening designed to register with an opening in the bracket-keeper for the passage of a seal-wire, a roller-hanger pivotally connected to the upper rear edge of the door for suspending the door from the track-rail, means operating between said roller-hanger and the upper rear edge of the door for moving said door inwardly and outwardly, and a connection between said lever and said means; substantially as described.

3. In a flush car-door, the combination with the door, of vertically-operable means for moving the upper rear edge of the door into and out of its opening, and means movable in a plane parallel to the face of the door for wedging the lower edge of the door in place, said wedging means being operatively connected to said first-mentioned means; substantially as described.

4. The combination with a car-door, of a hanger mounted upon the upper rear edge thereof, said hanger comprising two parts pivotally connected together, one of said parts being mounted upon the door and the other of said parts carrying a roller, a wedge-block operating between said parts for opening and closing them, a bracket-keeper on the side wall of the car adjacent the rear

edge of the door-opening, said bracket-keeper having an inclined or cam face and a lever connected to said wedge-block and carrying a locking-wedge for cooperating with the inclined or cam face of said keeper; substantially as described.

5. The combination with a car-door, of a hanger part secured thereto, a companion hanger part pivotally connected to the first-mentioned part and carrying a roller at its upper end, said hanger parts each being provided with oppositely-inclined faces  $15^a$   $15^b$ , and  $16^a$   $16^b$ , respectively, and a wedge-block having oppositely-inclined faces  $14^a$   $14^b$  for cooperating therewith; substantially as described.

6. A hanger for flush car-doors comprising a door part and a roller part pivotally connected together at their lower ends and each having inclined faces  $15^a$   $15^b$ , and  $16^a$   $16^b$ , respectively, and a wedge-block arranged between and cooperating with said inclined faces; substantially as described.

7. A hanger for flush car-doors comprising a door part and a roller or track part, each having oppositely-inclined faces  $15^a$   $15^b$ , and  $16^a$   $16^b$ , respectively, a wedge-block arranged between and cooperating with said inclined faces, and means for operating said wedge-block, said means comprising in part a rod having a joint in its length to accommodate the lateral movement of the wedge-block; substantially as described.

8. A hanger for flush car-doors comprising a door part 15 having inclined faces  $15^a$  and  $15^b$ , a roller part 16 carrying a flanged roller at its upper end, which roller is designed to roll on a track, said part 16 being pivotally connected at its lower end to the part 15 and having inclined faces  $16^a$  and  $16^b$ , and a wedge-block operating within and between the parts 15 and 16, said wedge-block having inclined faces  $14^a$  for cooperating with the inclined faces  $15^a$  and  $16^a$ , and said wedge-block also having inclined faces  $14^b$  for cooperating with inclined faces  $15^b$  and  $16^b$ ; substantially as described.

9. A hanger for flush car-doors comprising a door part and a roller part pivotally connected together, means for swinging said parts on their pivotal connection, and a gravitating device mounted on the car-door and moving in a plane parallel to the face of said door, said gravitating device cooperating with said means and exerting an energy on said parts tending to cause the door to impinge against the side wall of the car when in its fully-open position; substantially as described.

10. The combination with a car-door, of a hanger comprising a door part and a roller part pivotally connected together, and each having inclined faces, a wedge-block cooperating with said inclined faces to move the door



laterally, a lever connected to said wedge-  
block, a locking-wedge on said lever forming  
a weighted end thereof and a bracket-keeper  
having an inclined or cam face, said bracket-  
5 keeper being secured to the side wall of the  
car adjacent the lower rear edge of the door-  
opening and designed to cooperate with the  
locking-wedge when the door is opposite its  
opening for wedging the lower rear edge of

the door in its home position; substantially 10  
as described.

In testimony whereof I hereunto affix my  
signature, in the presence of two witnesses,  
this 16th day of February, 1905.

RICHARD MOBLEY.

Witnesses:

F. R. CORNWALL,  
GEORGE BAKEWELL.