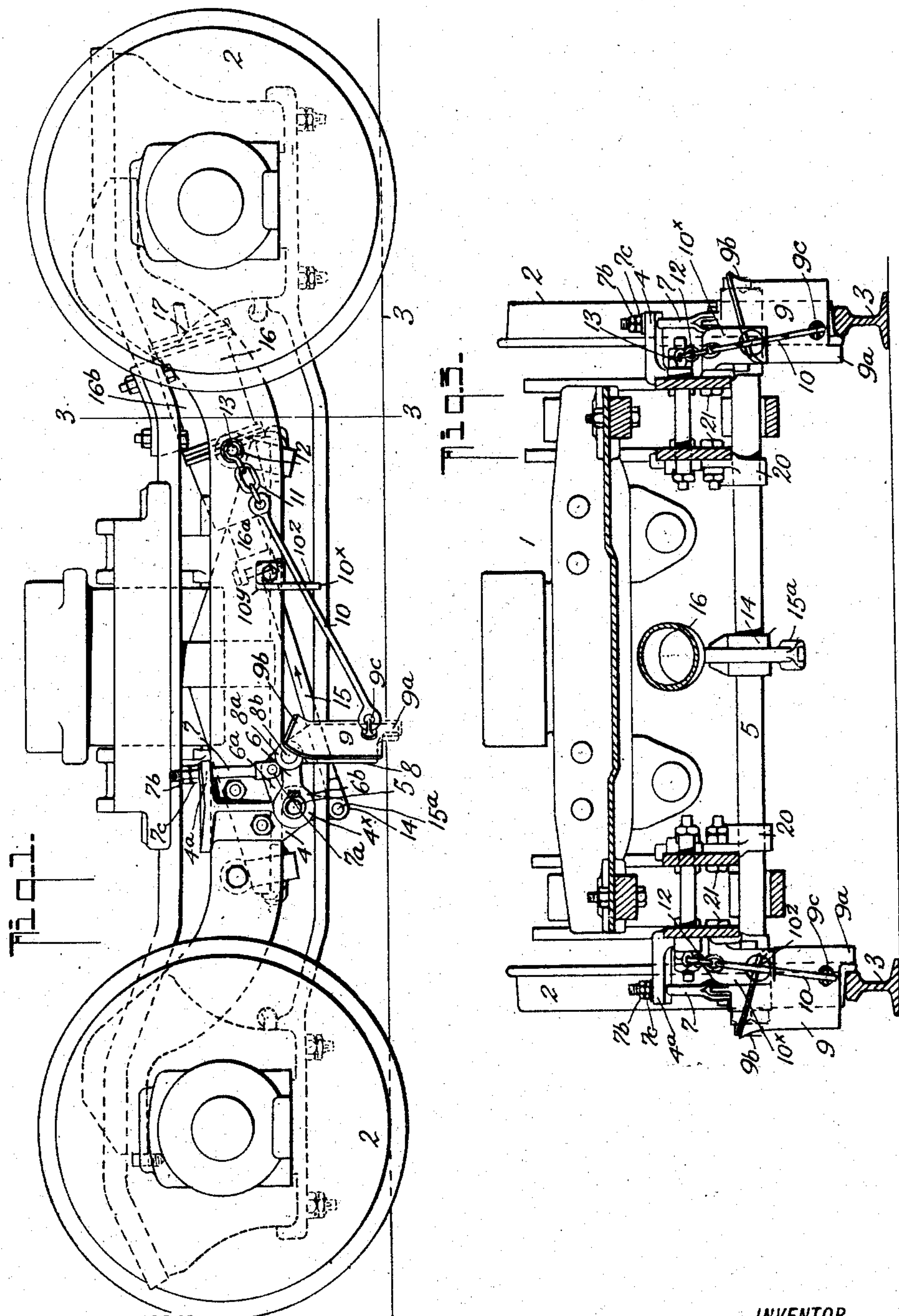


W. CROSS.
SNOW AND ICE SCRAPER.
APPLICATION FILED APR. 27, 1908.

Patented Dec. 22, 1908.
3 SHEETS--SHEET 1.

907,317.



WITNESSES:

Hayward Woodard

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William Cross.

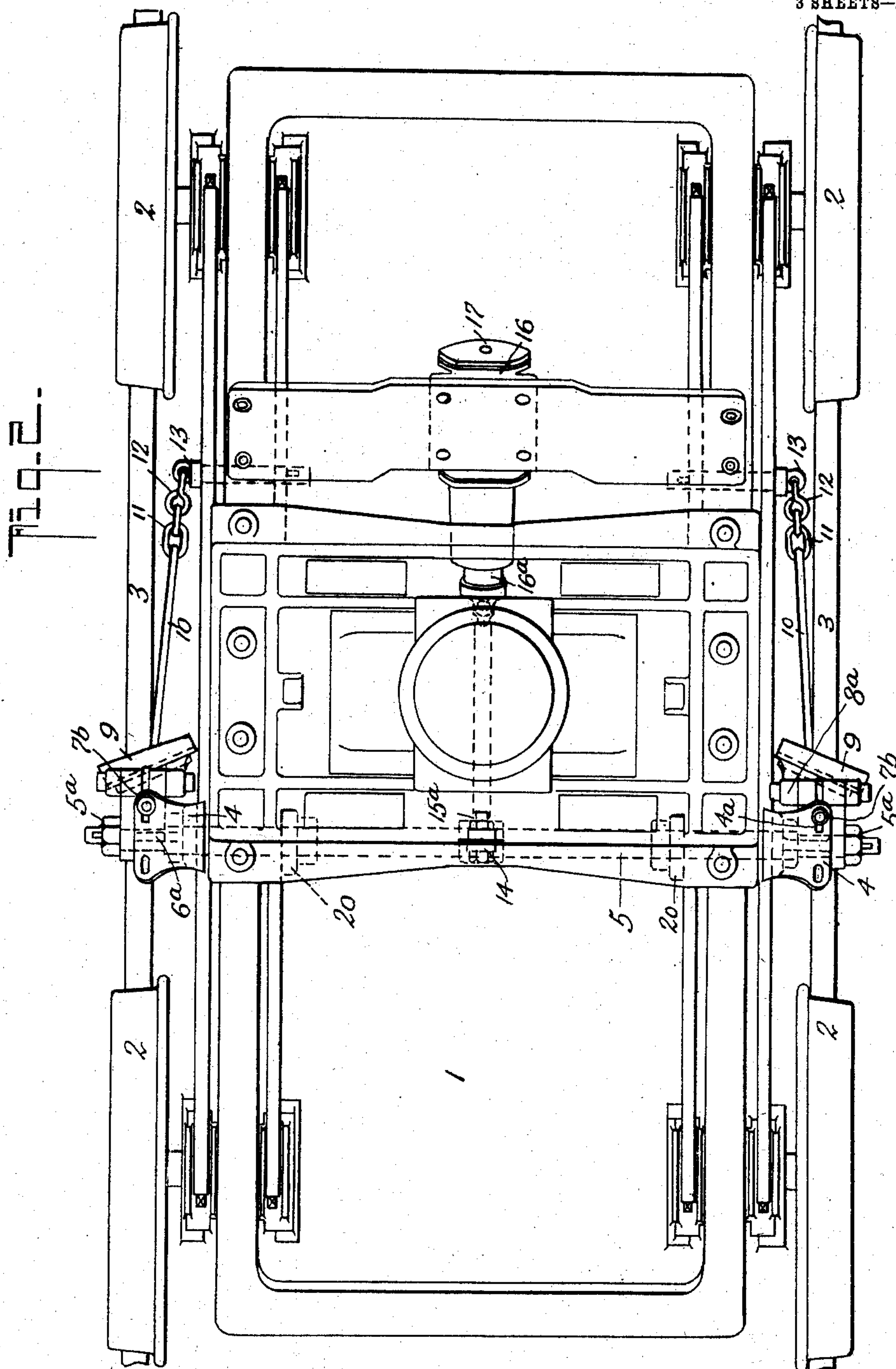
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3 SHEETS—SHEET 3.

Fig. 4.

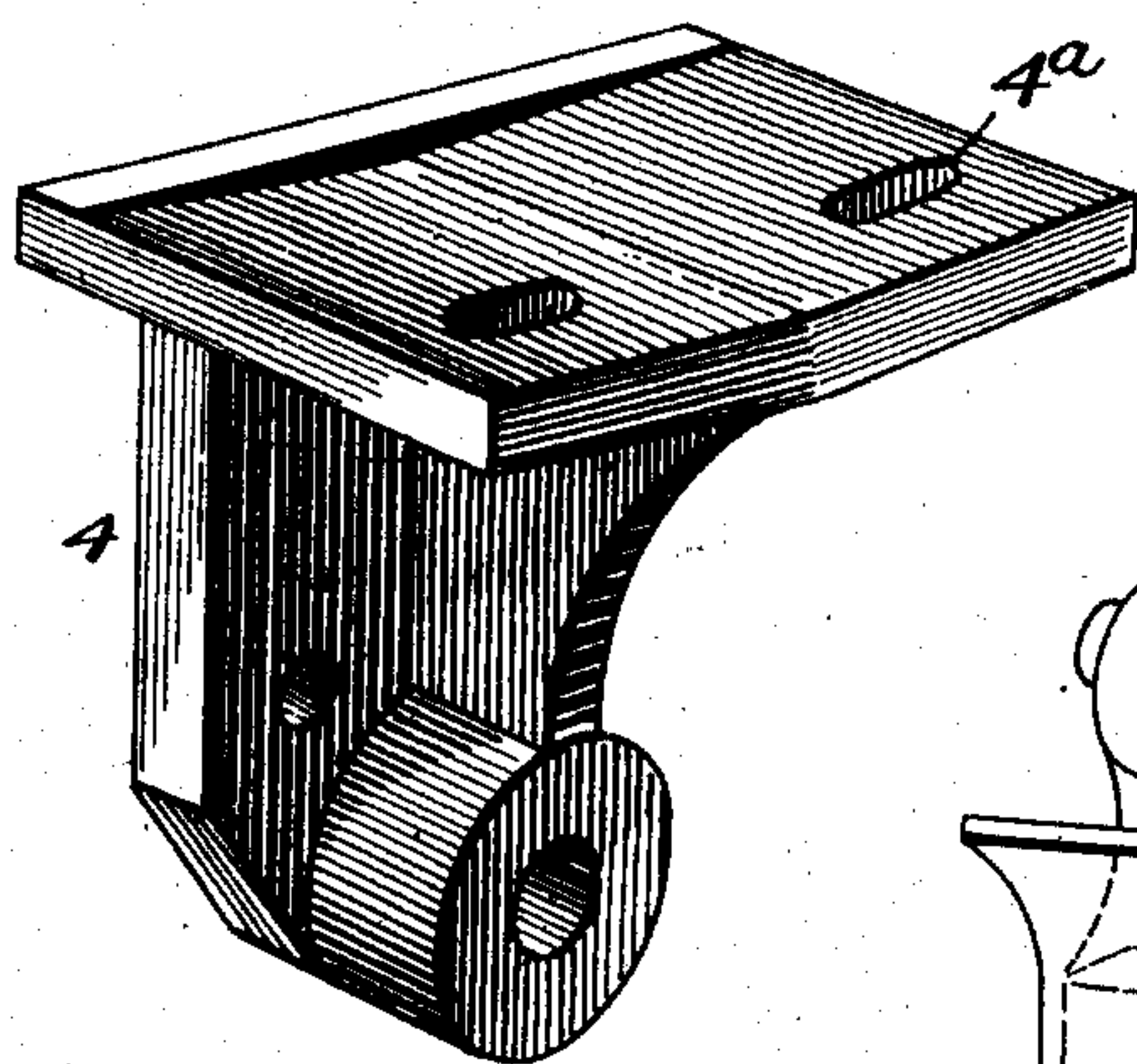


Fig. 5.

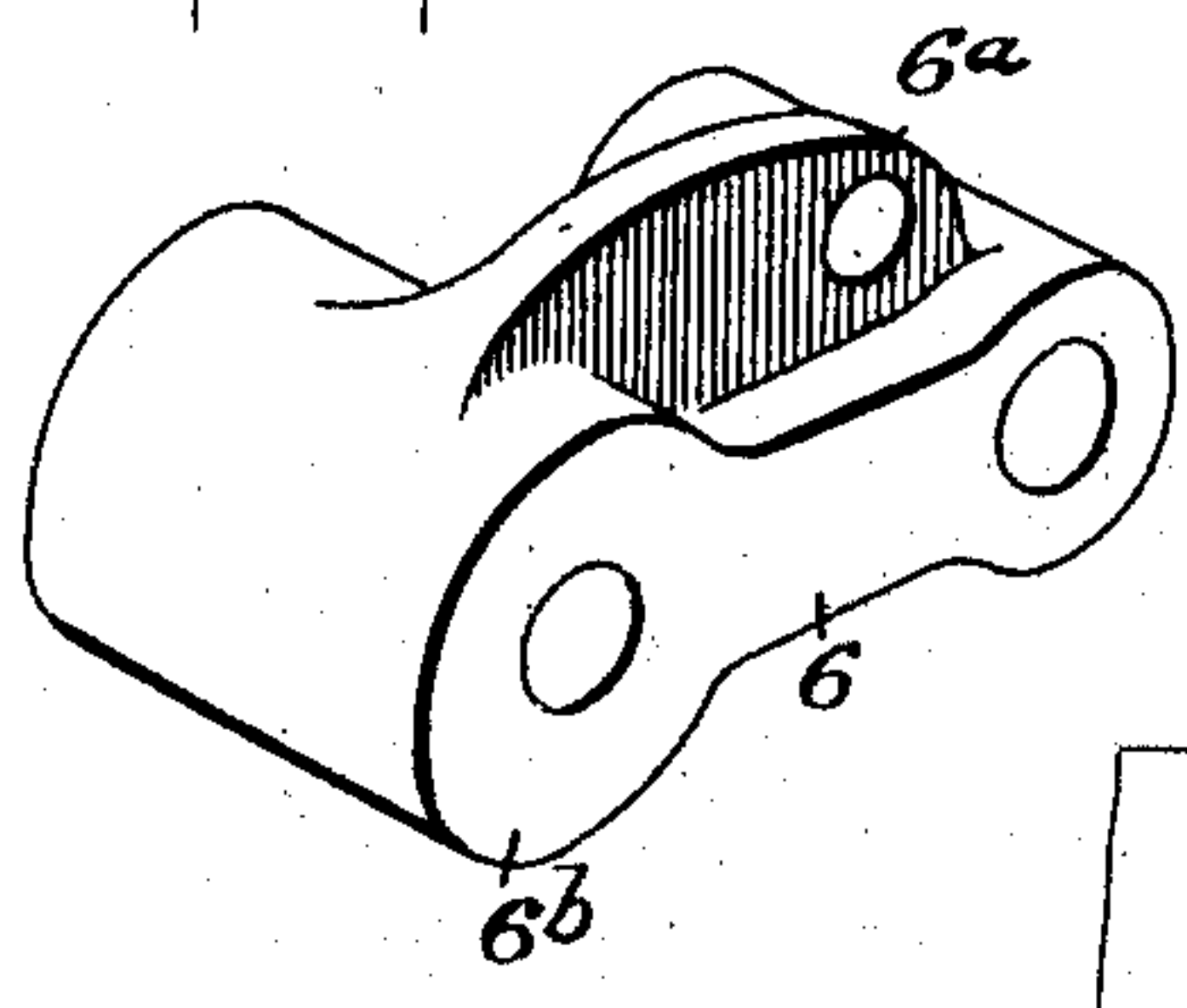


Fig. 6.

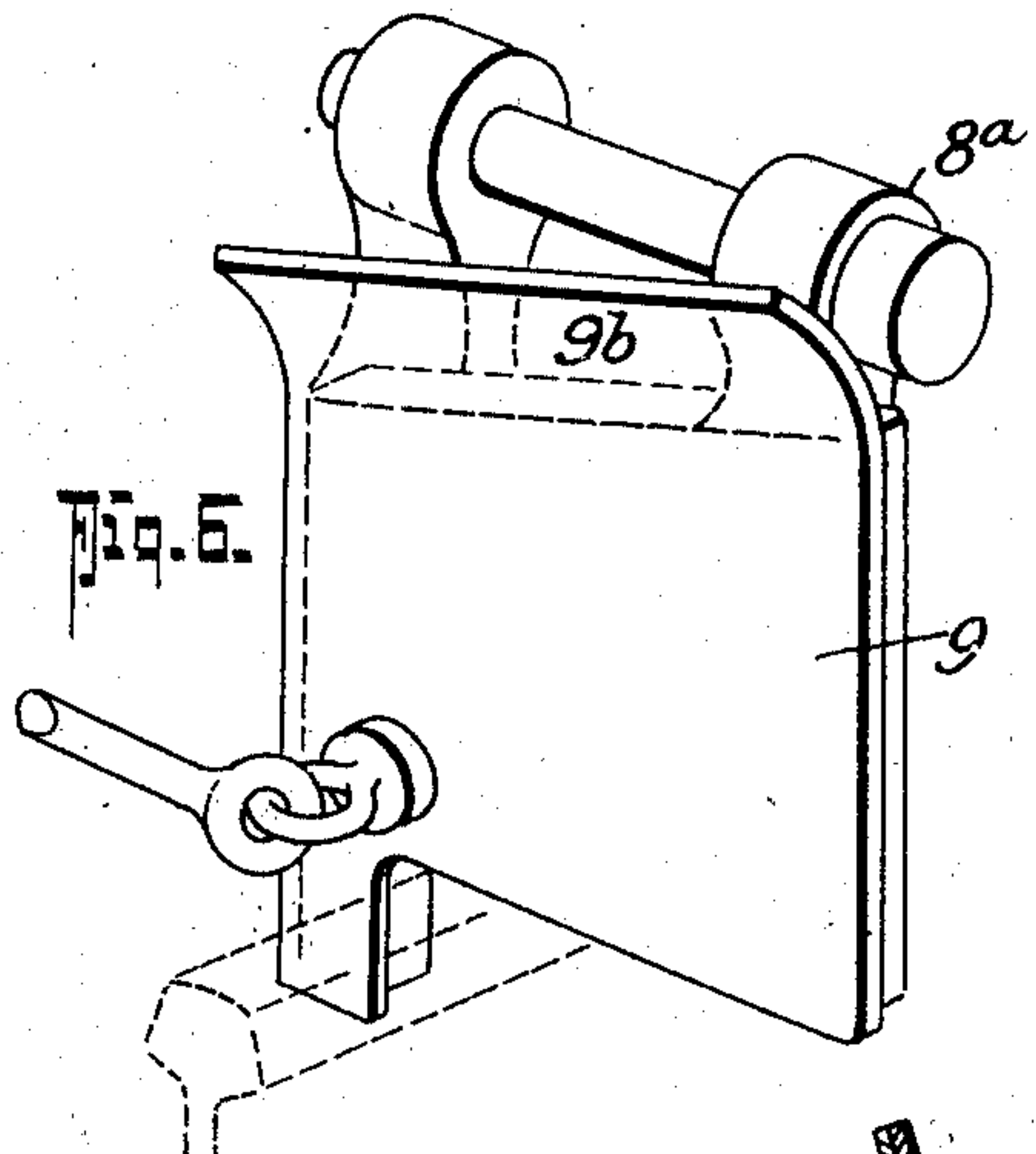


Fig. 7.

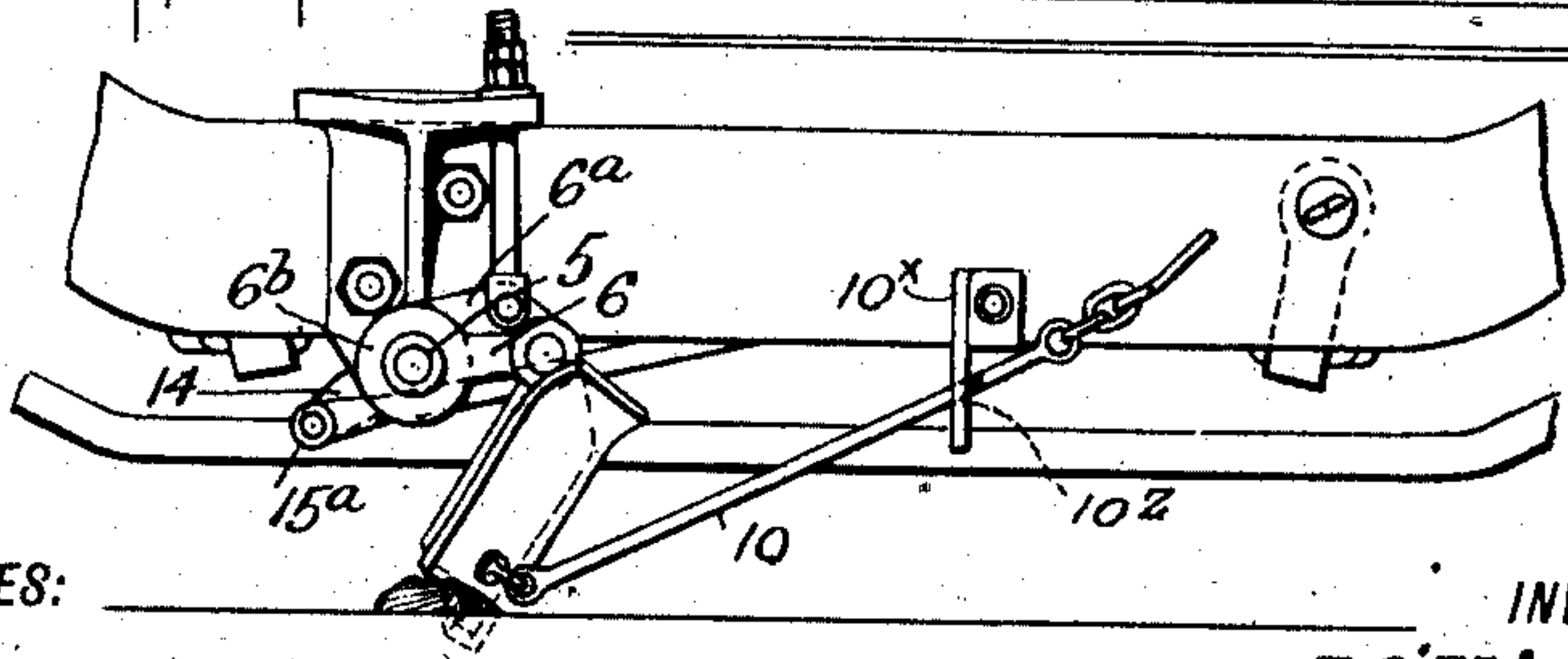
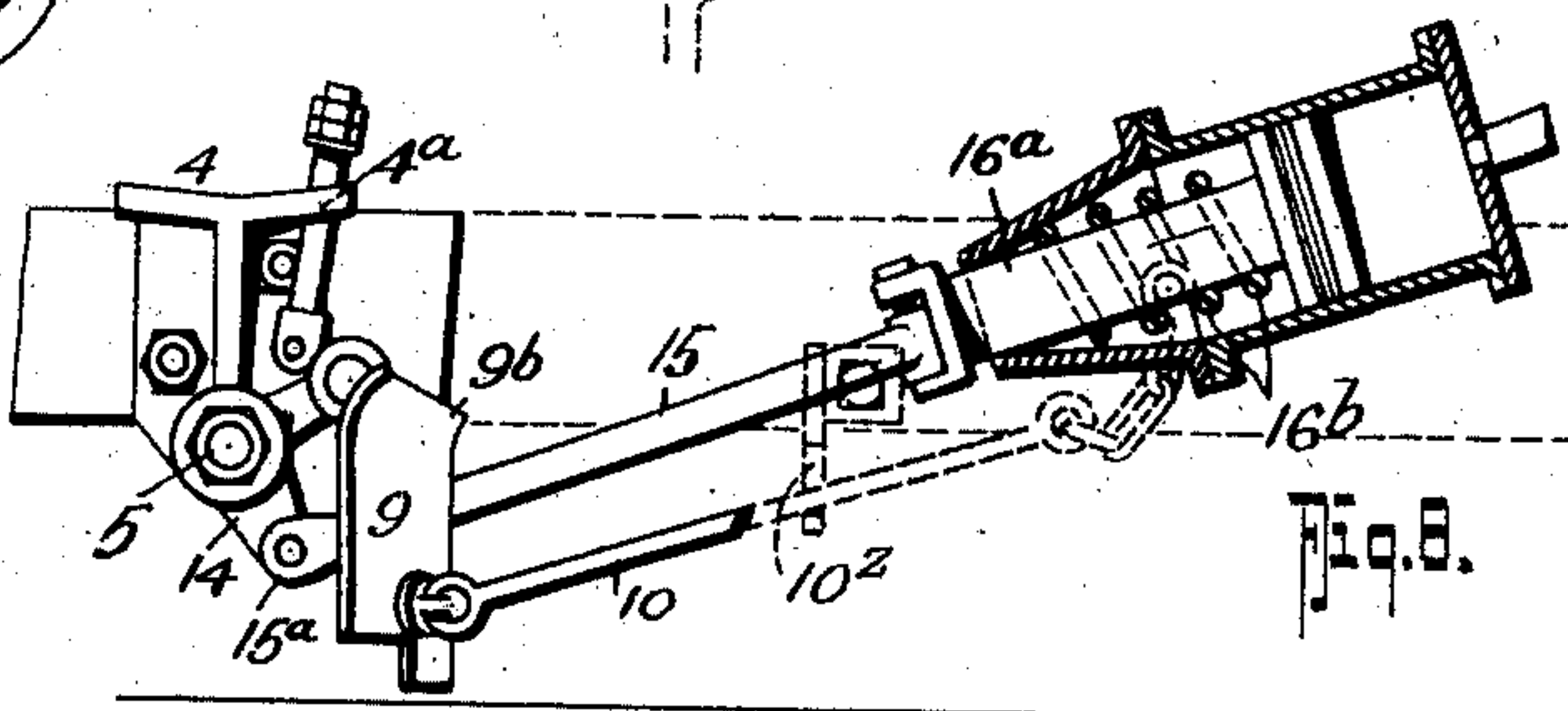


Fig. 8.



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UNITED STATES PATENT OFFICE.

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SNOW AND ICE SCRAPER.

No. 907,317.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed April 27, 1908. Serial No. 429,435.

To all whom it may concern:

Be it known that I, WILLIAM CROSS, residing at Winnipeg, Province of Manitoba, Dominion of Canada, have invented certain
5 new and useful Improvements in Snow and Ice Scrapers, of which the following is a specification.

My invention relates to certain new and useful improvements in snow and ice scrapers
10 for use on railroads and the like, and in its generic nature the invention embodies a scraper located behind the leading engine truck wheels of a locomotive to cooperate with the pilot plow in clearing the tracks of
15 ice and other similar obstructions.

In its generic nature the invention embodies a scraper mounted on the truck frame projecting down into engagement with the track rail, and means for automatically projecting the scraper plate into engagement
20 with the track rail at times and means for normally holding the scraper out of engagement with the track rails when not in use.

My invention also seeks to provide a device
25 of this character which will not be in the way of the track signals particularly those of the explosive type which are fastened to the rail and will therefore not interfere with safety signals being placed on the track and
30 thus will not render the system unsafe.

In its more subordinate nature the invention embodies those novel details of construction, combination and arrangement of parts, all of which will be first described in detail,
35 and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1, is a side elevation of a track embodying my invention. Fig. 2, is a plan
40 view thereof. Fig. 3, is a cross section on the line 3—3 of Fig. 1. Fig. 4, is a detail perspective view of one of the brackets which are secured to the equalizer bars or other portion of the truck, and in which the operating
45 shaft is mounted. Fig. 5, is a perspective view of one of the lever members that are carried by the operating shaft and to which the scrapers are pivoted, Fig. 6, is a perspective view of one of the scrapers, Fig. 7,
50 is a detail diagrammatic side elevation showing the manner of operation of my invention should the scraper meet an obstruction, and showing the manner in which it is released. Fig. 8, is a detail section showing
55 the position of the scraper when in its normal position out of engagement with the rail.

Referring now to the accompanying drawings, in which like letters and numerals of reference indicate like parts in all of the figures, 1 represents the front truck of a locomotive having the usual equalizer bars, which
60 truck is provided with the usual wheels 2 to run on the tracks 3, the construction of the truck may be of any approved type, as the same *per se* forms no part of my present
65 invention.

Bolted to the equalizer bars of the truck, or to any other suitable portion of the truck frame, and at each side thereof, is a bracket
70 4 which is provided with a bearing portion 4^x to receive the rock shaft 5 which passes from side to side of the truck and through supplemental bearing members 20 secured to the inside of the equalizer bars of the truck.

Secured to the projecting ends of the shaft
75 5 at each side of the truck is a lever member 6 which has a hub portion 6^b keyed to the shaft 5 and also held in place by a suitable nut 5^a, and the lever member 6 is also provided with a strengthening web 6^a and
80 another bearing portion in which the stub shaft or bolts 8^b are mounted, the bolts 8^b also passing through the ears 8^a of the scraper support 8 to which the scraper 9 is secured in any approved manner. The
85 scraper 9 is formed with a projection 9^a which is adapted to enter the groove of the rail, when a grooved rail is in use, or to project alongside of the rail when a T-rail is used. The scraper 9 is also provided with
90 a curved upper end 9^b to throw off the snow and ice as it is scraped up on the rail.

In order to hold the scraper 9 at the proper distance above the rail, as shown in Fig. 1, I provide a hanger 7 which is pivoted
95 at 7^a to the web 6^a of the lever member 6, and which projects through an aperture 4^a in the upper web of the bracket 4 and is secured by a check bolt 7^b, as shown, the bolt 7 having a free upward movement through the
100 aperture 4^a, but the check nut 7^c serves to limit the downward movement thereof which downward movement may be adjusted by adjusting the check nut.

In order to limit the backward swing of
105 the scrapers 9 and their supports 8 on the fulcrum 8^b, I provide a rod 10 which is linked to the scraper 9, by an eye bolt 9^c, as indicated in Fig. 1 of the drawings, and the rod 10 passes through the enlarged aperture
110 10^z of a bracket 10^x that is bolted at 10^y to the frame of the truck.

The rod 10 is secured to an S-hook 12 by links 11, the S-hook being in turn secured to an eye-bolt 13 that passes through a portion of the frame of the truck, the S-hook 12 is
 5 made of smaller iron than the stay rod 10, so that in case the scraper strikes any hard obstruction it will swing back and the S-hook will open to disconnect the stay rod 10 from the bolt 13, it being understood that the
 10 bracket 10^x supports the stay rod and prevents it falling down and engaging the road bed or track.

14 designates a lever clamped to the shaft 5 to which the piston rod 15 from the air
 15 piston cylinder is pivotally connected at 15^a. The piston rod 15 also connects with the piston 16^a that operates in the air cylinder 16, a coil spring 16^b being provided in the cylinder to normally move the rod 15 in the
 20 direction of the arrow in Fig. 1, so as to hold the scraper 9 up in the position shown in Fig. 8 of the drawings, out of its operative position with respect to the track, so that in case track signals are used on the road the
 25 scraper will not displace them. The cylinder 16 is connected through a port 17 with the air supply system of the locomotive and is controlled by any suitable valve in the engineer's cab, so that when the engineer
 30 opens his valve and allows the cylinder 16 to be filled with compressed air from the tank the piston will be forced into a direction opposite to the arrow in Fig. 1 and rotate the shaft 5 to move the scrapers 9 into their
 35 operative relation with respect to the rails of the track, see Fig. 1. Stud bolts 21 are preferably secured into the back boxes against the equalizers, as shown, to prevent the equalizers moving backwardly when my
 40 invention is applied thereto. It should be stated that the scrapers 9 are preferably arranged at an angle to the tread face of the rail so as to throw the debris to one side of the track and prevent it accumulating be-
 45 tween the rails.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of my invention will
 50 be readily understood by those skilled in the art to which it appertains, and I desire to say that numerous changes in the details of construction may be readily made without departing from the spirit of the invention
 55 or the scope of the appended claims.

What I claim is:

1. In combination with a truck, an operating shaft mounted thereon, a lever mounted on said shaft to move therewith, a scraper
 60 pivoted on said lever, means for normally holding said scraper out of operative relation with the track, means for moving said scraper into operative relation with the track, and means for limiting the movement
 65 of the operative shaft in one direction, said

last named means comprising a bolt secured to said lever and passing through a fixed support and movable endwise in one direction.

2. In combination with a truck having 70 two sets of wheels, a shaft mounted thereon between the sets of wheels, levers carried by said shaft, scrapers carried by the levers, combined with means for preventing the movement of said scrapers in one direction, 75 and means for automatically operatively disconnecting said last named means when the scraper meets an obstruction.

3. In combination with the front truck of a locomotive, said truck having a pair of 80 relatively closely spaced sets of wheels, an operative shaft mounted on said truck between said wheels, means for limiting the rotation of said shaft in one direction, means for moving said shaft in the opposite direc- 85 tion, and scraper members coöperatively connected to said shaft to be brought into and out of operative relation by the movement of said shaft, and means for imparting motion to said shaft. 90

4. In combination with a wheeled truck, brackets carried thereby, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, actuating 95 means connected with said lever, and a scraper pivoted to said lever to coöperate with the track.

5. In combination with a truck having two sets of wheels, brackets carried thereby 100 between said sets of wheels, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage the 105 track, and means for rotating said shaft to normally hold said scraper out of operative relation with the track.

6. In combination with a truck having two sets of wheels, brackets carried thereby 110 between said sets of wheels, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage 115 the track, means for rotating said shaft to normally hold said scraper out of operative relation with the track, means for rotating said shaft to move said scraper into operative relation with the track. 120

7. In combination with a truck having two sets of wheels, brackets carried thereby between said sets of wheels, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in 125 one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage the track, means for rotating said shaft to normally hold said scraper out of operative relation with the track, means for rotating 130

said shaft to move said scraper into operative relation with the track, and means for limiting the movement of the scraper on its pivot in one direction.

5 8. In combination with a truck, brackets carried thereby, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to
10 said lever to engage the track, means for rotating said shaft to normally hold said scraper out of operative relation with the track, means for rotating said shaft to move
15 said scraper into operative relation with the track, means for limiting the movement of the scraper on its pivot in one direction, and means to release said last named means at times.

9. In combination with a truck, brackets
20 carried thereby, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage the track, said shaft
25 rotation limiting means comprising a bolt pivoted to said lever and passing through a fixed support or portion of the truck, and means carried by said bolt for limiting its movement in one direction.

30 10. In combination with a truck, brackets carried thereby, a rotatable shaft mounted in said brackets, means for limiting the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to
35 said lever to engage the track, means for rotating said shaft, to normally hold said scraper out of operative relation with said track, said last named means comprising a second lever carried by the shaft, a rod se-
40 cured to said second lever and spring devices for moving said rod in one direction.

11. In combination with a truck, a rotatable shaft mounted thereon, means for limiting the rotation of said shaft in one direc-
45 tion, a lever carried by said shaft, a scraper pivoted to said lever to engage the track, means for rotating said shaft to normally hold said scraper out of operative relation with the track, and means for rotating said
50 shaft to move the scraper into operative relation with the track, said means for rotating the shaft to hold the scraper out of operative relation with the track comprising a second lever secured to the shaft, a rod secured to
55 said second lever, and spring devices for moving the rod in one direction, and said last named rotating means comprising a piston carried by said rod, a compressed air cylinder in which said piston is movable and
60 means for conveying compressed air into said cylinder to move said piston in a direction opposite to the movement imparted thereto by the spring devices.

12. In combination with a truck, a rotatable shaft mounted thereon, means for limit-

ing the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage with the track, means for rotating said shaft, to hold
70 said scraper out of operative relation with the track, means for rotating said shaft in an opposite direction to move the scraper into operative relation with the track, and means for limiting the movement of the scraper on its pivot in one direction, said
75 last named means comprising a bolt carried by the truck, and a stay rod connected with said scraper and with said bolt.

13. In combination with a truck, a rotatable shaft mounted thereon, means for limit-
80 ing the rotation of said shaft in one direction, a lever carried by said shaft, a scraper pivoted to said lever to engage with the track, means for rotating said shaft, to hold said scraper out of operative relation with
85 the track, means for rotating said shaft in an opposite direction to move the scraper into operative relation with the track, means for limiting the movement of the scraper on its pivot in one direction, said last named
90 means comprising a bolt carried by the truck, a stay rod connected with said scraper and with said bolt, and means for releasing said last named means to permit the scraper to move freely at times.
95

14. In combination with a truck, a rotatable shaft mounted thereon, means for limiting the rotation of said shaft in one direc-
100 tion, a lever carried by said shaft, a scraper pivoted to said lever to engage with the track, means for rotating said shaft, to hold said scraper out of operative relation with the track, means for rotating said shaft in an opposite direction to move the scraper
105 into operative relation with the track, means for limiting the movement of the scraper on its pivot in one direction, said last named means comprising a bolt carried by the truck, a stay rod connected with said scraper and
110 with said bolt, means for releasing said last named means to permit the scraper to move freely at times, said last named means comprising a yieldable hook connecting the stay rod with the fixed bolt of the truck frame.

15. In combination with a truck, a rotatable shaft mounted thereon, means for limiting the rotation of said shaft in one direc-
115 tion, a lever carried by said shaft, a scraper pivoted to said lever to engage with the track, means for rotating said shaft, to hold said scraper out of operative relation with the track, means for rotating said shaft in an opposite direction to move the scraper
120 into operative relation with the track, means for limiting the movement of the scraper on its pivot in one direction, said last named means comprising a bolt carried by the truck, a stay rod connected with said scraper and
125 with said bolt, means for releasing said last named means to permit the scraper to move
130

freely at times, said last named means comprising a yieldable hook connecting the stay rod with the fixed bolt of the truck frame, and means for holding the stay rod when
5 released.

16. In combination with the front or pilot truck of a locomotive, said truck having a pair of sets of wheels arranged in close proximity, a shaft mounted on said truck
10 between said pairs of wheels, a bell crank lever secured to the shaft, a scraper pivoted to said lever and adapted to engage with the track, and means connected with said lever for actuating said shaft.

15 17. In combination with the front or pilot truck of a locomotive, said truck having a pair of sets of wheels arranged in close proximity, a shaft mounted on said truck between said pairs of wheels, a bell crank
20 lever secured to the shaft, a scraper pivoted to said lever and adapted to engage with the track, means connected with said lever for actuating said shaft, and means for normally holding said lever with the scraper out of
25 operative relation to the track.

18. In combination with the front or pilot truck of a locomotive, said truck having a pair of sets of wheels arranged in close proximity, a shaft mounted on said truck
30 between said pairs of wheels, a bell crank

lever secured to the shaft, a scraper pivoted to said lever and adapted to engage with the track, means connected with said lever for actuating said shaft, means for normally holding said lever with the scraper out of
35 operative relation to the track, and means for limiting the movement of said lever in one direction.

19. In combination with the front or pilot truck of a locomotive, said truck having a
40 pair of sets of wheels arranged in close proximity, a shaft mounted on said truck between said pairs of wheels, a bell crank lever secured to the shaft, a scraper pivoted to said lever and adapted to engage with the
45 track, means connected with said lever for actuating said shaft, means for normally holding said lever with the scraper out of operative relation to the track, means for limiting the movement of said lever in one
50 direction, and limiting means connected to said scraper to retain it in one position, said limiting means having provisions for releasing said scraper when it engages an obstruction.

WILLIAM CROSS.

Witnesses:

A. J. LONG,

GEORGE DICKSON.