

No. 609,021.

Patented Aug. 16, 1898.

J. HANSON.
LOCK FOR DUMPING CAR DOORS.

(Application filed Nov. 2, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

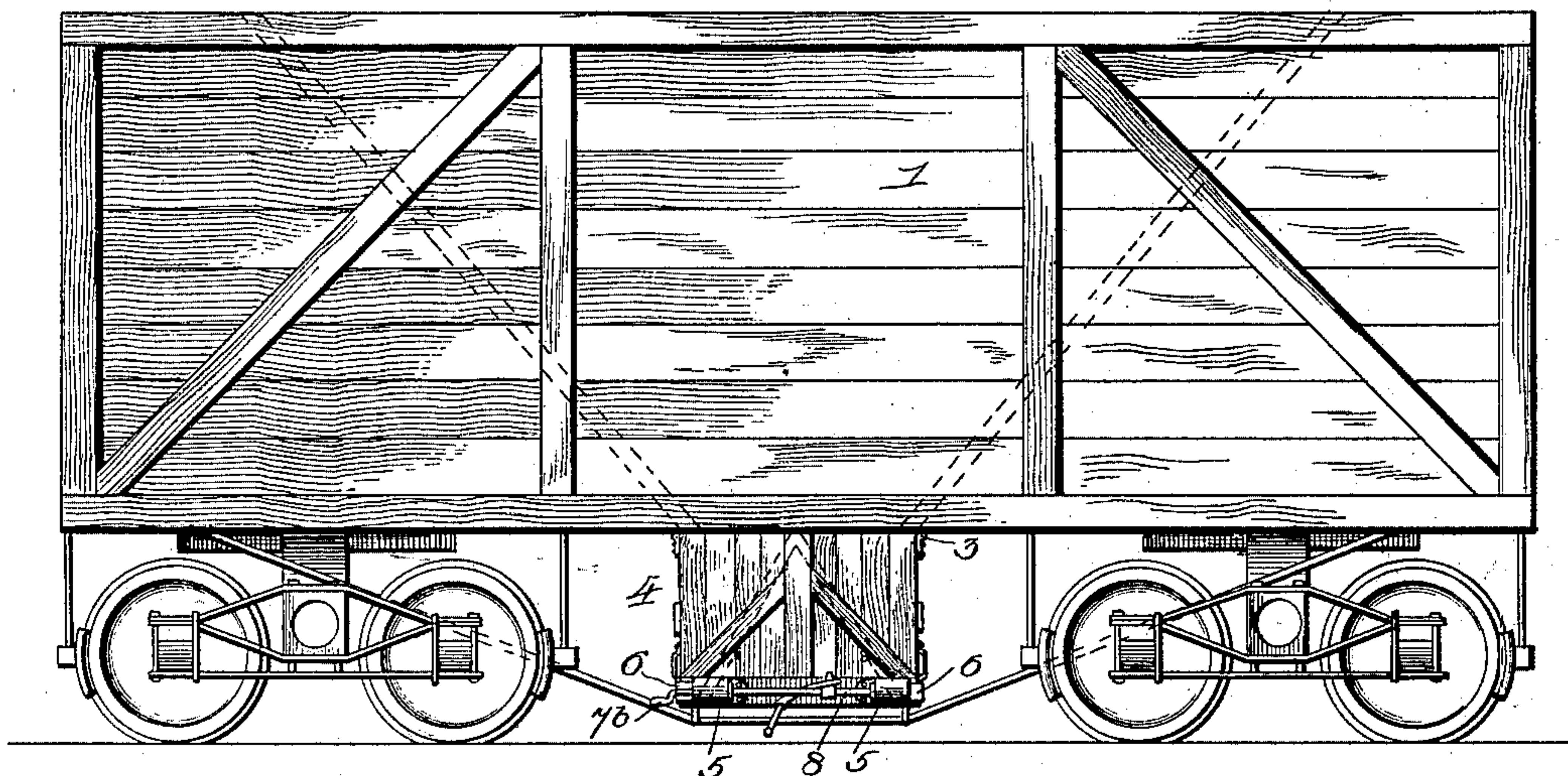


Fig. 2.

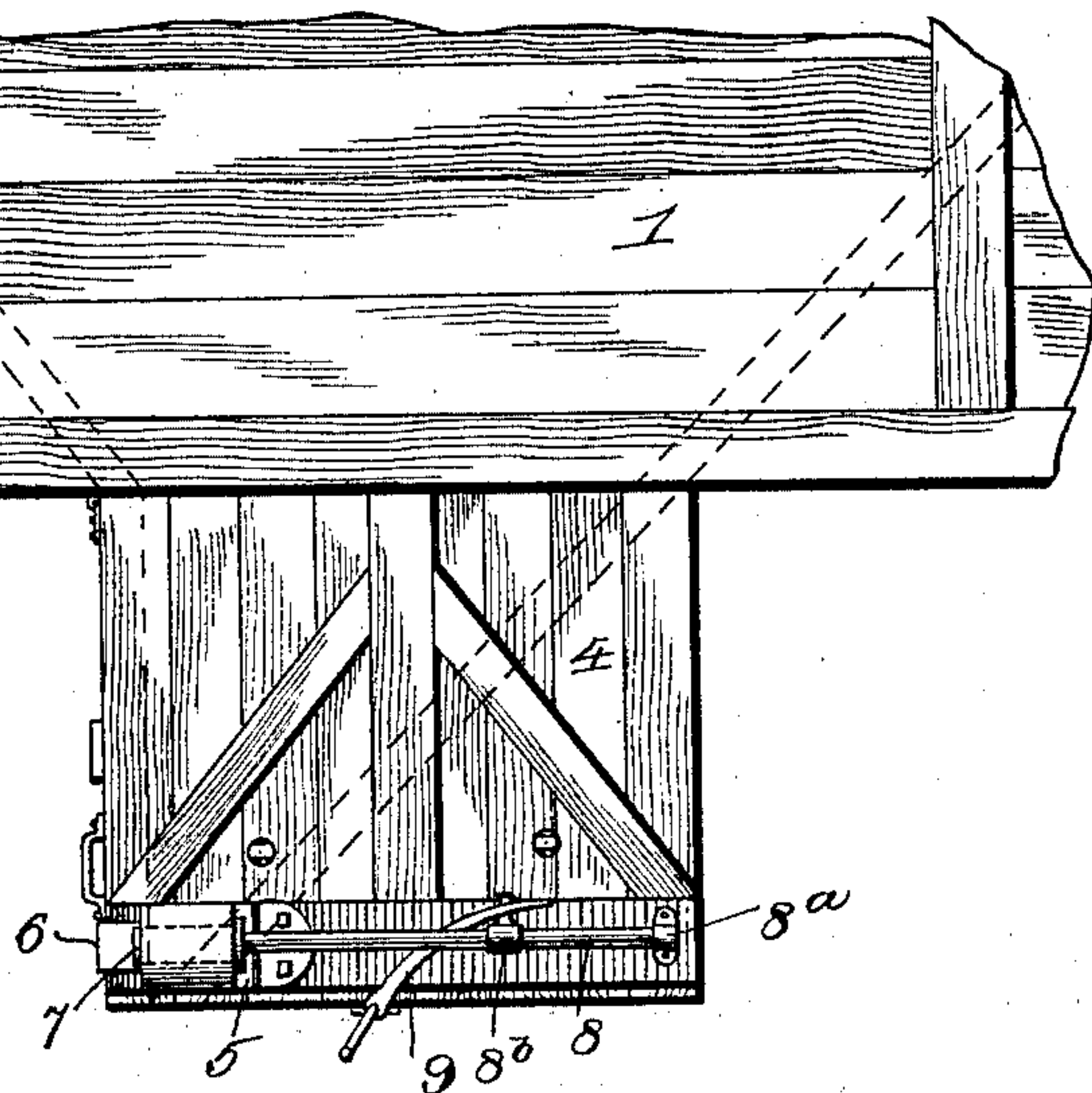
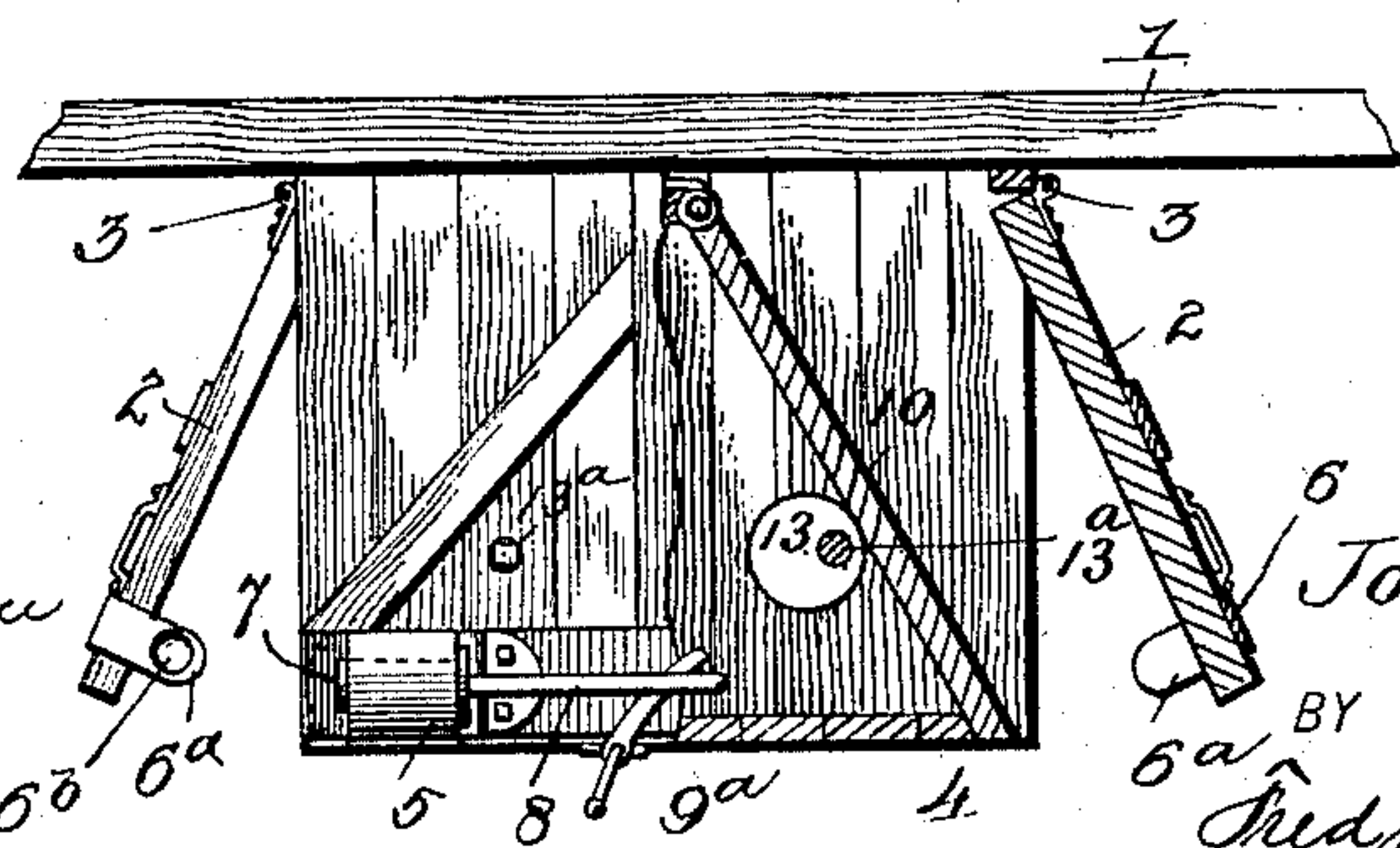


Fig. 3.



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2 Sheets—Sheet 2.

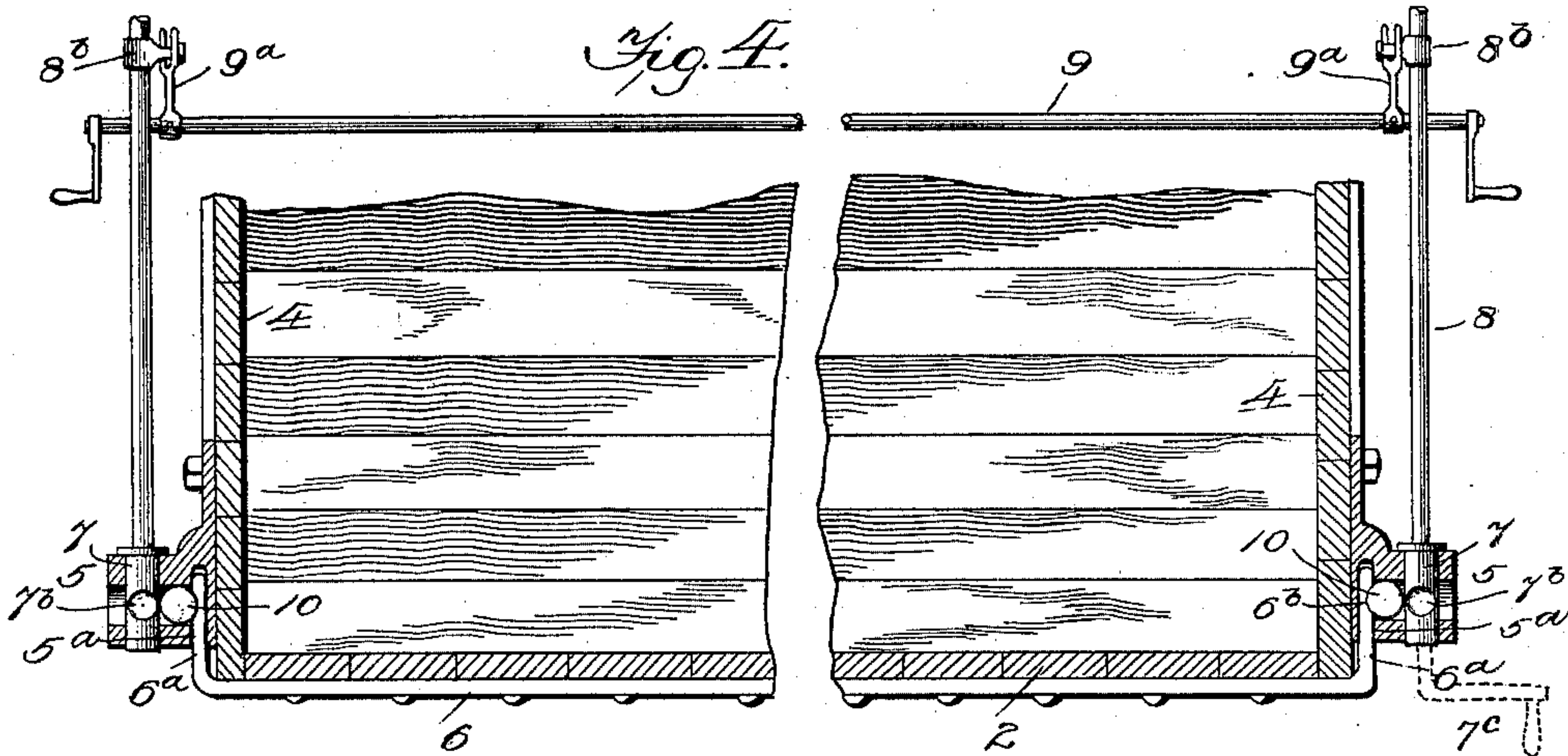


Fig. 5.

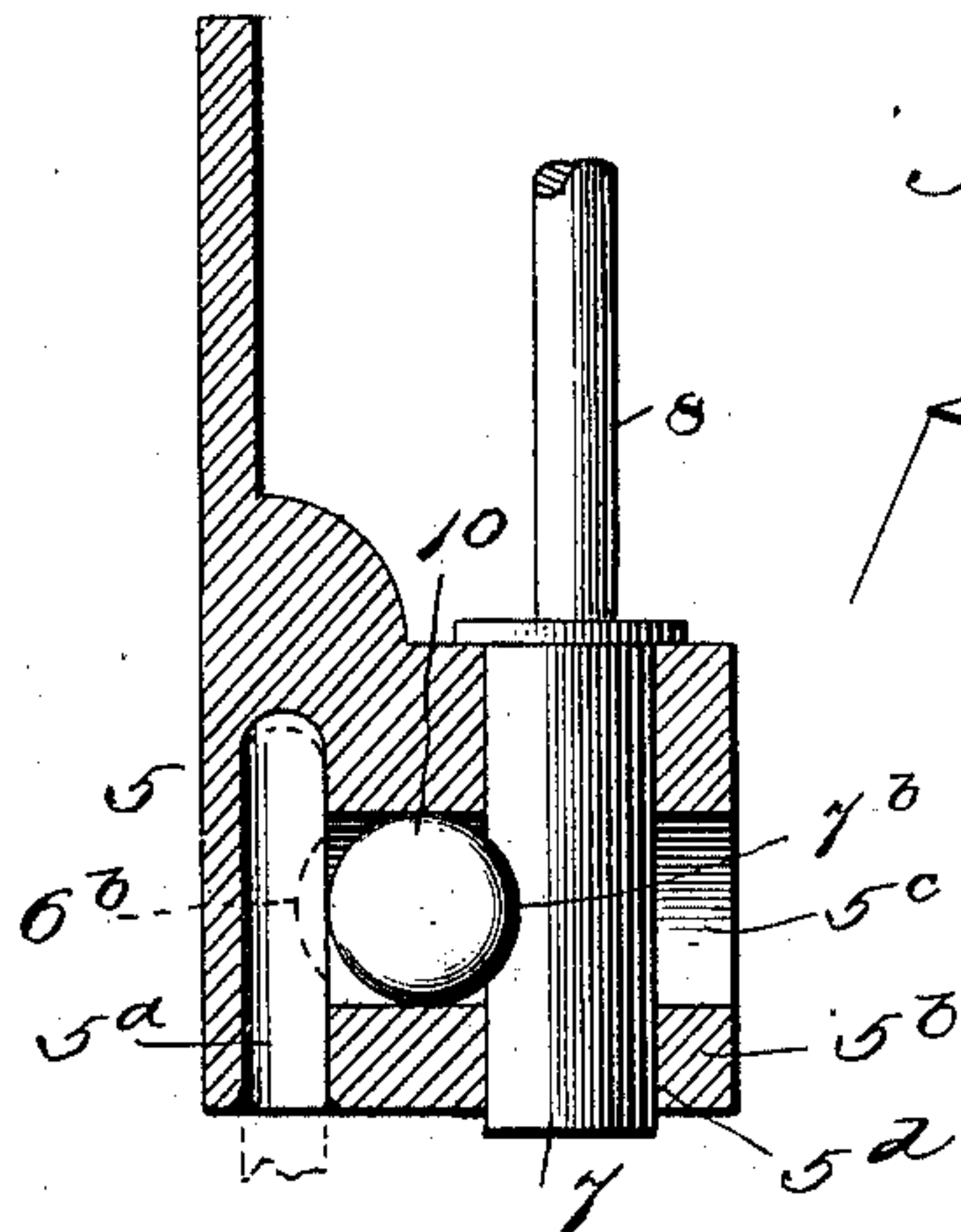


Fig. 7.

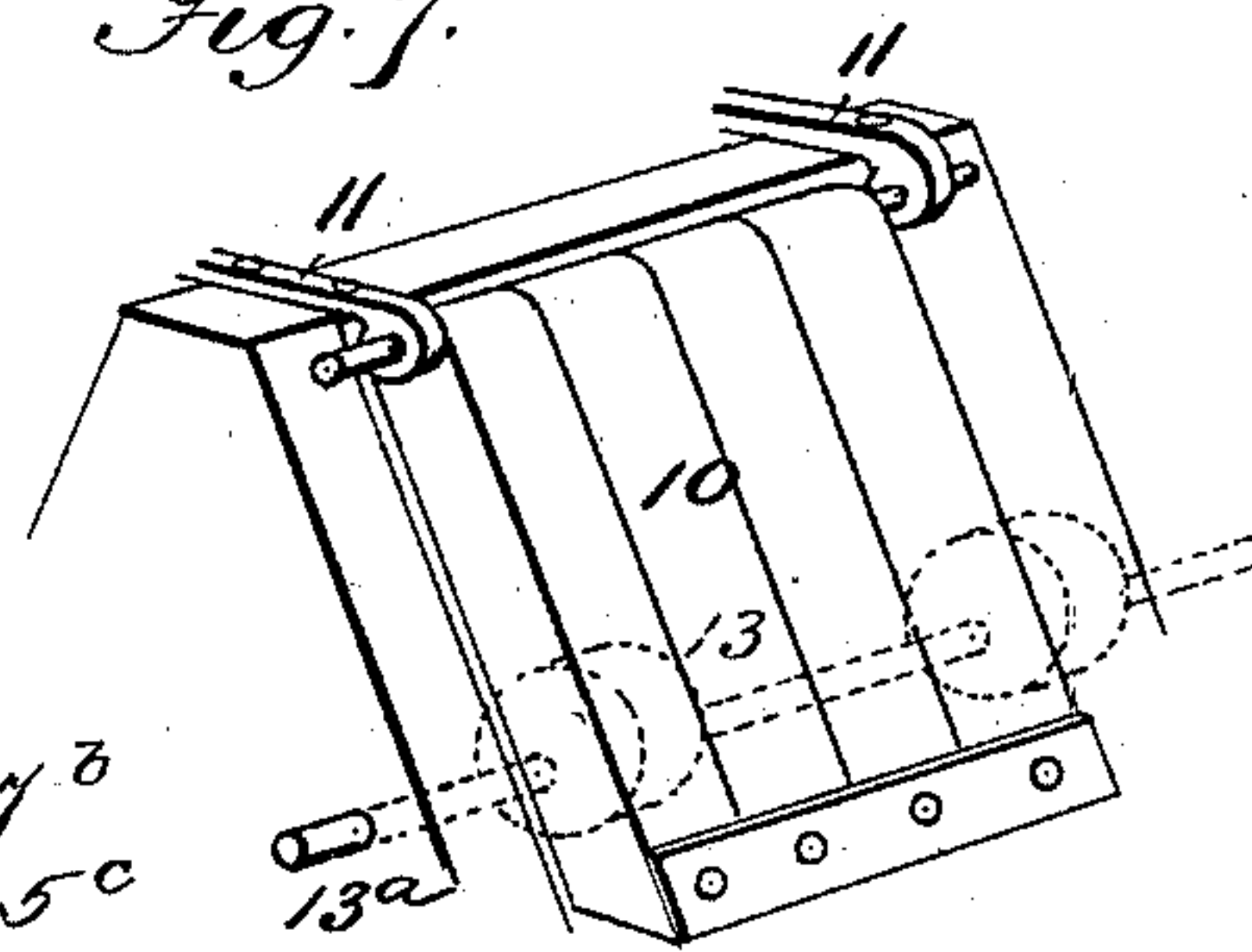
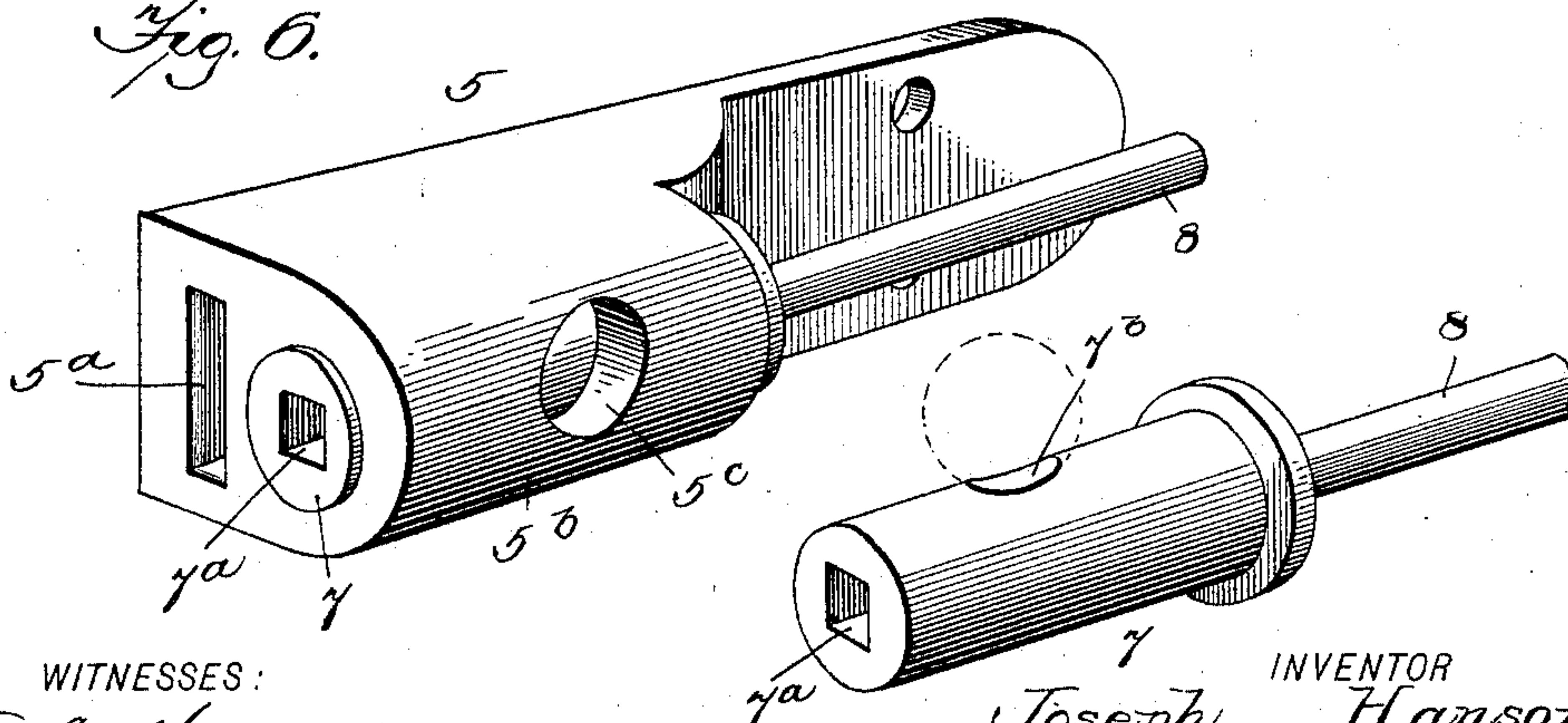


Fig. 6.



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UNITED STATES PATENT OFFICE.

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LOCK FOR DUMPING-CAR DOORS.

SPECIFICATION forming part of Letters Patent No. 609,021, dated August 16, 1898.

Application filed November 2, 1897. Serial No. 657,216. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HANSON, residing at Crystal Falls, in the county of Iron and State of Michigan, have invented a new and
5 Improved Lock for Dumping-Car Doors, of which the following is a specification.

This invention relates to an improved construction of dumping-car having the trap-doors provided with lock devices adapted to be
10 readily released without the use of wrenches, hammers, and the like and which will automatically swing back to a closed and locking position as soon as the ore has been emptied from the car.


15 With other objects in view, which hereinafter will be referred to, the invention consists in the peculiar combination and novel arrangement of parts, such as will be first described in detail and then be specifically
20 pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a dumping-car with my improvements applied, the same
25 being equipped with double traps. Fig. 2 is a view of a portion of a car having a single chute and trap. Fig. 3 is a side elevation, partly in section, of the dump or chute portions of the car, the traps being swung open.
30 Fig. 4 is a horizontal section of one of the traps and the ball-lock devices, the parts being in their locked position. Fig. 5 is a detail view illustrating the ball-lock mechanism in its unlocked position, and Fig. 6 is a detail
35 view of the lock-casing and the turn-bolt. Fig. 7 is a detail view illustrating in detail a portion of the chute-bottom.

Referring to the accompanying drawings, in which like numerals indicate like parts in
40 all the figures, 1 indicates the car, which may have a double chute or dump-section, as shown in Figs. 1 and 3, or it may have a single chute and trap, as shown in Fig. 2.

22 indicate the trap-doors, which are hinged
45 at their upper ends on the cross-rods 3, they being vertically hung, so as to close down by gravity.

At the lower corners of the chute-frame 4 are secured castings 5, having deep recesses
50 or channels 5^a, which receive the right-angled

members 6^a 6^a of the -shaped metal bands 6, secured to the lower ends of the traps 2 2, as clearly shown in Fig. 4. The brackets 5 are also formed with barrel portions 5^b, disposed parallel with the channels 5^a, in which are
55 held the rocker-bolts 7, the outer ends of which have non-circular sockets 7^a to receive a crank 7^c or other suitable implement for rocking the same. The bolts 7 are also secured on shafts 8, journaled on the lower end
60 of the chute-frames in suitable bearings 8^a.

When my devices are used with a double chute, the shaft 8 at each side extends entirely across and connects with the rocker-bolts 7 at each end, as shown, so that by
65 manipulating the rocker-bolt at one end to set it to an unlocked position the bolt 7 at the other end of the shaft 8 will be similarly set.

To provide an additional means for operating the bolts 7, the shafts 8 have cranks 8^b,
70 which serve as actuating members, they being arranged to be engaged by lock-pawls 9^a on the shaft 9, journaled on the bottom of the chute-frame and having crank-handles at the ends, as shown.

The bolts 7 have each a concaved pocket
75 7^b at a point in line with the transverse apertures 5^c in the brackets 5, which apertures bisect the bolt-aperture 5^d and open at the inner end into the channels 5^a.
80

10 indicate lock-balls, which are passed into the apertures 5^c before the bolts 7 are inserted and have a limited free play in that portion of the recesses 5^c between the bolt and the channel-ways 5^a when the concaved
85 pockets of the bolts are turned in line therewith.

The members 6^a of the trap-door irons 6 have concaved seats 6^b, in which the balls
90 seat when in their locked position.

So far as described it will be readily seen that when the traps are to their closed position and the bolts turned, as shown in Fig. 4, their peripheral edge will engage and force the balls to engage the concaved seats in the
95 members 6^a, and in consequence form a lock for securing the trap from opening outward.

To release the traps, the operator first disengages the pawls 9^a from the members 8^b, and either through the medium of the members
100

8^b or by applying a crank in the ends of the bolts turns such bolts until their pockets are in line with the lock-balls. When in this position, the weight of the ore on the chutes will force the traps outward, the balls at this time being shoved back into the apertures 5^c and the pockets in the bolts. After the ore has been emptied the traps will drop back to a closed position, their members 6^a again seating in the channels 5^a, and by turning the bolts 7 to bring their solid face to engage the balls they will be again moved to a locking position.

While I prefer to employ a supplemental means for holding the bolts to their locked position, such means may be dispensed with and the bolts held adjusted by friction.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete operation and advantages of my invention will readily appear. The same is of a very simple and inexpensive nature and adapted to be readily manipulated by a single person, and owing to the novel construction of the parts the traps can be tripped while the train is moving slowly, thereby causing little or no delay of the train for unlocking the traps. Furthermore, by providing a ball-lock mechanism constructed as described the same is protected from dust and rain.

My lock devices can also be used in the style of trap-doors now in general use; but to open such doors they must be raised, as usual, by manual labor.

The ball-lock devices may be used for connecting other movable parts to fixed members—as, for example, it may by a very slight modification of the several parts be readily adapted for use as a switch-lock.

To provide for a positive discharge of the coal or ore and prevent the same from lodging on the chute-bottoms of the dump portions of the car, such bottoms are preferably hinged on stay-hangers 11, as shown in Figs. 3 and 7, and the lower ends of such bottoms supported on shaker-disks 13, mounted upon shafts 13^a, the ends of which project outside of the trap portion of the car to receive a crank or other implement for turning them.

By supporting the bottom 10 in the manner shown it is manifest that when the ore is wet and packs hard on such bottom it can be easily dislodged by turning the shafts 13^a.

While I have shown the bottom 10 formed of a series of heavy planks joined to vibrate together, it is obvious that the several planks may be independently hung and a shaker-disk 13 provided for each plank and such disks arranged alternately, so as to produce an alternate vibration or shake action on each of the parts which form the said bottom.

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

1. In a dumping-car, in combination, a trap-door having angled extensions, sockets in the car-frame to receive such extensions, and ball-locks, and means for moving such ball-locks into engagement with the said angle extensions of the door substantially as shown and described.

2. As an improvement in dumping-cars, the combination with the chute-frame, the barrel-castings secured thereto, a rocker-bolt held therein, having a recess, said casting having channels and transverse pockets connecting such channels and the bolt-aperture, of the trap-door having side members adapted to enter the aforesaid channels, said side members having seats, and balls movable in the pockets between the channel and bolt-openings adapted to be moved into engagement with the side-arm seats when the bolts are turned, substantially in the manner and for the purposes described.

3. As an improvement in dumping-cars, the combination with the chute-frame, and the gravity-hung trap-door, said door having projecting side arms at the lower end, of lock devices secured to the chute-frame, comprising castings having channels to receive the door side arms, lock members secured in such castings adapted to be moved into a locked engagement with such side arms, a rotary shaft for operating the lock members, and detent devices for holding the shaft to its locking position as specified.

4. As an improvement in dumping-cars, the combination with the chute-frame, and the trap-doors, said doors having angle members provided with seats, of barrel-castings secured to such chute-frame, rocker-bolts movable therein, having recesses, balls movable in the said castings adapted to seat in the recesses of the bolts when same is turned to an unlocked position and to be moved by the turning of such bolts to engage the seat in the door angle members, and means for turning the bolts, all being arranged substantially as shown and for the purposes described.

5. The combination with the chute-frame, and the trap-doors hinged at their upper ends, and having their lower ends provided with angle members provided with seats or recesses, of the castings 5, having barrel portions, transverse apertures 5^c, bisecting such barrel portions, and channels 5^a arranged parallel with the barrel portions, communicating with the apertures 5^c, balls held in such apertures, and the bolts held to rock in the barrel portions, said bolts each having a recess, and means for rocking the bolts all being arranged substantially as shown and for the purposes described.

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Witnesses:

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