

(No Model.)

4 Sheets—Sheet 1.

J. F. MATTHEWS & H. L. SHERBURNE.

ANTI-TRAIN ROBBERY APPARATUS.

No. 562,008.

Patented June 16, 1896.

Fig. 1.

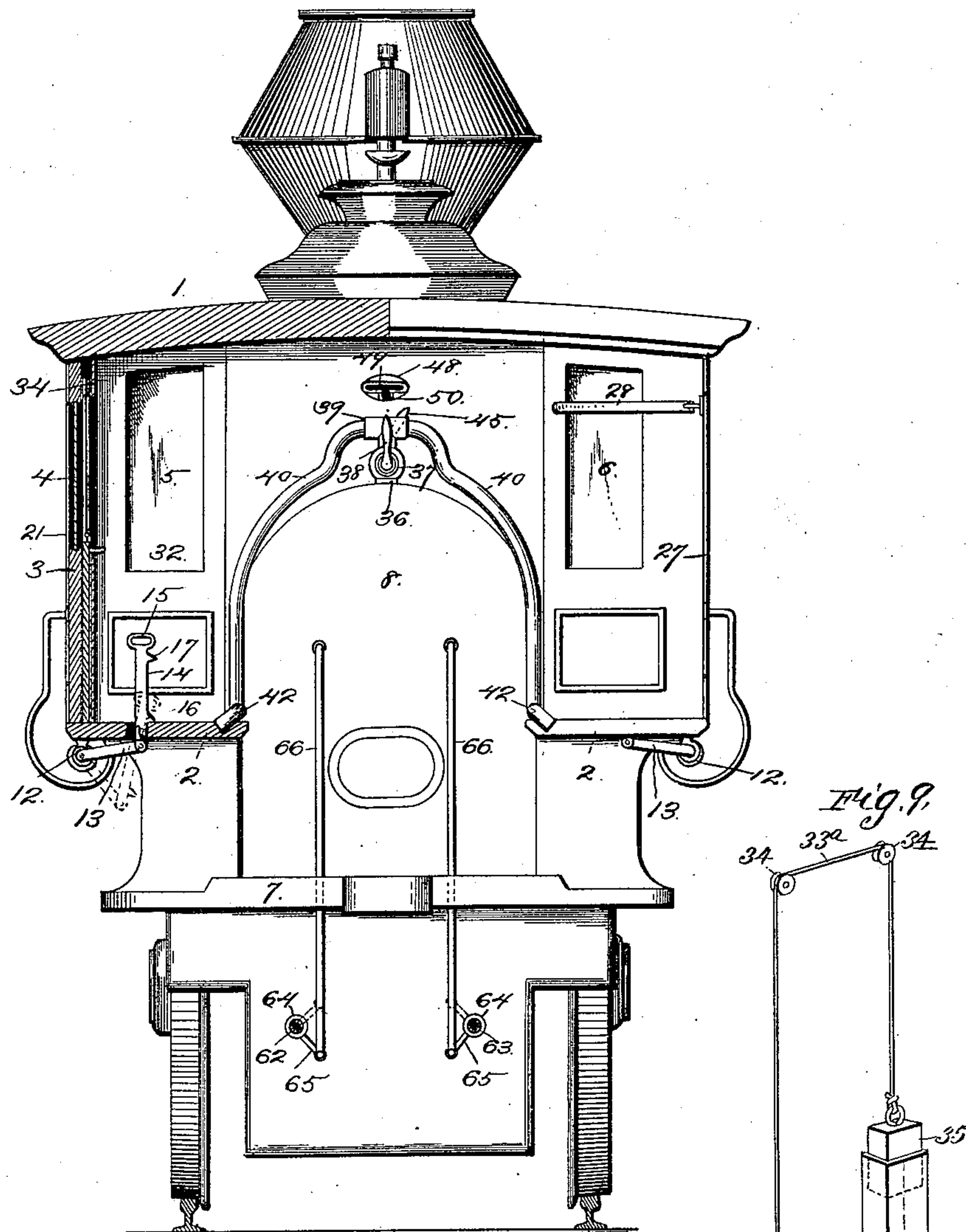
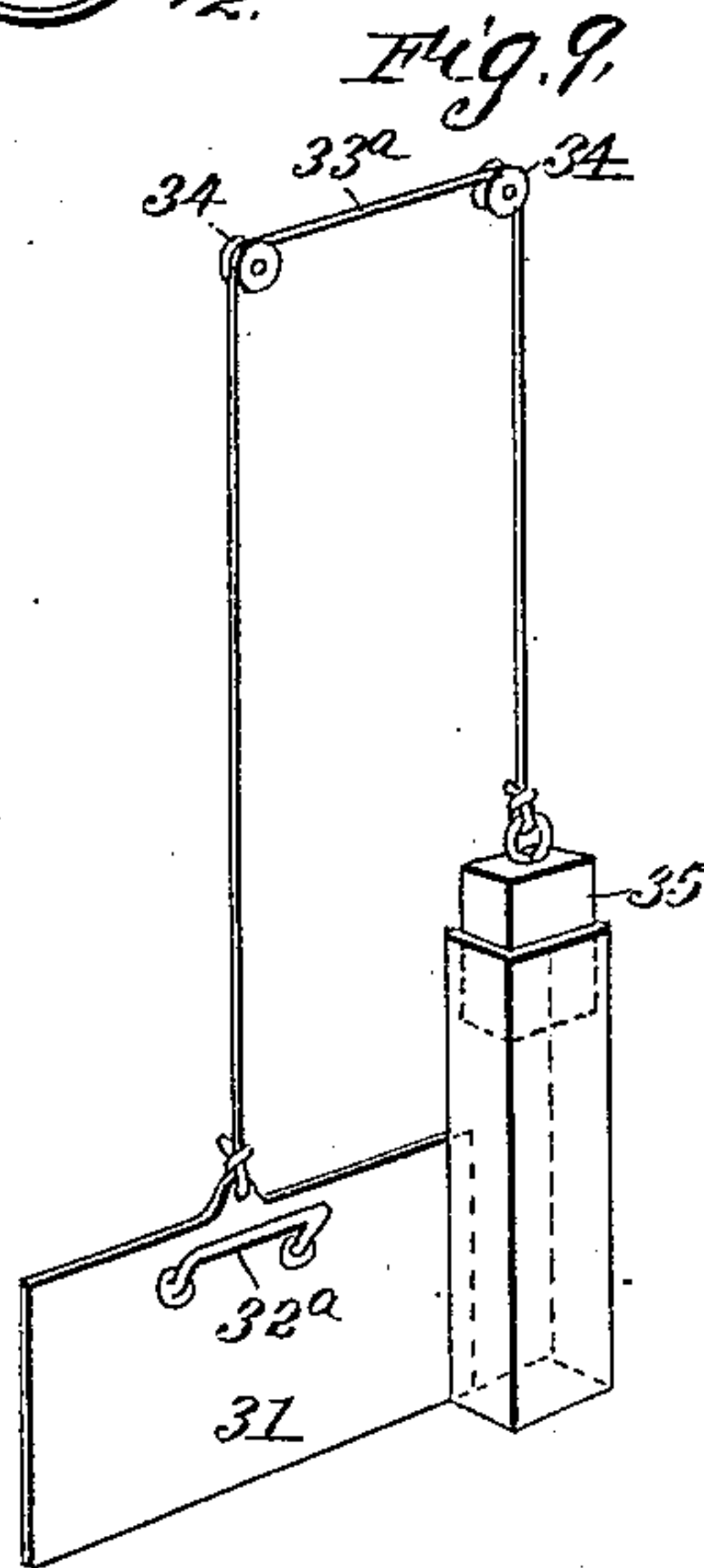
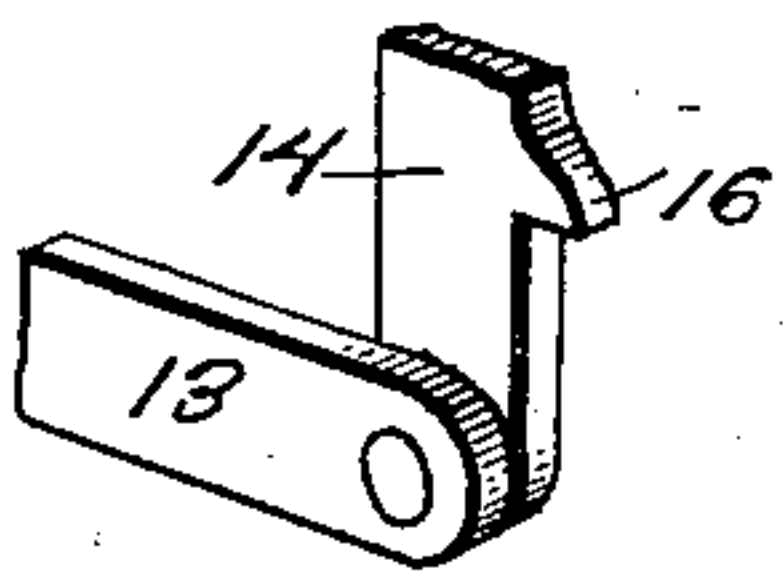


Fig. 8.



Witnesses:

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Inventors:

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by Higdon & Higdon
Attys.

(No Model.)

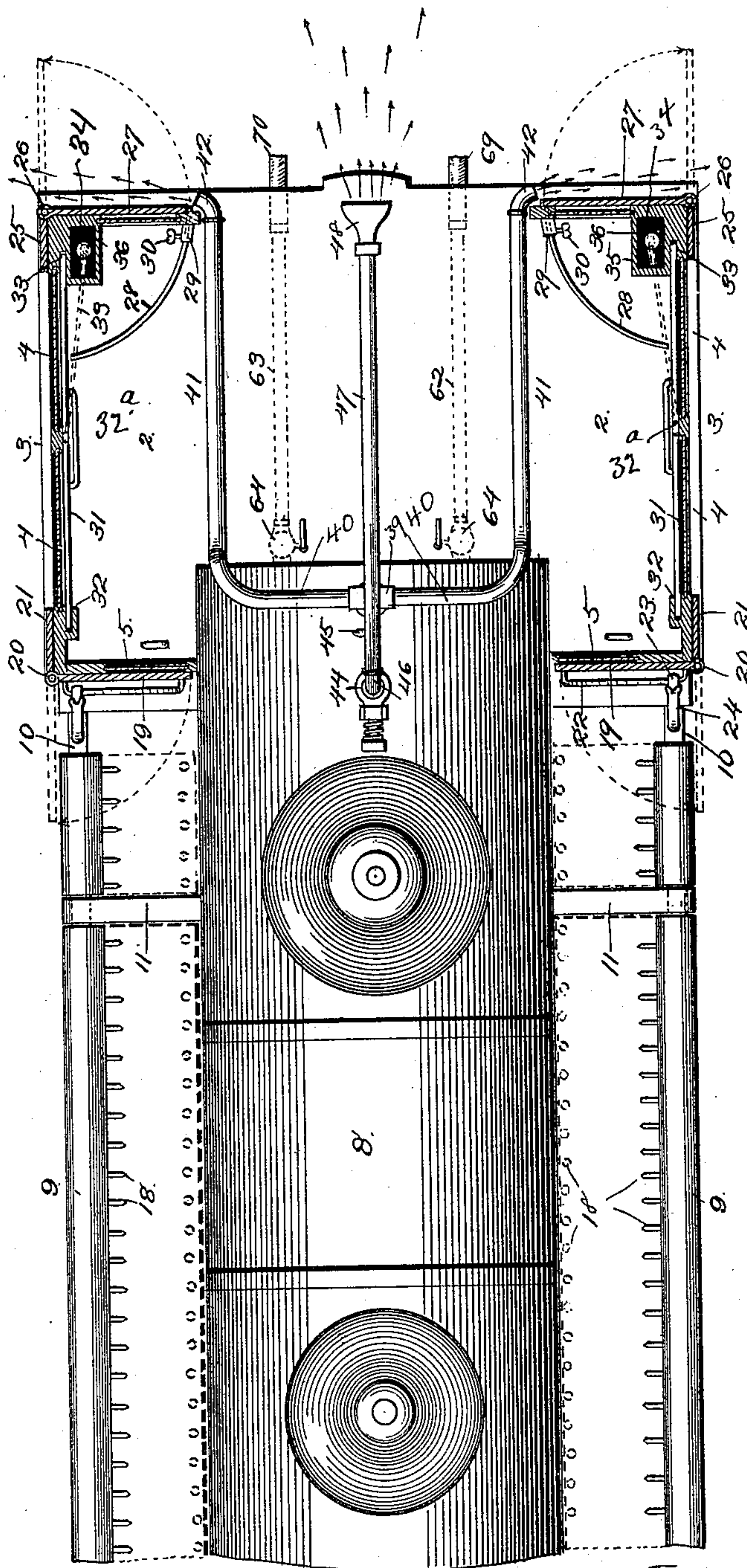
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Fig. 2.



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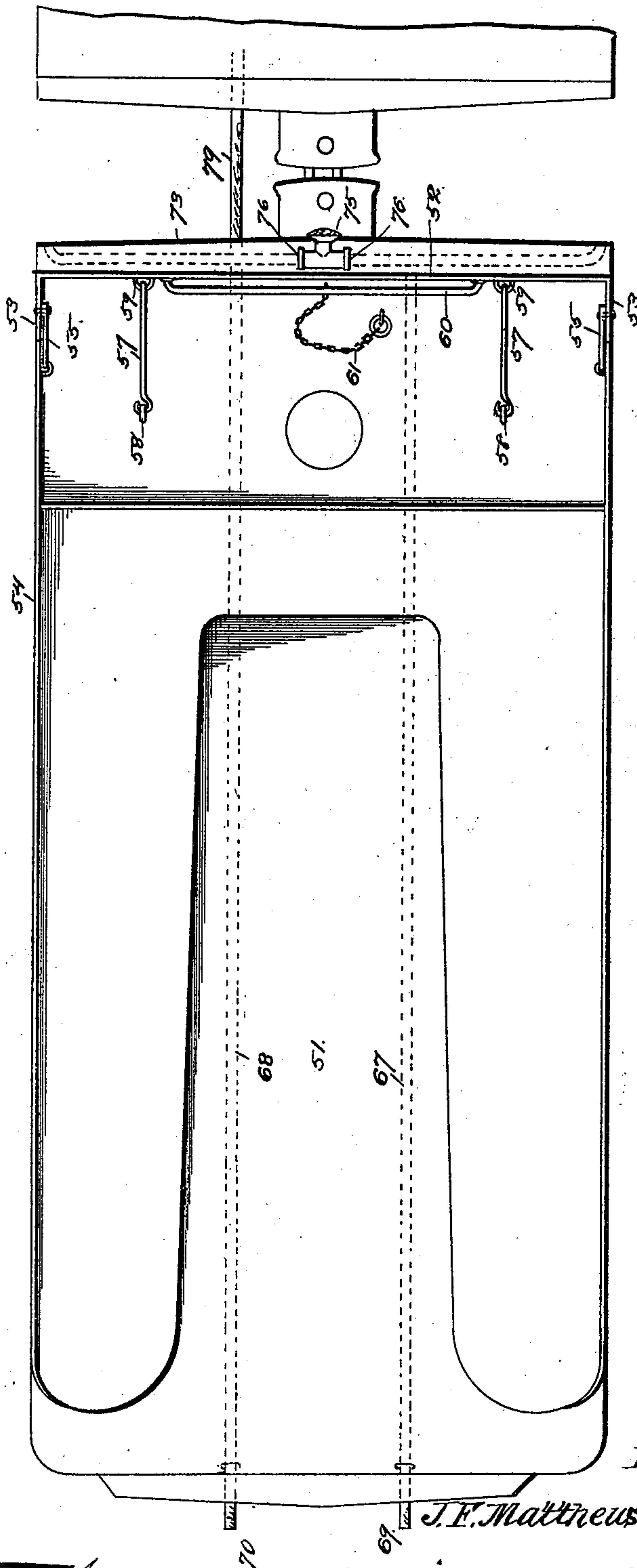
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Fig. 3.



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Fig. 4.

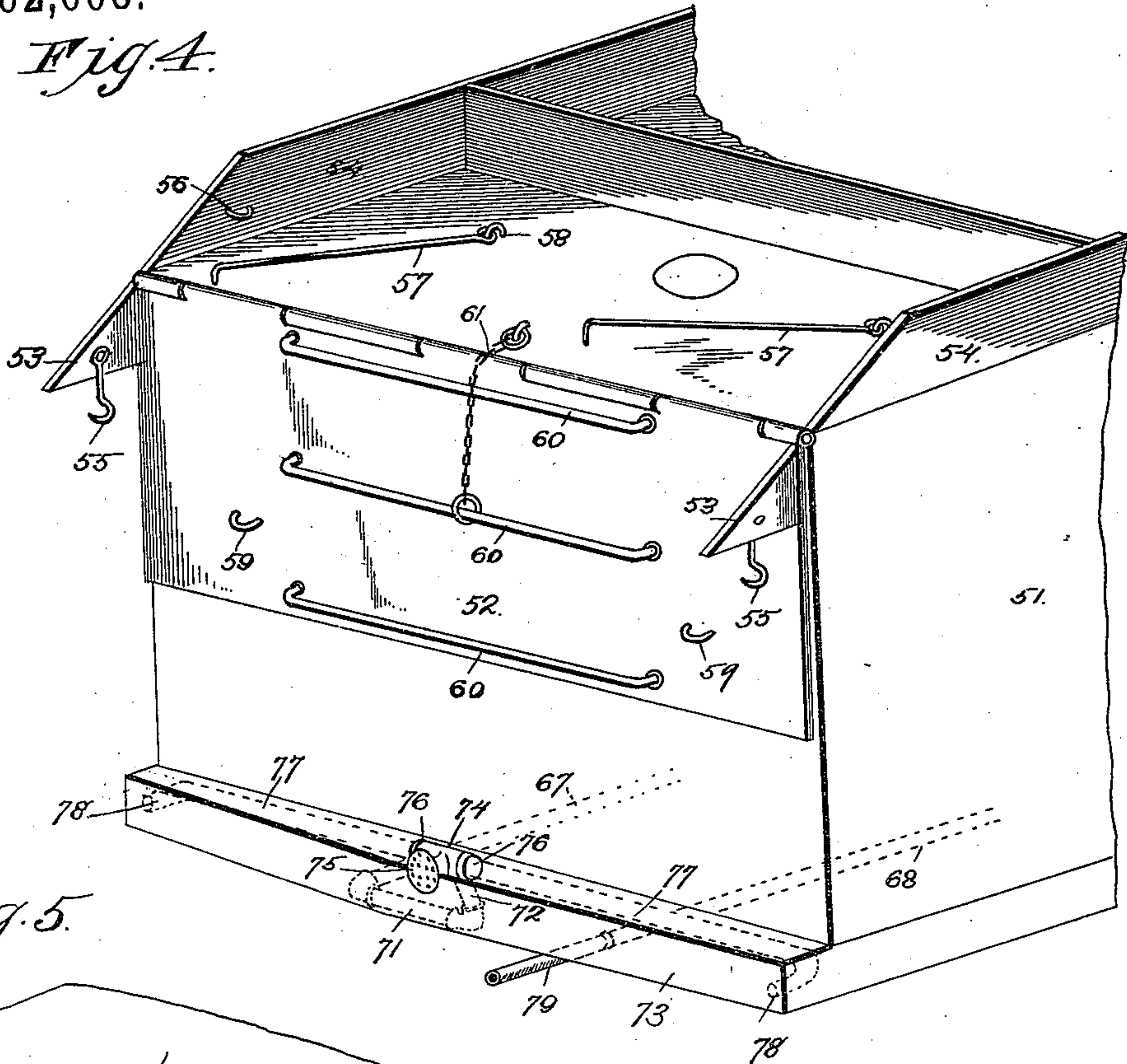


Fig. 5.

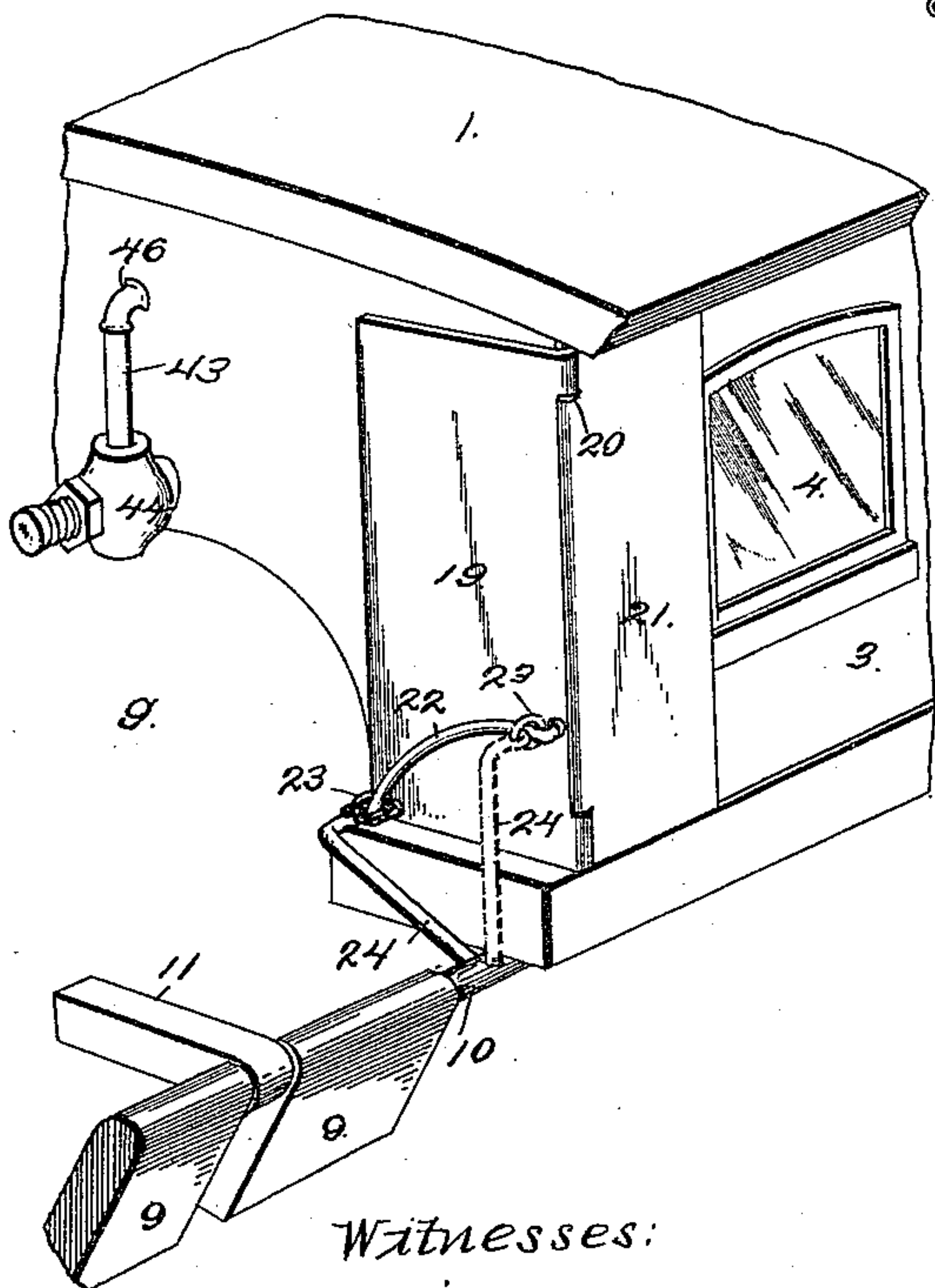


Fig. 6.

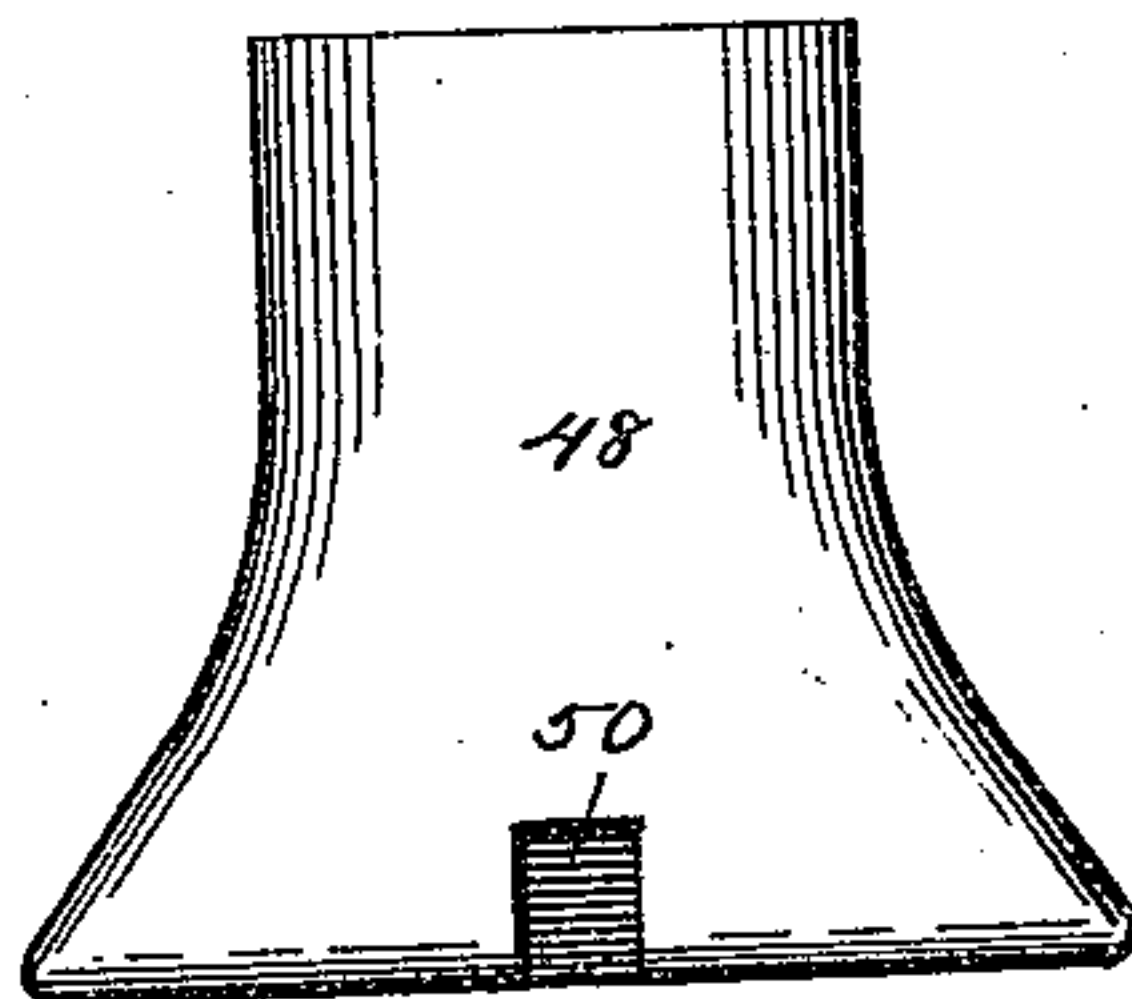
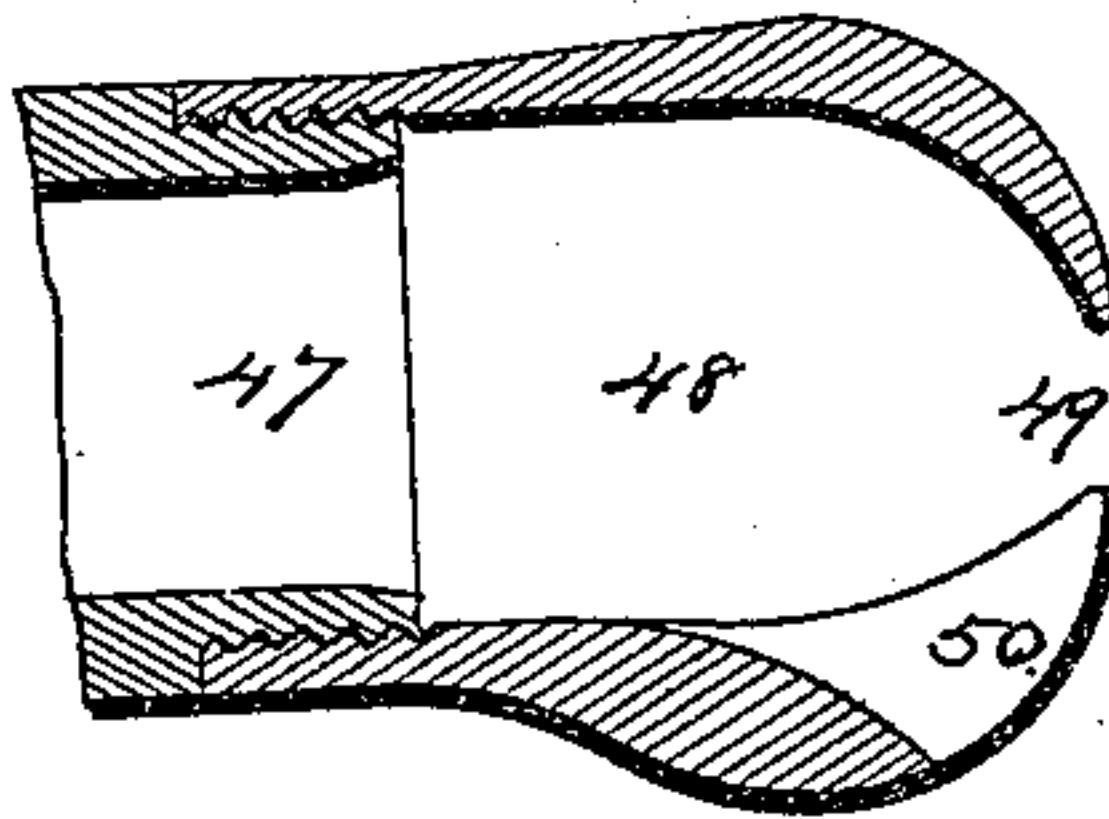


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES F. MATTHEWS AND HENRY L. SHERBURNE, OF TOPEKA, KANSAS.

ANTI-TRAIN-ROBBERY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 562,008, dated June 16, 1896.

Application filed August 30, 1895. Serial No. 561,032. (No model.)

To all whom it may concern:

Be it known that we, JAMES F. MATTHEWS and HENRY L. SHERBURNE, of Topeka, Shawnee county, Kansas, have invented certain new and useful Improvements in Anti-Train-Robbery Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to anti-train-robbery apparatus.

The object of the invention principally is to protect the engineer and fireman and the express-car by certain combinations and organizations of apparatus hereinafter to be described and illustrated in detail.

The new and novel parts and combination of parts will be pointed out in appended claims.

In order that the invention may be fully understood, we will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a view, partly in rear elevation and partly in section, of a locomotive provided with our protecting apparatus. Fig. 2 represents a horizontal section of a part of the same. Fig. 3 represents a plan view of the tender or tank-car, which is connected to the locomotive and to the express-car, a part only of which is shown. Fig. 4 represents a perspective view of the rear end of said tender or tank-car. Fig. 5 represents a perspective view of a part of the locomotive. Fig. 6 represents an inverted plan view of a nozzle employed as part of our apparatus. Fig. 7 represents a vertical section of the same. Fig. 8 shows the connection between one of the lift-bars and one of the shaft-arms below the cab. Fig. 9 is a detached perspective view of a window-shield and its connections.

Before proceeding with the detailed description we will state that the invention contemplates the employment of metallic shields to prevent train-robbers from firing into the cab of the engine. It also contemplates the employment of running-boards at opposite sides of the boiler, which may be caused in an instant to swing downwardly, that a person thereon may not only be prevented from proceeding farther, but will be reliably caught

and held securely in a position from which he cannot extract himself, at least while the locomotive is in motion. It also contemplates a system of pipes, whereby steam and hot water may be discharged rearwardly from the locomotive-cab and from the tender to prevent unauthorized persons entering the cab or the tender from the rear.

Referring now to the drawings, 1 designates a locomotive-cab.

2 designates the floor upon which the inmates normally stand.

3 designates the sides, which are provided with the customary glass windows 4.

5 designates the glass windows in the front of the cab, and 6 similar windows at the rear.

7 designates the platform, which is some distance from the floor 2.

8 designates the boiler.

9 designates the swinging running-boards at opposite sides of the boiler. Said running-boards may be secured at their outer margins, as shown, to the rock-shafts 10, so as to have their free margins adjacent to the boiler, or said rock-shafts may be located near the boiler and the free margins of the running-boards be disposed outwardly or away from the boiler. We prefer, however, the construction shown, for a reason which will hereinafter appear.

11 designates arms projecting from the boiler or supported in any other suitable manner, to which are journaled the shafts 10. Said shafts also find a bearing at their rear ends in the brackets 12, depending from the cab. 13 designates arms which are secured rigidly upon the rear ends of said shafts, and 14 designates lift-bars which are pivoted at their lower ends to the arms 13. Said lift-bars project vertically upward through the floor 2 of the cab and are provided with handle-loops 15 at their upper ends and with shoulders 16 and 17. When the running-boards are in their horizontal or normal position, the lift-bars 14 are elevated, as shown in Fig. 1, and the shoulders 16 rest upon the floor of the cab. When the running-boards occupy the position shown in Fig. 5, the shoulders 17 are in engagement with the floor of the cab and the arms 13 and the lift-rods are in the position shown in dotted lines, Fig. 1. At their free margins and projecting up-

wardly from their tread or upper surface the running-boards are provided with the short spikes or points 18, the object of which will be hereinafter explained. Thus it will be
 5 seen that should a suspicious person be seen upon either of the running-boards by the engineer or fireman it will only require an instant for them to trip the proper lift-bar and permit the weight of such person to cause
 10 the downward swing of the running-boards, and this would precipitate such party partly through the opening thus made, and he would become wedged between said board and the boiler. It would be impossible for him to
 15 fall clear through, owing to the fact that the swinging of the running-board would be gaged to that end, and also because the locomotive mechanism below would prevent it. In this position, however, if he tried to raise him-
 20 self he would cause consequently an upward movement on the part of the running-board, which would result in the penetration of his apparel by the spikes or points with which said board is armed, and the greater the ef-
 25 forts made to extricate himself the more firmly he would be held. When the locomotive entered the next town, he would be taken in charge by the proper authorities.

To prevent a person in front of the engine
 30 or upon the running-boards firing into the front windows of the cab, we provide the metallic shields 19, which are hinged at the front corners of the cab, as shown at 20, to the front ends of metallic shields or plates 21, secured
 35 to the sides of the car and extending rearwardly to the front edges of the adjacent side windows. The shields 19 are provided with the sway-rods 22, which correspond in curvature to lines struck from the axis of the
 40 shaft 10, and engaging said rods loosely are the rings 23, pivotally carried at the upper ends of the arms 24, projecting from said shaft. The arrangement is such that when the running-boards swing downwardly the
 45 arms 24 cause the rings 23 to slip downwardly upon the sway-rods and thereby force the shields 19 to close the front windows, as shown clearly in Figs. 2 and 5. When the running-boards are again elevated by the engineer or
 50 fireman raising the lift-rods, the upward movement of the arms 24 causes said shields to swing to an open position, as shown in dotted lines, Fig. 2.

Secured also to the sides of the cab and extending from their rear corners to the edges of the adjacent side windows are the shields 25, and hinged to said shields, as at 26, are the rear shields 27. Said shields at suitable points are provided with the curved arms 28, which
 60 extend through apertures in the frame of the rear windows of the cab and also through collars 29, secured to said frame within the cab. Set-screws 30, carried by said collars, are manipulated in the usual manner to se-
 65 cure said rear shields at any required point in their adjustment.

To prevent a person or persons firing into

the cab by way of the rear windows, the engineer or fireman may either secure them in their closed position, as shown in full lines, 70 Fig. 2, or may swing them and secure them by means of the set-screws in their open position, as shown in dotted lines, same figure. When open, other means are employed to prevent unauthorized persons coming near 75 enough to the locomotive to fire up through the rear windows by way of the opening or space between lower ends of the shields and the platform 7.

To prevent the entrance of bullets or other 80 projectiles through the side windows, we employ the internal shields 31, which extend clear across both windows and are about equal in depth thereto. Said internal shields are adapted to reciprocate vertically in the 85 guide-grooves 32 and 33 and are overlapped at their side margins by the shields 21 and 25, so as to prevent a bullet entering the cab in a dangerous direction between said shield. Said internal shields normally rest upon the 90 floor of the cab, as shown clearly in Fig. 1, and leave the side windows exposed. At their upper ends they are provided with handles 32^a and are connected by chains 33^a or other suitable flexible connections, which 95 are guided over antifriction rollers or pulleys 34, secured in the upper part of the cab in any suitable manner, to the counterbalance-weights 35 in the vertical boxes 36. By this arrangement should the occupants of the cab 100 believe themselves in danger they can grasp the handles 32^a and with practically no exertion raise the shields 31 to the required position, in which position the counterbalance-weights will hold them. They can be as easily 105 lowered. The construction just described represents in reality the defensive part of the apparatus.

The offensive part of the apparatus comprises a system of pipes for discharging hot 110 water and steam in the required direction, which we will now proceed to describe.

36 designates a pipe within the cab and extending downwardly within and below the water-line of the boiler. Said pipe is pro- 115 vided with a valve 37, controlled by a handle 38. At its upper end it is connected to the stem of the T-coupling 39, and branching from the arms of said coupling are the pipes 40. Said pipes curve downwardly con- 120 tiguous with the boiler to the floor of the cab and then continue directly and horizontally to the rear, as shown at 41. At their rear ends they are provided with discharge-nozzles 42, which are disposed downwardly and 125 outwardly, so as to discharge continuously a stream of hot water and steam through the openings hereinbefore referred to, as long as the valve is open, between the platform and the lower ends of the shields 27, which pro- 130 vide, when the various shields are in their closed position, the only entrance to the cab, except by way of the tender. Thus it will be seen that when such streams of hot water

and steam are playing through said openings it will be impossible for a person or persons to get near enough to the cab to fire effectively through said openings into the cab.

5 43 designates a pipe which extends vertically through the boiler and has its lower end below the water-line thereof. Said pipe is preferably arranged outside of the cab, and it is provided with a valve 44. Said valve is
10 held, normally, closely upon its seat by means of a coiled spring, and is provided with a handle 45 within the cab, whereby it may be operated. Coupled to the upper end of the pipe
15 43 by the elbow 46 is a horizontal pipe 47, which extends longitudinally through the upper portion of the cab, and secured upon the rear end of said pipe at the rear end of the cab is the two-way nozzle 48. Said two-way
20 nozzle comprises a horizontal and comparatively long and narrow discharge-opening 49 and the vertical opening 50, communicating with and below the opening 49, as shown most clearly in Figs. 1 and 7. When the valve 44
25 is open, by reason of the flaring shape of the nozzle 48 and the comparatively long and narrow opening 49 a continuous sheet of water plays upon the tender and envelops the same from side to side to prevent unauthorized persons entering the same from the sides.
30 At the same time a continuous stream of water plays downwardly and inwardly upon the front end of the tender and the platform 7 between the tender and the cab, which will obviously prevent persons already upon the
35 tender from entering the cab unless at the risk of being scalded to death.

To prevent unauthorized persons from clambering into or upon the rear end of the tender, and thereby from such position firing
40 into the cab, we hinge at the rear and upper end of the tender 51 the guard 52. Said guard is provided near its hinged end with the wings 53, which fit snugly against and form, practically, a part of the flanges 54 of the tender
45 when the guard is in its vertical position, as shown in Fig. 3. To support the guard in such position, the hooks 55 are pivoted to the wings 53 and engage staples 56, projecting inwardly of said flanges. We also employ the
50 hooks 57, which are pivoted to staples 58 upon the tender and engage staples 59, projecting inwardly to the guard. When these parts are in position described, the rear end of the tender is too high for a person to climb
55 over. For the convenience of the trainmen, however, said guard is provided at its inner side with the steps 60, with a chain 61, whereby it may be conveniently raised or lowered by a person upon the tender.

60 To protect the express-car, we provide the following apparatus:

62 and 63 designate pipes which communicate with the water-jacket of the furnace below the platform of the cab, and said pipes
65 are controlled by similar valves 64. The handles 65 of said valves are connected to the

vertical lift-rods 66, whereby the valves may be opened or closed. In line with the pipes 62 and 63 and secured in any suitable manner to the under side of the tender are the
70 pipes 67 and 68, and said pipes are connected to the pipes 62 and 63 by the flexible pipes 69 and 70, respectively. The rear end of the pipe 67 is coupled to the horizontal pipe 71, and said pipe in turn is coupled to the pipe
75 72, which extends upwardly through the end bar 73 of the tender. At its upper end communicates a T-coupling 74. The stem of said coupling may be closed by any suitable cap or may communicate with the rose-nozzle 75,
80 which is adapted to spray water against and prevent the entrance of unauthorized persons into the express-car at this point. When said nozzle is employed, the arms of said coupling will be closed by caps 76. When said nozzle
85 is not used, however, the pipes 77 will be coupled to the arms of the T-coupling and the caps will be removed. Said laterally-extending pipes communicate at their outer ends with the rearwardly-projecting nozzles
90 78, which are adapted to discharge streams of water along the sides of the express-car and thus prevent the entrance of unauthorized persons.

As a further protection for the express-car
95 we connect the pipe 68 with a flexible hose 79, which will in practice project into the express-car, so as to provide for interior defense.

Thus it will be seen that we have provided an apparatus which can be operated easily
100 and expeditiously, so as to afford complete protection to the engineer and fireman and to the express-car, and incidentally to the express-messenger, which is comparatively simple and inexpensive of construction and may
105 be without difficulty applied to any of the locomotives now in use.

It is to be understood, of course, that slight changes in the form, arrangement, or detailed construction of the parts will not be a de-
110 parture from the spirit or scope or sacrifice any of the advantages of our invention.

Having thus described the invention, what we claim as new, and desire to secure by Letters Patent, is—
115

1. An anti-train-robbery apparatus, comprising the locomotive, a valve-controlled pipe communicating with the water of the boiler, a pipe connected thereto and extended rearwardly through the cab, and a nozzle at the
120 rear end of said pipe having a comparatively long and narrow horizontal discharge-opening and a vertical discharge-opening communicating with and below the same, substantially as, and for the purpose set forth.
125

2. An anti-train-robbery apparatus, comprising the locomotive, the tender, valve-controlled pipes communicating with the water-jacket of the furnace, pipes below the tender, flexible pipes, connecting the latter with the
130 former pipes, a T-coupling connected with one of the latter-named pipes and provided

with laterally-extending pipes having rearwardly-disposed discharge-nozzles, substantially as, and for the purpose set forth.

3. An anti-train-robbery apparatus, comprising the locomotive, shafts at opposite sides of the boiler and suitably supported, running-boards carried by said shaft, and means to raise and lower the same, substantially as set forth.

4. An anti-train-robbery apparatus, comprising the locomotive, shafts at opposite sides of the boiler and suitably supported, running-boards carried by said shafts and armed with spikes or points, arms projecting from said shaft, lift-bars pivoted to said arms, and extending through the floor of the cab, and shoulders projecting from said lift-bars, substantially as described.

5. An anti-train-robbery apparatus, comprising the locomotive, shafts at opposite sides of the boiler and suitably supported, running-boards carried by said shafts, arms projecting from said shafts, hinged shields to protect the front windows of the cab, curved sway-rods secured to said shields, rings carried by the shaft-arms and loosely engaging said sway-rods, and means to raise and lower the running-boards and incidentally open or close said hinged shields, substantially as set forth.

6. An anti-train-robbery apparatus, comprising the locomotive, the sliding metallic shields within the same, and counterbalance-weights connected with said shields whereby the latter will be supported when raised or lowered, substantially as set forth.

7. An anti-train-robbery apparatus, comprising the locomotive, stationary shields secured externally to the side of the same, and at opposite sides of the windows, a sliding shield within the cab, and having its side edges overlapped by said external shields, and means to support said sliding shields when raised or lowered, substantially as, and for the purpose set forth.

8. An anti-train-robbery apparatus, comprising the locomotive, hinged shields at the rear corners of the cab, and adapted to close and open the rear windows of the same, curved guide - arms projecting from said shields through the window-frame, and collars carried by said frame and embracing said arms, and set-screws carried by said collars, and adapted to clamp said shields at any required point in their adjustment, substantially as, and for the purpose set forth.

9. In an anti-train-robbery apparatus, the combination of the tender, the guards hinged to the rear end of the same, engaging hooks and staples to secure said guard in its vertical position, steps secured to the inner side of said guard, and a chain connected to one of said steps, whereby the guards may be conveniently raised or lowered, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES F. MATTHEWS.
HENRY L. SHERBURNE.

Witnesses:

M. J. SLAYBAUGH,
WILLIAM BEECHAR.