

No. 679,083.

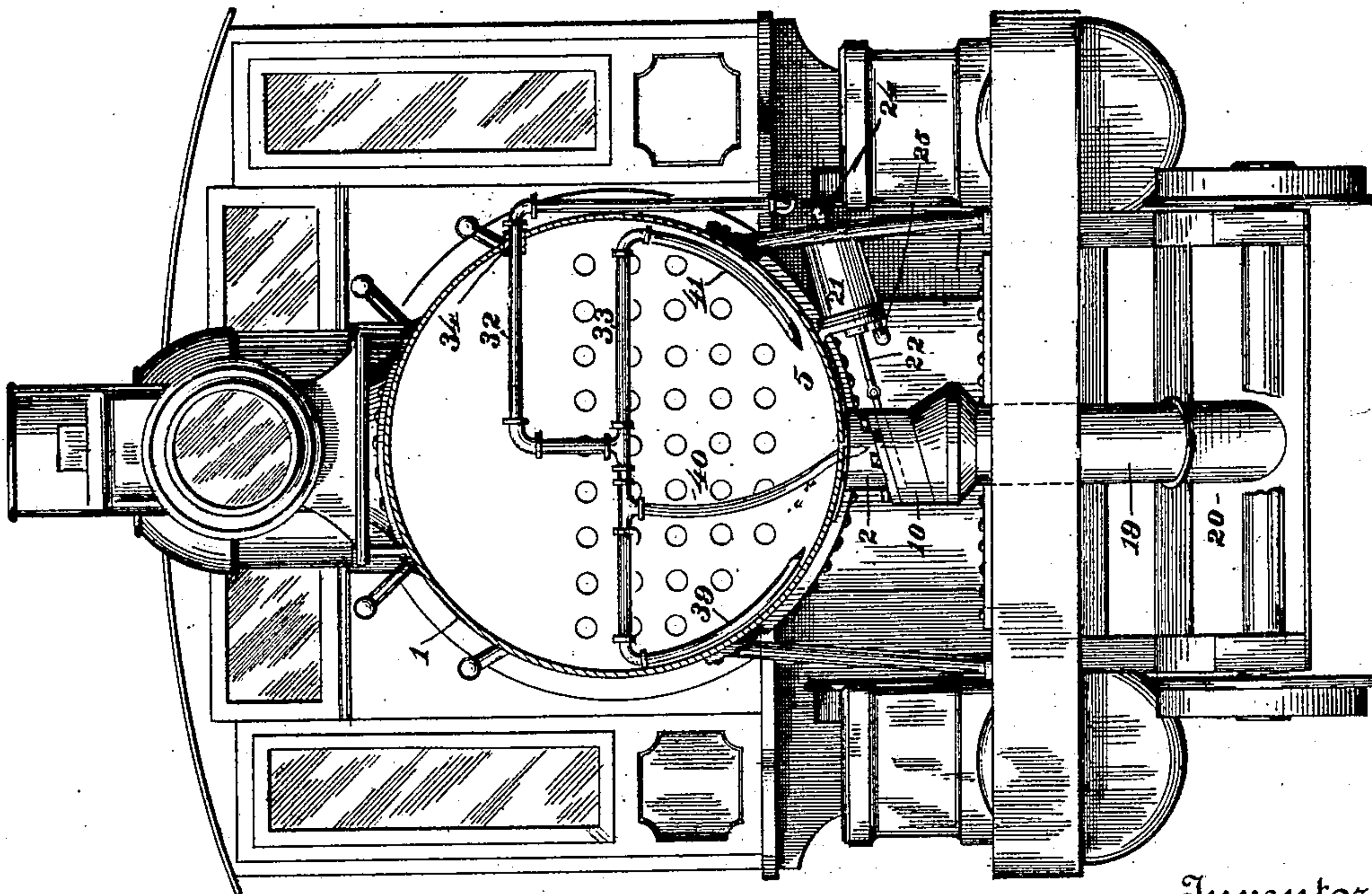
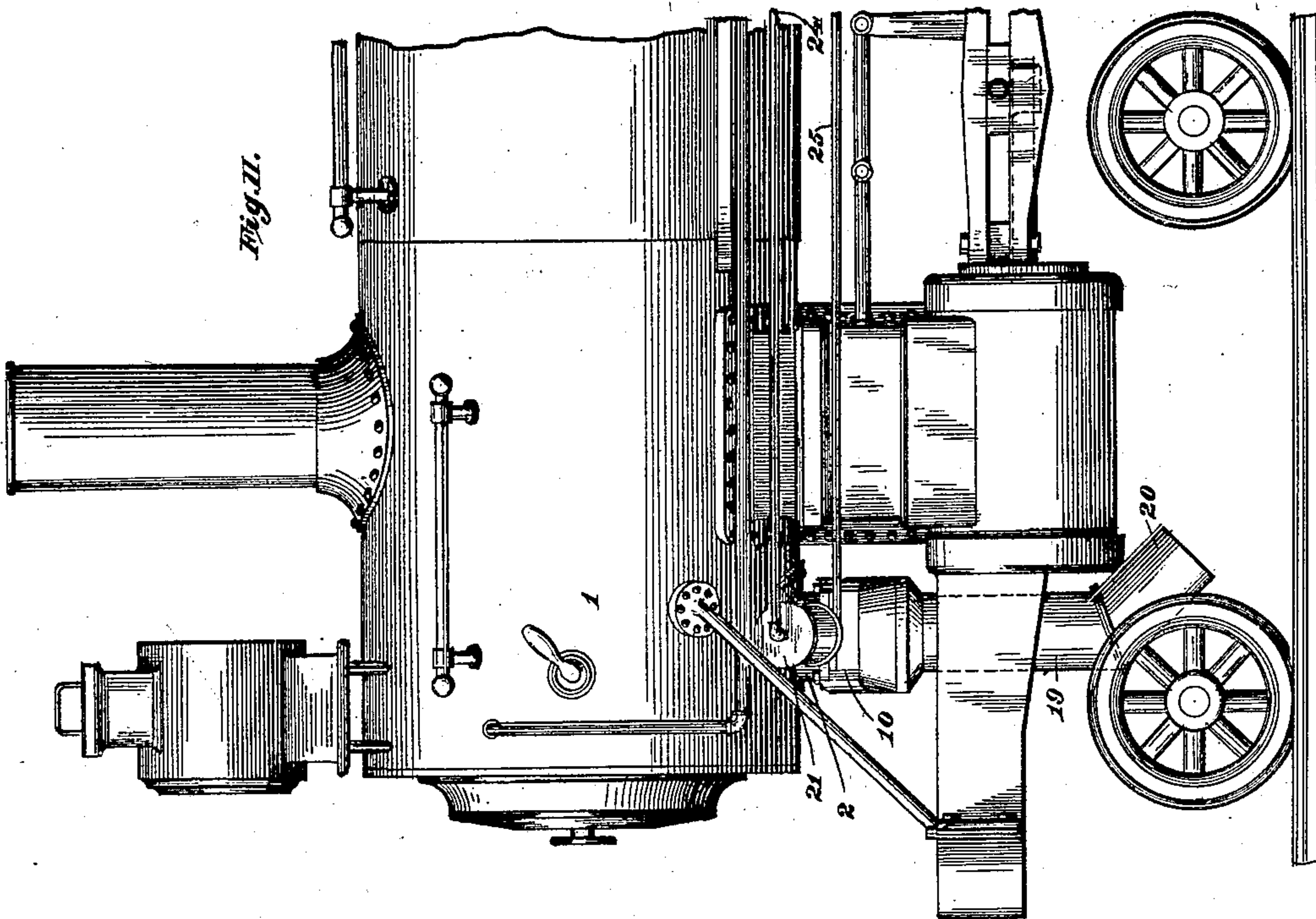
Patented July 23, 1901.

M. LAUX.
CINDER HOPPER.

(Application filed Mar. 8, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
H. S. Austin
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Fig. I.

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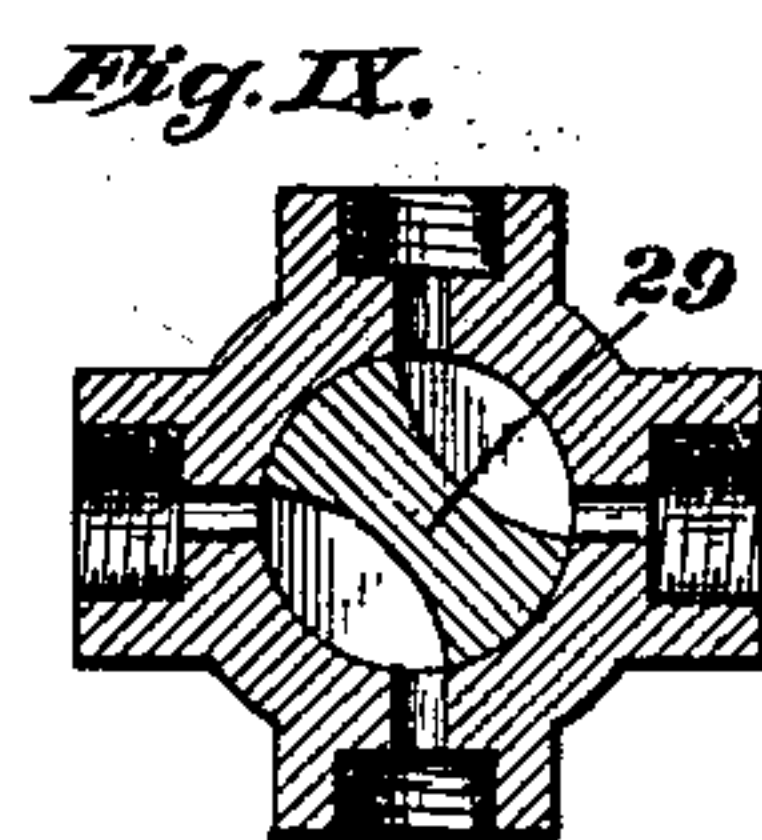
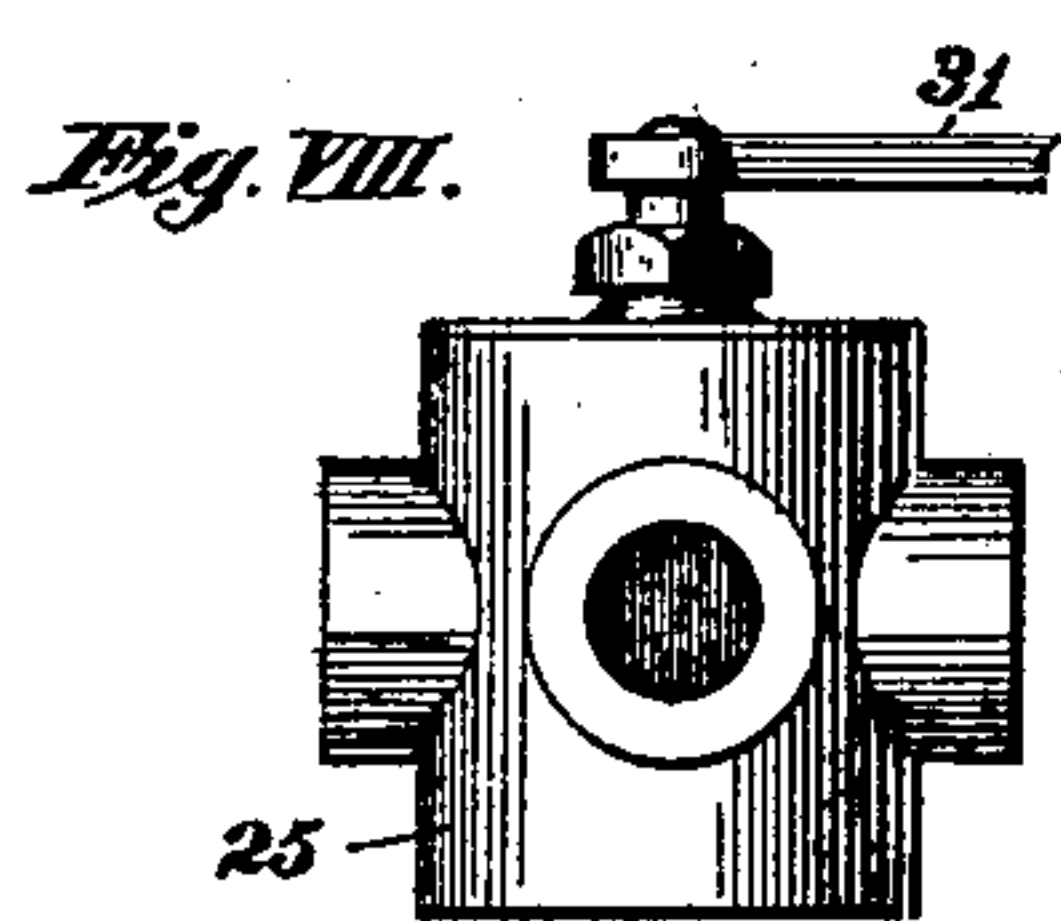
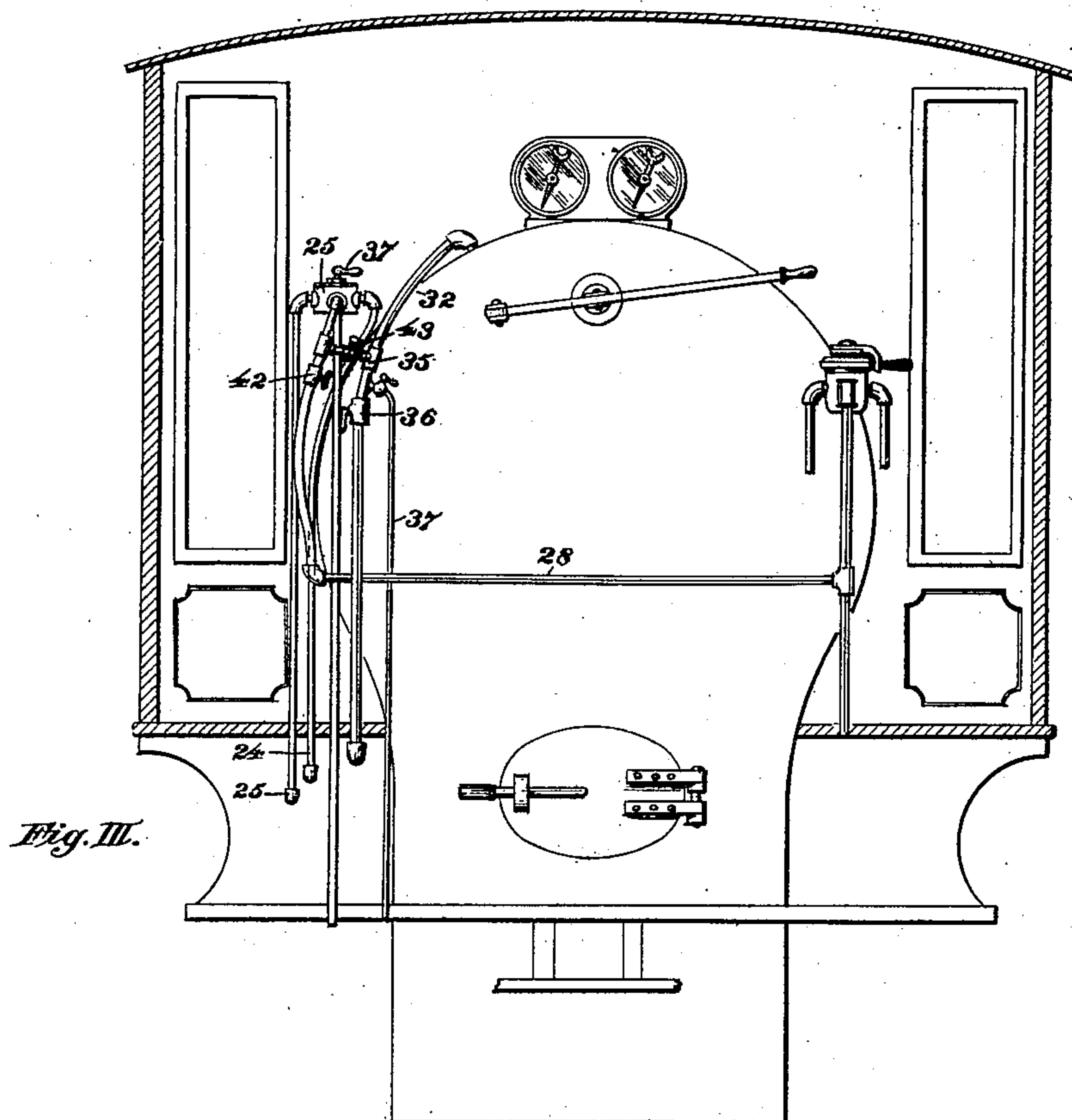
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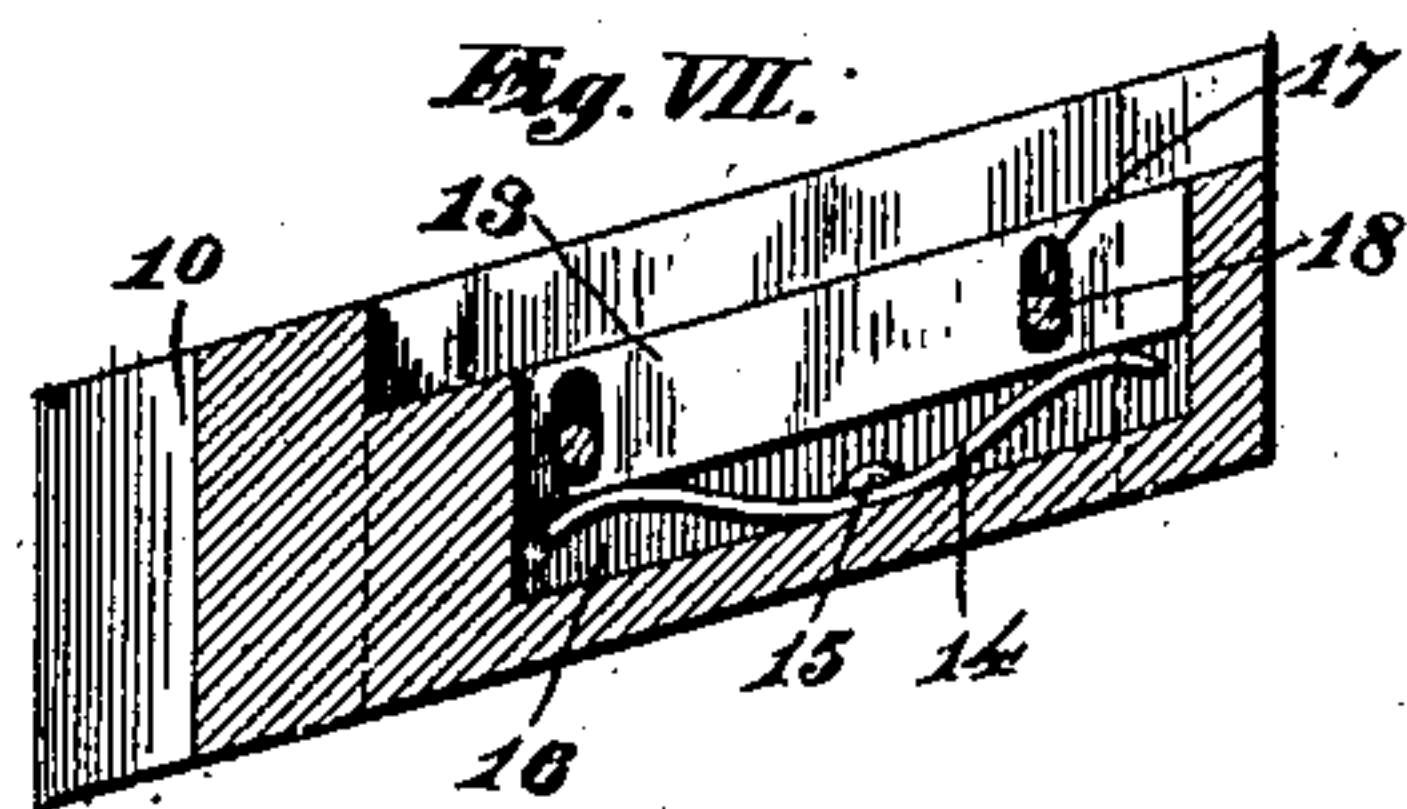
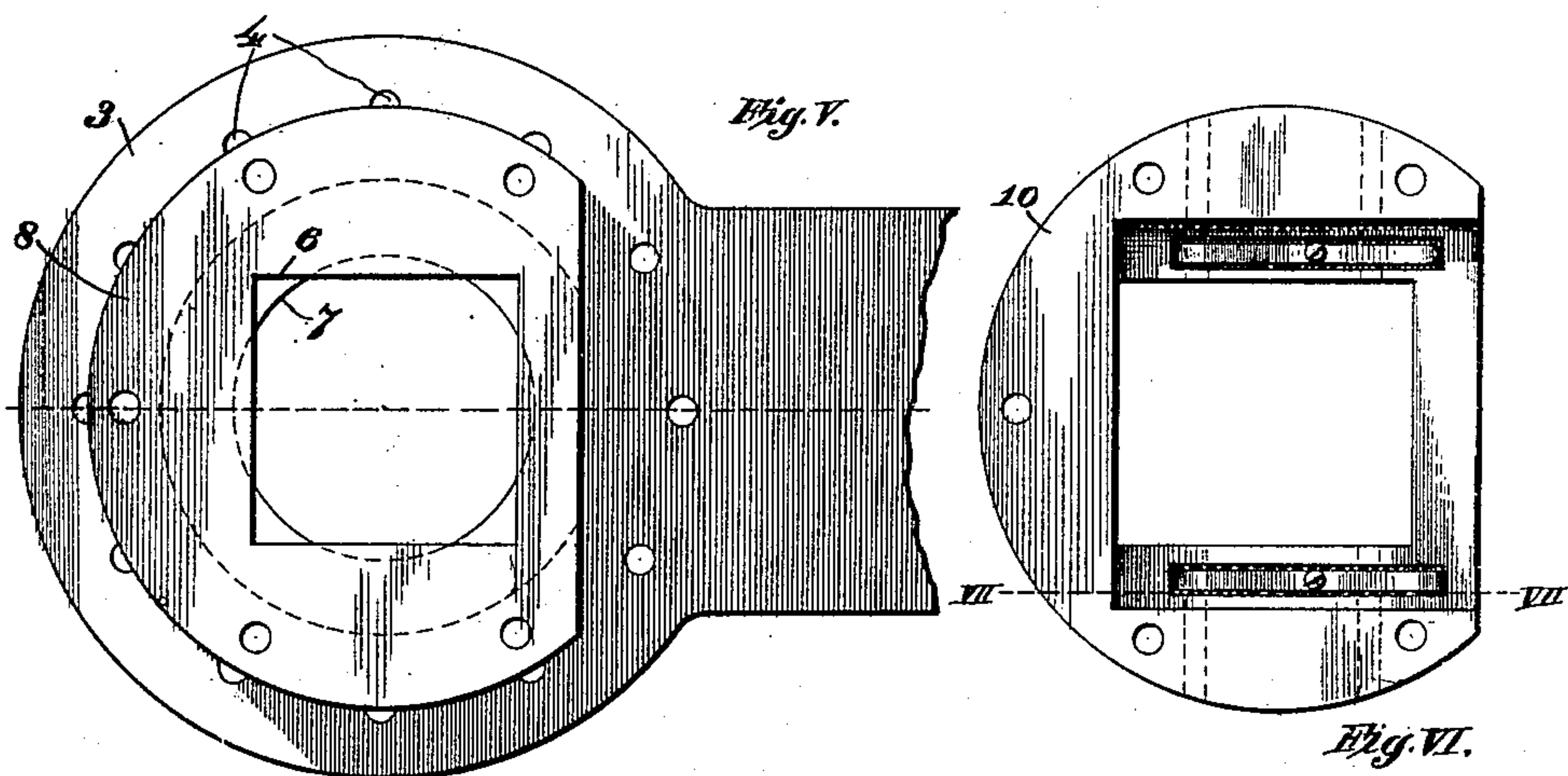
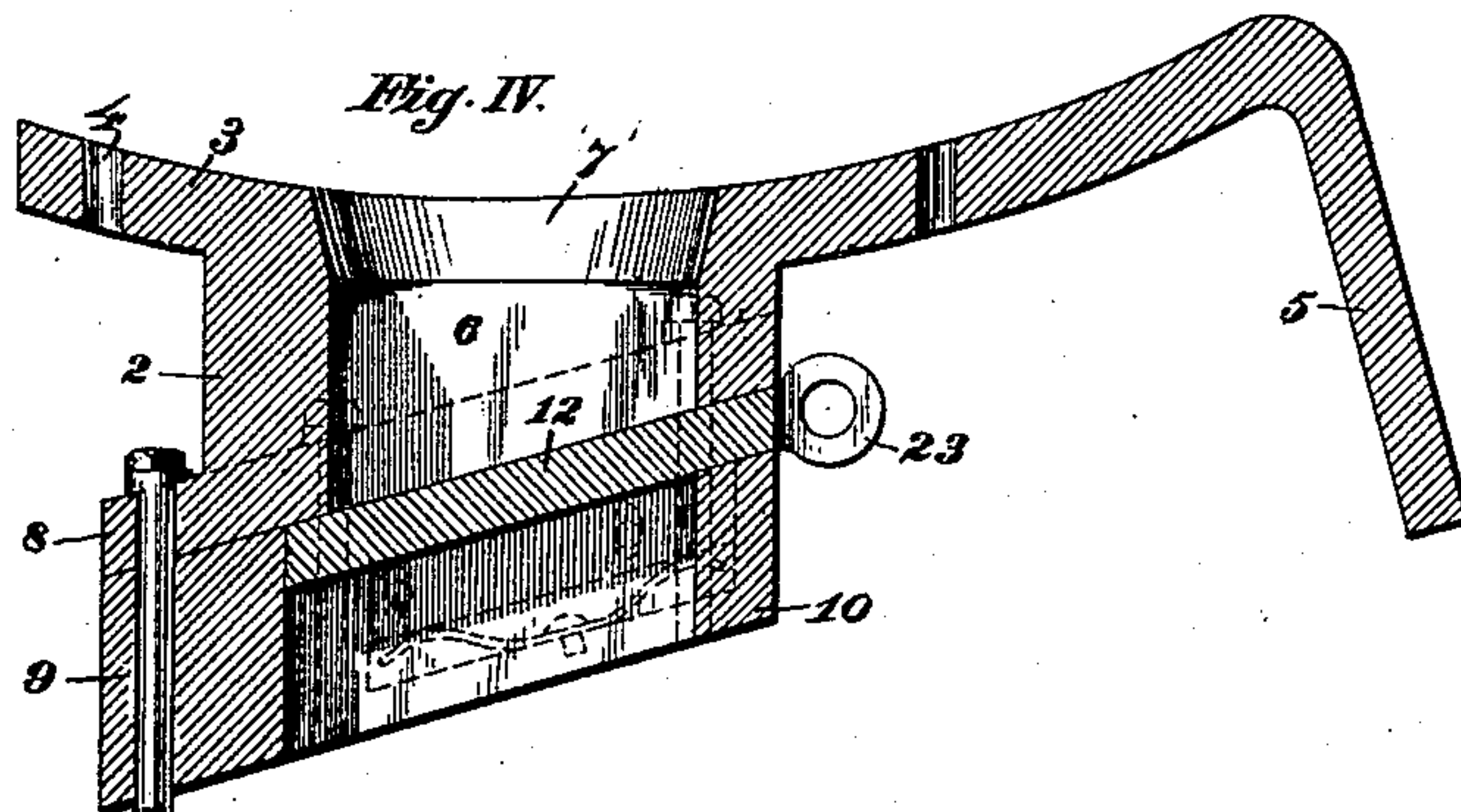
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3 Sheets—Sheet 3.



Witnesses
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Inventor:
Mathias Laux
By *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

MATHIAS LAUX, OF LITTLE ROCK, ARKANSAS, ASSIGNOR OF TWO-THIRDS
TO THOMAS E. GLYNN AND JOHN E. COATES, OF SAME PLACE.

CINDER-HOPPER.

SPECIFICATION forming part of Letters Patent No. 679,083, dated July 23, 1901.

Application filed March 8, 1901. Serial No. 50,349. (No model.)

To all whom it may concern:

Be it known that I, MATHIAS LAUX, of Little Rock, in the county of Pulaski, State of Arkansas, have invented certain new and
5 useful Improvements in Cinder-Hoppers, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce
10 improved means for discharging the accumulation of cinders from the flues of a locomotive-boiler between the tracks on which the locomotive travels.

In the ordinary type of locomotive those
15 cinders which do not pass through the netting and out of the smoke-stack accumulate in the barrel or smoke-box, commonly known as the "extension front end." When this accumulation nearly or quite fills up the front
20 end, it prevents combustion, consumes extra fuel, and must be emptied from time to time, the present method requiring the fireman or engineer to open the smoke-box from underneath by hand when the locomotive is standing still, and if the cinders cake in the front
25 end they must be poked out by hand with iron rods. This method requires time and occasions delay. If the accumulation is very considerable, it usually sets fire to the packing in truck-cellars.

By my invention means are provided in the cab of the locomotive by which the cinder-hopper may be opened and closed and also by which the cinders may be instantly loosened and discharged harmlessly as often as
35 may be required, thereby enabling the front end to be kept entirely free and open at all times. These results are accomplished by the action of either steam or air while the
40 locomotive is standing still or in motion.

In the accompanying drawings, Figure I is a front elevation of a locomotive, parts of the machine removed the better to illustrate the details of my invention. Fig. II is a side
45 elevation of a portion of the subject-matter of Fig. I, the head of the smoke-box or barrel being shown in position. Fig. III is an end elevation of a portion of the subject-mat-

ter of Fig. I looking into the cab. Fig. IV is a central vertical sectional view of my hopper-frame and cut-off therein in the closed
50 position. Fig. V is a top plan view of a portion of the subject-matter of Fig. IV. Fig. VI is a top plan view of the discharge-chute collar, showing the end thereof which is attached to the hopper-frame. Fig. VII is a
55 vertical section on the line VII VII of Fig. VI. Fig. VIII is a side elevation of a four-way cock for actuating the cut-off. Fig. IX is a transverse section of the same. 60

Referring to the numerals on the drawings, 1 indicates the barrel of a locomotive of any ordinary type, the locomotive illustrated being merely shown by way of example as one to which my invention is applicable. To the
65 bottom of the barrel I apply a hopper-frame 2, having a plate 3, (see Fig. IV,) curved to fit the bottom of the barrel 1, to the shell of which it may be secured, as by bolts or rivets passing through apertures 4 therein. 5 indicates a bracket extension which preferably
70 constitutes an integral angle from the plate 3 thereof. The hopper-frame is provided with a discharge-aperture which is preferably square at its lower end, as indicated at 6, and
75 cylindrical above, as indicated at 7. Surrounding the lower end of the aperture 7 the hopper-frame is provided with an external flange 8, to which, as by bolts 9, is secured a chute-collar 10. Between the chute-collar
80 and the flange 8 is provided a snugly-fitting guide-recess for a cut-off 12, the form of the recess and cut-off being clearly indicated in Fig. VI of the drawings. A close fit is obtained between the cut-off and the bottom of
85 the hopper-frame, against which it works, as by the employment of grooved joints, the object being to obtain an air-tight fit between the parts. In order to movably support the cut-off in its guide-recess, I prefer to support
90 it upon opposite sides, as by gibs 13, located underneath the opposite ends of the cut-off and each urged into contact therewith, as by a bow-shaped leaf-spring 14, secured, as indicated at 15, to the bottom of the recess 16,
95 in which the gib and its spring fit. The gib

is susceptible of limited vertical movement, being provided with oblong slots 17, which receive bolts 18, fixed in the wall of the collar 10. To the bottom of the collar 10 is secured the end of a cinder-chute 19, which, descending toward the road-bed, preferably terminates in a rearwardly-deflected section 20, the rearward deflection being provided to prevent cinders, while the locomotive is in motion, striking the ground vertically and rebounding to such an extent as to clog or interfere with the machinery under the locomotive. The cinder-hopper also relieves excessive draft on fire when starting up by being wholly or partially opened, the air coming up through chute 19, thereby preventing the entire force of the heavy exhausts tearing up the fire in the fire-box.

For actuating the cut-off 12 I prefer to employ a controlling-cylinder 21, which is secured at one end to the bracket extension 5, its location thereon and the inclination of the bracket extension being such as to bring the piston-rod 22 of the cylinder 21 into alignment with the cut-off 12, to which the rod 22 may be separably secured, as by the employment of a pin-and-eyelet connection, the eyelet 23 of the cut-off being clearly shown in Fig. IV. The bracket extension 5 may constitute a frame-piece for the cylinder 21 or may supply the places of an ordinary cylinder-head and is of course provided with an aperture for the accommodation of the piston-rod 22. The cylinder 21 is designed to accommodate an ordinary piston (not illustrated, but connected with the rod 22 in the usual manner) and is supplied at opposite ends with pneumatic energy, as through pipes 24 and 25. By the term "pneumatic energy" I include both air and steam or other fluid by which the piston may be actuated. It is also obvious that the piston might be actuated by suction, which is merely one mode of applying air-pressure. The pipes 24 and 25 are connected, preferably, within the cab of the locomotive with a four-way cock 26, the details of which are illustrated in Figs. VIII and IX. This cock derives pneumatic energy as from a pipe 28 connecting with the air-brake system in the cab, or it may be supplied from any other suitable source. It is obvious that air-pressure from the pipe 28 may be directed by manipulation of the plug 29 into either of the pipes 24 or 25.

31 indicates a handle by which the plug 29 may be manipulated.

It is obvious that by manipulation of the handle 31 the cut-off 12 may be opened or closed whenever required to permit discharge of the solid contents of the barrel or smoke-box through the chute 19 and that provision is made to prevent leakage of air around the cut-off when it is closed. It frequently happens, however, that it is necessary to dis-

lodge the contents of the barrel and to force the same therefrom into the chute. For this purpose I provide a steam-pipe 32, establishing communication between the interior of the locomotive-boiler and a cross-head 33 in the interior of the barrel, the pipe 32 passing through the shell of the barrel 1 by a tight joint, as indicated at 34. The pipe 32 is controlled, preferably, by a plurality of cocks 35 and 36, between which a cock-controlled waste-pipe 37 is preferably applied. The pipe 32 affords means for forcing a blast of steam into the interior of the barrel and toward the point of communication therewith of the discharge-chute. Accordingly I prefer to provide the cross-head 33 and communicating therewith a plurality of branches 39, 40, and 41, for example, which are led toward the aperture 6 in the hopper-frame and are adapted to discharge into or toward the same.

In operation the engineer or other attendant upon the locomotive is enabled by manipulation of the handle 31 to open the cut-off 12 and to close it, as required. When it is open by manipulation of the cock 36 on pipe 32, steam will flow from the boiler through pipe 32 into cross-head 33 and thence into 39, 40, and 41, loosening all cinders instantly and causing their discharge through chute 19. Afterward by the reverse movement of the handle 31 the cut-off 12 is closed, as described. In case of manipulation by air and the air should give out on engine the cut-out cock 42 in pipe 28 should be closed, thus preventing steam when cut-out cock 43 from steam-pipe 32 is cut in from communicating through pipe 28 with air-brake system.

What I claim is—

1. The combination with a locomotive-barrel and cinder-discharge chute communicating therewith, of a reciprocatory cut-off adapted to open and close said chute, yielding means adapted to compel close contact between the cut-off and the surface against which it works, and pneumatically-operative means for actuating the cut-off.

2. The combination with a locomotive-barrel and cinder-discharge chute communicating therewith, of a hopper-frame adapted to secure the chute to the barrel, a chute-collar secured thereto, an intermediate cut-off working in a recess therein, spring-actuated gibs adapted to compel contact between the cut-off and the surfaces against which it works, and pneumatically-operative means for actuating the cut-off.

3. As a part of a cinder-box chute, a hopper-frame adapted to be secured to the barrel of a locomotive, a chute-collar secured thereto and provided with a recess, and an intermediate cut-off working in the recess.

4. As a part of a cinder-box chute, the combination with a hopper-frame adapted to

carry a cut-off, of a bracket extension integral therewith adapted to support the operative mechanism for the cut-off.

5. As a part of a cinder-box chute, a hopper-frame adapted to be secured to the barrel of a locomotive, a chute-collar secured thereto, an intermediate cut-off working in a recess therein, and spring-actuated gibs adapted to compel contact between the

cut-off and the surfaces against which it works.

In testimony of all which I have hereunto subscribed my name.

MATHIAS LAUX.

Witnesses:

B. E. SCOTT,
JAMES COATES,
J. E. COATES.