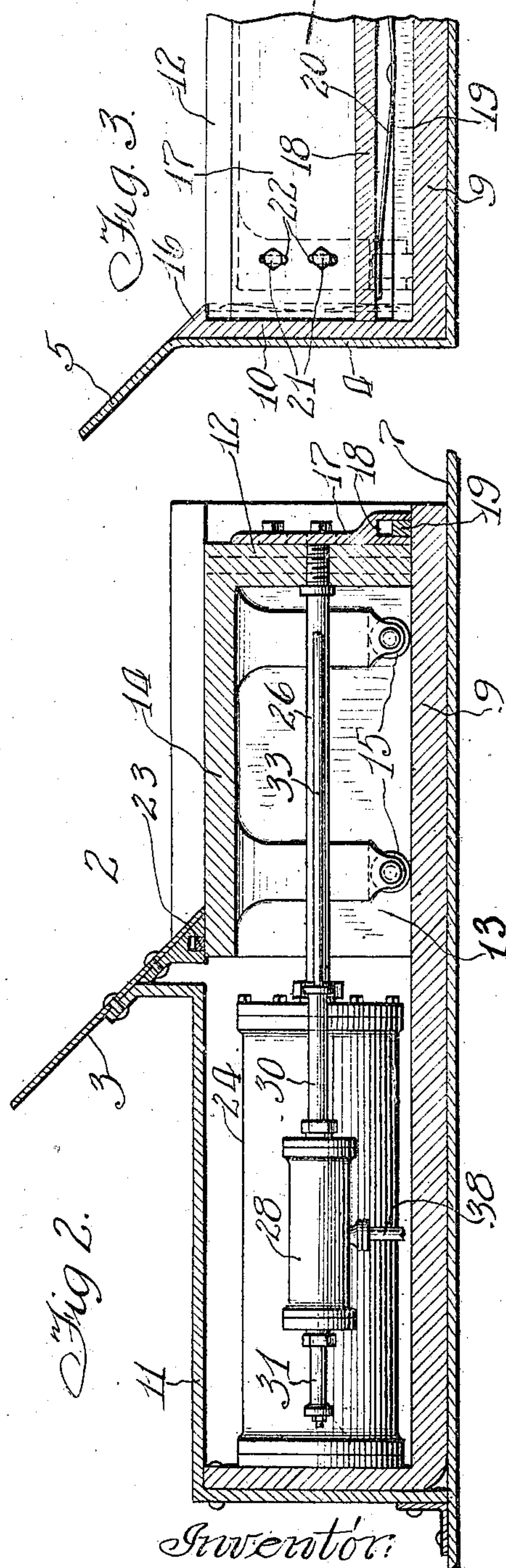


LOCOMOTIVE TENDER.

989,595.

2 SHEETS—SHEET 1.



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989,595.

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LOCOMOTIVE TENDER.
APPLICATION FILED JAN. 30, 1911.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 2.

Fig. 4

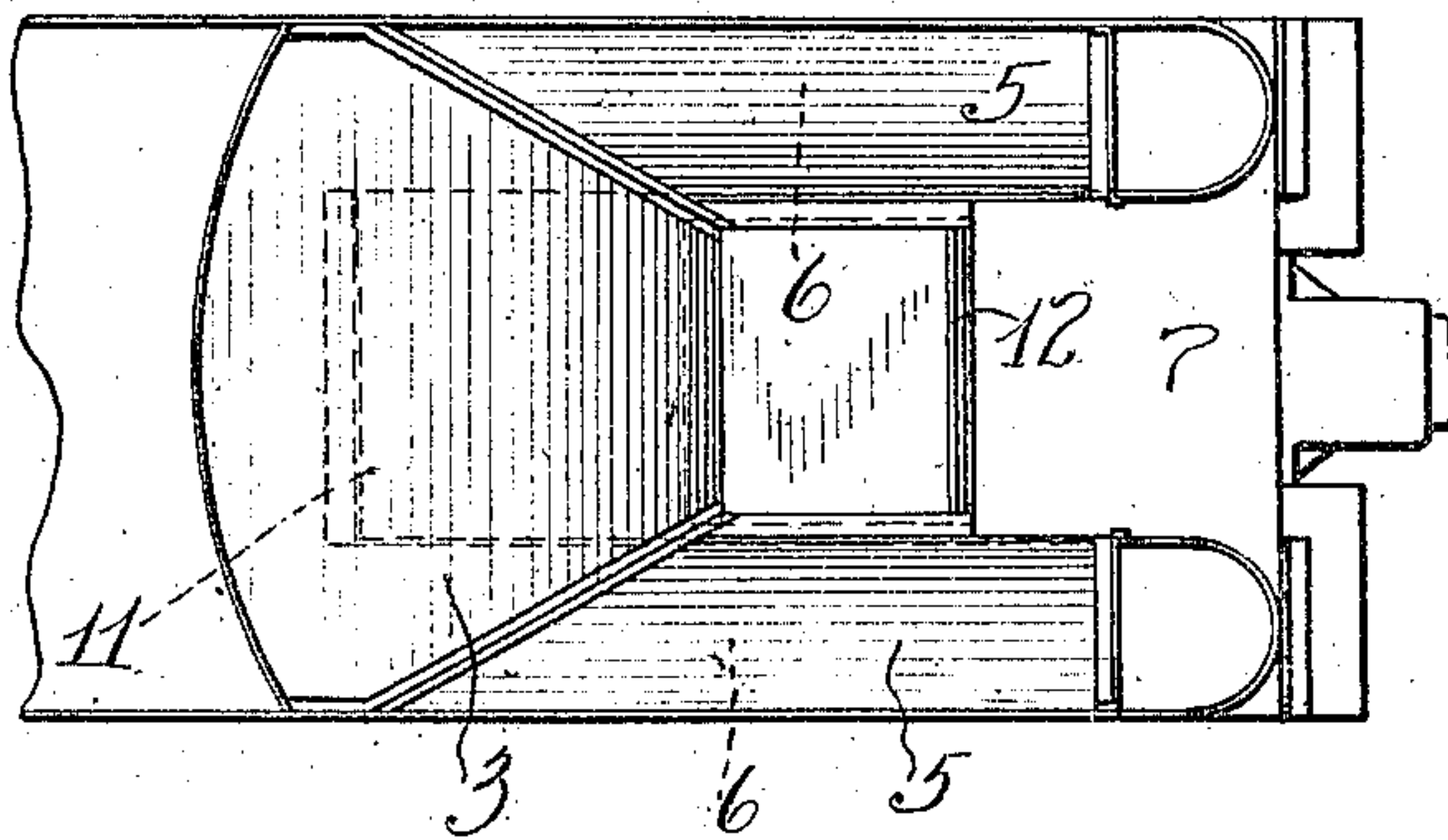


Fig. 5

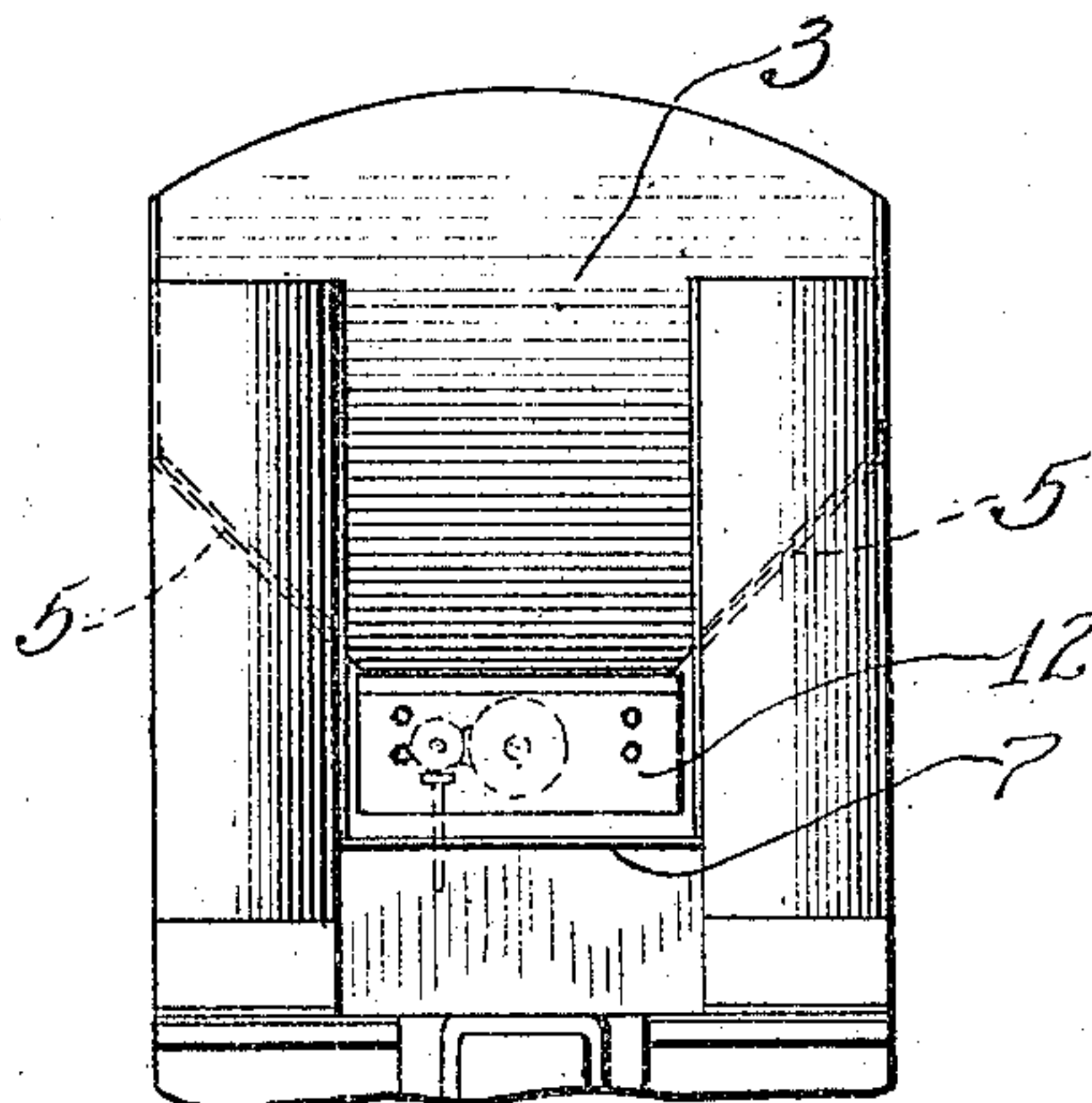
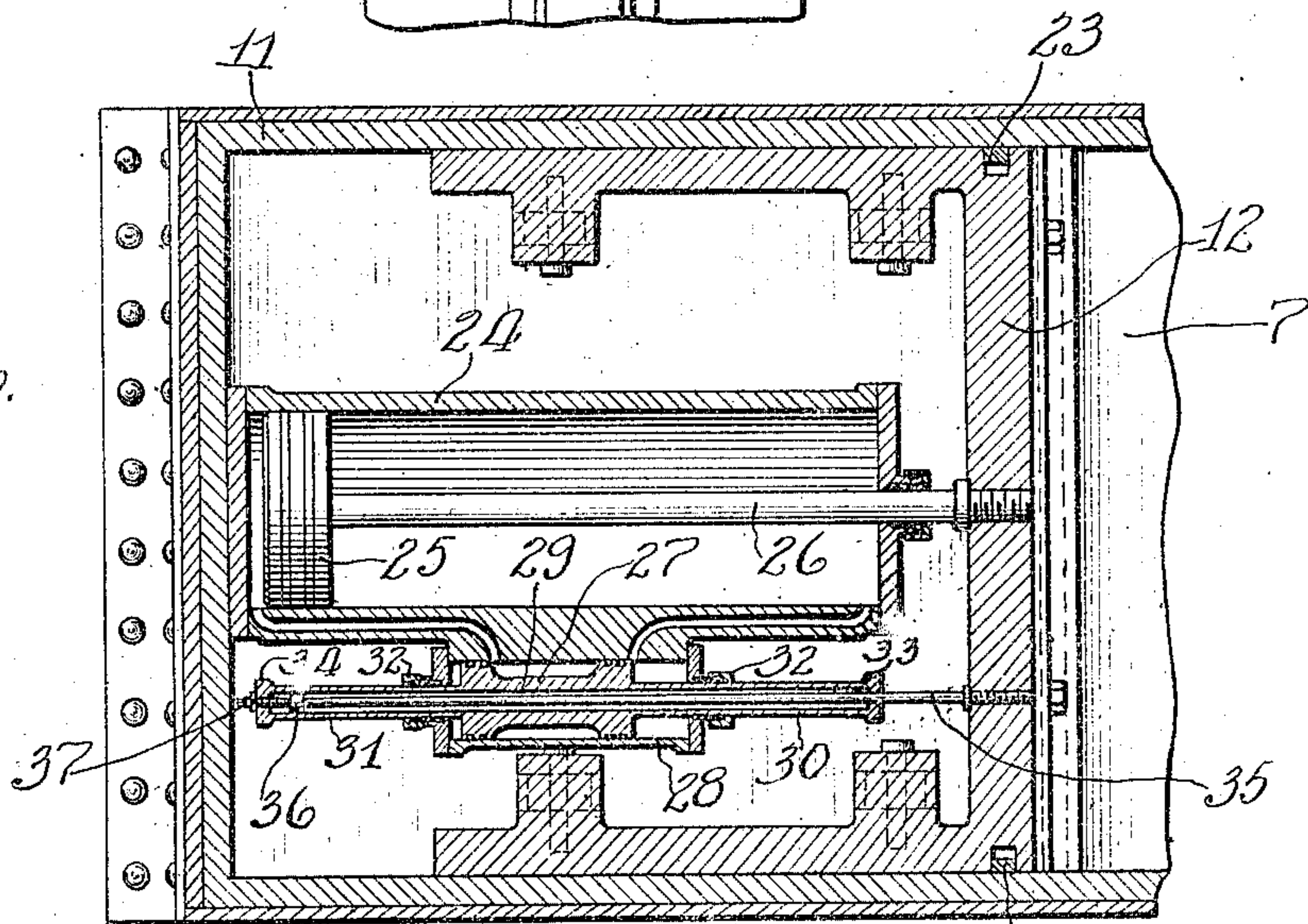


Fig. 6



Witnesses:

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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE-TENDER.

989,595.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed January 30, 1911. Serial No. 605,485.

To all whom it may concern:

Be it known that I, LLOYD W. GALLOWAY, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in Locomotive-Tenders, of which the following is a specification.

In the forms of tenders heretofore in common use, the vibration of the tender has caused the slack coal to settle into the lower rear portion of the coal pit, where it accumulated and became watersoaked and air-slacked. The lumps of coal also became embedded in the slack and could be loosened and advanced only by the application of considerable physical force.

The object of my invention, generally stated, is to produce a mechanism for passing the coal contained in the coal pit of a locomotive tender to a point within convenient reach of the fireman.

Special objects of the invention are to provide a type of coal-passing mechanism which shall be operatively independent of the furnace, so that its use shall not necessitate the employment of a mechanical stoker or require any alterations of the furnace; to arrange a coal-passing mechanism that will act upon the lower portion of the mass of coal, whereby accumulations of slack are prevented from forming, and whereby the slack and lumps are mixed and the mass broken up; to arrange the coal-passing mechanism so that it shall not reduce the coal-storage space; and to locate the mechanism so that it shall not be exposed to the weather.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive tender and the rear portion of the locomotive, illustrating the relation of the coal-passing mechanism to the tender and locomotive. Fig. 2 is a longitudinal sectional view of said mechanism. Fig. 3 is a fragmental transverse sectional view. Figs. 4 and 5 are fragmental top plan and front end views of the tender. Fig. 6 is a horizontal sectional view of the coal-passing mechanism.

The embodiment herein shown of my invention comprises a water tank 1 and a coal pit 2, the rear wall 3 of the coal pit being upwardly and rearwardly inclined. The lower portion of the coal pit is relatively narrow, each side wall comprising the vertical portion 4 and the upwardly and outwardly inclined portion 5.

6 are water spaces at each side of the coal pit.

The bottom 7 of the coal pit is in substantially the same horizontal plane as the deck 8 of the locomotive. The rear portion of the walls 5 and the bottom 7 may be lined, as herein shown, by metallic members or plates 9 10. Alined with the lower portion of the coal pit and extending into the tank is a chamber 11. A plunger 12 having sides 13 and a top 14 and preferably provided with supporting rollers 15 is mounted for movement upon the plate 9 and into and out of the chamber 11. Said plunger is of substantially the same width as the space between the plates 10, the latter having flanges 16 (Fig. 3), that overhang the side edges of the top 14. To prevent slack from getting behind the plunger 12 I attach to the front side of the plunger a plate 17 having a groove 18 in its lower edge, within which groove is a packing strip 19 held in contact with the plate 9 by any suitable means such as a spring 20. Preferably the plate 17 is arranged for vertical adjustment to take up wear, as by securing it in place with screws 21 extending through elongated openings 22. Suitable packing (which may be similar to the packing 19 20 just described) is preferably provided at the side edges of the plunger and at the lower edge of the hopper wall 3, as indicated at 23 in Figs. 2 and 6.

The means herein shown for reciprocating the plunger 12 comprises a cylinder 24 located within the chamber 11, and containing a piston 25 which is connected by a rod 26 to the plunger. The passage of pressure fluid to and from the cylinder 24 is controlled by any suitable valve mechanism, as, for instance, a valve 27 slidable within the valve chest 28, said valve having an axial opening 29 and a sleeve or tube 30 31 at each end alined with the opening 29.

32 are stuffing boxes through which the sleeves 30 31 extend. The outer end of each sleeve 30 31 is provided with a head or cap 33 34. Attached to the plunger 12 is a valve-actuating rod 35 extending within the valve 27 and the sleeves 30 31. Upon the rear end of the rod 30 is a collar or projection 36 adapted alternately to contact the head 33 and an adjusting screw 37 carried by the head 34. When the plunger 12 approaches the forward limit of its travel, the projection 36 contacts the head 33 and shifts

the valve 27, thus causing a reversal of the direction of movement of the plunger. As the plunger nears its rearmost position, the projection 36 strikes the screw 37 and shifts the valve into the position indicated in Fig. 6, thereby again reversing the direction of travel of the plunger.

Any suitable pressure fluid, such as water, air, live steam or exhaust steam, may be employed to actuate the piston 25. Herein I have shown a fluid supply pipe 38 supported on the tender and connected at one end with the valve chest 28 and at its other end flexibly connected to a supply pipe 39 on the locomotive. I have deemed it unnecessary to illustrate the exhaust ports and passages of the valve chest. The supply of pressure fluid to the plunger-actuating cylinder may be controlled in any suitable manner and from any desired point. In this instance, I have illustrated a throttle valve 40 located in the pipe 39 at a point convenient to the fireman.

In use, the forward end of the coal pit is closed, as usual, by a gate (not shown) having a small shoveling opening in its lower edge, until all the coal accessible through such opening has been removed, whereupon the fireman removes the gate. The coal-passing mechanism may now be actuated to push the coal forward to a point within convenient reach of the fireman. When the plunger 12 is within the coal pit the top 14 serves to support the superincumbent coal. The mechanism is actuated intermittently and as frequently as may be necessary to keep a supply of coal on the forward part of the bottom 7. As the coal-passing mechanism operates upon the lower part of the mass of coal, slack is prevented from accumulating, the slack and lump coal being advanced together.

The embodiment herein shown of my invention being susceptible of various modifications, I would have it understood that the invention is not limited to the details set forth.

I claim as my invention:

1. In a locomotive tender, the combination of a coal pit having a rear wall; a plunger located below the plane of the lower edge of said wall, and arranged for

movement over the bottom of the coal pit, said plunger having means to support coal resting upon the plunger when the latter is projected forwardly; and means for reciprocating the plunger.

2. In a locomotive tender, the combination of a coal pit having a relatively narrow lower portion, and a coal-passing mechanism located in the horizontal plane of said lower portion and above the bottom of the pit, said mechanism comprising a rectilinearly movable plunger of substantially the same width as the lower portion of the pit.

3. In a locomotive tender, the combination of a coal pit having a rearwardly and upwardly inclined rear wall, a plunger located below said rear wall for movement over the bottom of the coal pit, and means for reciprocating said plunger to pass coal from the rear portion of the pit to the forward portion thereof.

4. In a locomotive tender, the combination of a coal pit and a water tank, said coal pit having a relatively narrow lower portion and a rearwardly and upwardly inclined rear wall, a plunger mounted for reciprocatory movement over the bottom of the pit, a chamber extending rearwardly from the lower end of said inclined rear wall into the tank, and adapted to receive said plunger, and means within said chamber for reciprocating said plunger.

5. In a locomotive tender, the combination of a coal pit having a relatively narrow lower portion, a plunger supported for movement upon the bottom of the pit, the width of said plunger being substantially equal to the width of the lower portion of the pit, a horizontal coal-supporting member attached to and extending rearwardly from the plunger, means for horizontally reciprocating said plunger and member, and packing means between the sides, bottom and top of the plunger and member and the adjacent walls of the pit.

In testimony whereof I affix my signature in the presence of two witnesses.

LLOYD W. GALLOWAY.

Witnesses:

F. E. MCGONEGLE,
L. M. JEFFERIES.