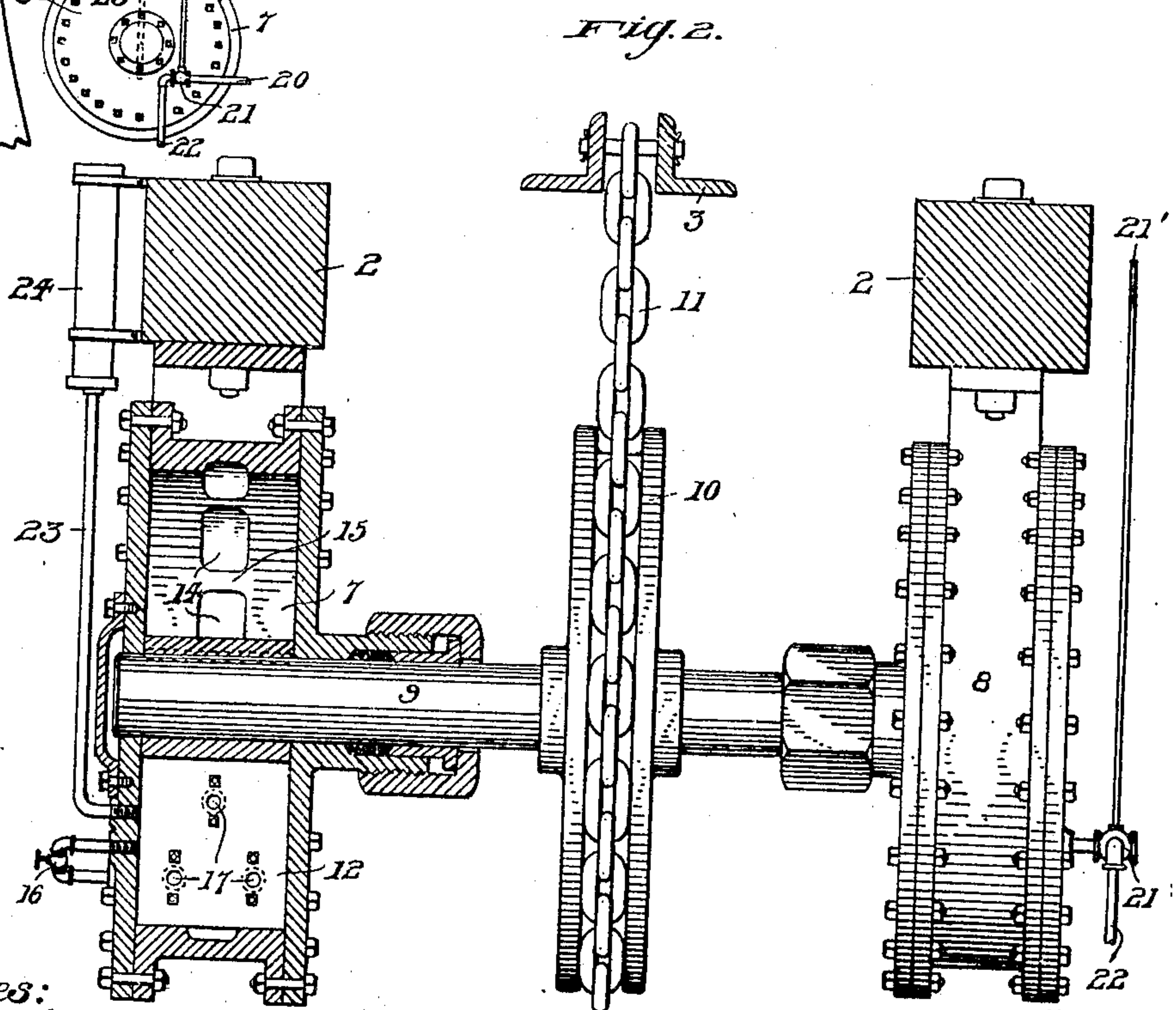
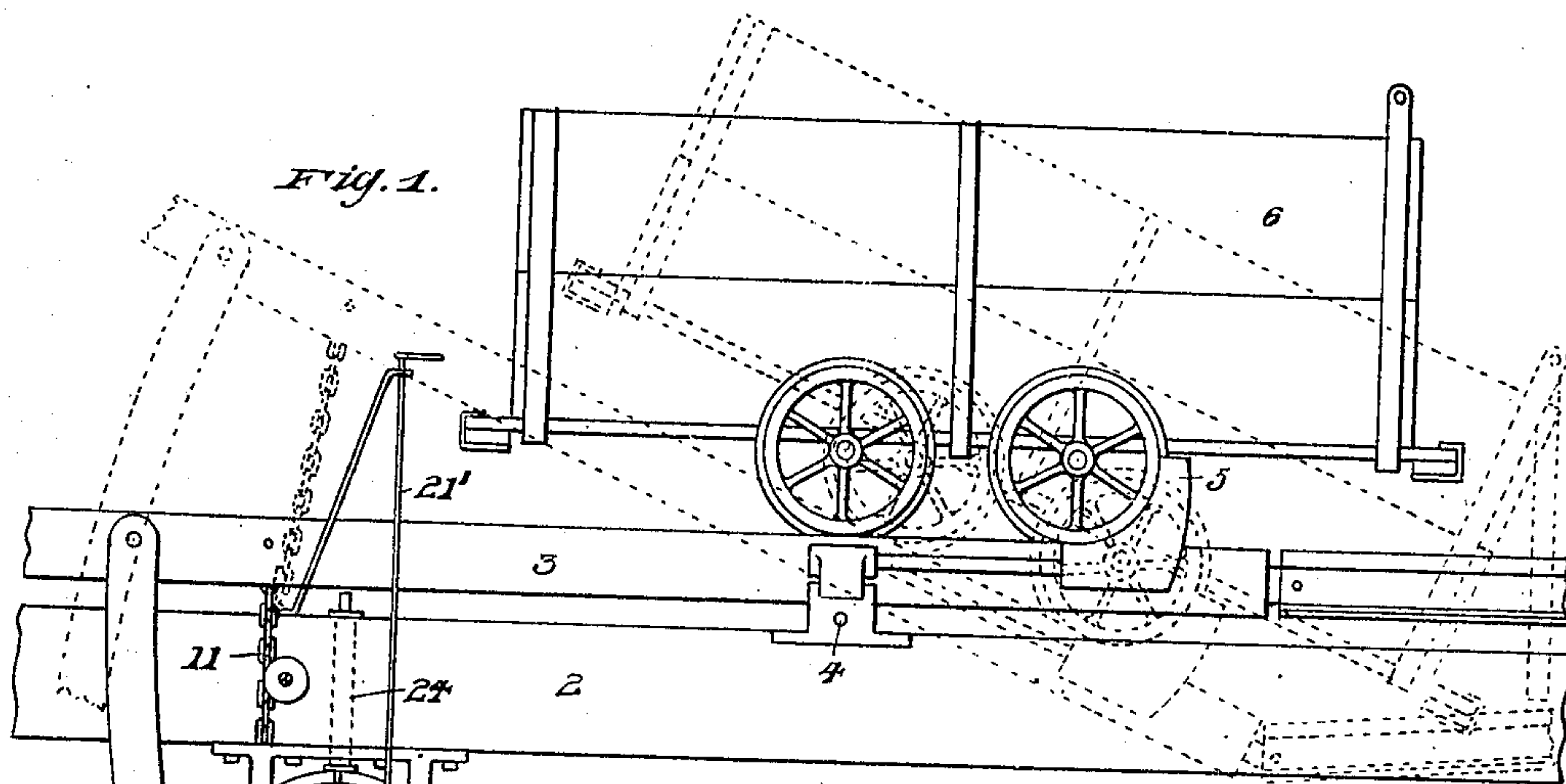


913,555.

J. S. PATES.
COAL TIPPLE.
APPLICATION FILED AUG. 8, 1908.

Patented Feb. 23, 1909.
2 SHEETS—SHEET 1.



witnesses:
J. R. Hoffman,
White Breaker.

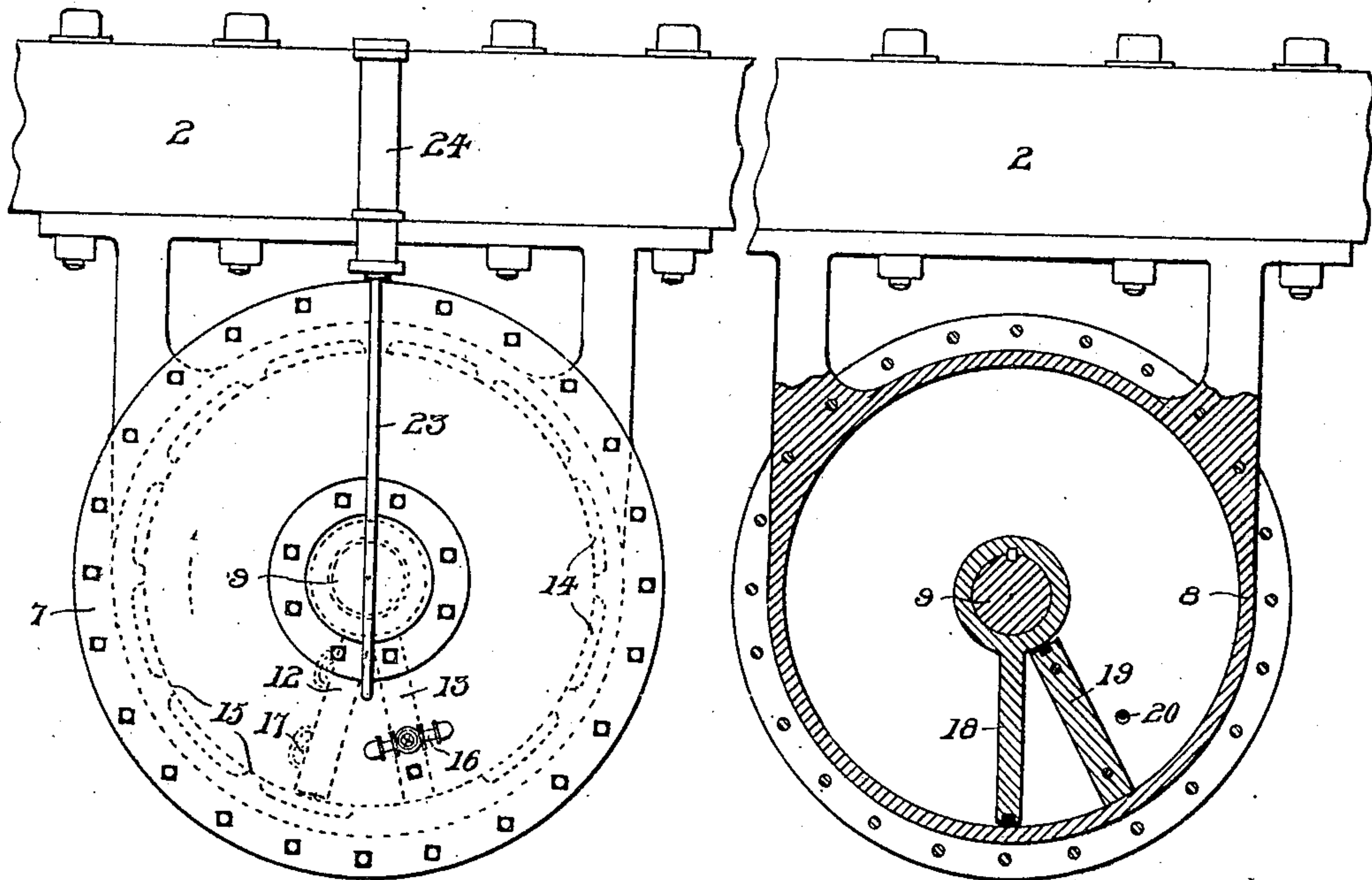
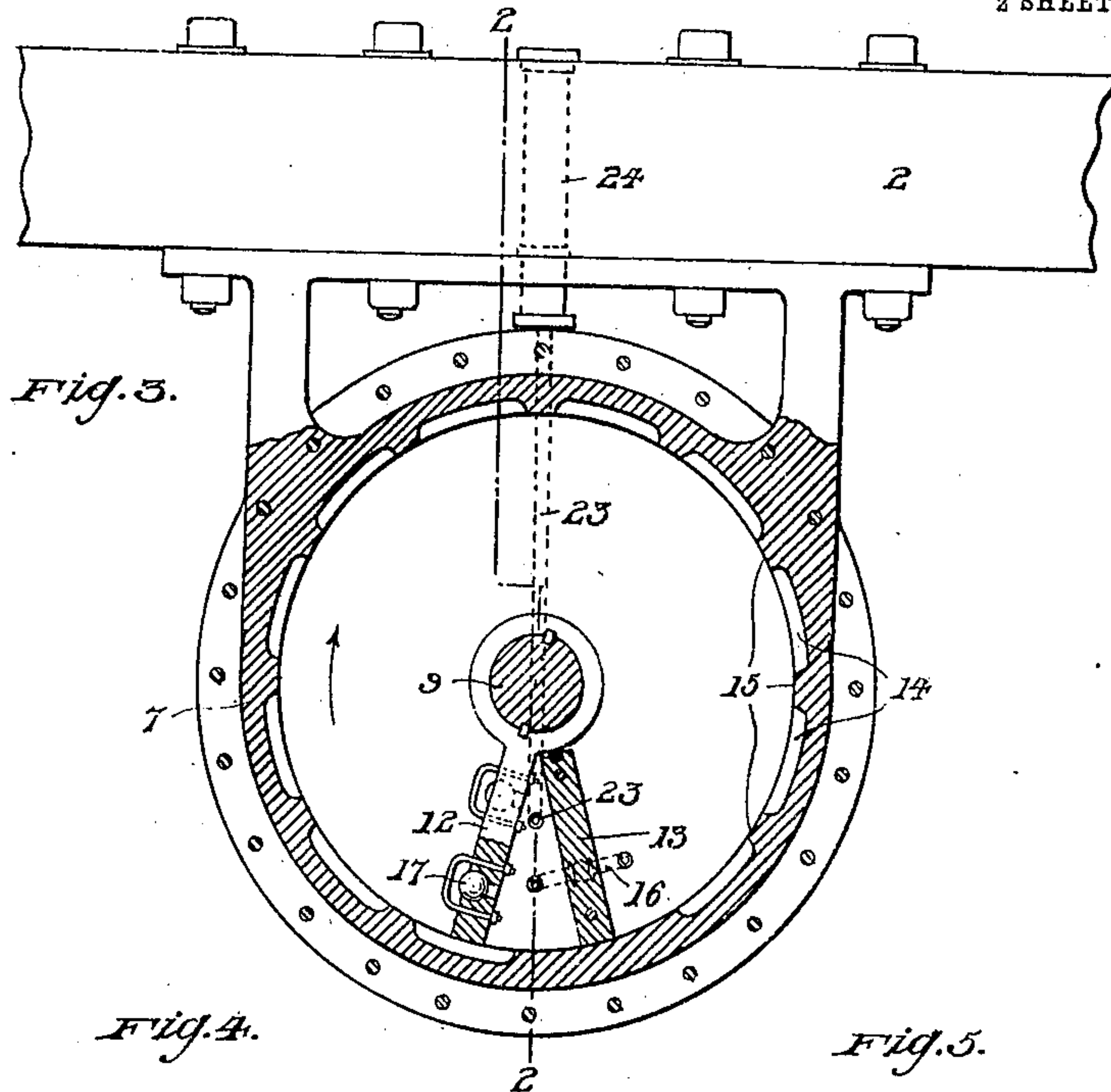
Inventor
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By J. W. Herbert
att.

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2 SHEETS—SHEET 2.



witnesses:

J. B. Johnson,
Witness Richard

Inventor

James S. Pates,
By J. C. Vebbit
att.

UNITED STATES PATENT OFFICE.

JAMES S. PATES, OF HOMESTEAD, PENNSYLVANIA.

COAL-TIPPLE.

No. 913,555.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed August 8, 1908. Serial No. 447,498.

To all whom it may concern:

Be it known that I, JAMES S. PATES, a resident of Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Tipples, of which the following is a specification.

This improvement relates to a specific embodiment of the invention for which Letters Patent No. 863,314 were granted me August 13, 1907, and the primary object is to provide a simple and efficient rotary piston mechanism for so retarding the movement of the pit car while dumping that the coal will be discharged therefrom gradually and in a substantially uniform stream of such volume as to be fully acted upon by the screens over which it passes, and not be dumped on the screens *en masse*, as when the whole load is displaced from the car at once.

In the present embodiment of the invention, the tilting of the car is controlled by a piston which rotates in its cylinder, the means employed for alternately releasing and checking the movement of the piston being substantially the same as in the adaptation shown in the former patent wherein the piston reciprocates. However, in the rotary piston design a cylinder of special and improved construction is provided. And as the rotary piston operates a shaft upon which a chain is wound connecting with the car tilting means, I have found it convenient to provide a second cylinder for rotating the shaft to wind up the chain, as when returning the tilting mechanism to horizontal or starting position.

In the accompanying drawings, Figure 1 is a view in side elevation of a portion of a coal tippie constructed in accordance with the invention, the car being shown tipped in dotted lines. Fig. 2 is a vertical cross-section, on a larger scale, of the cylinders and mechanism actuated thereby, the oil cylinder being shown on line 2—2 of Fig. 3. Fig. 3 is a sectional view of the oil cylinder, taken at right angles to the section of Fig. 2. Fig. 4 is a side elevation of the oil cylinder. Fig. 5 is a sectional view of the steam cylinder.

The tippie structure may be of any preferred design. As here shown, 2 indicates two of the longitudinal base timbers thereof; 3 the car tilting platform; and 4 the platform axis.

5 are the usual horns for holding car 6 on the platform.

Secured in hanger fashion to the under sides of timbers 2 are the oil or checking cylinder 7, and steam cylinder 8, which are in line with each other and form bearings for shaft 9, the latter between the cylinders carrying sheave 10 upon which is adapted to wind and unwind chain 11 connected at its upper end to platform 3. Secured to the shaft within cylinder 7 is piston 12, which when checking the dumping movement of the platform turns in direction of the arrow, Fig. 3. The piston-operating space of cylinder 7 is interrupted or divided by partition 13. This partition and the piston divide said space into two compartments, one in front of and the other behind the piston. The inner periphery of cylinder 7 is formed with a series of separated port-forming grooves 14, adjacent grooves being separated by the unindented portions 15 of the cylinder periphery.

In operation, when the car supporting platform is tilted, the upward movement thereof causes piston 12 to turn, and when the piston is in register with any one of ports 14 the oil or other fluid with which cylinder 7 is filled may flow around the piston from the front face thereof to its rear face, thus imparting an easy upward or yielding movement to the platform. But when the piston registers with the intervening spaces 15, its movement is checked, and this slowing up or partial or complete stopping, as the case may be, causes the coal to flow from the latter as soon as it begins to tip and before the angle of the car bottom reaches and exceeds the angle of repose of the coal contained therein. The result of the interrupted movement is the discharge of the coal in a stream of substantially uniform volume which does not exceed the capacity of the screens. This is not possible in those forms of dumping apparatus wherein no substantial part of the load is dislodged until it moves as a whole, following such an inclination of the car as to cause it to so move.

On the exterior of cylinder 7 and bridging partition 13 is the valved by-pass 16, by means of which the partial or complete stoppage may be regulated, it being obvious that with the valve open to pass a substantial amount of oil, the stop will be less abrupt than with the by-pass more nearly closed.

17 are check valves carried by piston 12 which remain closed as the piston advances in the cylinder, but which open on the backward movement and permit free passage of the oil.

Secured to shaft 9 within steam cylinder 8 is piston 18, and the piston operating space in this cylinder is divided by a partition 19, similar to the partition in cylinder 7. During the dumping portion of the operation, piston 18 moves idly within the steam cylinder, but when the car has been dumped and it is desired to return it to horizontal or starting position, steam is admitted to cylinder 8 through pipe 20 which forces piston 18 around in a reverse direction, thus rewinding chain 11, and turning piston 12 back to starting position. The steam may be supplied from any suitable source. As here shown, the steam pipe 20 is provided with a three-way valve 21 to which is connected exhaust pipe 22, and by manipulating valve stem 21', extending upward to a convenient point on the tiddle, steam may be admitted to the cylinder as required, and after the mechanism has been restored to starting position the valve may be turned to exhaust the steam from the cylinder, as will be understood.

The checking cylinder 7 is filled with oil in preference to other more elastic mediums such as air or gas, but it will be understood that any suitable liquid, gas or vapor may be employed. The supply may be maintained through pipe 23 leading to the cylinder from elevated tank or container 24, so that the cylinder is kept constantly filled and cannot become ineffective through leakage.

I claim:—

1. The combination of car tilting means, a cylinder, a piston rotatable in the cylinder and operatively connected to the tilting means, and automatically acting means for checking and releasing the piston in its rotary movement.

2. The combination of car tilting means, an oil containing cylinder having a non-continuous piston operating space, a piston rotatable in said space and dividing the same into two compartments, means operative intermittently for passing oil from one compartment to the other, and an operative connection between the piston and tilting means.

3. The combination of car tilting means, an oil containing cylinder having a non-continuous piston operating space, a piston rotatable in said space and dividing the same into two compartments, means operative intermittently for passing oil from one com-

partment to the other, a sheave rotatable with the piston, and a chain wound on the sheave and connected to the tilting means.

4. The combination of car tilting means, a cylinder, a partition within the cylinder and forming the interior into a non-continuous piston operating space, a piston rotatable in the cylinder and forming said space into two compartments, means controlling the passage of oil from one compartment to the other, and an operative connection between the piston and the tilting means.

5. The combination of car tilting means, an oil containing cylinder having a non-continuous piston operating space, the periphery of the cylinder having an annular series of separated oil passages, a piston rotatable in the cylinder and movable when in register with said passages and the advance thereof checked when in register with the passage-separating spaces, and an operative connection between the piston and the car tilting means.

6. The combination of car tilting means, an oil containing cylinder having a non-continuous piston operating space, controlled means for passing oil directly from one end of said space to the other, a piston rotatable in said cylinder space and dividing the same into two compartments, means operative intermittently for passing oil around the piston from one compartment to the other, and an operative connection between the piston and the tilting means.

7. The combination of car tilting means, an oil confining cylinder, a steam cylinder, a shaft rotatable in the cylinders, pistons within the cylinders and secured to the shaft, means in the oil cylinder for intermittently releasing and checking the piston therein, and an operative connection between the shaft and the tilting means.

8. The combination of car tilting means, an oil cylinder and a steam cylinder each having a non-continuous piston operating space, a shaft, pistons secured to the shaft and rotatable in the cylinders, means operative intermittently for passing oil around the piston of the oil cylinder, means for admitting steam to the steam cylinder, and an operative connection between the shaft and tilting means.

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

JAMES S. PATES.

Witnesses:

F. E. GAITHER,
J. M. NESBIT.