No. 841,218. PATENTED JAN. 15, 1907.

W. BAKER.

STEAM VALVE.

APPLICATION FILED OCT. 25, 1906.

Fig. 1.

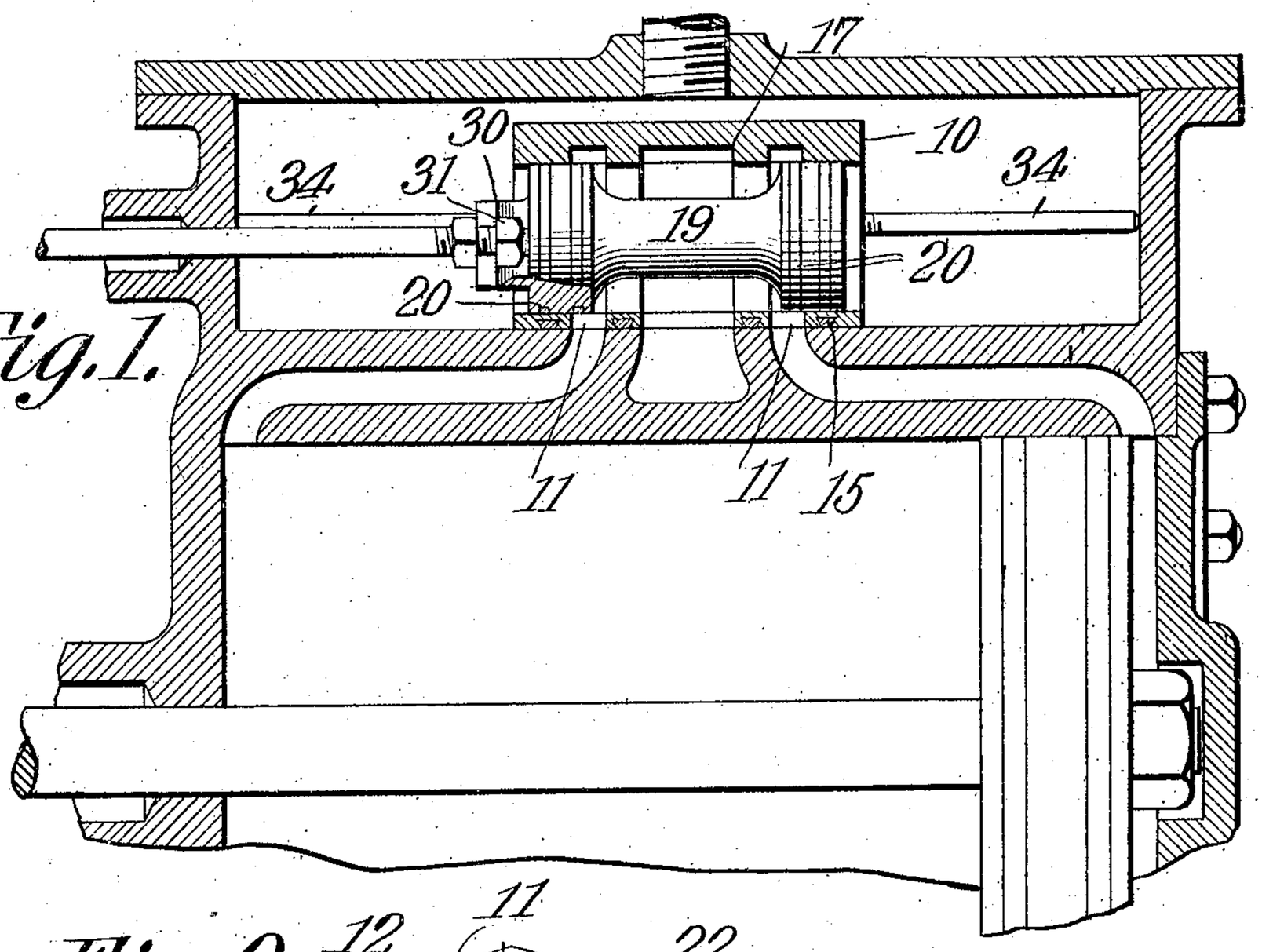


Fig. 2.

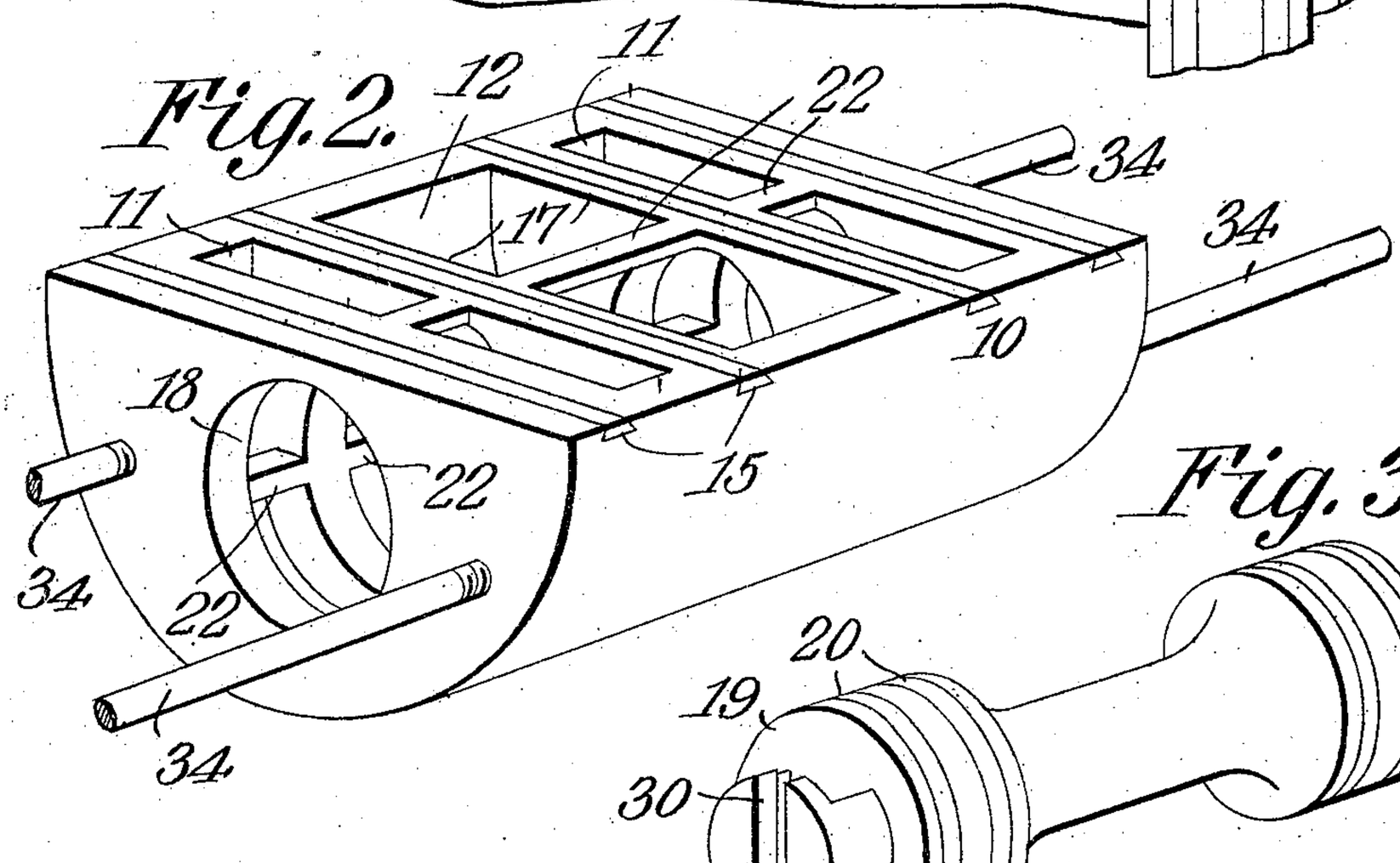


Fig. 3.




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# UNITED STATES PATENT OFFICE.

WILFRED BAKER, OF ABERDEEN, SOUTH DAKOTA.

## STEAM-VALVE.

No. 841,218. Specification of Letters Patent. Patented Jan. 15, 1907.

Application filed October 25, 1906. Serial No. 340,567.

*To all whom it may concern:*

Be it known that I, WILFRED BAKER, a citizen of the United States, residing at Aberdeen, in the county of Brown and State of South Dakota, have invented a new and useful Steam-Valve, of which the following is a specification.

This invention relates to steam-engines, and has for its principal object to provide a novel form of balance-valve which may be placed in position within the steam-chest and as a substitute for the ordinary D slide-valve.

A further object of the invention is to provide a novel form of valve and valve-casing which may be made and sold as an article of manufacture and applied to existing engines by merely removing the ordinary D slide-valve, the device being so constructed as to permit ready application and to secure steam-tight joints even where the valve-seat is worn.

A still further object of the invention is to provide a novel form of valve and valve-casing which may be placed within an ordinary steam-chest as a substitute for a D-valve of larger size, the valve forming the subject of the present invention being of the piston type and having a friction area much smaller than the slide-valve, while at the same time there will be no excessive wear due to the pressure exerted by the steam.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a vertical section of a steam-valve constructed in accordance with the invention. Fig. 2 is a detail perspective view of the valve-casing detached. Fig. 3 is a similar view of the valve.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The majority of traction-engines and other forms of engines employed generally for farm-work and the like are provided with D slide-valves, which in time become worn or which wear away their seats to such an extent as to prevent perfect action, and it is usually a matter of considerable difficulty and expense to repair engines of this type, especially where they are located at a considerable distance from a machine-shop.

In carrying out the present invention a balanced valve and an auxiliary valve-chamber are made, these being of such construction that they may be placed on the market as separate articles of manufacture and readily placed in position in existing engines after the ordinary D-valve is removed.

The valve-casing 10 is generally of semi-cylindrical form having a flat lower face in which are formed two steam-inlet ports 11 and a central exhaust-port 12, these being designed to be placed in alinement with the similar ports formed in the valve-seat of the engine and the casing being held down to the valve-seat by the pressure of steam in the chest.

In many cases the valve-seats are worn from long use, and in order to secure steam-tight joints the lower face of the auxiliary casing is provided with grooves extending transversely of the casing and on both sides of each port, and in these grooves is placed a strip 15, formed of Babbitt or other soft metal, which will protrude slightly from the mouth of the groove and which will yield when the casing is forced or held down, so that it may accommodate itself to a worn valve-seat and form perfectly steam-tight joints between the ports.

The whole of the interior of the casing is hollow and is divided into the inlet and exhaust ports by means of vertically-disposed partitions 17, and to the end walls of the casing and through these partitions is bored a cylindrical passage 18 for the reception of the piston-valve 19. The piston-valve has a reduced central portion, so that it corresponds approximately to the D-valve in controlling the flow of steam. The enlarged end disks of the piston-valve fit snugly in place and are preferably provided with grooves for the reception of metallic packing-rings 20. In order to prevent loosening of the packing-rings, the spaces between the partitions and the end walls of the casing are connected by bridging-strips 22, which are arranged in alinement with the bore and form guides for the piston, so that it becomes impossible for the latter to move out of place or for the pis-

ton packing-ring to become detached. By enlarging the areas of the ports the steam is allowed to flow freely, and the quantity of steam passing will be the same as that controlled by the D-valve for which the device is substituted.

At the end of the piston is arranged a guide 30 in the form of a pair of parallel undercut ribs which are arranged to be engaged by an enlarged head 31 on the valve-stem, so that the latter may be properly engaged with the valve and may pass through the same stuffing-box as the one connected to the slide-valve.

In order to hold the auxiliary casing from longitudinal movement, a number of pins 34 are arranged in threaded openings in the opposite end walls of the casing, and these may be screwed in or out until they firmly engage with the inner end wall of the steam-chest, so that the auxiliary casing will be held from movement.

The device may be readily placed in position by an ordinary mechanic or by the owner of the engine without any machine-work whatever, it being merely necessary to discard the D-valve and its stem and place the present device and new stem in place, or the old valve-stem may be altered, if desired. Inasmuch as the valve is of the piston type and exposed to practically the same pressure at all points, there will not be any excessive wear and the valve may be moved more readily than the D-valve, this being of especial value where the engine is to be reversed while under full steam.

I claim—

In a device of the class described, a casing having a flat lower face and provided with a cylindrical bore, there being partitions dividing the casing into inlet and exhaust ports, the lower face of said casing being provided with transversely-extending grooves between the ports, said grooves being filled with yieldable or compressible material, bridging-pieces in alinement with the wall of the bore, and connecting the partitions, and end walls of the casing, a piston-valve mounted in the cylindrical bore, and a pair of spaced ribs arranged at one end of the piston and adapted for the reception of the head of a valve-stem.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILFRED BAKER.

Witnesses:

AUGUST ZASTROW,

I. O. CURTISS.