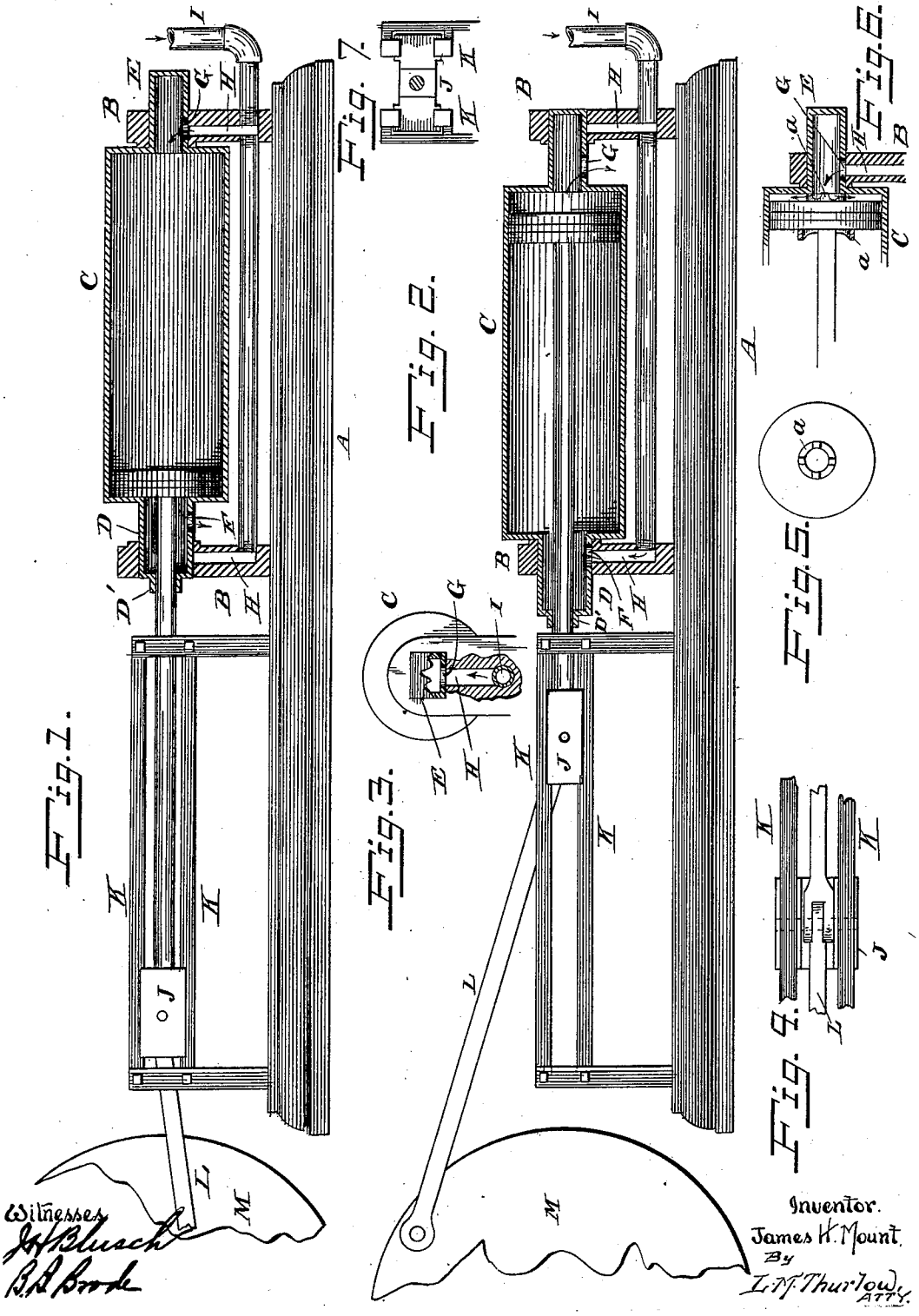
No. 674,706. Patented May 21, 1901.

J. H. MOUNT.

ENGINE.

(Application filed Oct. 1, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JAMES H. MOUNT, OF PEORIA, ILLINOIS.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 674,706, dated May 21, 1901.

Application filed October 1, 1900. Serial No. 31,729. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MOUNT, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in steam-engines.

The object of the invention is to simplify and cheapen the construction and provide an engine which will require no nicety of adjustment in order to make it thoroughly efficient in its work.

Furthermore, the object of the invention is to reduce the friction, thereby increasing the power. By this means a larger percentage of power is realized from the expenditure of the steam than in other engines.

My improved engine does away with slide-valves and steam-chest, and in this way the friction is reduced and construction is cheapened.

In the appended drawings, which form a part of this application, Figure 1 is a side elevation of my improved engine, showing the cylinder in longitudinal section. Fig. 2 is the same view showing the piston in a different position. Fig. 3 is an end view of the cylinder, showing an upright bearing and a steam-duct therein. Fig. 4 is a plan view of a cross-head, showing the piston-rod and pitman connected thereto. Fig. 5 is a face view of a modified piston-head. Fig. 6 is a longitudinal section of a portion of a cylinder, showing the modified piston-head therein. Fig. 7 is an end view of the cross-head and guides for the same.

Letters of reference on the drawings correspond with those of the following specification.

A indicates the engine-base, and B B standards or guides secured thereto or formed therewith, as desired.

C indicates the cylinder, having at one end a hollow projection D and at the other a similar projection E. The former is larger than the latter and permits the piston-rod to work therein and, besides, allows a passage between it and the said rod for entrance of steam. Suitable packing may be provided within the portion D′ for forming a steam-tight joint, as in common practice. At the bottom of each of the said projections D and E is an aperture F and G, respectively, answering both as induction and exhaust ports. The cylinder is designed to have a longitudinal movement, and to this end the said projections or extensions D and E are provided and slide in the upright B, before described. Within each upright is a steam duct or passage H, which has connection with the steam-pipe I, leading from the boiler. (Not shown.) These ducts are so arranged as to communicate alternately with the steam-ports of the cylinder. In order to prevent a tendency of the cylinder to rotate on its extensions D and E, I make the portion E square in cross-section, and the opening in the upright B, which supports it, must of course be of the same shape. It is evident that this may be made oval or in any other form that will prevent the rotary movement referred to.

As shown in Figs. 1 and 2, one port is taking steam and the other is exhausting, and just here the operation may be understood. In the position shown in the first figure the steam is entering the cylinder through the extensions E, and in consequence is pushing the piston-head to the left as viewed in the drawings. This movement exhausts the steam behind the piston-head through the projection D and exhaust-port F, the steam in the adjacent passage H being cut off by the forward closed wall of portion D. In said figure the piston has not finished the stroke, although it is found in contact with the end of the cylinder. The momentum of the engine will move the piston still farther, and this will move the cylinder until the aperture F is in line with the duct H. When this occurs, the steam will enter such aperture and drive the piston in the opposite direction. At the time the aperture and ducts coincide the aperture G at the opposite end is carried away from the duct H, and through it the spent steam in the cylinder is exhausted. This is shown in Fig. 2, in which the piston is now nearing the end of the cylinder and whose stroke is almost completed. In completing this stroke the piston will strike the

end wall and carry the cylinder back to the position shown in Fig. 1, at which time the steam will be reversed and the pressure applied at that end. It will be seen that the cylinder is made to abut against the standard B at the end the piston is to recede from at each stroke, and such abutment is made at the end of each stroke. In this manner the steam is expanded between the piston and the stationary end of the piston, as in all engines. No loss of power results from this method. I have illustrated a cross-head J and guides K for the same; but these are merely accessories, such as are ordinarily employed. The pitman L is attached to a wheel M or to a crank-shaft, if desired; but to these parts I of course lay no claim.

Fig. 7 is an end view of the cross-head and guides, showing the construction which permits the cross-head to pass the upright portion of the guides. This is merely shown to make the drawings clearly understood.

In constructions where the engine is carried on the boiler, as with threshing outfits, the steam-ducts H may be opened through the uprights B directly into the boiler; but some means must of course be provided for shutting off the steam as occasion demands. In the engine as I have shown it the exhaust-ports open directly into the air; but means may be provided for piping the steam away to the outside of the building in which the engine is in operation. This may be easily accomplished by making the supports B thicker and providing two passages, one of which would pass the steam to the cylinder and the other receive the exhaust-steam, and from which a pipe could be connected to carry said exhaust-steam.

In Figs. 5 and 6 I have shown a modified form of piston-head. On each face of this member is placed a ring *a*, which is corrugated and designed to strike against the end of the cylinder instead of using the flat face of the piston. This is provided in order to hold the piston away from the cylinder and provide a larger space for steam expansion and to use the entire surface of the piston at the beginning of each stroke. I merely show this to illustrate how I may alter the construction and do not deem this change necessary and may not use it. The interval during the reversal of the stroke is so brief that the steam would have little effect during that time. The momentum could carry the piston away instantly, and then the steam would have full area of such piston.

It will be evident that my engine is very powerful, from the fact that it received its steam from each end of the cylinder instead of at the middle, as is usually the case, and in consequence the pressure is had the full length of the stroke.

The only frictional parts of my engine are at the sliding projections D and E within the uprights B, that found between the piston and cylinder and between the piston-rod and in the packing at D being the same in all engines.

I do not confine myself to the exact construction described and shown, but reserve the right to make any changes that will better assist in the operation of the engine without departing from the spirit of my invention.

I claim—

1. In an engine, a longitudinally-shifting cylinder, a hollow projection at each end for receiving steam and providing supports for said cylinder in its shifting motion, a single port in each projection, bearings for the said projections, a duct in each for communicating with the ports, steam connections for the ducts in said bearings, a piston for the cylinder adapted to shift the latter at the end of each stroke to reverse the steam-inlet substantially as set forth and described.

2. In an engine, a cylinder adapted to shift in the direction of its length, a hollow projection at each end thereof for supporting the cylinder, the same permitting said shifting movements and admitting steam, an orifice in each projection serving both as induction-ports and exhaust-ports, bearings for the projections, a steam-duct in each bearing for communicating with the respective orifice in the projections, steam connections for the ducts substantially as set forth, and a piston for the cylinder adapted to shift the latter at the end of each stroke for reversing the point of entrance of the steam and exhausting the spent steam of the preceding stroke.

3. In an engine, the combination of the cylinder C, hollow projections D and E at the ends thereof and opening into the cylinder, ports F and G in the projections D and E respectively, bearings B B for the projections, steam-ducts H H in the bearings, for communicating alternately with the ports F G, a steam-pipe I connecting the ducts H H with the steam-supply, and a piston in the cylinder adapted to shift the latter in its bearings B B for changing the steam inlet and exhaust as set forth.

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

JAMES H. MOUNT.

Witnesses:
DAN R. SHEEN,
FRANK T. MILLER.