(No Model.)

2 Sheets—Sheet 1.

A. H. WAGNER.

DIRECT ACTING ENGINE.

No. 249,491. Patented Nov. 15, 1881.

Fig. 1.

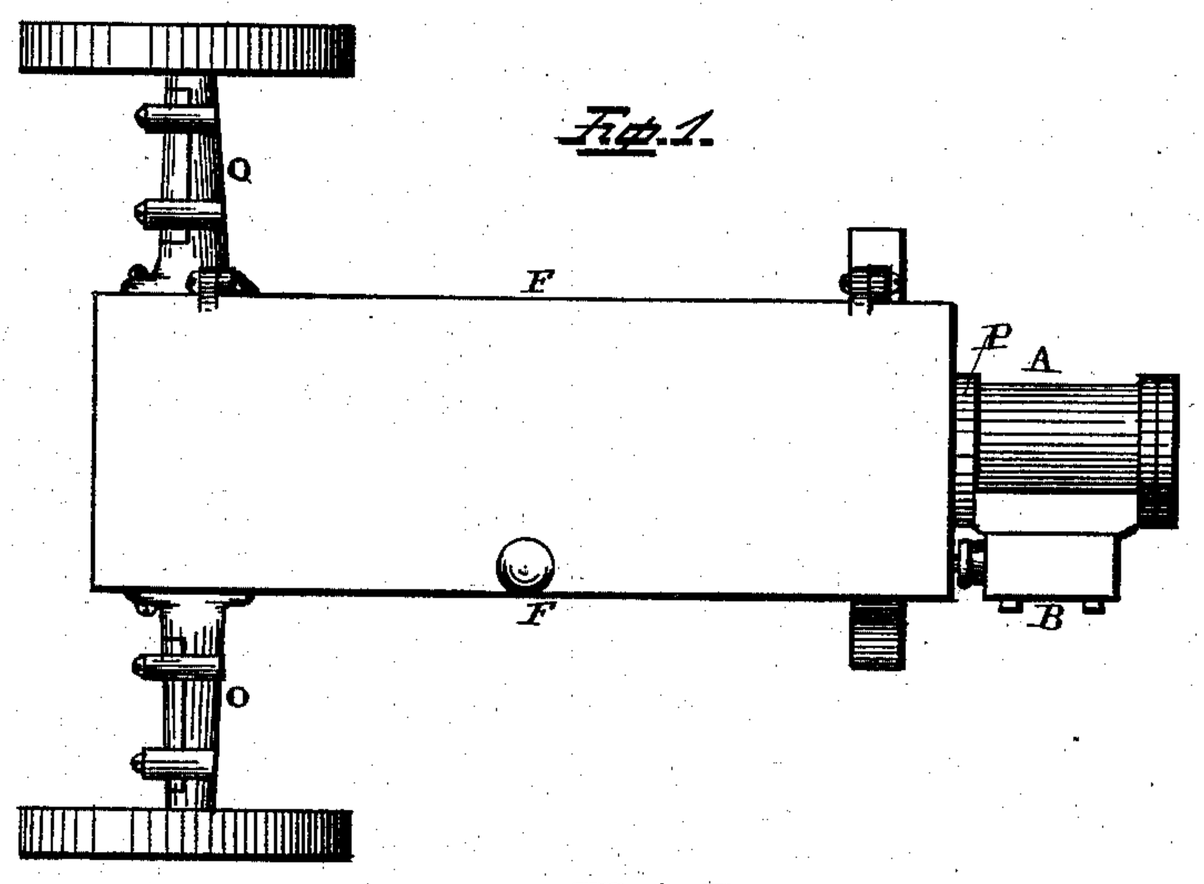
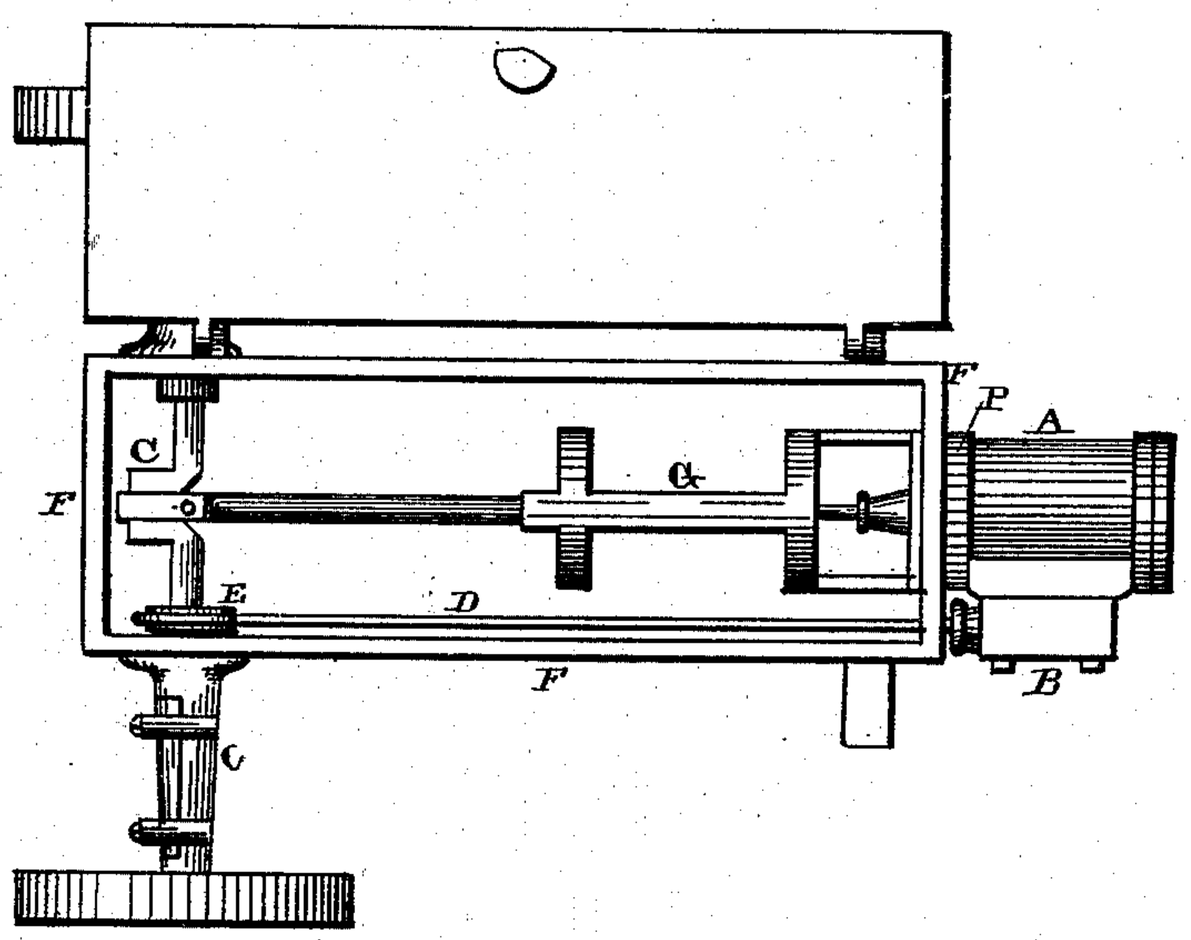


Fig. 2.



Witnesses.

W. W. Mortimer.

A. B. Kiskadden.

Inventor.

A. H. Wagner,

per

F. A. Lehmann,

Atty

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

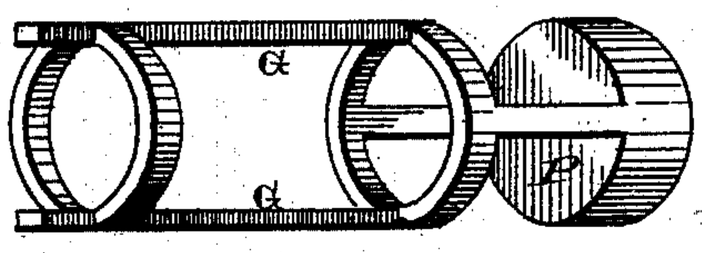


Fig. 4.

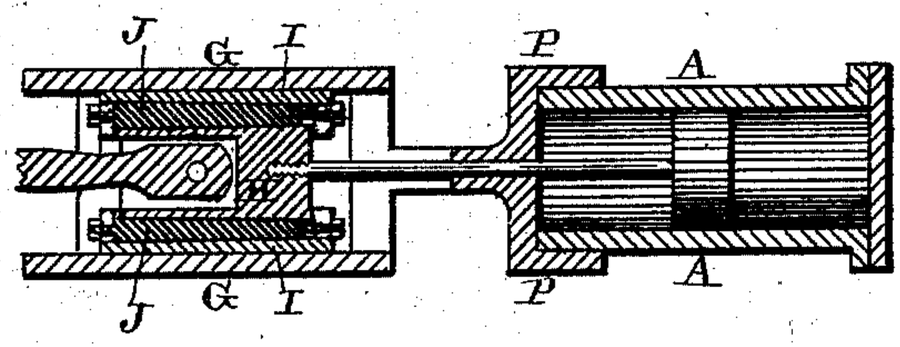
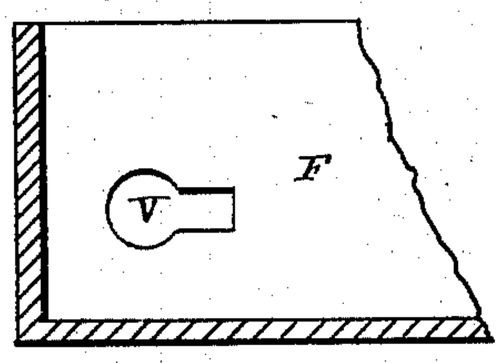


Fig. 5.



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UNITED STATES PATENT OFFICE.

AWSBENT H. WAGNER, OF CHICAGO, ILLINOIS.

DIRECT-ACTING ENGINE.

SPECIFICATION forming part of Letters Patent No. 249,491, dated November 15, 1881.

Application filed March 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, AWSBENT H. WAGNER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in steam-engines; and it consists, first, in inclosing the crank, the connecting-rod, cross-head, and the guides for the cross-head, together with the eccentric and the valve-rod, in a box or case, so as to protect them from the weather, dust, and dirt; second, in inclosing the outer ends of the driving-shaft in long pipe-like boxes, which are made in two parts and provided with suitable collars or flanges at their inner end, for the purpose of securing the boxes to the sides of the inclosing-case; third, in making the guides for the cross-head in a single piece with one of the cylinder-heads, and making the guide tubular at or near each one of its ends; fourth, in the manner of adjusting the gibs by means of an inclined wedge which is provided with a screw-thread at each end, so as to receive a tightening-screw, and which wedge, when moved endwise, will force the gibs outward against the sides of the guides, and thus take up all wear, as will be more fully described hereinafter.

Figure 1 is a plan view of my invention with the top of the inclosing-case shut. Fig. 2 is a similar view of the same, showing the cover open. Fig. 3 is a detached view of the guide and the cylinder-head cast in a single piece. Fig. 4 is a vertical section of the cross-head, the gibs, and the adjusting-wedges. Fig. 5 is a detail view, showing the slot through the side of the inclosing-case.

My invention is intended to be applied to steam-engines of all kinds, whether portable or stationary.

A represents the cylinder, B the steam-chest, C the crank on the driving-shaft, D the valve-rod, and E the eccentric, all of which parts are constructed in the usual manner.

Instead of allowing the crank, the connecting-rod, cross-head, guides, and other parts of the engine to be exposed to the weather and to dust, moisture, and rust, they are all here inclosed in an oblong box, F, which is provided with a door or cover which fits perfectly tight, and through which access can be obtained to all of the moving parts at any time.

The guides G, for the cross-head H, instead of being made as a part of the bed-frame, are here cast in a single piece with the inner one, P, of the cylinder-heads, and are made in the peculiar form shown. By thus casting the guides in a single piece with the cylinder-head the guides need no separate support, but are held rigidly in position as long as the cylinder is held in place upon the end of the inclosing-case. The cross-head, to which one end of the connecting-rod is attached, may be made either of the form here shown or any other that may be preferred, and which has the two gibs I applied to its outer side, where it comes in contact with the interior of the guide. In order to make these gibs adjustable, and thus take up all wear without the necessity of removing them from position, a groove is made through the outer edges of the cross-head and through the inner sides of the two gibs, and in these grooves, between the two parts, are placed the wedges or inclines J, which have a screw-thread made upon each of their ends. These screw-threaded ends project beyond the cross-head and gib, and each one receives a clamping-nut, for the purpose of holding the wedges in any desired position. By loosening one of the nuts and screwing up upon the other the wedge will be drawn toward the nut, and will thus force the gibs outward toward the guide; and by reversing the operation the wedges will be moved in the opposite direction, and thus allow the gib to move inward toward the cross-head. The groove between these two parts, of course, is made deeper at one end than the other, and the ends of the gibs are recessed or slotted, so as to pass down over the screw-threaded ends of the wedges. By placing these wedges in this groove, which is made equally in the cross-head and the gib, the gib is prevented from moving laterally. As soon as the cross-head begins to move loosely in its guides it is only necessary to slightly slacken up upon the nut at one end of the wedge and tighten up upon

the nut at the other end, and the cross-head can be made as snug and true as in the first instance.

In order to insert the driving-shaft, with its crank, through the sides of the box, a round opening is made through one side of the box, and a slot, V, the full length of the crank is made through the other, and then it is only necessary to pass one end of the driving-shaft through the two openings and move it lengthwise until the crank has been drawn inside of the box, when the shaft is secured in position by means of the pipe-like bearings O, which are applied to it. These bearings are made in two parts, which are bolted together in any suitable manner, and on the inner end of one of the parts is made a wide flange or collar, by means of which the bearings are bolted to the side of the box or inclosing-case. These flanges or collars close the openings which have been made through the sides of the box at the same time that they serve to brace the bearings rigidly in position. These bearings, being made long, as here shown, serve to protect the shaft at the same time that they keep it much more steady and true, and thus prevent any and all vibration of the moving parts. This inclosing-case, it will be seen, serves as a support for the cylinder at one end and the driving-shaft at the other, and may be provided with suitable legs or supports, as here shown, or constructed in any suitable manner that may be preferred.

Having thus described my invention, I claim—

1. An inclosing box or case, F, for the moving parts of a steam-engine, having the cylinder A secured directly to one end, and having the shaft C passed through its other end, the parts being combined and arranged to operate substantially as described.

2. The combination of an inclosing-case for steam-engines, having openings made through one of its ends for the passage of the shaft C, with the sleeves O, made in two parts, and having their inner ends enlarged, so as to act as covers for the openings, substantially as set forth.

3. In a steam-engine, the combination of a cross-head, H, the gibs I, and the endwise-moving wedges J, having both of their ends made screw-threaded, and provided with nuts for moving them, substantially as specified.

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

AWSBENT H. WAGNER.

Witnesses:

THOS. B. TOWNSEND,

FRANK S. STAYNER.