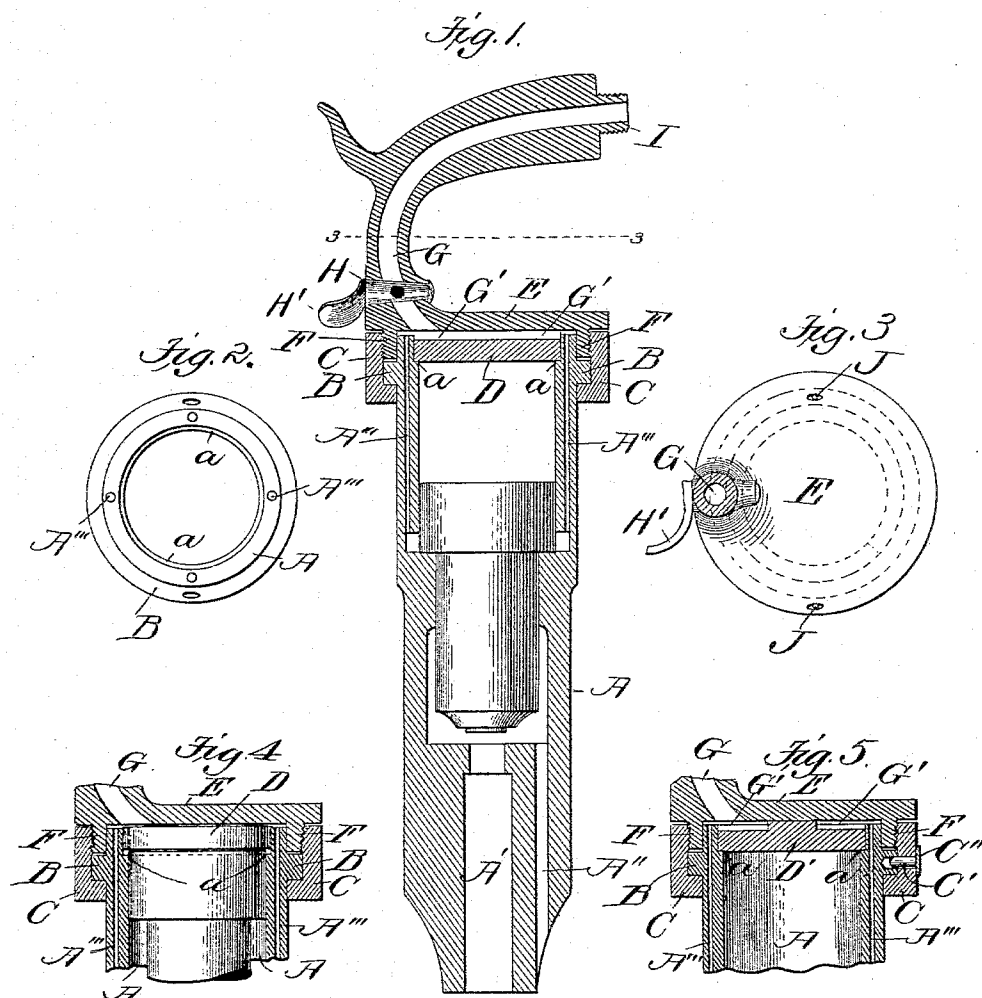


(No Model.)

P. CHOUTEAU & F. R. CORNWALL.
ATTACHMENT FOR DIRECT ACTING ENGINES.

No. 531,834.

Patented Jan. 1, 1895.



Witnesses:
Hugh N. Wagner
Alfred Fuhr

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UNITED STATES PATENT OFFICE.

PIERRE CHOUTEAU AND FREDERICK R. CORNWALL, OF ST. LOUIS, MISSOURI;
SAID CORNWALL ASSIGNOR TO SAID CHOUTEAU.

ATTACHMENT FOR DIRECT-ACTING ENGINES.

SPECIFICATION forming part of Letters Patent No. 531,834, dated January 1, 1895.

Application filed August 4, 1894. Serial No. 519,440. (No model.)

To all whom it may concern:

Be it known that we, PIERRE CHOUTEAU and FREDERICK R. CORNWALL, citizens of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Attachments for Direct-Acting Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, wherein—

Figure 1 is a longitudinal sectional view through an engine provided with our attachments. Fig. 2 is a plan-view of the engine cylinder. Fig. 3 is a sectional view through the handle, taken on line 3—3, Fig. 1. Fig. 4 is a detail sectional view, showing the parts in a different position from what is illustrated in Fig. 1; and Fig. 5 is a detail view of a modification.

Our invention relates to new and useful improvements in attachments for direct-acting engines, and consists in forming an inlet port or way through the engine handle, whereby the conducting-pipe which connects the engine to a suitable source of supply, is in a convenient place and out of the way of the operator.

Another feature of our invention resides in the improved means for attaching the handle to the engine cylinder whereby the same may be located at a desirable point; and, finally, in introducing into the bore of the cylinder an independently-movable cylinder-head which is held in its place by the pressure of live fluid and which acts as a cushion or buffer for the piston at the extreme of its stroke.

The engine which is shown in the drawings is substantially the same in construction and operation, so far as the piston and its carried distributing-valve is concerned, as the engines shown and described in United States Letters Patent No. 434,976, of August 26, 1890, and No. 519,147, of May 1, 1894. Therefore, no detailed description need be given here of those parts.

In the drawings, A indicates the cylinder formed with tool-shank opening A' in its front end, exhaust port A'', and inlet-ports A''', as is common. Located at the upper end of the cylinder, is an annulus or ring B, preferably formed integral therewith, which offers an ob-

struction-shoulder to a flange on an interiorly-threaded collar C, which collar turns loosely on the cylinder. The bore of the cylinder at its upper end is formed with the shoulder a upon which rests and is loosely supported a close-fitting independent cylinder head D, which in conjunction with the base of the handle E forms a live fluid chamber G', which communicates with the ports A''' to distribute the live fluid beneath the head of the piston. This independent cylinder-head or auxiliary cylinder head, as it might be termed, outside of forming the live fluid chamber for the reception and distribution of the live motive fluid to the engine, also forms a yielding cushion for the piston on its upstroke, as illustrated in Fig. 4. The live fluid has a tendency to always hold this cushioning-head D to its seat a, at all times, by reason of the increased area presented by the upper surface over the area presented by the lower surface. Moreover, as the piston is ascending, the space therebetween and the head D is being exhausted. Therefore, the head D is held to its seat. The momentum of the piston on its upstroke very often carries it beyond its supposed limit of stroke, and the upper face of the piston hammers itself on the end closing plate of the bore. The head D will yield under this condition and when the piston strikes, it will be forced up slightly, absorbing the shock or jar, and, by cushioning the parts, insure a longer life to the engine.

The handle is formed with a base-portion E, from which projects a threaded flange F, which co-operates with the threads on the collar C, to hold the parts together. Any suitable locking device may be used to hold the collar C stationary, or to lock the base of the handle and collar C to the cylinder. In Fig. 3, we have shown a pin J passing through the base E, flange F, shoulder B, and flange of collar C, which will retain the parts against displacement, and in Fig. 5 we have shown a pin C' passing through the collar C into an opening in shoulder B to prevent the collar C from turning. Pin C' is held in place by a strap spring C''. Such a construction could also be utilized to lock the handle base in position.

Extending from the handle-base E, is a hand-stock which is adapted to be grasped by the

operator to manipulate the tool. This hand-stock is formed throughout its length with an inlet conducting port G, which opens into the live fluid chamber G'. In the length of this
5 conducting port G, is a valve H, shown in the drawings as an ordinary plug-valve, operated by a handle H', but it is obvious that any suitable form of valve may be employed to admit or cut off the motive fluid to the engine.

10 At the extreme outer end of the handle, we preferably form a threaded boss I, to which a suitable coupling may be attached to connect the port G with a source of supply of the motive fluid.

15 In Fig. 5, we have shown a modified form of the head D in which the same is rigidly held in its place by an extension on its upper face, which extension is impinged upon by the handle-base E, when it is screwed home. This
20 construction might be desirable in some instances where the stroke of the piston was too short to admit of its hitting the head B, but it would be advantageous to have present in the engine the live fluid chamber G'.

25 Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an engine, the combination with the cylinder, of an independent head mounted in
30 its bore, a projection on said head, a cylinder head in the form of a handle base which is secured to the cylinder, and which retains said

independent head in position by impingement, and a handle on said handle base, through which handle is formed an inlet port
35 leading to between the two cylinder heads, substantially as described.

2. In an engine, the combination with the cylinder having a ring formed thereon near its upper end, a collar loosely mounted on said
40 ring an auxiliary cylinder head which is mounted in the bore of the cylinder, and a cylinder head which is mounted in the collar, between which two heads is formed a live fluid chamber, substantially as described. 45

3. In an engine, the combination with the cylinder, of a ring formed thereon near its upper end, a collar loosely mounted on said
50 cylinder and abutting against said ring, a cylinder head which is threaded in said collar, means for locking said parts against rotary movement, a handle on said cylinder head through which handle is formed an inlet port, and a valve located in the handle for controlling the passage of fluid through the inlet port,
55 substantially as described.

In testimony whereof we hereunto affix our signatures, in presence of two witnesses, this 24th day of July, 1894.

PIERRE CHOUTEAU.

FREDERICK R. CORNWALL.

Witnesses:

HUGH K. WAGNER,

ALFRED HUHNS.