(No Model.)

2 Sheets—Sheet 1.

E. E. HANNA.

SELF LUBRICATING ENGINE.

No. 606,543. Patented June 28, 1898.

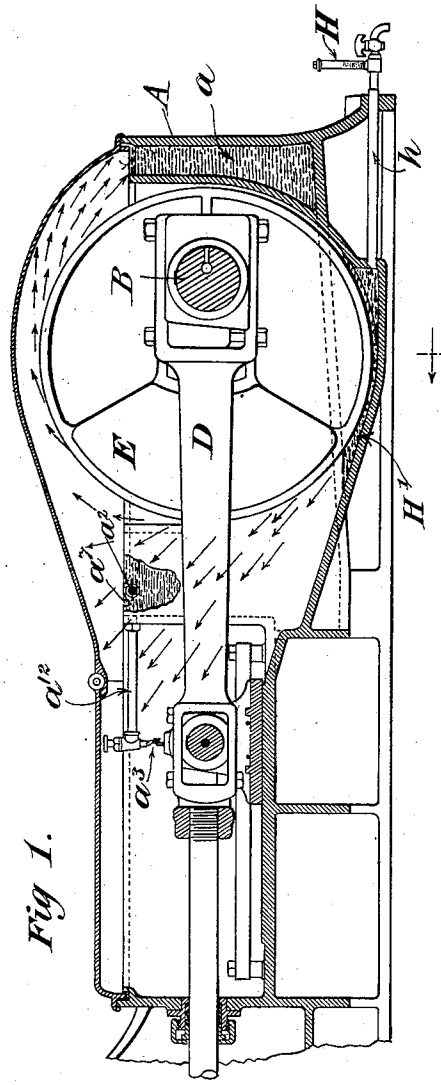

Fig 1.

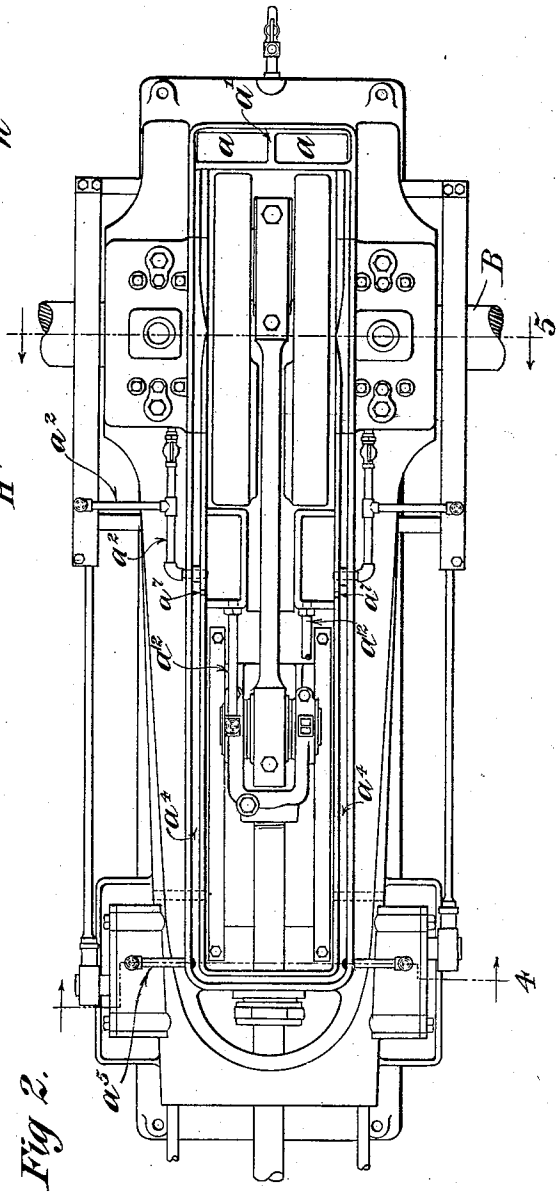

Fig 2.

WITNESSES:-

Thomas B. McGregor.

Belle W. Barry

INVENTOR

Elmer E. Hanna.

by Banning & Banning & Sheridan

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

E. E. HANNA.

SELF LUBRICATING ENGINE.

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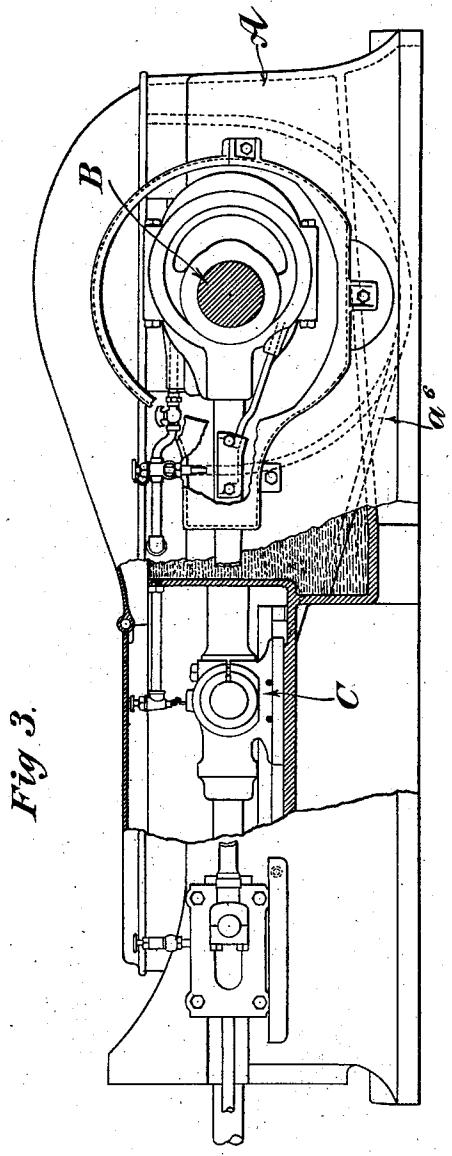

Fig 3.

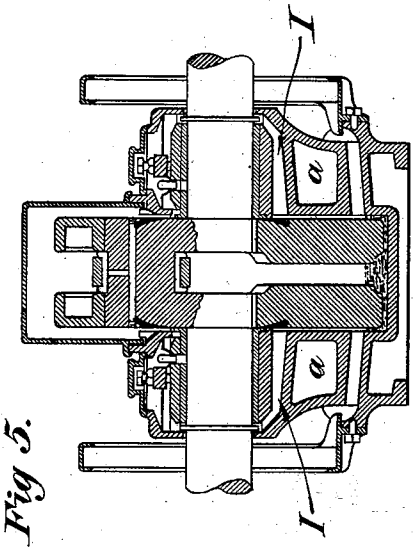

Fig 5.

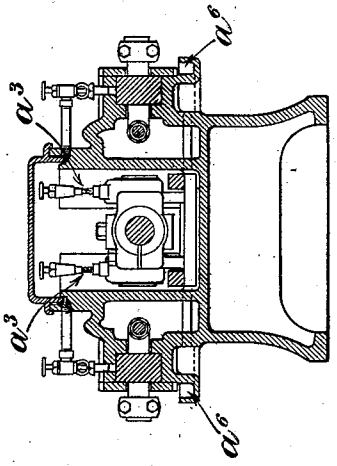

Fig 4.

WITNESSES:—

Thomas B. McGregor.

Belle N. Barry

INVENTOR

Elmer E. Hanna.

by Banning & Banning & Sheridan.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ELMER E. HANNA, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GATES IRON WORKS, OF SAME PLACE.

SELF-LUBRICATING ENGINE.

SPECIFICATION forming part of Letters Patent No. 606,543, dated June 28, 1898.

Application filed December 18, 1897. Serial No. 662,394. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. HANNA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Self-Lubricating Engines, of which the following is a specification.

The object of my invention is to provide a self-lubricating engine of such construction and arrangement that it automatically throws and guides the oil to a settling-chamber, where the clear oil may be drawn off for the purpose of lubricating the parts and feeding the initial basin or reservoir.

The invention consists, further, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of an engine constructed in accordance with my improvements; Fig. 2, a plan view of the same; Fig. 3, a side elevation, partly broken away; and Figs. 4 and 5 transverse sectional views taken on the lines 4 and 5 of Fig. 2.

In constructing an engine in accordance with my improvements I make a frame portion A of the desired size, shape, and strength to practically inclose all the working parts of the engine and form a housing for the same. In this frame are mounted the usual crank-shaft B and cross-head C, connected with the wrist-pin by means of a connecting-rod D. In order to lubricate the parts automatically and efficiently with a clean filtered or settled oil, I make a hollow frame portion in such a manner as to provide a reservoir or settling-chamber a. This settling-chamber is divided, preferably divided longitudinally, by means of a web a', (shown in Fig. 2,) and its upper portion is arranged considerably above the bearing of the crank-shaft and other surfaces to be lubricated and in such manner that the crank-disks E during their rotation will throw a portion of the oil, as indicated by the arrows, into the reservoir until such reservoir is completely filled. This reservoir practically surrounds the crank-shaft, and the forward portion—that is, that portion which extends to the front of the crank-shaft and which is connected with the rear portion by means of the ducts under the shaft, as shown in Fig. 5—is provided with an outlet having pipes a^2, that lead to the bearing portions to be lubricated—viz., the bearing portions for the journals on the crank-shaft. A second pipe a^{12} is led forward from the upper front portion of the reservoir and is provided with a wiper a^3, arranged to be contacted by a projection on the cross-head to wipe off sufficient lubricant to lubricate the same. The outer and upper portion of the frame is provided with a channel a^4, connected with the reservoir by means of the opening a^7, so that oil may flow forward and by means of the pipe a^5 be fed to the valve-stem slides, the drip of which is caught in the grooves or channels a^6 and led backwardly and downwardly to enter a basin in the housing at a point underneath the crank-disk.

In order to enable the engineer to determine whether sufficient oil is in the engine or not, a sight-glass "oil-gage" H is provided and connected with the basin H′ underneath the crank-disk by means of a pipe h. This arrangement permits the oil to rise in the glass to the same height as the oil in the basin H′, and thereby enables the engineer to determine as to whether there is or is not sufficient oil to lubricate the parts.

In operation oil may be poured into the groove or channel a^6 or in any way fed to the basin H′ underneath the crank-disk until it attains the desired height in the glass. The engine is started and the disks throw the oil by centrifugal force onto the cross-head and also back into the reservoir a. The engineer keeps feeding the oil into the groove a^6 until the reservoir a is filled, when the oil begins to feed automatically, by means of the pipes above described, to the different bearings to be lubricated—viz., all the movable parts of the engine—or the reservoir a a may be filled first. From the main journals the oil flows back by means of the channels I (see Fig. 5) to the basin underneath the crank-disk. From the cross-head it flows back by gravity to the basin, and from the slide-valves it flows back by means of the channels or grooves a^6 to the point underneath the basin, to be again thrown up and caught in the reservoir. In the reservoir the oil is caught and held until it is settled, and fed out for use over and again

or until the oil ceases to run out at the top openings. Only that portion of the oil at the top is drawn off. Consequently it will be seen that only the pure oil is drawn off, while the water, sediment, and other matters remain at the bottom, and the oil-gage indicates at all times to the engineer whether sufficient oil is in the engine to meet the requirements of the case or not.

I claim—

1. In a self-lubricating engine, the combination of a frame portion having a settling chamber or reservoir, pipes connecting the upper portion of the settling-chamber with bearings to be lubricated, and return-channels leading from the lubricated bearings to a basin underneath the crank-disk, substantially as described.

2. In a self-lubricating engine, the combination of a frame portion having a settling-chamber extending to the front, underneath and rear of the crank-shaft and above the bearing portion to be lubricated, pipes connecting the upper portion of the settling-chamber with the bearings to be lubricated, and return-channels leading from the lubricated bearings to a basin underneath the crank-disk, substantially as described.

3. In a self-lubricating engine, the combination of a frame portion having a settling chamber or reservoir divided longitudinally and extending to the front, rear and underneath the crank-shaft and to a point above the bearings to be lubricated, pipes connecting the upper portion of the settling-chamber with the bearings to be lubricated, and return-channels leading from the lubricated bearings to a basin underneath the crank-disk, substantially as described.

ELMER E. HANNA.

Witnesses:
P. W. GATES,
H. M. VANCE.