

(No Model.)

A. L. IDE.

LUBRICATING DEVICE FOR ENGINES.

No. 397,293.

Patented Feb. 5, 1889.

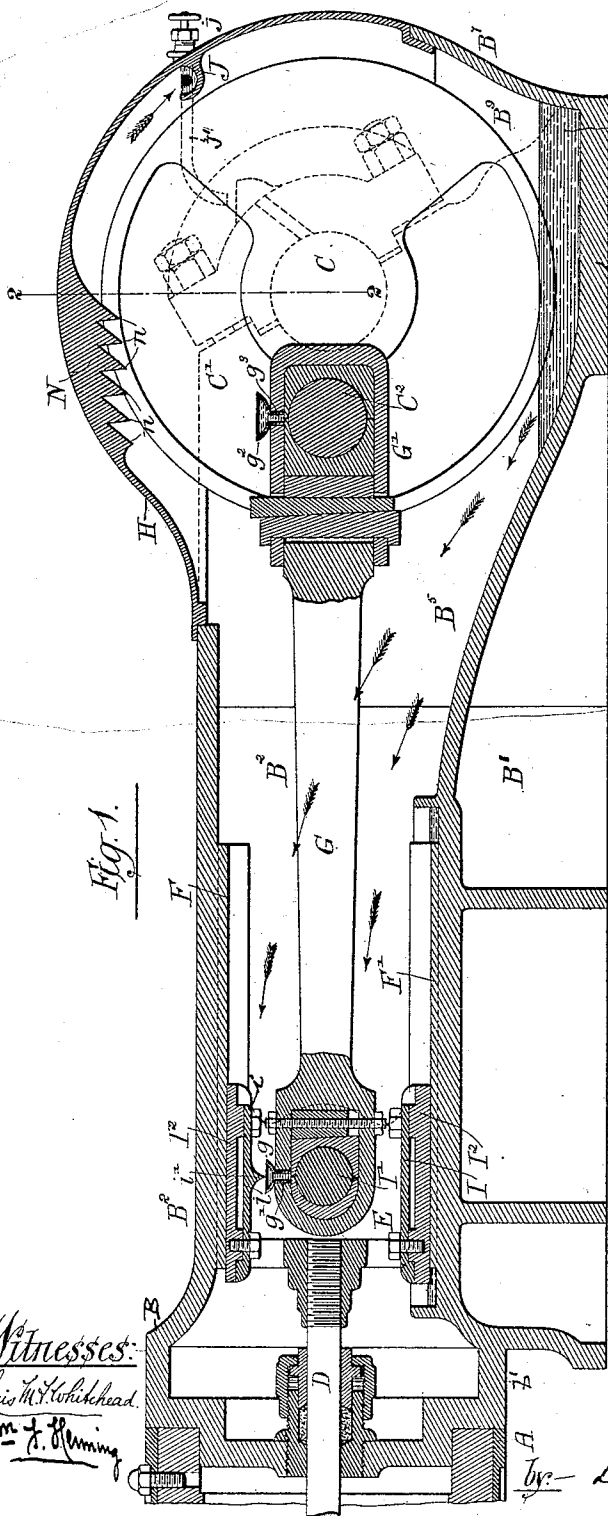


Fig. 2.

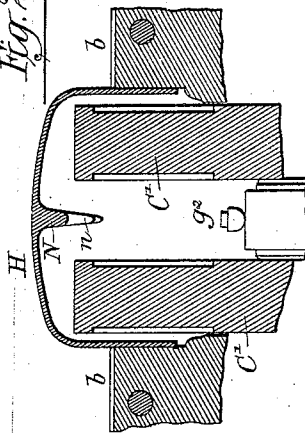
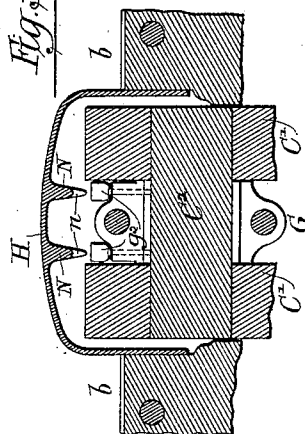


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## LUBRICATING DEVICE FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 397,293, dated February 5, 1889.

Application filed August 4, 1888. Serial No. 281,944. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT L. IDE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Lubricating Devices for Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of  
10 reference marked thereon, which form a part of this specification.

This invention relates to improvements in steam, gas, or other engines, and more particularly to improvements in lubricating  
15 devices for the crank-shaft, connecting-rod, cross-head, and other parts of such engines.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

20 The invention is herein shown as illustrated in connection with a horizontal stationary engine of that class having two crank-disks; but the main features of the invention may be applied to engines of upright or  
25 other forms and to other than stationary engines.

The engine-frame herein shown is similar in its general features of construction to the frame illustrated and described in a separate  
30 application for patent, Serial No. 264,607, filed February 20, 1888.

In the said drawings, Figure 1 is a longitudinal section of an engine and frame illustrating my invention. Fig. 2 is a detail  
35 section of the same, taken upon line 2 2 of Fig. 1. Fig. 3 is a detail section showing a modification of the lubricating devices illustrated in Figs. 1 and 2.

As illustrated in the drawings, A is the engine-cylinder, and B is a horizontal continuous frame or bed supporting the bearings of the crank-shaft at one end and the cylinder  
40 A at its opposite end, the cylinder being secured to the extreme end of the frame, so as  
45 to overhang the latter.

C is a crank-shaft, which has bearings *b b* at one end of the frame B. Said shaft C is provided between the bearings *b b* with two crank-disks, *C' C'*, in which is secured a crank-  
50 pin, *C<sup>2</sup>*.

D is the piston-rod of the engine, which is attached to a cross-head, E, which is held in

guides F F', formed upon the engine-frame. Said piston-rod is connected with the crank-pin *C<sup>2</sup>* by means of a connecting-rod G, in the  
55 usual manner.

The engine-frame B contains certain novel features of construction, as set forth in said separate application, Serial No. 264,607, hereinbefore referred to. Said frame is provided  
60 with an overhanging cylindric part, *b'*, to which the cylinder is attached, and the lower part of the frame is formed by a hollow base, *B'*. The main or upper portion of the frame *B<sup>2</sup>* adjacent to the cross-head guides F F' is tu-  
65 bular, and the lower wall of said tubular part of the frame is extended from the lower cross-head guide to form a wall, *B<sup>4</sup>*, which slopes downwardly beneath the crank-disks  
70 to the level of the bottom of the frame, the bearings *b b* being supported by walls *B<sup>5</sup>*, forming extensions of the side walls of said tubular part.

*B<sup>9</sup>*, Fig. 1, is a vertical wall extending rearwardly from the side wall, *B<sup>5</sup>*, and united  
75 with a transverse end wall, *B<sup>7</sup>*, connecting the said side wall *B<sup>9</sup>* with the corresponding side wall at the opposite side of the frame. Said end wall, *B<sup>7</sup>*, is located at the end of the frame exterior to the crank-disks *C' C'*, and  
80 forms, with the side walls, *B<sup>5</sup>* and *B<sup>9</sup>*, and the bottom wall, *B<sup>4</sup>*, a basin or tank, *B<sup>8</sup>*, for containing a quantity of oil or other lubricant, in which the peripheries of the crank-disks  
85 are immersed when the engine is running.

H is a removable cover, which is fitted to the adjacent margins of the side walls, *B<sup>5</sup>* and *B<sup>9</sup>*, the end wall, *B<sup>7</sup>*, and the adjacent margin of the tubular part *B<sup>2</sup>* of the frame, and is  
90 shaped to completely inclose or cover the crank-disks *C' C'*. Said cover H serves to protect from dust and dirt the several moving parts within the frame, as set forth in said separate application, and also serves, in  
95 connection with the engine-frame, to form a casing or housing, which operates, in connection with lubricating devices constructed as herein shown and claimed, to aid in supply-  
100 ing lubricant to the several bearings of the engine.

In the use of an engine-frame constructed to form a housing or casing which entirely incloses and surrounds the crank-disks and the cross-head guides, and which is provided

in its lower part beneath the crank-disks with an oil-tank, B<sup>s</sup>, as shown and described, the crank-disks, when turned in a direction to carry their lower parts or surfaces toward the engine-cylinder, act to take up and throw forward, mainly toward the cylinder, but also into other parts of the housing, drops or particles of the oil or other lubricant contained within the said receptacle B<sup>s</sup>, as indicated by the arrows in Fig. 1. The drops or particles of oil or lubricant thus thrown or cast upwardly and forwardly by the crank-disks will be distributed throughout the interior of the casing or housing and serve to afford a continual and abundant supply of lubricant upon the surfaces of the cross-head guides, and will commonly afford a sufficiently abundant supply of lubricant to the pivotal connection between the connecting-rod and the piston.

The cross-head illustrated in Fig. 1 is generally similar to that shown in a prior patent, No. 321,726, dated July 7, 1885, said cross-head being hollow or of box form, and consisting of a rectangular main part, I, in the side walls of which a wrist-pin, I', is supported, and bearing-plates P<sup>1</sup> P<sup>2</sup>, attached to the upper and lower surfaces of the main part of the cross-head and directly engaging the guides.

In the construction shown in Fig. 1 the upper horizontal plate or wall, i, of the main part I of the hollow cross-head is provided in its center with a depending conical or tapering projection, i', which is located over a receptacle, g, placed upon the end of the connecting-rod G, and communicating by a passage, g', with the bearing-surface of the crank-pin I'. In a construction of this kind the oil thrown by the action of the revolving crank-disks upon the under surface of said plate i, or flowing to the under surface of the said plate as it is scraped from the upper cross-head guide, F, by the plate P<sup>2</sup>, will drop from the end of the projection i', and thus enter the receptacle g, from which it will flow to the bearing-surface of the wrist-pin, thereby affording an abundant supply of lubricant to the same.

The head G' of the connecting-rod is provided with an oil cup or receptacle, g<sup>2</sup>, which communicates with the bearing-surface of the brasses therein by means of a passage, g<sup>3</sup>, said cup or receptacle g<sup>2</sup> in this instance being preferably elongated in the direction of the planes of the crank-disks. Upon the under surface of the upper wall of the cover or housing II is formed a depending serrated flange, N, having at its lower end a series of teeth or points, n n, arranged over and in the same vertical plane with the oil cup or receptacle g<sup>2</sup>. The said serrated flange N may of course be replaced by a series of separate points or depending projections. In the operation of the device thus constructed a considerable portion of the oil thrown upon the under surface of the cover or housing will flow downwardly upon and drip from the ends of the teeth or projections n n, and the

oil thus dripping or falling from said projections will be caught by the said receptacle g<sup>2</sup>, as the crank-pin rises in the revolution of the disks, thereby affording a continuous supply of lubricant to the said receptacle for supplying the crank-pin.

In Fig. 3 is shown a construction substantially similar to that in Figs. 1 and 2, with the exception that two rows of teeth or projections, n n, are employed, which are adapted to supply oil to two separate oil-cups, g<sup>2</sup> g<sup>2</sup>, upon the connecting-rod head. This construction will be useful in case of that form of head illustrated in said Fig. 3, wherein the head is made in two parts connected by bolts, instead of being provided with brasses held upon the main part of the rod by a strap, as illustrated in Figs. 1 and 2.

J, Fig. 1, is a trough or receptacle extending across the rear end of the wall of the covering or housing II, so as to receive the lubricant cast upon and running down the under surface of the rear part of the said cover II. This trough is connected with a pipe or tube, J', provided with a valve, j, and arranged to discharge into an oil-cup located upon crank-shaft bearing. These features of construction are shown and claimed in a separate application for patent, Serial No. 264,608, filed by me in the United States Patent Office February 20, 1888.

My invention embraces as one of its main features the combination, with an oil-tank containing a lubricant in which the crank disk or disks are immersed and turn, and a housing surrounding said disks provided with depending pointed projections, of a receptacle placed beneath said pointed projections to receive oil delivered to the said interior surface of the housing and dripping or flowing from said pointed projections, and a passage or passages connecting said receptacle with a surface to be oiled or lubricated; and I desire to claim this construction broadly as applied to the oiling of any moving parts of the engine, it being entirely obvious that the same principles of construction and operation may be employed for oiling stationary and other bearings as is used in oiling the crank-pin and the wrist-pin in the engine herein illustrated.

I have herein shown the casing or housing surrounding the disks and other operative parts as being formed partially by the engine-frame, which is made of peculiar form for this purpose, and partially as formed in or by the frame itself. As far as the operation of the lubricating device described and broadly claimed is concerned, however, it will be readily seen that said tank may be separated from the frame and that an inclosing casing or housing for the operative parts of the engine may be made otherwise than as above set forth. I do not therefore wish to limit my invention to a construction in a housing or casing formed partially by the engine-frame or to any other specific features

of construction in the said housing or casing itself, except as certain novel features of construction in said parts, herein illustrated, may form the subject of specific claims herein.

5 Certain novel features of construction in the particular lubricating devices illustrated are herein specifically claimed as separate improvements in addition to the main features of the invention above set forth.

10 I claim as my invention—

1. The combination, with an engine crank-shaft and a crank-disk connected therewith, of a casing or housing surrounding the disk, having an oil tank or basin beneath said disk, said casing or housing being provided with a depending pointed projection, by which the oil flowing from the inner surface of the casing or housing may be directed or carried to a part to be lubricated.

20 2. The combination of an engine crank-shaft, a crank-disk connected therewith, and a housing or casing surrounding the disk and provided with depending pointed projections upon the said housing or casing, and having an oil tank or basin beneath said disk, an oil-receptacle secured to the connecting-rod and arranged beneath said pointed projections, and having a pipe and a passage leading from said oil-receptacle to the bearing-surface to be lubricated.

30 3. The combination, with an engine crank-shaft, a crank-disk, connecting-rod, and cross-head, of a casing or housing surrounding the disk, connecting-rod, and cross-head, and having an oil tank or basin beneath the disk, a wrist-pin in the cross-head engaged with the connecting-rod, and an oil-cup upon the said connecting-rod communicating with the bear-

ing-surface of the wrist-pin, said oil-cup being located in position to receive the lubricant thrown upon the surface of the cross-head by the crank-disk, substantially as described.

4. The combination, with a crank-shaft, crank-disk, connecting-rod, and cross-head of hollow box form, of a casing or housing surrounding said disk, connecting-rod, and cross-head, and having an oil tank or basin located beneath the crank-disk, a wrist-pin upon the cross-head engaging the connecting-rod, and an oil-cup upon the connecting-rod communicating with the bearing-surface of the wrist-pin, said hollow cross-head being provided upon its upper wall with a depending projection located over the said oil-cup, substantially as described.

5. The combination, with an engine crank-shaft, a crank-disk, crank-pin, and connecting-rod, of a casing or housing surrounding the disk and having an oil tank or basin beneath the same, and provided with pointed projections, an oil-cup upon the connecting-rod communicating with the bearing-surface of the crank-pin, said pointed projections depending from the top of said housing or casing over the oil-cup for the purpose of delivering to the said oil-cup oil thrown upon the housing by the disk, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ALBERT L. IDE.

Witnesses:

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