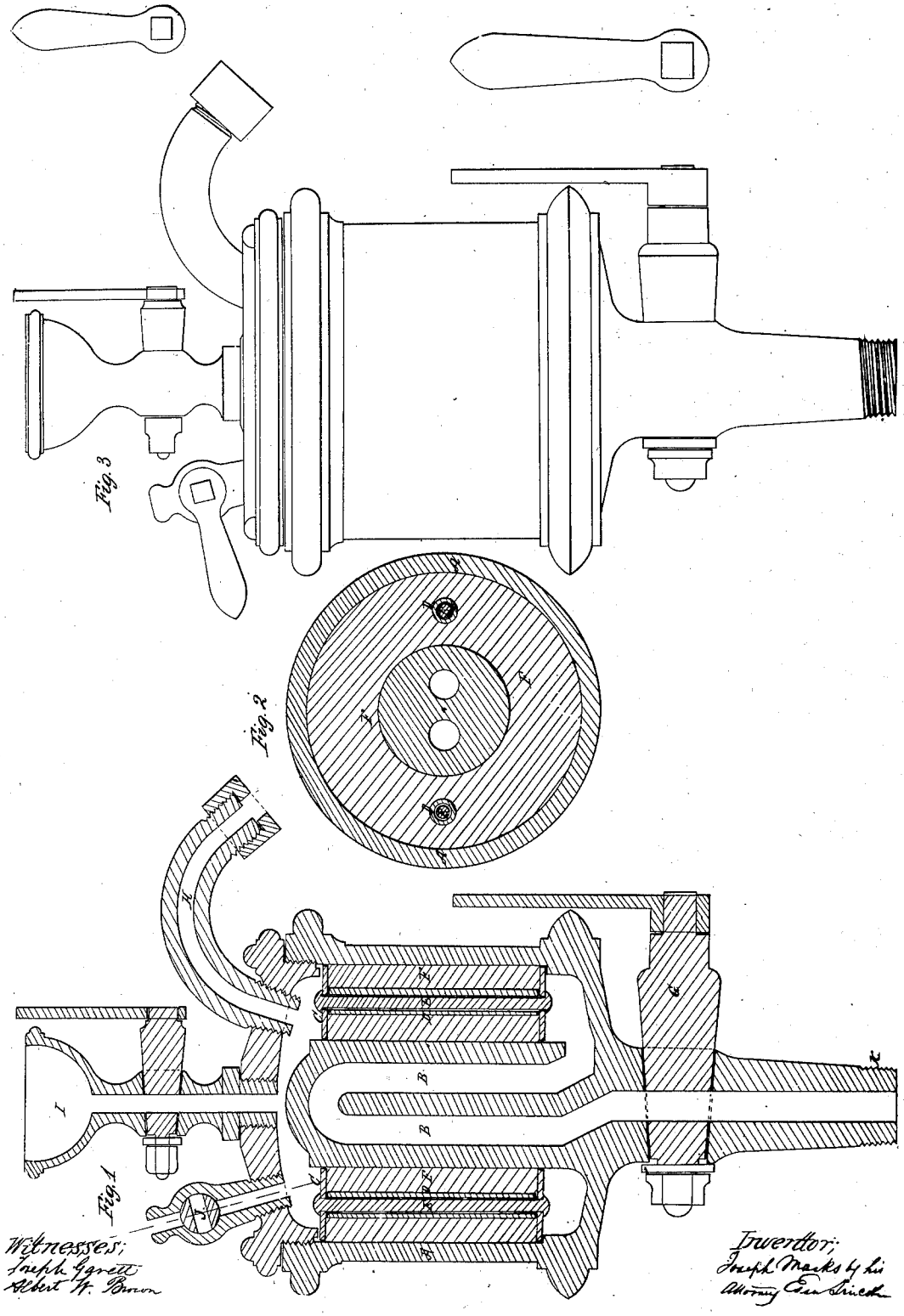
No. 30,416. PATENTED OCT. 16, 1860.

J. MARKS.

LUBRICATING VALVES AND CYLINDERS OF STEAM OR VAPOR ENGINES.



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UNITED STATES PATENT OFFICE.

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METHOD OF LUBRICATING ENGINES, &c.

Specification of Letters Patent No. 30,416, dated October 16, 1860.

To all whom it may concern:

Be it known that I, JOSEPH MARKS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Mode of Lubricating Valves, Pistons, Cylinders, or other Portions of Engines and Machinery, and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention consists in a new mode of lubricating the various portions of locomotive and other engines and machines worked by air, steam, gas or vapor by impregnating or saturating air, steam, gas or vapor, used as a motive power with lubricating material and then forcing it under pressure into the cylinder, steam-chest or other portions of an engine or machine. By this means, air, steam, gas or vapor being thus impregnated can be forced into and diffused about all the wearing parts of machinery, such as valves, pistons, cylinders, piston rods, valve spindles, &c., and penetrate to these parts more readily than any other method previously known, thereby effecting a more uniform, certain and economical means of lubrication than has heretofore been possible.

To carry out the objects of my invention, viz., that of saturating or impregnating steam, &c., with lubricating material and then forcing it under more or less pressure into the cylinder or other portions of an engine or machine it will be evident that many different arrangements of devices may be used, but the apparatus which I prefer and which I have found to operate very successfully I will now proceed to describe in detail.

The figures of the accompanying plate of drawings represent an apparatus for saturating or impregnating air, steam, gas, vapor, &c.

Figure 1 is a vertical section of the apparatus. Fig. 2 a transverse section. Fig. 3 an elevation of the same.

A is the cylinder of the impregnating apparatus.

B is the passage through which the steam, air, gas, or vapor is to enter the impregnating apparatus.

C C are perforated plates, held apart by thimbles D D and together by rivets E E.

F is any suitable porous packing such as cotton wick, worsted, sponge, asbestos wire-gauze or fine wire twisted up together or in combination with other materials or porous earthenware or cylinders and tubes may be used for the purpose.

G is a stop-cock.

H is a pipe that conducts the steam, air, gas, or vapor, &c., after it becomes impregnated into the steam, air, gas, or vapor chest and cylinder of the engine.

I is a feed cup to charge the impregnator with lubricating material.

The operation of the impregnating apparatus is as follows: The pipe K on the bottom end is screwed into the boiler or its equivalent, the stop-cock G is shut off and a sufficient quantity of lubricating material to saturate the porous packing or its equivalent is put into the impregnating apparatus. The stop-cock G is then opened and the steam, air, gas or vapor will pass through the porous packing and become impregnated with lubricating material and each time the valve moves off of its ports to induct steam, air, gas or vapor into the cylinders, the pressure of steam, air, gas, or vapor in the steam, air, gas, or vapor chest, when the engine is in motion, is not so great as it is in the impregnating apparatus, which is in immediate connection with the boiler. This difference of pressure therefore will allow a portion of the impregnated steam air, gas or vapor from the impregnating apparatus to pass into the steam air, gas or vapor chest and cylinder, keeping them in a continual state of lubrication.

By the application of this method to locomotive engines a great saving will be effected over the usual system of applying lubricating material, as under the ordinary system when the steam is shut off from the engine and the valves and pistons are kept in motion by the momentum of the train only these parts of the machinery are liable to become dry and cut. The application of my improvements will entirely obviate this

evil as a continual supply of lubricating material will always be kept on them when the engine is in motion, causing a great saving of the wear and tear of these important parts of the engine.

Although the steam, &c., will pass with the lubricating material into the steam-chest and cylinder, yet this will not interfere with the prompt stopping of a locomotive, as the quantity of steam that will pass through a very small pipe—say ¼ of an inch in diameter—and at a comparatively low-pressure is so small that no appreciable power is communicated to the pistons. Any difficulty that might occur, from the presence of steam in the steam cylinder &c, when the engine was being stopped, could easily be overcome, as follows;—the handle of the steam-cock of the apparatus could be coupled to the main throttle-valve-lever so that when the engineer shut off steam from the engine, he would also shut off steam from the impregnating apparatus, but I prefer the first described arrangement, which allows a small quantity of impregnated steam to pass into the steam-cylinder &c when lubrication is most needed viz; at the time when the pistons and valves are moving and the main throttle-valve is shut off.

In some cases I propose to use for the packing F a mass of gauze wire, or fine wire wound or twisted up, or asbestos or porous earthenware shaped and perforated to suit the required purpose without the intervention of separating plates, also large or small tubes or cylinders or cups placed in the impregnating appartus to hold the lubricating material which would be caused to evaporate by the heat of the steam in the impregnating apparatus and mix with the steam, air, gas, or vapor in its passage from the boiler through the impregnating apparatus to the steam, air, gas or vapor chest and cylinder, also the steam instead of being admitted from the bottom to the impregnating apparatus may be admitted at the top or side or any other suitable place and the impregnating apparatus may be fixed directly to the cylinder, valve-chest, steam-pipe or boiler.

Having described the nature of my invention and in what manner the same is or may be used I wish it to be understood that I do not confine myself to the precise details as shown in the illustrations inasmuch as the apparatus may be very much varied in, size, shape, or position and internal arrangements so as to suit any kind of engine worked by steam, air, gas or vapor as a motive power without departing from the essential principles of my invention.

Having thus described my improvements, what I claim as my invention and desire to have secured to me by Letters Patent is—

The mode or process herein described of saturating, mixing or impregnating steam, air, gas, vapor, &c., with lubricating material for the lubrication of the various working parts of engines, and machines operated by steam, air, gas or vapor by means of any impregnating, mixing or saturating apparatus containing any proper lubricating material, through which the steam &c is made to pass and arranged and operating substantially as herein above described.

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Witnesses:
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