H. WILSON.

IMPERMEATOR FOR STEAM ENGINES.

No. 104,914. Patented June 28, 1870.

Fig 1

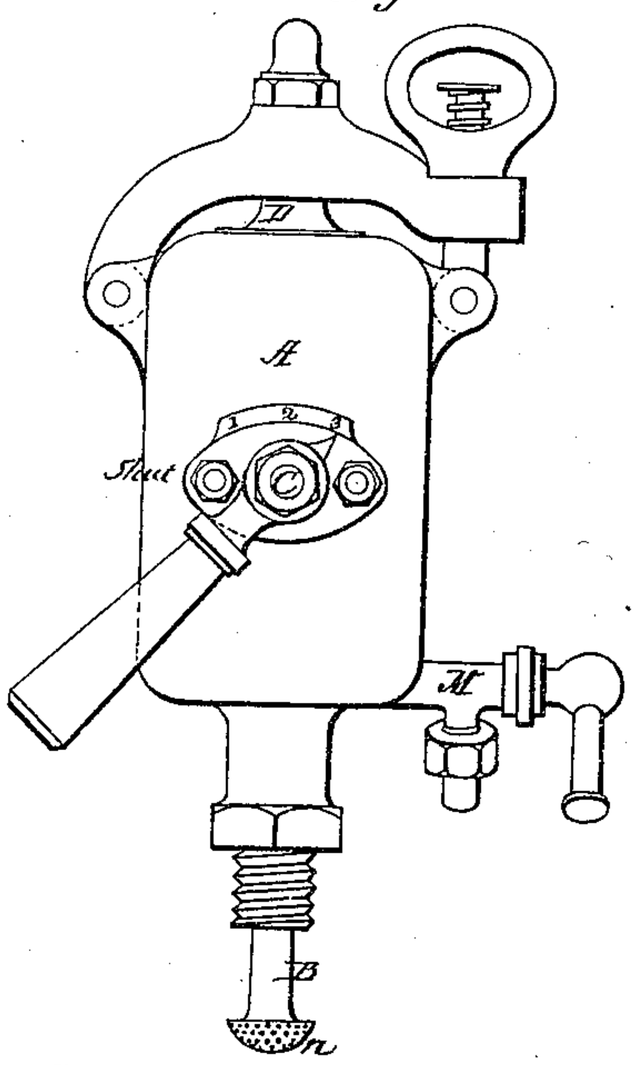


Fig 2.

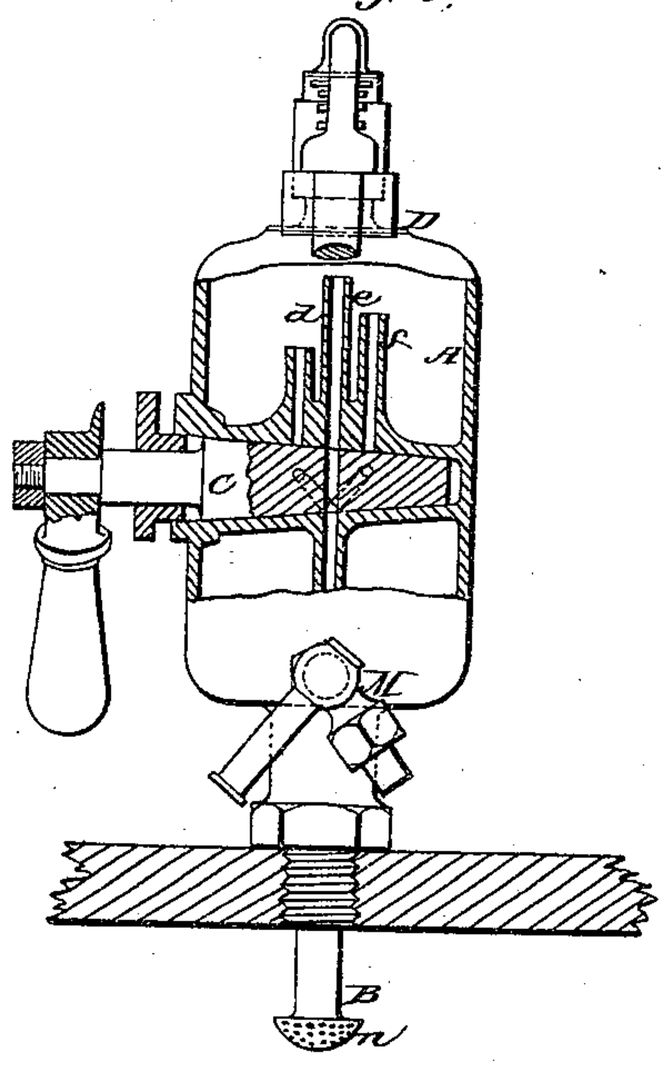


Fig 3

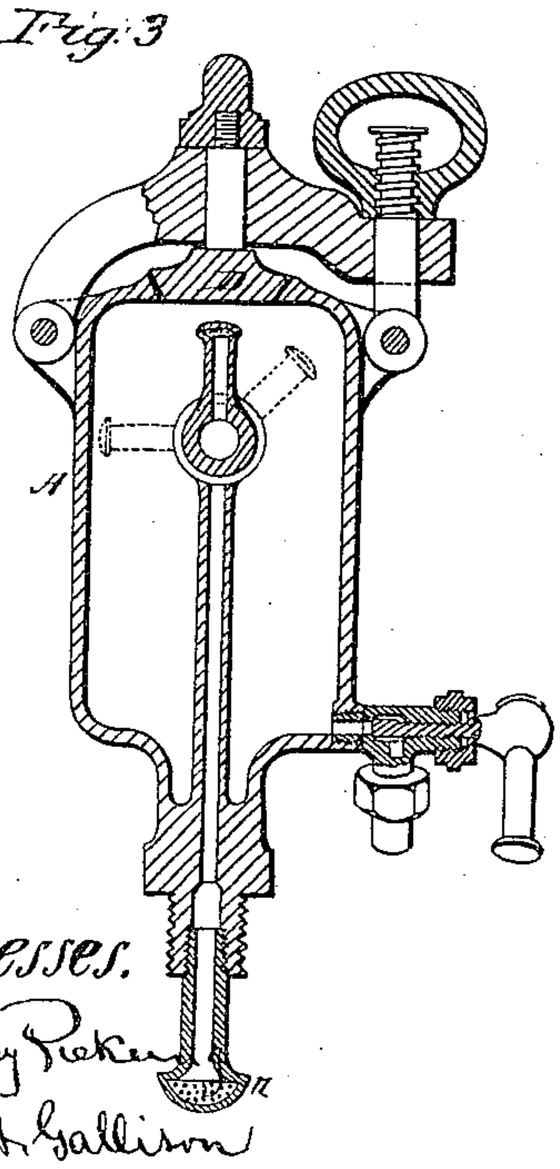
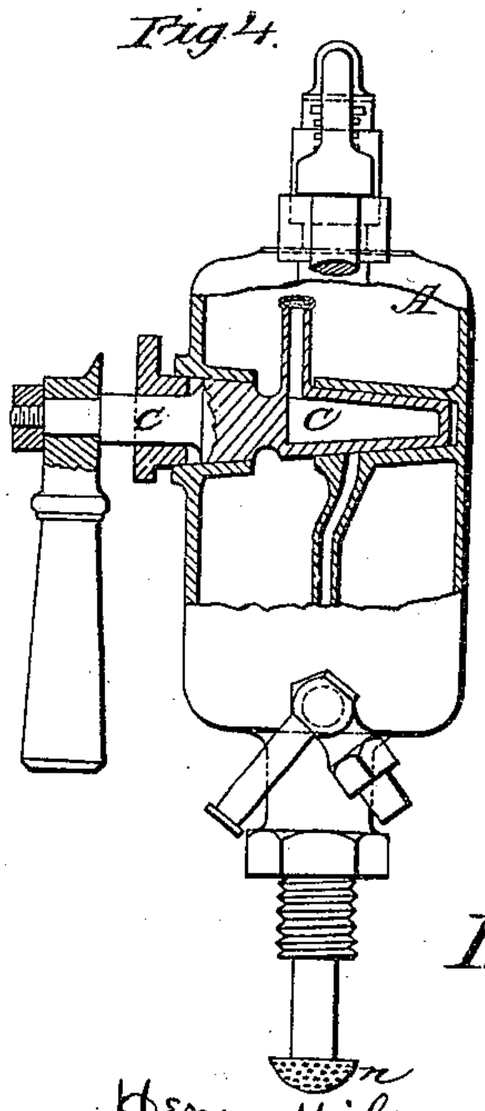


Fig 4.



Witnesses.

Henry Pickering

Wm H. Gallison

Inventor.

Henry Wilson of Stoneham and

by his attorneys Hamilton & Hill

United States Patent Office.

HENRY WILSON, OF STOCKTON-ON-TEES, GREAT BRITAIN.

Letters Patent No. 104,914, *dated June* 28, 1870.

IMPROVEMENT IN IMPERMEATORS FOR STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY WILSON, of Stockton-on-Tees, in the county of Durham and Kingdom of Great Britain, have invented a new Steam-cylinder Impermeator, of which the following is an exact description, reference being had to the annexed drawings and letters thereon.

In the drawings—

Figure 1 is an outside view, and

Figure 2 a sectional view of the said impermeator.

In fig. 2–

A is the impermeator.

B is a vertical pipe reaching below the impermeator into the center of the steam-pipe, on which it stands, and also up into the interior of the impermeator, its upper end fitted steam-tight against the plug-cock C, as shown in the drawings.

Above the plug-cock are cast into the brass-work into which the plug-cock is fitted, one, two, or three or more short pieces of pipe of different lengths, *d e f.*

Through proper openings in the plug-cock and its casing, these pipes can alternately come in connection with the interior of the plug-cock, and through it, one at a time, in connection with the pipe B; or the plug-cock can be so turned that connection with the pipe B is entirely shut off.

The cock M is for the purpose of draining the impermeator when filled with water or otherwise.

D is a steam-tight valve, through which the impermeator is filled.

The semicircle lettered "sheet 1, 2, 3," on the outside fig. 1, indicates, by means of a pointer attached to the plug-cock, whether the latter stands in connection with the pipes *d e f*, &c.

n is a rose placed at the end of the pipe at the bottom of the lubricator, for the better delivery of the oil.

I also, in preference, sometimes construct the impermeators in the manner shown in figs. 3 and 4.

The plug *c* is made with a tube, which, by the turning of the plug, raises or lowers the surface of the lubricant, and exposes more or less condensing-surface, and thereby dispenses with the three separate tubes.

The operation of the impermeator is as follows, viz:

The plug-cock is turned to "shut." This cuts off all entrance of steam to the impermeator through the pipe B. Any water in the impermeator is then drawn off by the drain-cock M. The impermeator is filled with lubricating material by the valve D, at the top, which is closed. The plug-cock is then turned so that the pointer stands at, for example, No. 2. This brings the pipe B in connection with the upper pipe *e*, so that the steam can pass through them into the impermeator. As the steam draws in and out with the motion of the piston, a portion will be condensed in the impermeator, and, sinking under the lubricating material, buoys it up, so that, rising a little above the top of the pipe *e*, a portion of it will be carried with the steam into the main steam-pipe, and, being delivered by the strainer at the bottom of the pipe B into the midst of the steam, will be carried by it into all parts of the steam-valve and cylinder, furnishing all parts with a perfect lubrication, and, as this is repeated at every stroke, the lubrication will be constant. If the steam does not condense fast enough to afford the needed lubrication, the plug-cock may be set at 1 or 3, and the corresponding pipes *d* and *f*, not rising so high, give a larger steam area above and a larger surface for condensation, which proceeds more rapidly. The same effect is produced by turning the plug in figs. 3 and 4, as the tube is thereby turned, so that the height of its open top aries, and, therefore, the height of the lubricant and the rapidity of the feed.

The rose at the bottom is intended to be attached when the lubricator is used, as a means of greasing the steam. It serves as a receptacle for the drops of oil furnished by the lubricator, keeps the oil from falling onto and adhering to the bottom of the pipe, and distributing it through the small holes into the steam, it assists in breaking it up into small particles, and thus diffuses it more thoroughly through the steam.

By these means a steady lubrication proceeds, using every particle of the oil till the whole is expended.

It will be observed that this arrangement may be modified in a variety of ways, provided the principle is preserved of raising the oil or other lubricating material by the condensation of steam, so that it shall be carried into the steam-pipe as it rises by the flow of the steam.

The impermeator may be made with a single pipe rising nearly to the top. It may be of metal or of glass, and fitted with a gauge to show the height of the oil, &c., within.

What I claim is—

A steam-engine impermeator, arranged substantially as described, so that as the steam flowing in and out from the steam-pipe or steam-chest with which it is connected becomes condensed, it shall raise the lubricating fluid, and cause it to gradually and regularly feed into the engine with the steam, and also so that the condensing-surface may be varied in the manner heretofore set forth.

Also, the arrangement within the impermeator of pipes or openings of different heights, connected with the pipe which conveys the steam into the impermeator, and takes the oil or other lubricating matter away, which pipes or openings determine the height at which the lubricating fluid shall stand in the impermeator, and thus the extent of condensing-surface

and the rapidity of condensation and of feed of the lubricating fluid.

Also, the arrangement of a plug-cock or other similar mechanism, in combination with said pipes or openings, as described above and for the purposes set forth, to wit, the arrangement by which any one of the said pipes or openings may be put in connection with the pipe B, at the will of the operator, so that the steam may be admitted and the lubricating material fed out thereby.

Also, the rose, as described, in combination with a lubricator working by condensation, for the purposes described, that is, for the better distribution of the oil furnished by the lubricator, when the same is applied to grease the steam.

HENRY WILSON.

Witnesses:

W. C. NEWBY, *Stockton-on-Tees, Solicitor.*

JOHN J. PEMBERTON, *His Clerk.*