No. 744,088. PATENTED NOV. 17, 1903.

W. MICHALK.

LUBRICATING.

APPLICATION FILED JULY 22, 1901.

NO MODEL.

Fig. 1.

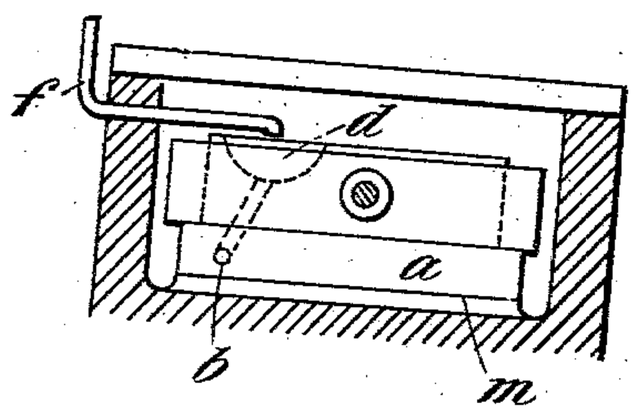


Fig. 2.

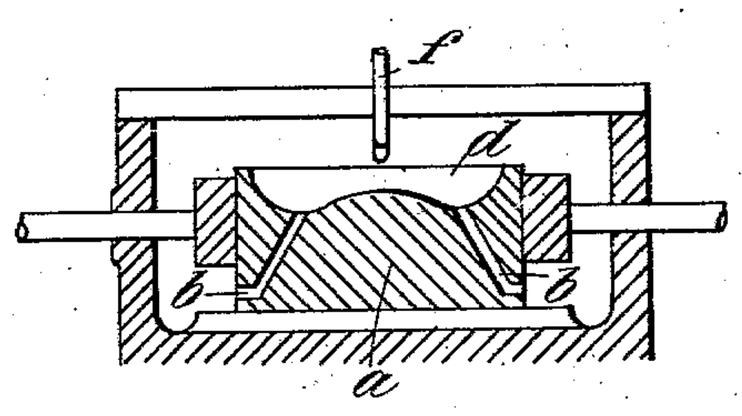


Fig. 3.

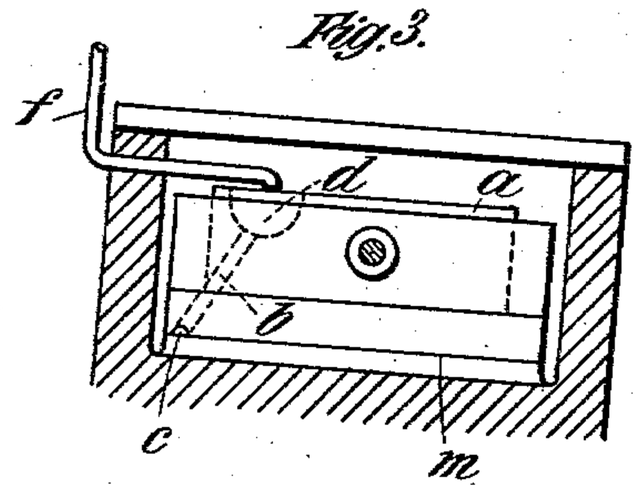


Fig. 4.

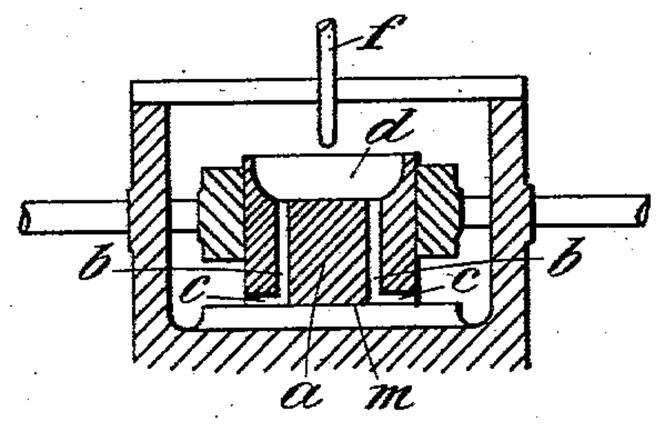


Fig. 5.

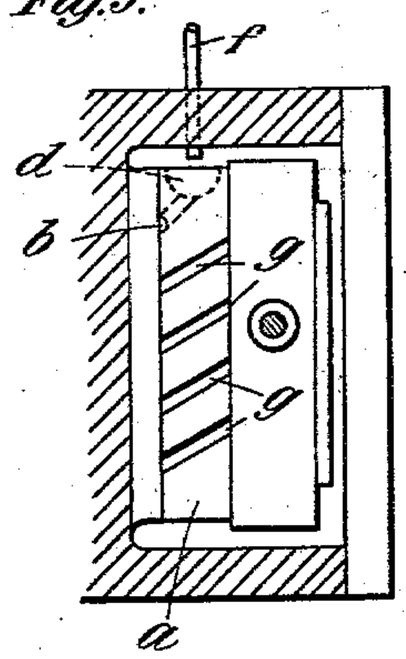


Fig. 6.

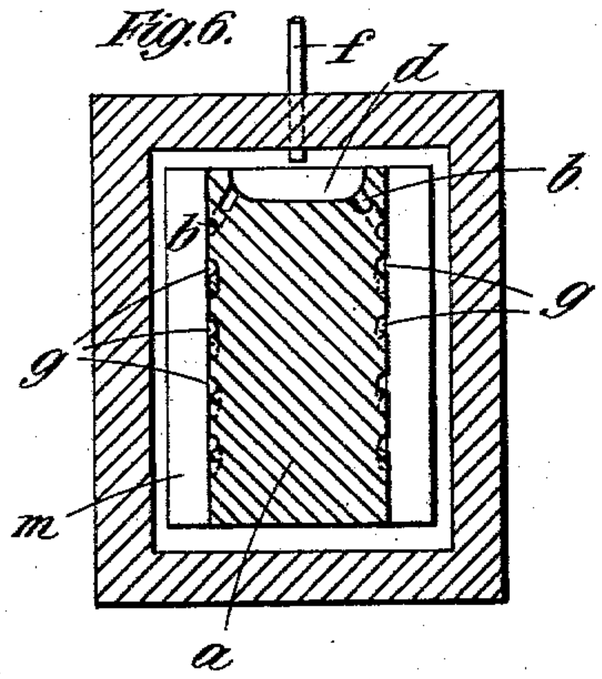
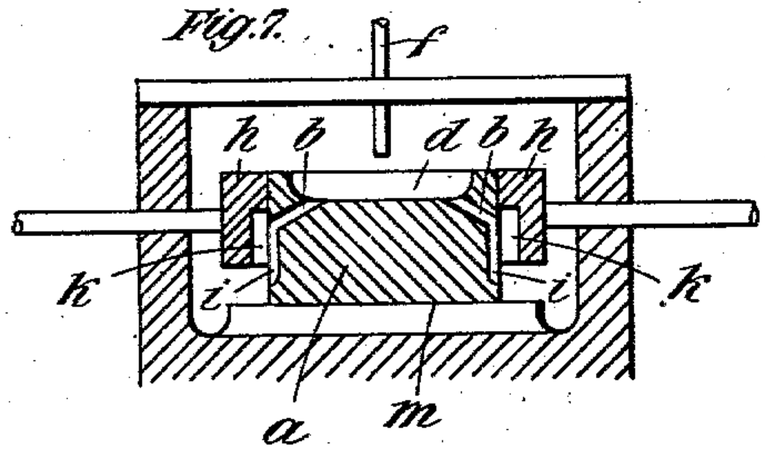


Fig. 7.



WITNESSES

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No. 744,088. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

WILHELM MICHALK, OF DEUBEN, GERMANY.

LUBRICATING.

SPECIFICATION forming part of Letters Patent No. 744,088, dated November 17, 1903.

Application filed July 22, 1901. Serial No. 69,241. (No model.)

To all whom it may concern:

Be it known that I, WILHELM MICHALK, a subject of the King of Saxony, residing at Deuben, near Dresden, in the Kingdom of Saxony, Empire of Germany, have invented a certain new and useful Improvement in Lubricating, of which the following is a full, clear, and exact description.

The present invention relates to a lubricating arrangement for the working faces of slide-valves and the like which is mainly characterized by the lubricating material in the said arrangement being directly conveyed through channels of the slide-valve continually open to the outside or side faces of the latter and from there to the alternately-exposed parts of the slide-surfaces of the valve-box or the like, onto which it is conveyed in the form of threads. By this arrangement the result is attained that the lubricant is conveyed with certainty and thoroughness between the slide-surfaces of the slide-valve and the valve-box, and thus a thorough and effective lubrication of the slide-surfaces is obtained with a most economical consumption of lubricant, and thus the wearing or eating away of the surfaces is prevented.

It has been proposed to convey the lubricant either to the outside of the slide-valve by tubular pistons connected with oil-cups and fitted into pump-cylinders formed in or on the back or side of the slide-valve, said pistons and pump-cylinders being provided with valves, or through oil grooves or channels of the slide-valve directly between the opposite bearing-surfaces of the slide-valve and the valve-box; but in these cases the vapor penetrates the pump-cylinders, respectively, between the opposite bearing-surfaces of the slide-valve and the valve-box and in the oil-channels of the valve and forms condensed water in the same, which if the channels are not open to the outside cannot escape, but by the pressure thereby arising in the closed channels boils and decomposes the oil, and thereby makes it ineffective for lubricating. Moreover, in the case of vertical slide-valves used hitherto the lubricant has simply been allowed to run over the valve or the valve-box guide, and it was left to chance whether the lubricant reached the surfaces to be lubricated, which frequently only took place incompletely, while much lubricant was consumed uselessly without being able to reach the surface to be lubricated. A very better lubricating effect results if the oil is only conveyed by channels of the slide-valve directly onto the outside or side faces of the slide-valve and from there to the alternately-exposed parts of the slide-surfaces of the valve-box or the like; and the feature of the present invention is that the oil-channels of the valve are continually open to the side faces of the latter to prevent any pressure of vapor and condensed water in the interior of the channels.

In the accompanying drawings, Figure 1 is a cross-section of a valve-box lying inclined or obliquely and having the slide-valve provided with this improved arrangement. Fig. 2 is a longitudinal section of the same. Figs. 3 and 4 show a similar but somewhat modified form of construction to that one shown in Figs. 1 and 2. Figs. 5 and 6 are also a similar form of construction of the arrangement in a vertical slide-valve. Fig. 7 shows a similar form of construction of the arrangement, in which the outer openings of the slide-valve channels lie inside the slide-frame.

In the arrangement shown in Figs. 1 and 2 a trough-shaped recess *d* is formed in the slide *a*, which receives the lubricant applied from the outside through a pipe *f* and from which passages or channels *b* lead and open continually toward the outside or side faces of the slide, on which the lubricant runs downward in the form of threads to the alternately-exposed parts of the slide-surface *m*. As the channels *b* are continually open to the outside of the slide-valve, the vapor is prevented to penetrate in the channels *b* under pressure and to form condensed, respectively, boiled water therein, so that the lubricant becomes not decomposed, but remains highly effective for lubricating.

In slide-valves or slides having a short travel in order to enable the lubricant to also reach with certainty the center of the slide-track in the arrangement shown in Figs. 3 and 4 the passages or channels *b* are brought near the center down to the sole or slide-surface of the valve, and grooves or channels *c* are formed in the slide-surface of the said valve. The said channels *c* join to the lower

end of the channels *b* and lead also to the outside of the slide-valve. By these means, as is evident, the lubricant is conveyed near the center of the valve-box slide-surface *m* and yet by means of the passages *c* is also enabled to reach the outside or side faces of the slide-valve. The passages *c* also serve to conduct the water condensed from the steam which comes between the slide-valve and the slide-surface *m* of the slide-box to the outside of the valve, so that the lubricant is not decomposed by the condensed water.

Figs. 5 and 6 show a form of construction of the arrangement similar to that one shown in Figs. 1 and 2, but applied on a vertical slide-valve. *d* is the trough-shaped recess of the slide. *a* and *b* are the channels leading toward the outside or side faces of the latter and close to the slide-surface *m* of the valve-box. From these figures it may also be seen that at the sides of the slide-valve inclined grooves *g* are formed which fall toward the slide-surface of the valve. Any oil running out of the slide-valve, which would otherwise be uselessly lost, is caught by these further channels *g* and retained and conducted downward to the slide-surface *m* in order there to fulfil its purpose of lubricating the opposite bearing-surfaces of the slide-valve and the valve-box.

The arrangement shown in Fig. 7 is also similar to that one shown in Figs. 1 and 2; but the outer openings of the channels *b* still lie inside the slide-frame *h*, which cannot be avoided in many forms of slide construction. In order that the oil from the channels *b* may not run along the slide-frame *h* and be carried away from this latter by the steam without acting on the slide-valve surface, recesses *k* are provided on the inner side of the slide-frame *h* opposite the openings of the channels *b*, which recesses prevent the escaping oil from coming in contact with the slide-frame, and, on the other hand, compel it to only run downward on the slide and to thus reach with certainty the alternately-exposed parts of the slide-surface *m*. To enable the oil to more easily flow out from the channels *b*, further grooves or the like *i*, joining to the outer openings of the said channels and leading downward, may be arranged on the side faces of the slide-valve.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a lubricating arrangement for valve-slide surfaces or the like the combination with a valve-seat, of a slide-valve *a*, having a recess *d* and channels *b* leading from the said recess through the slide-valve and being continually open to the side faces of the same which channels convey the lubricant entering the recess *d* and the condensed water onto the side faces of the latter on which the lubricant runs downward to the alternately-exposed surfaces of the valve-box, said recess *d* being arranged in the upper side of the slide and the said channel *b* extending downwardly therefrom, substantially as described and for the purpose stated.

2. In a lubricating arrangement for valve-slide surfaces or the like the combination with a valve-seat, of a slide-valve *a* having a recess *d* and channels *b* leading from the said recess more to the center of the slide-surface of the valve and continuing from there into outwardly-leading channels *c* formed in the slide-surface of the valve, which channels convey the lubricant and also the condensed water to the side faces of the slide-valve, substantially as described and for the purpose stated.

3. In a lubricating arrangement for valve-slide surfaces or the like the combination with a valve-seat, of a slide-valve *a* having a recess *d* and channels leading from the said recess through the slide-valve and being continually open to the side faces of the same, and inclined grooves *g* or the like arranged on the side faces of the slide-valve and falling toward the slide-surface of the valve which grooves catch the lubricant running down the sides of the slide-valve and convey it to the slide-surface, substantially as described.

4. In a lubricating arrangement for slide-surfaces or the like the combination with a valve-seat, of a slide-valve *a* having a recess *d* and channels leading from the said recess through the slide-valve and which open inside the valve-frame *h* onto the side faces of the valve or into grooves *i* provided in the latter, recesses *k* being provided opposite the mouth of these passages on the inner side of the slide-valve frame in order to prevent the escaping lubricant from coming in contact with the slide-valve frame and carried away by the same, instead of reaching the slide-surfaces, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM MICHALK.

Witnesses:

MARGARETE SCHICK,

HERNANDO DE SOTO.