(No Model.) 2 Sheets—Sheet 1.

A. B. GRISWOLD & J. M. BRADBURY.

AUTOMATIC OILER.

No. 379,643. Patented Mar. 20, 1888.

Fig. 1.

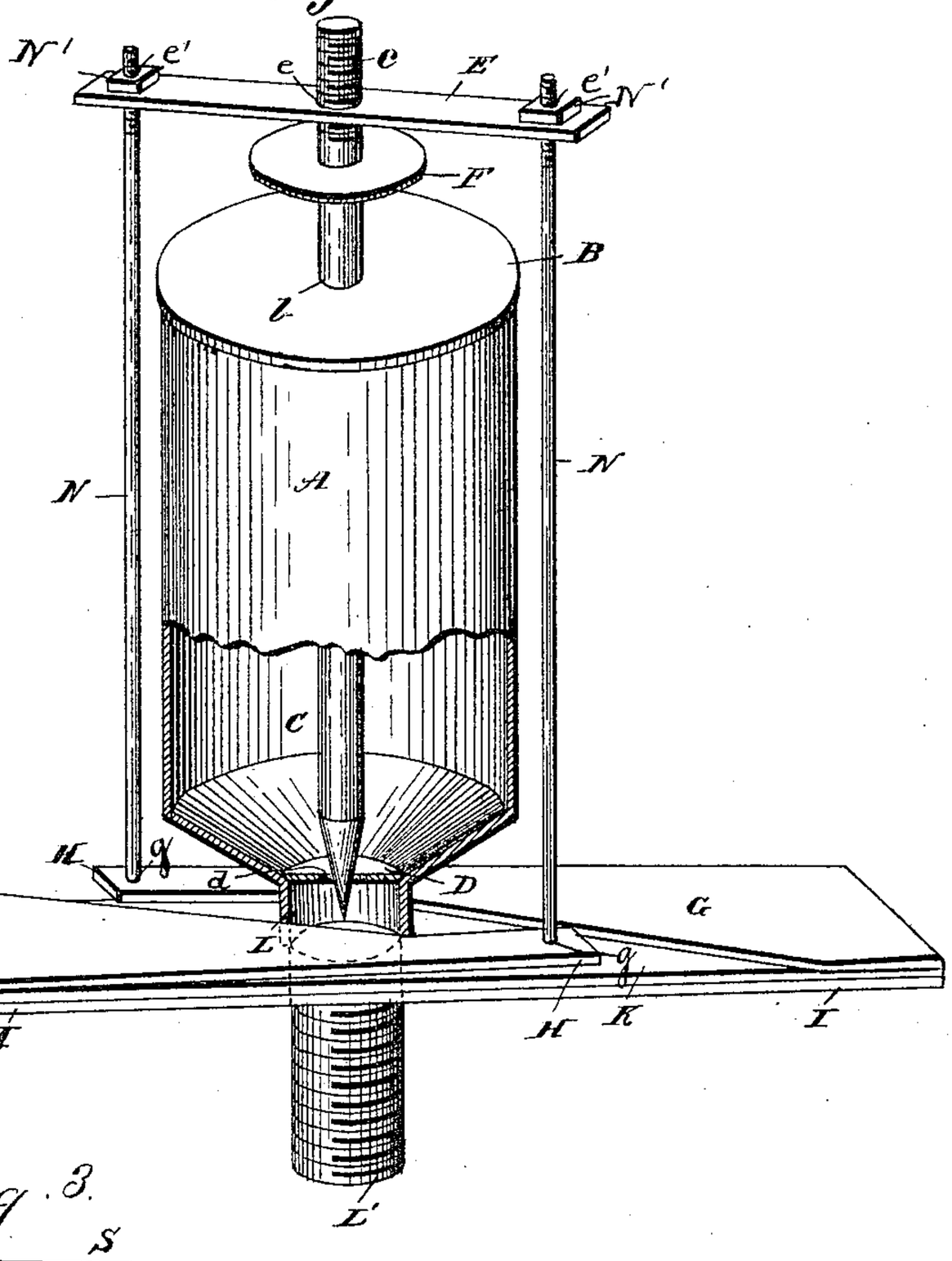
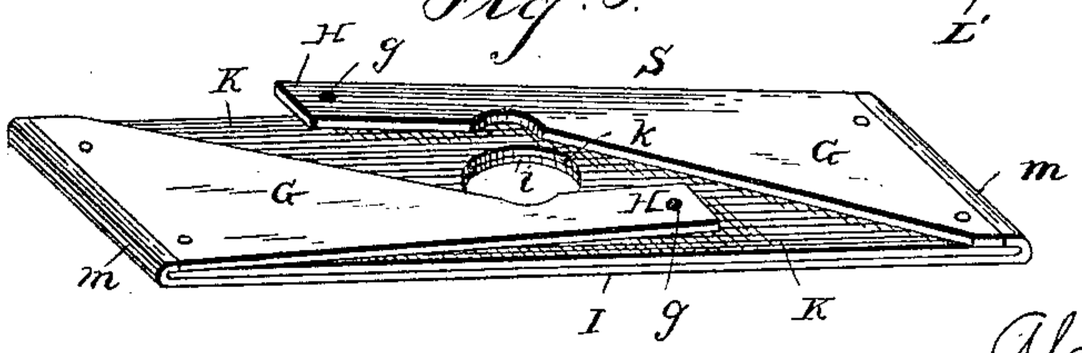


Fig. 3.



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their Attorney

(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

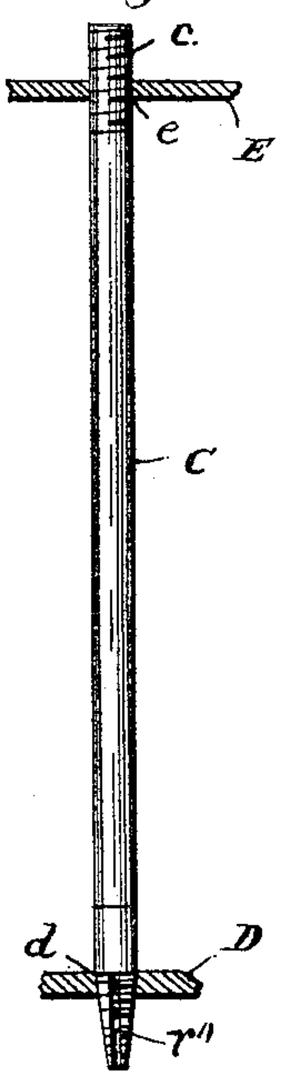


Fig. 6.

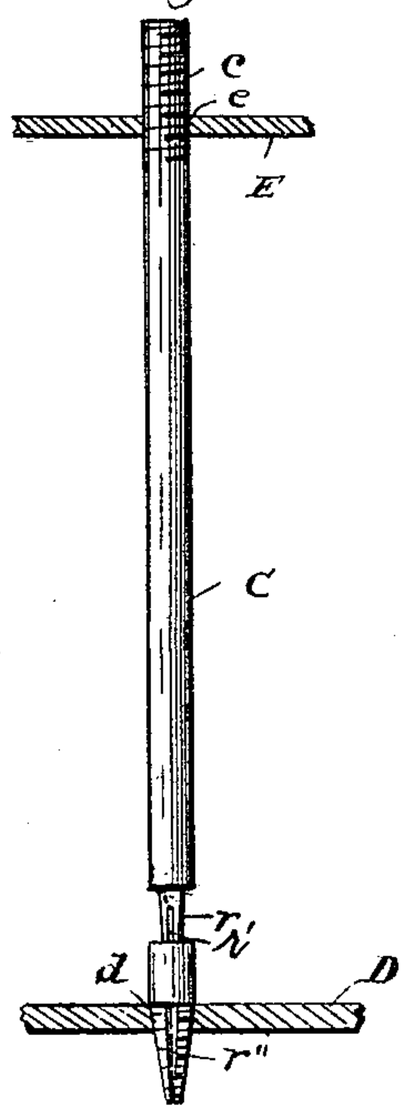


Fig. 7.

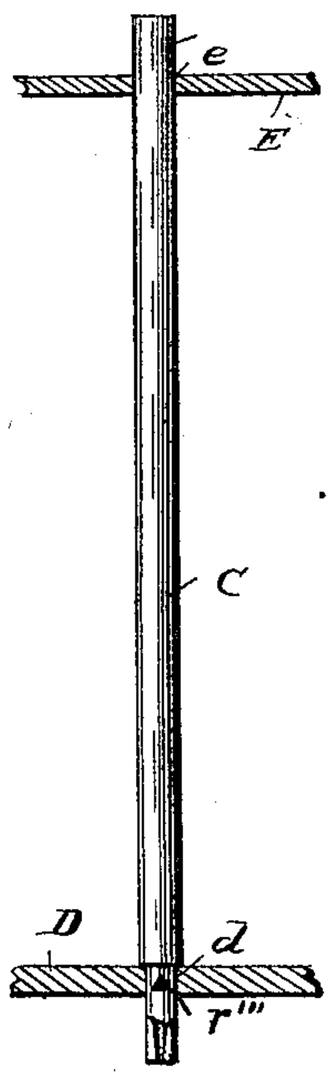


Fig. 2.

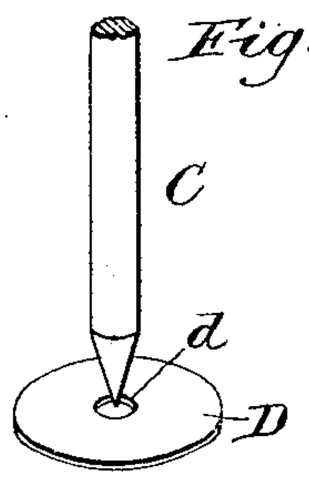
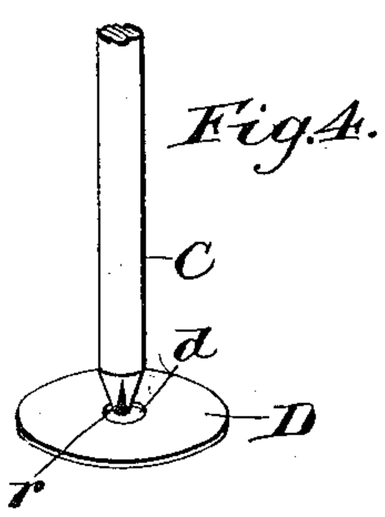


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALANSON B. GRISWOLD AND JOHN M. BRADBURY, OF BUNKER HILL, KANSAS.

AUTOMATIC OILER.

SPECIFICATION forming part of Letters Patent No. 379,643, dated March 20, 1888.

Application filed May 6, 1887. Serial No. 237,344. (No model.)

To all whom it may concern:

Be it known that we, ALANSON B. GRISWOLD and JOHN M. BRADBURY, citizens of the United States, residing at Bunker Hill, in the county of Russell and State of Kansas, have invented certain new and useful Improvements in Automatic Oilers, of which the following is so full, clear, and exact a description as will enable others skilled in the art to which our invention appertains to make and use the same, reference being had to the accompanying drawings.

This invention relates to an improvement in automatic oilers, the object being to construct a self-acting oiler which will be operated to lubricate a journal-box or slide, or any part of a machine where a lubricant is necessary, when the parts with which it is in juxtaposition become heated by the heat itself acting upon the oiler in such a manner that the flow of the oil upon the heated part will be increased.

To this end our invention consists, essentially, of a compound or bimetallic strip or series of strips formed of unequally-expanding metals—as, for instance, brass and iron—in combination with an oil-cup or any kind of oil-receptacle having a valve of any suitable construction.

Our invention further consists in certain peculiarities in the construction, arrangement, and combination of parts, substantially as will be hereinafter described, and particularly pointed out in the claims at the end of the specification.

In the accompanying drawings, illustrating our invention, and in which similar letters of reference denote corresponding parts, Figure 1 is a perspective of our improved self-acting oiler, a portion of the oil-cup being broken away to expose the valve and valve-seat. Fig. 2 is a detail representation of the valve and valve-seat. Fig. 3 is a detail representation of the bimetallic plate. Fig. 4 is a detail representation of a valve-seat and another form of valve. Figs. 5 and 6 are views of still another form of valve, and showing it in its normal and operative positions, respectively. Fig. 7 is a detail of still another form of valve.

Referring to the drawings, A represents an oil-cup, which may be made of any suitable form, and which is provided with a removable cover, B, and terminates in a neck, L, which may be screw-threaded at L′ for attachment to the usual oil-hole of the journal-box or other piece of machinery to be lubricated. The removable cover B and the bottom plate, D, of the oil-cup are each provided with perforations *b* and *d*, respectively, for the reception of a valve, C, the lower extremity of which is conical and is adapted to register with and open or close the passage-way through the perforation *d* in the bottom plate, D, as shown in detail in Figs. 2 and 4. This valve C extends a suitable distance above the top of the oil-cup A and is screw-threaded at *c*.

E designates a cross-piece which is formed with an interiorly-screw-threaded perforation, *e*, for the reception of the upper extremity of the valve C, and connects by means of rods N with an expansible bimetallic plate, S, as will be readily seen by reference to Fig. 1. This bimetallic plate S is preferably formed of the strips I K and G G, each one of which is formed of two metals—as, for instance, brass and iron—made and arranged as shown. The lower strip, I, is formed with a perforation, *i*, adapted to receive the neck L of the oil-cup, and is laid directly upon the top of a journal-box or other place where it is to be used, and the ends of this strip I are upset at *m m*, beneath which the extremities of the strip K are adapted to be situated, and which serve as a means for keeping the said strips together and keep the strip K from accidental displacement. This strip K is preferably made of the same width as the strip I, and is formed with a perforation, *k*, registering with the perforation *i*, as will be readily seen by reference to Fig. 3. The strips G G are cut away at one end, as shown, in order to leave sufficient space for the neck L of the oil-cup to pass between them, and they are secured at their opposite ends to the strip K by rivets or otherwise. The outer free ends, H H, of these strips G G are formed with small perforations *g g*, to receive the extremities of the rods N N, the upper extremities of which rods pass through screw-threaded perforations *e′ e′*, formed in the cross-piece E, and are also screw-threaded, and the said cross-piece is held from accidental displace-

ment thereupon, preferably by means of the nuts N′ N′; but we do not wish to be understood as limiting ourselves to the above manner of securing the cross-piece to the rods, as any other suitable method might be adopted without departing from the general spirit of our invention or in any manner interfering with its usefulness.

In the strips I and G G the brass sides are underneath and the iron on top, and the strip K has its iron side underneath and its brass side on top. Thus the iron side of one strip will in every instance be in juxtaposition with the iron side of the next adjacent strip, and the brass side of one strip will be in juxtaposition with the brass side of the next adjacent strip.

By forming the bimetallic plate of three strips we obtain three times as much movement as would be obtained if only one strip were used; but we do not wish to be understood as limiting ourselves to the precise number of strips shown and described, or to their precise construction or arrangement, as the number, form, and arrangement might be varied at will without departing from the general spirit of our invention.

On the valve C is a disk, F, the outer edges of which may be serrated or milled to facilitate the turning of the same to adjust it vertically in order to determine the amount of flow of oil or other lubricant through the perforation *d* in the plate D in the bottom of the cup.

The neck L of the oil-cup is preferably formed with a flange resting on the bimetallic plate S and serving to facilitate the supporting of the oil-cup by the said plate and to prevent the neck from extending too far down through the perforations of the said plate.

From the foregoing description the operation of our device will be obvious. The device is situated upon the journal-box or slide, or other portion of machinery which it is to lubricate, with the strip I of the plate S resting directly upon it, and when the said parts become heated it will cause the bimetallic plate to expand and the strips G G to rise and automatically and simultaneously lift the rods N N, and through their medium the cross-bar E, carrying the valve C upward, lifting its lower end out of the valve-seat in the middle of the cup, and permit the oil in the cup to flow out and lubricate the said heated portions. It will be further evident that when, from any cause, as dirt or impurities becoming accumulated, the flow of the oil becomes insufficient, and the journal, in consequence of this lack of sufficient lubricant, becomes heated, or any portion of the machine becomes heated in the vicinity of the bimetallic plate to a very high degree, the very action of the heat will be to increase the flow of oil, as above explained, by causing the bimetallic plate to expand to a corresponding degree.

The particular form of valve is not material, and we do not wish to be understood as limiting ourselves to any particular form of valve or oil-cup, as any device for opening or closing an orifice may be used without departing from the spirit of our invention and without in any way interfering with its usefulness.

In Figs. 4 to 8, inclusive, modifications of the valve are shown, any one of which may be used and will accomplish its purpose in a perfect manner. In Fig. 4 it is shown as having a longitudinal groove or recess, *r′*, to facilitate the exit of the lubricant, while in Figs. 5 and 6 the lower end of the valve is shown as formed separate from the upper portion and as being hollow, as *r″*, and rigidly secured to the bottom plate, D, of the oil-cup, and the said upper portion is shown as having a downwardly-projecting extension, *r*, fitting within the lower portion and having a longitudinal groove, *r′*, for the escape of the lubricant, and in Fig. 7 the lower extremity of the valve is formed smaller in its circumference than the upper portion and the said extremity is provided with a perforation, *r‴*, for the escape of the lubricant. Obviously when the valve shown in Figs. 5 and 6 is adopted the upper portion only will be lifted and the oil will escape through the groove *r′* and through the channel *r″* in the lower extremity, being guided thereto by the groove *r′* of the extension *r*.

The various details of our device may be varied at will and certain minor details of the constructions shown and described may be changed and substituted for other equivalent devices without departing from the spirit of our invention, which consists, essentially, in the combination of parts, comprising strips of unequally-expanding metals and the other appliances above specified.

It will be readily seen that a device of the character herein described is applicable to any kind of device which may be used for opening and closing a valve or waste-nozzle of any oil-receptacle, the essentials of the invention consisting in the communication of motion to the valve through the medium of the metal, which will be expanded by heat, as above explained.

Having now described the objects, uses, and advantages of our invention, and having described a preferred means of carrying the same into effect, what we believe to be new, and desire to secure by Letters Patent, and what we therefore claim, is—

1. In an automatic oiler of the character described, an oil-cup having a perforation in its bottom and a neck projecting downwardly from the bottom of the oil-cup and screw-threaded for attachment to the journal-boxes, in combination with a valve adapted to open and close the said opening in the bottom of the said oil-cup, operated by an expansible bimetallic plate, and having a disk for the purpose, substantially as shown and described.

2. In an automatic oiler of the character de-

scribed, an oil-cup having a central perforation at its bottom and the valve, in combination with bimetallic strips carrying supporting-rods and a cross-piece to which is secured the said valve, substantially as described, whereby the expansion and contraction of the metal raises and lowers the valve, opening and closing the exit in the oil-cup.

3. In an aumotatic oiler of the character described, the combination of the bimetallic strips carrying rods, a screw-threaded cross-piece, and a valve supported by the said cross-piece and adjustable therein, substantially as shown and described.

4. In an automatic oiler of the character described, the oil-cup having a perforation in its bottom, the valve opening and closing the said perforation and having a disk, in combination with the vertical rods, the expansible strips, and a cross-bar supporting the valve, all arranged to operate substantially as and for the purposes specified.

5. In an automatic oiler, the combination of the bimetallic expansible plate consisting of the bimetallic strips I K and G G, secured together, the rods, the cross-bar supported thereby, having a screw-threaded perforation, a valve having a screw-threaded extremity for the purpose specified, and a disk on the said valve.

6. In an automatic oiler of the character described, the expansible plate consisting of the bimetallic strip I, to be situated directly upon the portion of machinery to be lubricated and having its ends bent over upon itself at *m m*, and the bimetallic strip K, arranged above the said strip I and kept from lateral displacement by the bent-over portion of the said strip I, and the strips G G, secured at one extremity to the said strip K and having their free ends perforated for the reception of rods, in combination with the said rods, supporting cross-piece, the valve, and an oil-cup having an opening in its bottom adapted to be opened and closed by the said valve, all constructed and arranged to operate substantially as shown and described.

7. In an automatic oiler of the character described, the oil-cup having a removable cover and an opening in its bottom and a downwardly-projecting neck, in combination with a valve to open and close the said opening, a cross-piece, upright rods, and bimetallic expansible plate having a perforation for the reception of the said neck.

8. In an automatic oiler of the character described, the combination of the oil-cup having a perforation in its bottom, a bimetallic expansible plate, upright rods, cross-piece, and valve, the lowermost extremity of the said valve being hollow and rigidly secured to the said bottom plate and the upper portion formed with a projection having a slot and situated within the said lowermost extremity, all arranged in such a manner that the expansion of the bimetallic plate will cause the upper portion of the valve to rise and permit the lubricant to flow out through the lowermost extremity.

9. In an automatic oiler of the character described, the oil-cup, valve, cross-piece, and supporting-rods, in combination with a bimetallic plate consisting of the strips I K and G G, connected as described, the inner free ends of the strips G G carrying the said supporting-rods.

10. In an automatic oiler, the oil-cup having a perforation in its bottom, a valve having one extremity tapered and the other screw-threaded, for the purpose specified, and a disk on the said valve, in combination with means for supporting and elevating the said valve, consisting of bimetallic expansible plate, upright rods, and a cross-piece, the said cross-piece having a screw-threaded perforation for the reception of the screw-threaded extremity of the valve.

In testimony that we claim the above as our invention we hereunto set our hands in the presence of two subscribing witnesses.

ALANSON B. GRISWOLD.
JOHN M. BRADBURY.

Witnesses:
RUSSELL S. WALTHEN,
WM. C. HOOPMAN.