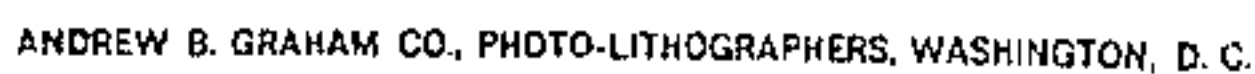


958,235.

Patented May 17, 1910.





# UNITED STATES PATENT OFFICE.

PAUL DESTEFANI, OF JOHANNESBURG, TRANSVAAL, ASSIGNOR OF ONE-HALF TO THE  
NEW TRANSVAAL CHEMICAL COMPANY, LIMITED, OF JOHANNESBURG, TRANS-  
VAAL.

## ILLUMINATING DEVICE FOR BURNING WAX.

958,235.

Specification of Letters Patent.

Patented May 17, 1910.

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*To all whom it may concern:*

Be it known that I, PAUL DESTEFANI, a subject of the King of Italy, and resident of Johannesburg, Transvaal, have invented certain new and useful Improvements in Illuminating Devices for Burning Wax, of which the following is a specification.

This invention relates to a means or device for burning paraffin wax, stearin, tallow or other liquefiable and inflammable grease, fat, or oil or suitable product thereof, for illuminating and other purposes. The inflammable material is most conveniently used in the form of a solid.

The invention has been primarily designed for the use of miners or other underground workers as a substitute for candles or other illuminants, although it may be employed for any other purpose for which it may be found applicable.

The device consists essentially of a cylindrical or other suitably shaped casing adapted to receive the paraffin wax or other liquefiable and inflammable material, and a wick holder constructed to provide a passage or passages from the casing to the wick along which the melted inflammable material may pass to the wick for combustion. The inflammable material, hereinafter referred to as wax, is liquefied by the heat conducted to the casing or casing cover or both, by those parts providing the passage from the casing to the wick. A valve is preferably provided for regulating or controlling the supply of the wax to the wick, as required, and the wick holder is preferably constructed with one or more projections in proximity to the flame for conducting the heat to the casing cover to melt the wax. A reservoir for the melted wax is preferably provided in the passages leading from the casing to the wick. The wick holder is preferably so constructed that it can be placed in a vertical position irrespective of the position of the casing. A spring positioned in the casing beneath the cylinder or block of wax, serves for advancing the wax to provide a continuous supply as it is consumed, and also for forcing the melted wax along or through the passages leading from the casing to the wick.

The invention will be described in detail by aid of the accompanying drawing, in which—

Figure 1 illustrates the casing in elevation, and wick holder in sectional elevation. Fig. 2 is a part sectional elevation of the casing and wick holder on a plane indicated by the dotted line  $x-x$  in Fig. 1. Fig. 3 is an elevation of the wick holder, detached, and taken at right angles to the plane of Fig. 2. Fig. 4 is a plan of the ring 23, detached. Fig. 5 is a part sectional elevation of a modified form of the wick holder. Fig. 6 is an elevation of a handle and support for the device, and Fig. 7 is a plan of Fig. 6.

The device comprises the preferably cylindrical and hollow casing 1, which may, as shown, be conveniently constructed of two parts. To the one part is screwed, soldered or otherwise suitably attached a cylindrical piece or band 2 in which are provided slots 3 adapted to be engaged by pins or projections 4 provided on the other part, to detachably connect the two parts. The one end of the casing 1 may, as shown, be constructed to provide a chamber or space 5 to serve as a holder for a supply of wicks for use with the apparatus. This end of the casing 1 may be closed by means of a cap or cover 6 provided with slots 7 engaging pins or projections 8 on the end of the casing.

Inside the lower end of the casing 1 is suitably fixed a disk or diaphragm 10. To this diaphragm 10 is fixed one end of a coiled spring 11, which, as hereinafter explained, serves to advance the block of wax as it is consumed. This connection is shown comprising a disk 12 soldered or otherwise suitably attached to the end of the spring, a screw-threaded pin 13 which projects through holes in the disks 10, 12, and the retaining nuts 14. To the other extremity of the spring 11 is attached a disk 15 which operates as a piston inside the casing 1 and is adapted to engage the inner or lower end of the piece of wax 16. This piston 15 may be conveniently constructed of leather, rubber, or other suitable material. It is attached to the end of the spring 11 by means of plate 17 soldered or otherwise fixed to the spring, and the pin 18 formed with a head which, as shown, may be countersunk



in the disk 15, and a split pin 19 or equivalent engaging a hole through the pin next the plate 17. A chain 20 is preferably provided attached at the one end to the pin 13  
5 and at the other end to the pin 18, for limiting the movement of the piston 15 inside the casing. In Fig. 2 the chain 20 is shown taut and the spring 11 at its maximum degree of expansion. This insures that a  
10 small portion of the piece of wax 16 remains in the casing 1 in a solid form and prevents the melted wax passing into the casing 1 below the piston 15. When the parts assume the position shown in Fig. 2 then a  
15 further piece of wax is inserted in the casing 1 above the piston 15, the spring being thereby placed in compression to advance the wax as it is consumed. When semi-solid or thick oils etcetera are used, then the piston 15 is necessarily made with a sliding fit  
20 inside the casing so as to prevent the passage of the oil between the casing and the piston.

The wick holder is screwed, soldered or  
25 otherwise suitably attached to a suitably thin metal disk 21 which is detachably connected to the casing 1 by the following means. The end of the casing 1 is formed with an external annular flange 22 and  
30 around the end of the casing is arranged a ring 23 shown in Fig. 4. This ring 23 is formed internally with four (more or less) pins or projections 24 which are adapted to engage the underside of the flange 22 and  
35 prevent the transmission of too much heat to the casing 1. This ring 23 is constructed with an external screw-thread and with a preferably milled flange 25. On the top of the flange 22 is arranged a leather or other  
40 suitable resilient washer or packing ring 26, next which is placed the disk 21 carrying the wick holder. 27 is a nut or cap which is adapted to screw over the exteriorly threaded portion of the ring 23 to fix these  
45 several parts to the casing flange 22. The piece of wax 16 is forced into contact with the inside of the disk 21 by the spring 11. When the device is in use the disk 21 is sufficiently heated to melt the wax.

50 The wick holder, in the form shown in Figs. 1, 2 and 3, comprises the burner consisting of the curved tube 28 formed in one piece with or suitably attached to a cylindrical piece 29 which constitutes a reservoir  
55 for the melted wax and from which reservoir the wax passes through an aperture 30 to the wick 31. The wick tube 28 is constructed with a boss 32 formed with a screw-threaded hole in alinement with the aperture 30 between the reservoir 29 and tube  
60 28. 33 is a screw-valve, which as shown in Fig. 1 is adapted to regulate the supply of melted wax to the wick 31. The handle 34 of the valve 33 is preferably constructed

with holes 35 and fitted in the rim with a  
65 coiled wire 36 to prevent it becoming too hot to be conveniently handled. The cylindrical member 29 is constructed (see Fig. 2) with a flange portion 37 which fits a cylindrical  
70 recess in a part 38 formed in one piece with or attached to a vertical tubular member 39 which is screwed, soldered or otherwise suitably attached to the disk 21. The  
75 flange 37 is revoluble in the recess and is retained in position therein by means of a ring 40 fixed by screws 41 to the part 38 in which the recess is provided. The flange  
80 37 is constructed with a conical projection fitting a conical hole 43 in the part 38. The tube 39 which serves for conducting the melted wax from the casing 1 to the reservoir 29 is formed with projections 44 which  
85 serve for conducting heat to the wax 16. The melted wax passes from said tubular member 39 through the conical hole 43 and through a hole in the center of the flange  
90 37 to the reservoir 29. The burner 45 is provided with two (more or less) upwardly and outwardly curved projections 46 which being in close proximity to the flame become  
95 heated, the heat being conducted through the several parts of the wick holder to the disk 21 to melt the wax.

In the modified form of wick holder illustrated in Fig. 5, the tube 47 fixed to the  
95 disk 21 is formed or connected with an exteriorly coned part 48 which constitutes the reservoir, and the tube 49 constituting the burner is formed with an internally coned part 50 which is adapted to fit over and  
100 rotate upon the coned part 48. The melted wax passes from the tube 47 to the interior of the cone 48 through the hole 51 and from the interior of the cone through holes 52 and coincident holes 53 formed in the mem-  
105 ber 50 to the curved wick-tube 49. The outer cone 50 is rotatably connected to the inner cone 48 by means of nut 55 and washer 56 engaging a screw-threaded projection 57  
110 formed upon or fixed to the inner cone 48.

In Figs. 6 and 7 I show a contrivance which may be used either for carrying the device by hand or for supporting it on a  
convenient stationary or movable object. This contrivance consists of a blade 58,  
115 which as shown, is preferably pointed so that it may penetrate a crevice in the rock or a mine prop or other timber, and a hook 59 for hanging it from any convenient support. The blade 58 is constructed with a  
120 square projection 60 adapted to engage a square hole provided in a socket 61 fixed to the casing. This contrivance may be constructed as shown to provide both hook 59 and blade 58 or with either the hook or the  
125 blade as desired.

The wick 31, as shown in Fig. 1, is of a sufficient length to project to the bottom of the



wick tube 28 and to extend sufficiently far above the tube. It is made of any ordinary material employed for making candle wicks, or of other suitable material. It is saturated and coated with wax or other suitable material, and is preferably treated before the wax is applied with a solution of acetic acid and water (in approximately equal quantities) or other suitable liquid to prevent it carbonizing too quickly or getting hard and brittle.

In using the device the piece of wax 16 having been placed in the casing 1 and the wick 31 in the wick tube 28, the wick is ignited and the casing inverted so as to direct the heat on to the wick holder and casing cover to heat these parts sufficiently to melt the surface of the wax. It is only necessary for the device to be inverted a very short time to accomplish this. The supply of melted wax is then continuous as sufficient heat is conducted to the disk 21 and top of the casing 1 through the parts in which are formed the wax supply passages. The casing 1 may be placed in either a horizontal or vertical position or in any intermediate position and the wick tube 28 be rotated to maintain the wick vertical.

What I claim as my invention and desire to protect by Letters Patent is:—

1. A device of the kind described comprising a casing for inflammable material, a wick holder connected to the casing, a wick in said holder, said holder having a passage leading from the casing to the wick, a valve for regulating the supply of the inflammable material through said passage and means for forcing the inflammable material from the casing to the wick.

2. A device of the kind described comprising a casing for inflammable material, a cover for said casing, a wick holder connected to said cover, a wick in said holder, said holder having a wick space and a passage leading from the casing to said wick space, and serving to conduct heat from the flame to the inflammable material, and means for maintaining the inflammable material in contact with the cover and for forcing the inflammable material when liquefied through the said passage to the wick.

3. A device of the kind described comprising a casing for inflammable material, a cover for said casing, a wick holder connected to said cover, a wick in said holder, said holder having a passage leading from the casing to said wick and constituting means for conducting heat from the flame to the inflammable material, means for maintaining the inflammable material in contact with the cover and for forcing it when liquefied through the passage to the wick, and a valve for regulating the supply of combustible liquid through said passage.

4. A device of the kind described comprising a casing for inflammable material, a cover for said casing, a wick, and a wick holder rotatably connected to said cover, said holder having a passage leading from the casing to the wick, and in which passage the whole of the wick is arranged, the holder also constituting means for conducting heat from the flame to the inflammable material, and means for forcing the liquefied inflammable material from the casing to the wick.

5. A device of the kind described comprising a casing for inflammable material, a wick, and a wick holder connected to said casing, said holder having a passage leading from the casing to the wick, and in which passage the whole of the wick is arranged, a reservoir in said passage from which the inflammable material passes directly to the wick, a valve in the passage for controlling the supply of inflammable material to the wick, and means for forcing the inflammable material from the casing to the wick.

6. A device of the kind described comprising a casing for inflammable material, a wick, and a wick holder comprising a movable wick tube or burner and a reservoir from which the inflammable material passes directly to the wick, said holder having a passage for the inflammable material leading from the casing to the reservoir.

7. A device of the kind described comprising a casing for inflammable material, a wick, and a wick holder comprising a movable curved wick tube or burner and a reservoir from which the inflammable material passes directly to the wick, said holder having a passage for the inflammable material leading from the casing to the reservoir, a valve attached to the wick holder for controlling the supply of inflammable material to the wick, and means for forcing the inflammable material from the casing to the wick.

8. In a device of the kind described, a casing for inflammable material, a wick, and a wick holder comprising a tubular member fixed to and in communication with said casing, a wick tube or burner rotatably attached to said tubular member, and a valve for controlling the supply of combustible material to the wick, the whole of the wick being arranged in said tube or burner.

9. In a device of the kind described, a casing for inflammable material, a wick, and a wick holder comprising a tubular member fixed to and in communication with said casing, a wick tube or burner rotatably attached to said tubular member, and a valve for controlling the supply of combustible material to the wick, the whole of the wick being arranged in said tube or burner, and



the wick tube or burner having projections which serve for conducting heat to the inflammable material in the casing.

10. A device of the kind described comprising a casing for inflammable material, 5 a wick, and a wick holder comprising a stationary tubular member affixed to and in communication with said casing and a movable wick tube or burner attached to said 10 stationary tubular member, said wick tube or burner having a chamber which serves as a reservoir for the inflammable material, the part forming the reservoir being constructed with a flange portion fitting a recess provided in the stationary tubular member, 15 and a ring for revolubly retaining said flange in said recess.

11. A device of the kind described comprising an externally flanged casing for inflammable material, a wick, and a wick 20 holder connected to said casing and having a passage leading from the casing to the wick, and means for detachably fixing the wick holder to said casing comprising a 25 thin disk, a ring adapted to engage the external flange on the casing and a cap having screw-threaded engagement with the ring and engaging the disk aforesaid.

12. A device of the kind described comprising an externally flanged casing for inflammable material, a wick, and a wick 30 holder connected to said casing and having a passage leading from the casing to the wick, means for detachably fixing the wick holder to said casing comprising a thin disk, 35 a ring constructed with projections adapted to engage the external flange on the

casing, and a cap having screw-threaded engagement with the ring and engaging the disk aforesaid, and packing between the disk 40 and casing.

13. A device of the kind described comprising an externally flanged casing for inflammable material, constructed in two separable parts, a wick, and a wick holder 45 comprising a fixed part and a rotatable part of burner, a removable cover for one end of the casing, a disk fixed within the casing, a spring within the casing, means for attaching the spring to the aforementioned disk, a chain for limiting the movement of said spring, a disk fixed to the 50 other end of the spring, and forming a piston within the casing for feeding the inflammable material to the wick, a removable disk forming a cover for the other end of the casing above the inflammable material, 55 a ring adapted to engage the flange on the end of said casing and a nut screwed to said ring for securing the disk on the end of the casing, the fixed part of the wick holder being attached to said disk and said fixed and rotatable parts having passages leading from the casing to the wick, and a 60 valve attached to the wick holder for regulating the supply of inflammable material to the wick. 65

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses; this 14th day of December, 1907. 70

PAUL DESTEFANI.

Witnesses:

CHAS. OVENDALE,  
R. OVENDALE.