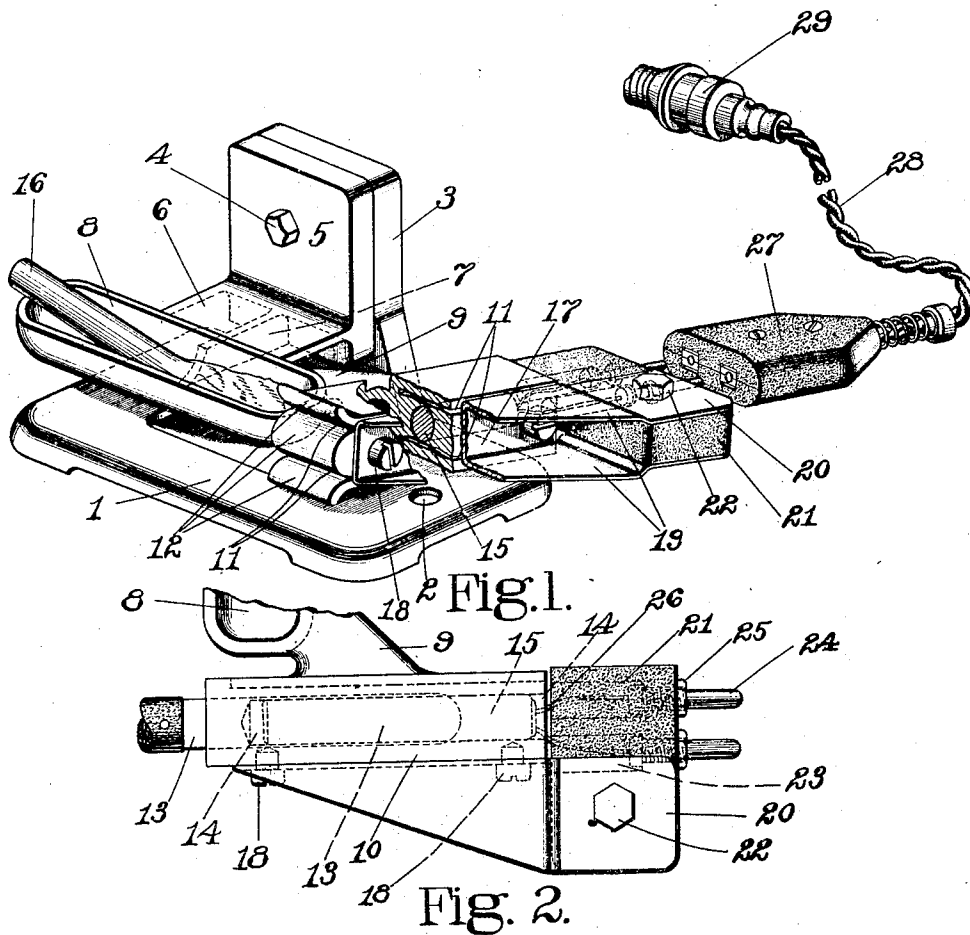


F. M. FURBER.
KNIFE AND WAX HEATER.
APPLICATION FILED NOV. 4, 1914.

1,264,174.

Patented Apr. 30, 1918.



WITNESSES.

Elizabeth C. Coyle
O. Blanche Hargrave

INVENTOR.

Frederick M. Furber
By his Attorney,
Nelson M. Howard

UNITED STATES PATENT OFFICE.

FREDERICK M. FURBER, OF REVERE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

KNIFE AND WAX HEATER.

1,264,174.

Specification of Letters Patent.

Patented Apr. 30, 1918.

Application filed November 4, 1914. Serial No. 870,314.

To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Knife and Wax Heaters, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

It is frequently necessary in the process of manufacturing shoes to apply a filler, as for example, wax, to the leather to fill crevices or build up surfaces in order to prepare them for reenameling or polishing. For instance in the manufacture of patent leather shoes, it is found that some of the tips become bruised or scratched, and such damage is repaired in the manner indicated. Crevices in heels are also filled in this way. It is necessary to apply this wax in a melted condition, in order that it may spread or run properly, and the wax is often applied and rubbed in by a small blunt knife blade which is heated hot enough to keep the wax on it in proper condition but not hot enough to burn the leather. It is to be understood that the term "knife" in the following specification and claims is not to be taken as restrictive, but is intended to denote any spatula, or thin bladed wax applying tool. Also, the term "wax" is intended to denote any plastic filling substance which softens under the influence of heat. It is the purpose of my invention to supply a convenient, practical device for preparing the wax and the knife for this operation.

Hitherto it has been customary to heat the knife by holding it down upon the flat upper surface of a heated member, for example a steam chest, by means of a pivoted weighted member or by means of a resilient clamping member, but neither of these constructions is satisfactory because, among other things, of the expense involved in manufacturing them, of their liability to get out of order and of the inconvenience in putting the knife in place to be heated. One of the features of the present invention comprises a body having an aperture to receive a knife blade, the walls of said aperture being rigid and immovable, and a source of heat arranged adjacent to said aperture.

It is desirable that the operator should

have accessible at all times wax of different consistencies, and to this end another feature of the invention comprises a receptacle for wax and means for maintaining different portions of said receptacle at different temperatures. In the illustrative apparatus this receptacle is shown as a trough to one end of which heat is supplied in such amount that in one end of the trough the wax is liquid while in the other end it is solid.

The knife should at all times be hotter than the wax which is being applied to the shoe, and in order to insure this condition another feature of the invention comprises a body having a blade-receiving recess and wax-holding receptacle and means for maintaining said recess at a higher temperature than said receptacle.

These and other features of the invention including certain details of construction and combinations of parts will be described in connection with an illustrative apparatus and pointed out in the appended claims.

In the drawings,—

Figure 1 is a broken-away perspective view of the device, and

Fig. 2 is a broken-away view perpendicular to the sloping upper face of the knife heating element, showing a knife in position.

The base 1 is adapted to be attached to a work-bench or table by a screw or bolt in the hole 2. It carries at its rear an upright standard 3 upon which the knife and wax-heating element is fastened by the bolt 4. The heating element is formed of a single metal casting, having a vertical flange 5 which bears against the standard 3. Extending from the side of the flange 5 are the webs 6, 7, which carry at their outer ends the wax holding trough 8. A web 9 extends from the end of the trough 8, and carries the knife heater 10. The web 9 is of small cross-section as compared with the elements it connects. The body of the heater is roughly of the form of a rectangular parallelepiped having its long axis extending downward and backward, and at right angles to the long axis of the trough 8. Two slots 11 are sawed lengthwise of the knife heater 10, and the front ends of the slots have lips 12, to facilitate the entry of the knife blade 13, the two slots 11 providing for the simultaneous heating of two knives when desired. Longitudinally through the

center of the knife heater is drilled a hole 14, extending from the rear end nearly to the front. This hole lies between the slots 11 and its diameter is not quite equal to the distance between their inner walls. A thin wall of metal is thus present between the hole 14 and the slots 11. In this hole is placed a cylindrical electrical resistance cartridge 15. The passage of electrical current through this cartridge generates heat which is rapidly conducted through the body of the knife heater, and communicated to the knives in the slots 11. It will be noted that the downward and backward slope of the knife heater 10 and, consequently, of the slots 11 facilitates the convenient insertion of the knives and causes the force of gravity to assist in positively holding them in place. The heat generated by the current in the cartridge 15 is conducted through the web 9 into the trough 8. It is obvious that this heat becomes more and more dissipated into the surrounding air the farther it gets from its source 15. As it proceeds through the trough 8 from one end to the other, so much of it is thus lost that, though the right end of the trough in Fig. 1 is kept well above the melting point of the wax 16, the left end is well below this melting point. It will therefore be obvious that the trough 8 will contain wax, ranging from the fluid to the solid state, and that the operator can obtain from it wax of any consistency desired for any specific operation.

For instance, if a slight scratch in the enamel is to be repaired, the operator will pick up a quantity of thoroughly fluid wax since only wax of this consistency will enter the scratch. When the scratch has been filled, the place is reenameled and finished. On the other hand, if the enamel has been destroyed over comparatively large areas, as happens when the wrinkled leather due to the lasting of the tip is removed, it is necessary to use wax that is not thoroughly melted, as very fluid wax would soak freely into the damaged leather and a great deal of wax would be required to form a surface for reenameled.

It has been found in practice that the knives 13 sometimes fall or are knocked out of the slot 11. It has also been found that if the electric lead wires are connected directly to the cartridge 15, they are frequently short circuited by the action of the heat and the carelessness of the operators. I have therefore provided means for avoiding these two difficulties. A retaining plate 17 is fastened by the screws 18 to the side of the knife heater 10 in position to cover the edges of the slots 11. Two wings 19 are bent at right angles to the plate 17, and have longitudinal extensions 20. The extensions 20 are bent inwardly to fit a standard terminal block 21, which is fastened between

them, adjacent to the rear end of the knife heater 10, by the bolt 22. It will be observed that there is a slight separation between the block 21 and the knife heater 10. This prevents to a large extent the conduction of heat into the block 21. The block 21 is made of a substance which does not conduct electricity, and is a poor conductor of heat, and has two holes 23 bored and counter-bored in it. These holes carry the terminals 24, which are headed and threaded at their inner ends, reduced at their outer ends, are inserted through the counter-bored ends of the holes 23 and fastened in place by the nuts 25. The lead wires 26 of the cartridge 15 are brazed to the heads of the terminals 24. The terminals 24 are of such size and distance from each other as to fit the well-known commercial receptacle 27, to which may be attached the flexible duplex conductor 28 and standard separable plug 29.

In practice, the power consumption of the cartridge 15 is so adjusted as to maintain the apparatus at the desired temperature. The two slots 11 permit the device to be used by two operators, who insert their knives in the slots 11 and place a suitable quantity of wax in the trough 8. When the knives have reached the temperature of the heater 10 and the wax in the trough 8 has been heated to the progressively varying temperature of the trough 8, the apparatus is ready for use, and the operators, removing the knives from the slots 11, may pick up a suitable quantity of wax of the desired consistency from the trough 8, and apply it to the leather.

It will be noted that owing to the gradual and progressive dissipation of heat above noted, the knife heating portion 10 of the apparatus will be considerably hotter than any part of the trough 8, since it is much closer to the heat generating cartridge 15. This arrangement keeps the knives 13 hotter than the hottest portions of the melted wax, and enables the knives to keep the wax melted during its application to the leather, though the knives lose heat rapidly when removed from the heater. The arrangement mentioned also insures the quick reheating of the knives after they have been used.

If desired the device, or any part of it, may be covered by a non-conductor of heat, in order to economize heat or to regulate the progressively varying temperature of the apparatus.

It will be observed that the form of the body 10 corresponds substantially to that of the knife blade which is to be heated by it, thus eliminating waste of power, since the radiating surface of the body is thereby reduced to a minimum. It will be noted also that the heating cartridge 15 is sub-

stantially co-extensive with the slots 11, thus insuring uniform and economical heating of the knife blade 13.

Although the invention has been set forth in connection with a particular apparatus it should be understood that the invention is not limited in the scope of its application to the particular apparatus which has been shown and described.

10 Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A knife heater comprising a body having a substantially blade-shaped recess and a long electrical heating unit, disposed substantially co-extensive with said recess and parallel thereto, being thereby adapted for uniformly and economically heating an elongated knife blade placed in the recess.

20 2. A knife heater comprising a body having a plurality of blade-receiving slots and a recess adapted to receive a source of heat, arranged between said slots.

3. A knife heater comprising a body adapted to receive a knife blade and an electrical heating unit, a terminal block for said unit, and an element adapted to hold said terminal block slightly separated from said body.

30 4. A knife heater comprising a body having a blade-receiving recess and adapted to receive an electrical heating unit, a terminal block for said unit, and an element adapted to cover said recess and to connect said block to said body.

35 5. A knife heater comprising a body having a blade-receiving recess, and adapted to contain an electrical heating unit, and a cover plate for said recess having a wing adapted to carry a terminal block for said heating unit.

6. A knife heater comprising a body having a blade-receiving recess, and adapted to carry an electrical heating unit, and a U-shaped element adapted to cover said recess, and to receive between its arms a terminal block for said heating unit.

7. A knife heater comprising a metallic stand with a cored recess therein longitudinally of said stand to receive a removable heating unit, a top portion united with said stand and spaced therefrom, adapted to receive a knife blade between said top and stand.

55 8. A wax heater comprising a wax-holding receptacle, a body adapted to carry an electrical heating unit, and a heat conducting web connecting one side of said receptacle and said body, whereby the heat conducted from said body reaches different parts of said receptacle in substantially different quantities.

9. A wax heater comprising a receptacle having walls of substantially uniform thickness adapted to hold wax, a member having good heat conductivity in fixed thermal relation to one extremity of said receptacle, and means for heating said heat conductive member at a point remote from the receptacle, whereby the contents of the receptacle at a point adjacent the heat conducting member will be heated to a substantially higher temperature than the contents at a point remote therefrom where they are kept cool by radiation.

10. A wax heater comprising a receptacle adapted to hold wax, and means for maintaining different parts of said receptacle at temperatures varying progressively between the temperatures of melted and solid wax.

11. A combined knife and wax heater comprising a body having a blade-receiving recess, a wax-holding receptacle, and a source of heat arranged nearer said recess than to said receptacle.

12. A combined knife and wax heater comprising a body adapted to receive a knife blade, a receptacle adapted to hold wax, and means for maintaining the body at a higher temperature than the receptacle.

13. A combined knife and wax heater comprising a body adapted to impart heat to a knife blade, a receptacle adapted to hold wax, and means for heating said body and said receptacle to different temperatures.

14. A knife heater comprising a block of heat conducting material having a knife-receiving slot adjacent to one side thereof and a recess located between said slot and the opposite side of said block, and a heat unit located in said recess.

15. A knife heater comprising a block of heat conducting material having a knife-receiving slot adjacent to one side thereof and a recess extending lengthwise of said slot and located in proximity thereto between said slot and the opposite side of the block and a heat unit occupying a position in said recess to heat the blade of the knife.

16. A combined knife and wax heater comprising a stationary support, a receptacle for wax, a web connecting said support and receptacle, a knife holder, a heat conducting member of small cross-section connecting said knife holder with one end of said receptacle, and means for heating said knife holder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK M. FURBER.

Witnesses:

LAURA M. GOODRIDGE,
CHESTER E. ROGERS.