UNITED STATES PATENT OFFICE

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SOLDER-SMOOTHING PADDLE

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4 Claims. (Cl. 113—111)

This invention relates to an improved soldering paddle.

One customary method of repairing dents and scratches in automobile bodies and other sheet metal surfaces is to fill the imperfections with solder carefully smoothed to conform to the desired contour of the surface. In this method, the solder, after being applied roughly to the surface, is held barely molten with a blowtorch and is smoothed down carefully with a wooden paddle. In order to prevent the paddle from sticking to the hot pasty solder, the paddle must be kept thoroughly oiled by dipping it into a pail of oil after every few smoothing strokes. Even in the hands of the most skillful workman, the life of the paddle is short, often only a few minutes, since the heat of the blowtorch and the solder tends to char the wood surfaces and to destroy their smoothness. Moreover, even with extreme care, solder occasionally sticks to a paddle, at once rendering it useless. The entire operation constitutes a real fire hazard, particularly in repair garages, where many flammable materials are usually present.

With these factors in mind, it is the principal object of the present invention to provide an improved solder-smoothing paddle which may be used day after day without charring seriously or becoming rough, and without showing any tendency to stick to hot solder. Another object is to provide a paddle which in use presents little, if any, fire hazard. A further object is to provide a paddle which makes the solder-smoothing operation so much easier that it may be carried out successfully by new operators after a comparatively short training period.

These objects are realized in the invention by a paddle comprising a relatively flat thin shoe of oil-permeable material having a solder-smoothing face, the shoe being supported by a body containing an oil reservoir which is open to the other face of the shoe. In use of the paddle, oil from the reservoir seeps slowly through the shoe onto the working face as a constantly renewed film. Under these conditions, the paddle may be maintained in almost continual contact with hot pasty solder without losing its effectiveness as a smoothing tool.

10 The invention, in a preferred form, is shown in the accompanying drawings, in which
Fig. 1 is a vertical longitudinal cross-section of the paddle;
Fig. 2 is a front elevation; and Fig. 3 is a perspective view.

In the drawings, the paddle comprises a body portion 4 formed of a hollow metal handle 5 closed at one end by an inside-threaded cap 6 which screws onto corresponding threads on the handle. At the other end, the body is flared outwardly and downwardly to form a bell-like opened shoe-receiving portion 7 terminating in a flat flanged edge 8. Against the flanged edge 8 is fitted a smoothing shoe 9 consisting of a flat relatively thin slab 10 of wood in which the grain is perpendicular or oblique to the faces of the shoe. The lower or exposed face 10 of the shoe is shaped to an elongated pointed solder-smoothing surface and is carefully sanded to remove all roughness. The upper or inside face 11 is plane and mates with the flange 8. The body and shoe are held together by screws 12 which penetrate the flange 8, a ring gasket 13 being interposed to prevent leakage.

The hollow interior or reservoir within the body 4 is kept filled with a lubricating oil, or better, a mixture of approximately equal volumes of hydrocarbon lubricating oil and lard oil.

In smoothing solder, the operator grasps the paddle by the handle 5 and applies the shoe 9 to the solder held pasty by a torch in a manner closely similar to that in which conventional wooden paddles have been used. However, unlike such paddles, the smoothing surface of the shoe remains covered at all times with an oil film seeping through from the reservoir. This film is largely self-regulating, since little oil flows except when the shoe is heated by contact with hot solder, at which time the oil flows more freely until the heat is removed. Further unlike conventional paddles, there is little, if any, tendency toward charring or scoring of the working face of the shoe, since the latter is maintained comparatively cool by transmission of heat to the mass of oil in the body. Inasmuch as smoothing is seldom a continuous operation, the paddle rarely if ever becomes too hot to hold. If desired, however, the handle 5 may be wrapped with heat-insulating tape.

It is highly desirable that the shoe 9 be formed of a wood which is scratch-resistant when heated. The wood should also have a degree of porosity such that it remains saturated with oil at room temperature but does not permit appreciable seepage until it is heated. White birch has been found most satisfactory, although basswood is adequate.

With a newly-made paddle, oil flow does not start until the wood is saturated. Such a paddle is best started by immersing the shoe for a few
minutes in a shallow pool of hot oil and rubbing it against an oily surface.

It will be appreciated that the foregoing description is illustrative rather than strictly limitative. For example, the size and shape of the shoe may vary on paddles used for different types of solder-smoothing operations. The shoe may be clamped or threaded to the body instead of held by screws as shown. Other variations within the scope of the following claims will doubtless occur to those skilled in the field.

We therefore claim as our invention:

1. A solder-smoothing paddle comprising a relatively flat thin oil-permeable wood shoe the exposed face of which is shaped to a solder-smoothing surface and a body holding the shoe and forming an oil reservoir unrestrictedly open to the entire back face of the shoe.

2. A paddle according to claim 1 wherein the grain of the wood forming the shoe is at an angle to the faces of the shoe.

3. A paddle according to claim 2 wherein the shoe is formed of white birch.

4. A paddle according to claim 2 wherein the shoe is formed of basswood.

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REFERENCES CITED
The following references are of record in the file of this patent:

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<th>UNITED STATES PATENTS</th>
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<tr>
<td>Number</td>
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</tr>
<tr>
<td>227,438</td>
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<tr>
<td>534,741</td>
</tr>
<tr>
<td>1,938,030</td>
</tr>
<tr>
<td>2,043,145</td>
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<tr>
<td>2,157,670</td>
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<tr>
<td>2,228,213</td>
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<td>2,361,411</td>
</tr>
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<td>2,460,560</td>
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