Oct. 7, 1952 R. H. GREEN 2,613,310

ELECTRICALLY HEATED PAINT REMOVING TOOL

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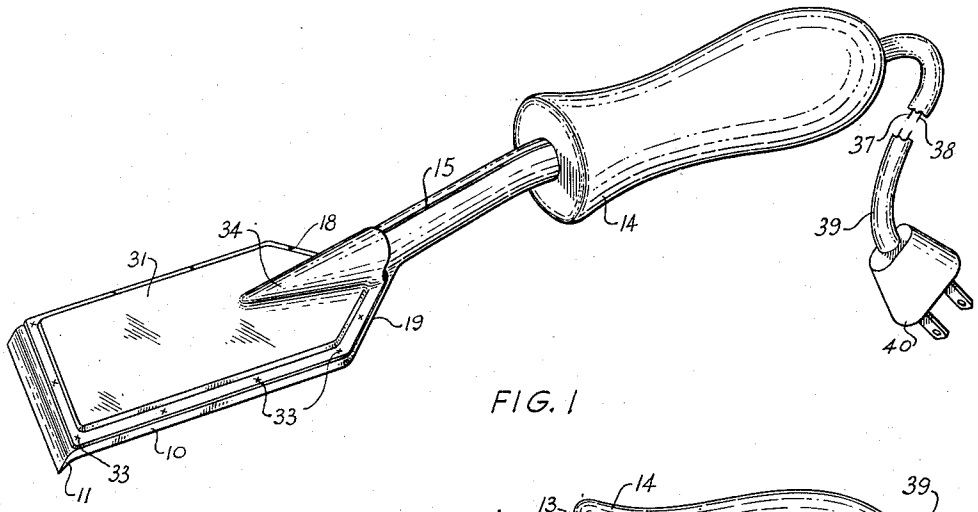



FIG. 1

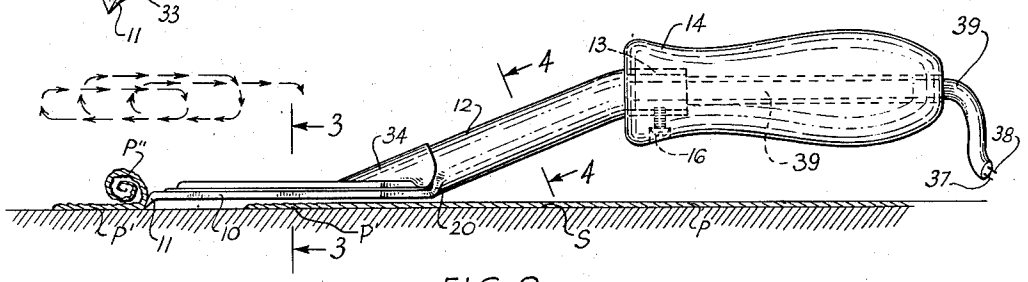



FIG. 2

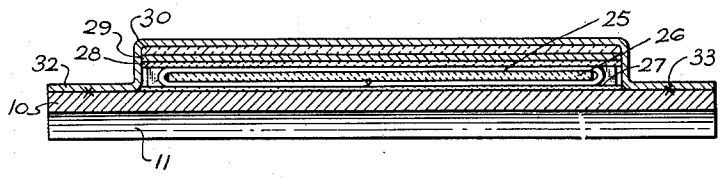



FIG. 3

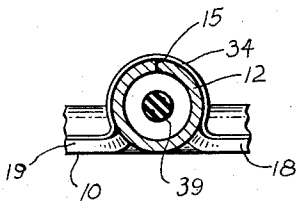



FIG. 4

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## ELECTRICALLY HEATED PAINT REMOVING TOOL

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4 Claims. (Cl. 219—21)

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This invention relates to a tool for removing paint and the like, and more particularly to an electrically heated hand tool for use in scraping paint and the like from wood or metal surfaces.

It has been proposed to provide electrically heated paint removing tools but heretofore such tools have been bulky and relatively costly and have been difficult to use because of their awkward shapes and because the tools have been subject to clogging with the paint removed by the tools.

A general object of the present invention is the provision of an electrically heated tool for removing paint and the like in which the above mentioned difficulties have been obviated. Another object is the provision of a compact, light and efficient tool for removing paint and the like which can be manufactured at reasonable cost. Further objects are the provision of a tool which can be used efficiently by unskilled workers; the provision of a tool in which the danger of burning the paint is minimized; the provision of a tool that is not subject to clogging or fouling by the paint; the provision of a paint removing tool of such character which is light in weight; and the provision of a tool which is shaped so that it naturally takes the correct position for use when grasped by the user's hand.

Further objects of the invention will become apparent from the following description of a preferred form thereof, reference being made to the accompanying drawings in which Figure 1 is a perspective showing a tool embodying the invention; Figure 2 is a side elevational view of the tool of Figure 1; Figure 3 is a transverse sectional view on an enlarged scale and with the thickness of certain of the parts exaggerated, taken along the line 3—3 of Figure 2; and Figure 4 is a transverse section taken along line 4—4 of Figure 2.

Briefly, I attain the above enumerated and other objects of my invention by providing a tool embodying a flat electrically heated blade which is adapted to be disposed close to but spaced from the surface of the work from which the paint or the like is to be removed whereby the paint or the like is heated and softened by heat radiating from the adjacent surface of the blade. The paint is scraped from the surface by a sharpened scraping edge formed integrally with the blade and slanting downwardly and forwardly toward the surface to be scraped at the front of the blade. At the rear of the blade, the blade material is bent into an integral hollow shank portion extending rearwardly and upwardly away from the blade and the surface to be scraped and terminating in a handle supporting portion extending rearwardly and lying in a plane substantially parallel to but offset from the plane of the blade. A handle composed of wood or other material which is a poor conductor of heat is mounted on the handle supporting portion, the arrangement being such that when the handle is parallel to the surface of the work and the scraping edge in engagement with the work, the heated blade is parallel to the surface and out of contact with the surface but closely spaced thereto. The blade is heated by an electric resistance heating element mounted on the upper side of the blade which is away from the work and enclosed in a metallic housing member. Current is supplied to the heating element through wires extending through the handle and the hollow shank portion to the blade.

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Referring now to the drawings, the flat, heated blade is indicated at 10, the sharpened scraping edge at 11, shank at 12 and the handle supporting portion at 13. Preferably these parts are formed integrally from a single piece of steel strip. The material is of sufficient thickness so that the blade will not be deflected to any substantial extent under the pressures exerted by the user; for example, stock having a thickness of about $\frac{1}{16}$ inch is satisfactory.

The scraping edge 11 is provided simply by bending the forward end of the blade so that it extends downwardly and forwardly from the front of the blade at an angle of, for example, about 65° and sharpening the downwardly bent portion to provide a scraping edge. The edge is disposed below the under surface of the blade by a distance greater than the thickness of the usual paint film.

To provide a support for the handle 14, the material of the blade is continued rearwardly and bent into the form of a tube to provide the tubular shank 12, the edges of the material abutting as at 15. The shank extends rearwardly and upwardly away from the blade and the surface to be scraped, which is indicated at S in Figure 2, at an acute angle; in the drawing this angle is a little less than 30°; preferably the angle is within the range of 20° to 45°. The end of the shank portion is bent into substantial parallelism with the blade 10 to provide the handle supporting portion 13 and the handle 14 is slid over the portion 13 and secured thereto as by the set screw 16. For the sake of appearance and in order to eliminate sharp corners, the rear corners of the blade 10 are cut off as indicated

at 18 and 19 so that the rear end of the blade merges into the shank as shown at 20 in Figures 1 and 2.

In order to heat the blade 10, an electric resistance heating element is disposed on the upper side of the blade. This element consists of an appropriate number of turns of nichrome or other suitable resistance wire 25 wound around a sheet 26 of mica or other appropriate insulating material, the turns of wire being spaced in conventional fashion to eliminate short circuiting. The heating element is insulated from the blade 10 by a sheet of mica or other insulating material 27 which is slightly wider and longer than the heating element itself. Above the heating element there is a similar layer of mica or other suitable insulating material 28. Above this is a thin reflective metallic sheet 29 provided to reflect downwardly the heat generated by the heating element, and in engagement with the upper side of the sheet 29 there is provided a thin layer 30 of asbestos or other fireproof heat insulating material.

In order to retain the heating element and the several layers associated therewith in place on the blade and to protect the heating element and the layers, the housing member 31 is preferably employed. Member 31 is a hollow stamping composed of light gauge steel and having a flange 32 which is spot welded to the blade 10 at several points as indicated diagrammatically to 33. The depth of the housing with respect to the thickness of the several layers within it is preferably such that the layers are slightly compressed between the housing and the blade, thus retaining the parts in position and improving the heat transfer to the blade. The housing 31 also has an upstruck conical portion 34, the rear end of which overlies the end of the shank 12 and provides within it a passageway for the leads (not shown) of the resistance wires 25.

The leads are preferably insulated with fiber glass or other heat resistant insulation and extend into the shank 12 where they are spliced to the conductors 37 and 38 of the cord or cable 39 which extends through a central bore in the handle 14; cord 39 is provided at its end with a conventional plug 40 so that the tool can be connected to any ordinary outlet.

In use the tool is positioned with respect to the surface to be scraped as shown in Figure 2. It will be noted that when the handle 14 is parallel to the surface S, then the blade 10 is also parallel and when the edge 11 is in contact with the surface S the blade 10 is disposed close to but out of contact with the upper surface of the paint film P. This is the position the tool naturally takes when the handle is grasped by the user's hand. When the heated blade is so disposed, the paint film P is rapidly heated and softened as diagrammatically indicated at P'. Then the tool is lifted from the work, moved rearwardly a short distance, the edge 11 applied to the softened portion of the film with the blade 10 parallel to the surface and the tool pushed forward to peel the softened paint off of the surface S. The softened paint film is deflected away from the heated surface of the blade 10 by the edge 11 as indicated at P''. While the scraping operation is going on, the heat radiated from blade 10 softens the next adjacent area of the paint, the tool is again lifted from engagement with the surface and moved rearwardly as before, the forward scraping operation is repeated, and so on. The path of the tool is generally as shown by the arrows in Figure 2; the center of the orbit of the tool is moved rearwardly after each forward scraping movement so that the tool and the softening action of the heated blade 10 move rearwardly and on each forward scraping movement the scraping edge acts on newly softened paint.

Inasmuch as the scraping edge is at the extreme forward portion of the tool, the tool can be used in close quarters without difficulty. The scraping edge supports the heated blade out of contact with the softened paint, and the softened paint is deflected away from the heated blade by the scraping edge. The paint does not come into contact with the heated blade; danger of fire is thus eliminated; the blade is maintained in clean condition and ordinarily the operation is carried out without the production of smoke or noxious fumes from the paint. The construction is simple and the device is light so that it can be used without undue fatigue. The disposition of the handle with relation to the blade is such that when the device is in use the blade is naturally positioned correctly with respect to the surface to be scraped. The heating element is efficient and does not become fouled with melted or burning paint. For these reasons the power consumed by the device is small; heating elements of from 150 to 250 watts have operated satisfactorily in tools in which the heated portion of the blade 10 measures approximately 2×3 inches. The tool functions rapidly and economically to remove paint and the like, and because of its simple construction, it can be manufactured at reasonable cost.

Various changes and modifications in the preferred form of the invention described herein will be apparent to those skilled in the art. It is therefore to be understood that my patent is not limited by the foregoing description and that the scope of the invention is defined by the appended claims.

I claim:

1. An electrically heated paint removing tool comprising a flat steel blade having at the forward end thereof an integrally formed downwardly and forwardly extending scraping edge terminating below the plane of the lower surface of said blade, a thin flat electric resistance heating element mounted on the upper surface of said blade, a layer of heat reflecting material disposed above said element, a layer of heat insulating material disposed above said layer of heat reflecting material, a housing enclosing and compressing said heating element and said layers, said housing comprising a hollow steel stamping having a peripheral flange welded to the upper surface of said blade, a hollow shank formed integrally with said blade and extending upwardly and rearwardly from the rear end of said blade and terminating in a handle supporting portion extending rearwardly and parallel to and offset from said blade, said housing having a conical raised portion overlying the end of said shank at the juncture of said shank and said blade, a handle composed of heat insulating material mounted on said handle supporting portion, and conductors extending within said handle, said handle supporting portion, said hollow shank and said conical raised portion for supplying electricity to said heating element.

2. An electrically heated paint removing tool comprising a flat blade having at the forward end thereof an integrally formed downwardly and forwardly extending scraping edge terminating below the plane of the lower surface of said blade,

a thin flat electric resistance heating element mounted on the upper surface of said blade, a layer of heat reflecting material disposed above said element, a layer of heat insulating material disposed above said layer of heat reflecting material, a housing enclosing said heating element and said layers, said housing comprising a hollow stamping having a peripheral flange welded to the upper surface of said blade, a hollow shank formed integrally with said blade and extending from the rear end of said blade and terminating in a handle supporting portion, said housing having a conical raised portion overlying the end of said shank at the juncture of said shank and said blade, a handle composed of heat insulating material mounted on said handle supporting portion and lying parallel to and offset from said blade, and conductors extending within said handle, said handle supporting portion, said hollow shank and said conical raised portion for supplying electricity to said heating element.

3. An electrically heated paint removing tool comprising an imperforate flat blade having at the forward end thereof an integrally formed downwardly and forwardly extending scraping edge terminating below the plane of the lower surface of said blade and below the adjacent lateral edges thereof, a thin flat electric resistance heating element mounted on the upper surface of said blade, a layer of heat insulating material disposed above said heating element, a housing enclosing said heating element and said layer, said housing comprising a hollow stamping having a peripheral flange secured to said blade, a hollow shank formed integrally with said blade and extending upwardly and rearwardly from the rear end of said blade and terminating in a rearwardly extending handle supporting portion, said housing having a conical raised portion overlying the end of said shank at the juncture of said shank and said blade, a handle composed of heat insulating material mounted on said handle supporting portion and extending rearwardly therefrom and being offset from said blade, and conductors extending within said handle, said handle supporting portion, said hollow shank and said conical raised portion for supplying electricity to said heating element.

4. An electrically heated paint removing tool



comprising a flat blade having at the forward end thereof an integrally formed downwardly and forwardly extending scraping edge adapted to scrape upon forward movement of the tool, said scraping edge terminating below the plane of the adjacent lower surface of said blade and below the adjacent lateral edges thereof by a distance greater than the thickness of the usual paint coating, a thin flat electric resistance heating element mounted on said blade and extending over the major portion of the area thereof, a housing enclosing said heating element, said housing comprising a hollow stamping having the peripheral edges thereof secured to said blade, a hollow shank formed integrally with said blade and extending upwardly and rearwardly from the rear end of said blade and terminating in a rearwardly extending handle supporting portion, said housing having a portion overlying the end of said shank at the juncture of said shank and said blade, a handle composed of heat insulating material mounted on said handle supporting portion and extending rearwardly therefrom and being offset upwardly from said blade, and conductors extending within said hollow shank and said portion of said housing for supplying electricity to said heating element.

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