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TOOL FOR REMOVING UNDERSEAL FROM AUTOMOBILE BODIES AND THE LIKE

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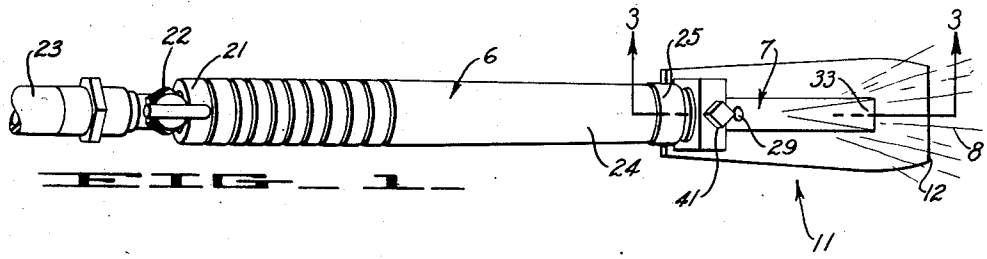



FIG. 1

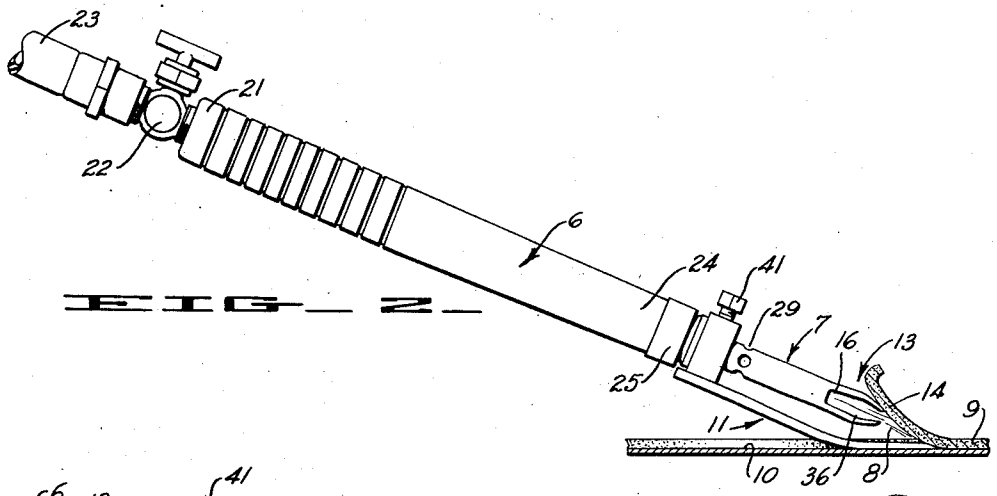



FIG. 2

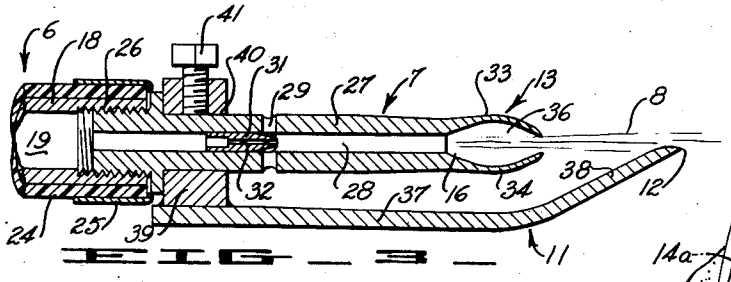



FIG. 3

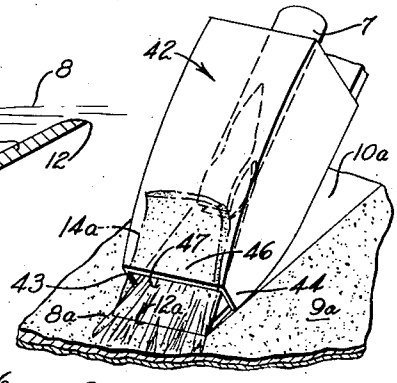



FIG. 5

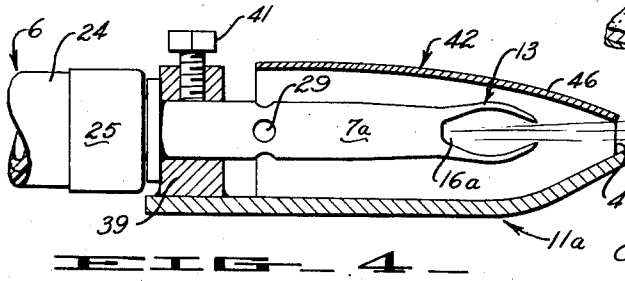



FIG. 4

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# TOOL FOR REMOVING UNDERSEAL FROM AUTOMOBILE BODIES AND THE LIKE

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4 Claims. (Cl. 158—13.6)

The invention relates to hand tools which include a coacting combination of burner and blade functioning to respectively heat and remove surface coatings.

In recent years it has become increasingly popular to apply to the underside of automobile bodies a relatively thick layer of a sealing and sound-deadening material commonly referred to as underseal. This material presents a very tough and durable coating of some elasticity and which, while excellently affording the sealing and sound-deadening characteristic noted, seriously obstructs and interferes with the use and functioning of sheet metal working tools, such as anvils, hammers, picks and the like available for use in repairing damaged body sections such as encountered in the smoothening out of dented, creased or other deformed portions. Accordingly, in the repair of automobile bodies, it is generally necessary to remove the underseal which, as above noted, is an exceedingly tough and durable material, making its removal most difficult. The material is, however, thermoplastic and accordingly I have found it possible to effect its removal by heating and separation by a blade or the like. It is, therefore, a principal object of the present invention to provide a hand tool by means of which the underseal may be quickly, readily and efficiently softened and stripped and removed from the underside of the automobile body.

Another object of the invention is to provide a hand tool of the character described which will effect an undercutting and separation of the underseal in large sheet-like masses and wherein the tool is constructed to prevent blocking or extinguishing of the flame provided by the tool by the covering or clogging action of the material removed.

A further object of the invention is to provide a tool of the character described in which the size and disposition of the flame may be controlled to prevent burning and/or overheating of the underseal and underlying surfaces in areas adjacent the portion being removed.

Still another object of the invention is to provide a tool of the character above which incorporates means for varying the position of the flame relative to the blade to accommodate different types and thicknesses of underseal coatings and to adapt the tool to various work conditions encountered at the underside of automobile bodies.

The invention possesses other objects and features of advantages, some of which, with the foregoing, will be set forth in the following descriptions of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a plan view of a hand tool constructed in accordance with the present invention.

Figure 2 is a side elevational view of the hand tool shown in Figure 1 in operative position for removing underseal.

Figure 3 is a cross-sectional view on an enlarged scale of the head end of the tool and is taken substantially on the line 3—3 of Figure 1.

Figure 4 is a cross-sectional view taken similarly to that of Figure 3, but illustrating a modified form of the hand tool of the present invention.

Figure 5 is a perspective view of the head end of the tool shown in Figure 4.



The hand tool of the present invention and as illustrated in the accompanying drawing consists briefly of a member 6 providing an elongated manually engageable handle carrying at the forward end thereof a gaseous burner 7 from whence issues a carefully controlled forwardly projecting relatively flattened flame 8 for application to and softening of a coating 9 of underseal as may be applied to the under surface 10 of an automobile body; a blade 11 carried by the handle and projecting generally forwardly thereof and providing a relatively flattened edge 12 in proximity to the flame 8 for undercutting the softened material 9 which, by reason of its characteristics will be thereby separated from the surface 10 in relatively large sheet-like masses as shown at 14 in Figure 2; and shielding means 13 overlying the flame and cooperating with the blade for supporting such removed sheet-like masses 14 in spaced relation to the point of issuance 16 of the flame so as to prevent smothering of the flame or clogging of the burner.

The handle 6 preferably is formed of a suitable heat insulating material such as phenolic resin plastic, composition, wood, or the like. In order to achieve added strength with the plastic handle 6 here used, a reinforcing metal tube 18 is incorporated in the handle with the bore of the tube providing a fuel conduit 19. Secured to one end 21 of the handle in communication with conduit 19 is a gas cock or valve 22 adapted for connection to a hose 23 leading to any suitable source of gaseous fuel under pressure (not shown), and the aforementioned burner 7 is mounted on the opposite end 24 of the handle 6 by means of a threaded connection 26 with the burner extending longitudinally therefrom. The end of the handle 6 adjacent to conduit end 24 may be further reinforced by a metal collar or ferrule 25 as is best shown in Figures 3 and 4.

The burner 7 may be of any suitable design which will project a flame forwardly away from the point of issuance 16. The burner illustrated in the accompanying drawing is designed for use with a gaseous fuel which, as above noted, may be supplied by any suitable source, usually tanks or bottles of gases such as acetylene or liquid petroleum gas. As here shown, the burner consists of an elongated tube or conduit 27 axially aligned with the handle 6 and providing a passageway 28 communicating with the fuel conduit 19. The burner tube 27 is formed with a plurality of apertures 29 located generally medially of the length thereof and providing openings for the introduction of atmospheric air from outside the burner to the internal bore 28, with the internal bore on the downstream side of the apertures 29 serving as a mixing chamber. Provided in the passageway 28 is a member 31 having a bore 32 of reduced diameter passing longitudinally therethrough. It will be apparent from the drawing that the gas passing through the bore 32 will draw primary air through the apertures 29 by venturi action, for mixing therewith to form an inflammable mixture. This mixture will then pass down the bore 28 and meet the secondary air at the aforesaid point of issuance 16 where it may be ignited to form the abovementioned flame 12. Preferably the member 31 is extended somewhat past the openings 29 so as to prevent a blowback of the flame, on reducing gas flow or otherwise, to produce burning out through the openings 29.

As a feature of the present invention, means are provided for modifying the flame 12 into a flattened generally fan shape as shown in the accompanying drawing. This modification of the flame into a fan shape is here accomplished by passing the flame through a slot adapted to flatten and spread out the burning gases to the shape illustrated. In the form of the tool shown in Figures 1 through 3, this slot is defined by upper and lower jaws 33 and 34 respectively which are formed as integral extensions of the burner tube 27 extending forwardly from the point of issuance 16. As may be seen from the drawing, these jaws are arranged one above the other and are curved to define a combustion cavity 36. As will also be seen from the drawing, no vertical side portions or connections are employed between the jaws 33 and 34 in order to permit entry of secondary air into the cavity 36 to support combustion.

In the tool of Figures 1 through 3, the abovementioned

means 13 overlying the flame 8 for supporting the sheet-like masses 14 of underseal therefrom is provided by the upper jaw 33. With reference to Figure 2, it may be seen that this jaw is so arranged as to support the mass 14 of loosened underseal and is curved to deflect same away from the point of issuance 16 of the flame.

As mentioned above, the blade 11 is carried by the handle 6 and here includes angularly related flat portions 37 and 38, with the aforementioned cutting edge 12 provided at the forward end of the blade in proximity to the flame 8 in order to remove the coating 9 as soon as it is warmed and softened by the flame in order to prevent overheating of the subjacent body metal. As shown in the drawing and preferably, the blade is arranged so that part of the flame 8 impinges upon the blade edge 12 in order to heat the blade for more efficient undercutting and separation of the coating 9 from the body metal. This is here accomplished by mounting the blade with the rear planar portion 37 parallel to the burner 7 and thus to the flame 8 and by inclining the contiguous planar portion 38 with respect thereto in order to position the edge 12 in the flame.

As an important feature of the present invention, adjustment means are provided for varying the relative position of the blade edge to the burner in order to adapt the tool for most efficient use with various characters and thicknesses of underseal material encountered. Accordingly, in the present invention, the blade 11 is mounted for adjustable positioning longitudinally of the burner 7. As may best be seen in Figure 3 of the drawing, this is accomplished by attaching a mounting block 39 to the rearward edge of the blade 11 and forming a bore 40 through the mounting block, with the bore 40 being dimensioned to receive in sliding embrace the burner tube 27. Any suitable means may be provided for securing the mounting block 39 and hence the blade 11 to the burner 27 such as a set screw 41 here shown threadably carried by the block for engagement with the tube 27.

As will be understood in the working at the underside of an automobile body, it is highly desirable that the flame be kept under precise control by the operator in order to avoid spurious side burning. In the form of the tool illustrated in Figures 1 through 3, this control is effected by the jaws 33 and 34 which define the above-mentioned cavity 36 and which function to flatten out the flame and thereby accurately define its width and length relative to the blade 11 used for removing the area of underseal heated by the flame. In the modified form of the invention illustrated in Figures 4 and 5, this control of the flame is further obtained by the provision completely around the flame of a containing casing here formed by a hood member 42 attached to and cooperating with the blade 11 to define the enclosure. Attachment of the hood to the blade may be effected in any suitable manner. The top portion is preferably convexly curved as shown in the drawing and together with the upstanding sides 43 and 44 and the portions 37 and 38 of the blade 11 forms a casing or housing completely encircling the flame end of the burner 7*a*. As may be seen from Figures 4 and 5 of the drawing, the top member 46 of the hood 42 extends over the burner 7*a* and hence is adapted to intercept and deflect the loosened portion 14*a* of the underseal coating in a manner similar to that previously described for the upper jaw 33 of the form of hand tool shown in Figures 1 through 3.

Also an important feature of the casing 42 is to further confine and direct the flame 8*a* so as to limit the width of the flame to substantially the width of the edge 12*a*. In this manner, the flame will be projected forwardly of the tool in coextensive relation to the edge 12*a* to warm and soften the underseal coating 9*a* along a path substantially the same width as the sheet-like portion 14*a* loosened by the cutting edge. Thus the portions of the undersealing warmed by the flame may be immediately undercut and separated from the underlying body metal 10*a* in order to prevent the above described deleterious overheating thereof. This limiting of the width of the flame 8a is accomplised by extending the hood forwardly and curving the upper portion 46 downwardly into proximity with the blade 11*a* at a point between the point of issuance 16*a* of the flame and the cutting edge 12*a* of the blade to define a slot 47 aligned with the flame. As the flame passes through the slot 47, it will serve to confine and direct the flow of the burning gases forming the flame forwardly in a path substantially coextensive in width with the blade edge 12*a*.



Summing up the operation of the hand tool of the present invention, the hose 23 is connected to a suitable source of gaseous fuel under pressure and the valve 22 is opened to allow the gas to pass through the handle 6 and out of the burner 7. The gas is here ignited within the cavity 36 and passes therefrom between the jaws 33 and 34 against and past the blade edge 12. The valve is regulated so that the flame extends somewhat past the blade edge 12 as is best illustrated in Figure 1. The tool is then grasped by the handle 6 and passed quickly forwardly over the coated surface in the manner of Figure 2 with the heat of the flame 8 acting to soften the thermoplastic coating 9 and with the blade edge 12 undercutting and loosening the coating in sheet-like masses. As these masses are deflected upwardly from the surfaces, they are engaged and deflected, in the case of the tool of Figures 1 through 3, by the upper jaw 33 which overlies the point of issuance 16 of the flame and prevents its being blocked by the sheets of undercoating removed. In the case of the form of the tool illustrated in Figures 4 and 5, the sheet-like masses of undercoating are engaged by the upper side 46 of the hood 42 and are deflected thereby away from the point of issuance of the flame 8.

As may be seen from the foregoing description and from the accompanying drawing, there has thus been provided a hand tool which is adapted for rapid and efficient removal of underseal coating from automobile bodies and the like and which incorporates novel means for preventing blocking and extinguishing of the flame by the loosened undercoating, and which also precisely confines the flame to the work area under the direct control of the operator.

I claim:

1. A hand tool for softening and cutting away in sheet-like masses a coating of thermoplastic undersealing material from automobile bodies and the like comprising, a member providing a manually engageable handle, a burner including an elongated conduit carried by and projecting longitudinally from said handle and adapted for issuing a fan shaped flame forwardly along the longitudinal axis of said member, a blade carried by said conduit for adjustable positioning longitudinally therealong parallel to said axis and having a substantially planar portion spaced from and extending substantially parallel to said conduit in underlying relation thereto and a second contiguous planar portion inclined to said first planar portion so as to position a forward edge of said second portion substantially at said axis and into impinging relation with said flame in all of the longitudinally adjusted positions of said blade for heating said edge for undercutting and separating said coating in sheet-like masses after softening by said flame, and means overlying said flame for supporting therefrom adiacent the point of issuance thereof the aforesaid sheet-like masses of material cut away by said blade edge.

2. A hand tool for undercutting and separating in sheet-like masses a coating of thermoplastic undersealing material from automobile bodies and the like comprising, a member providing a manually engageable handle, a blade carried by said member and having a relatively flattened edge presented forwardly thereof for undercutting said material, a gaseous burner issuing a relatively flattened flame against and beyond said blade edge for heating said edge and softening said material in advance of said blade edge, and means carried by said blade and positioned between said burner and said edge and extending into overlying relation to the point of issuance of said flame for intercepting and deflecting said sheet-like masses therefrom.

3. A hand tool for softening and cutting away in sheet-like masses a coating of thermoplastic undersealing material from automobile bodies and the like comprising, a member providing a manually engageable handle, a burner including an elongated conduit carried by and projecting longitudinally from said handle and adapted for issuing a fan shaped flame forwardly along the longitudinal axis of said member, a blade carried by said conduit for adjustable positioning longitudinally therealong and having a relatively flattened forward edge positioned substantially at said axis and in the path of said flame so as to heat said edge for undercutting and separating said coating in sheet-like masses after softening by said flame, and a hood member secured to said blade for movement there-

with and overlying said flame for supporting therefrom the removed sheet-like masses aforesaid.

4. A hand tool for loosening and undercutting for separating in sheet-like masses thermoplastic undersealing material applied to automobile bodies and the like comprising, a member providing a manually engageable handle, a blade carried by said member and having a relatively flattened edge presented forwardly thereof for undercutting said material, a gaseous burner carried by said handle in overlying relation to said blade and having a fuel issuing orifice positioned to project a flame along the axis of said orifice extending forwardly against said blade edge for heating said edge and beyond said edge for softening said material in advance of said edge, and a pair of jaw members having ends secured to said burner and projecting forwardly therefrom in spaced relation to and on opposite sides of said axis with one of said jaw members being positioned in overlying relation to said flame for supporting therefrom the aforesaid sheet-like masses of material separated by said blade edge, said jaw members being spaced apart to define therebetween lateral open air passages for said flame and being formed with converging free ends defining a slot therebetween positioned in the path of said flame for flattening out of said flame at said blade edge.



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