Aug. 24, 1948. D. T. RICKETTS ET AL 2,447,960

MUFFLER REMOVER

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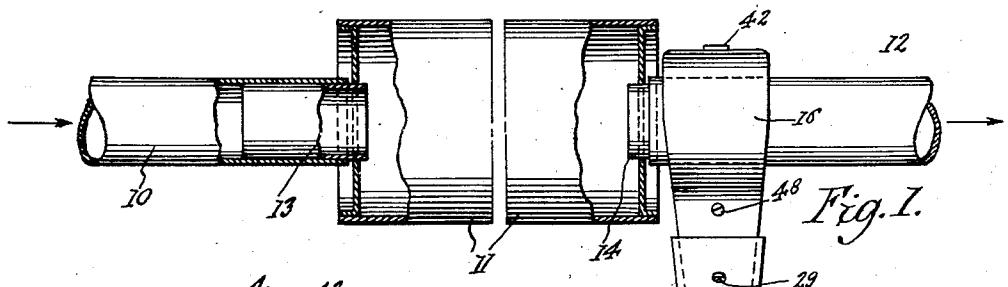


Fig. 1.

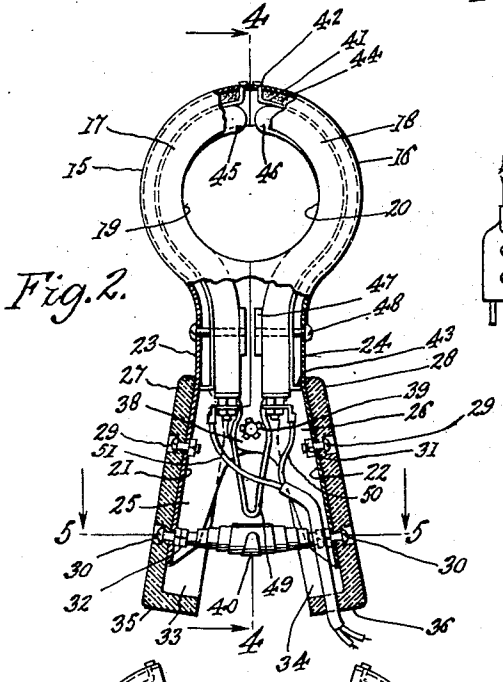


Fig. 2.

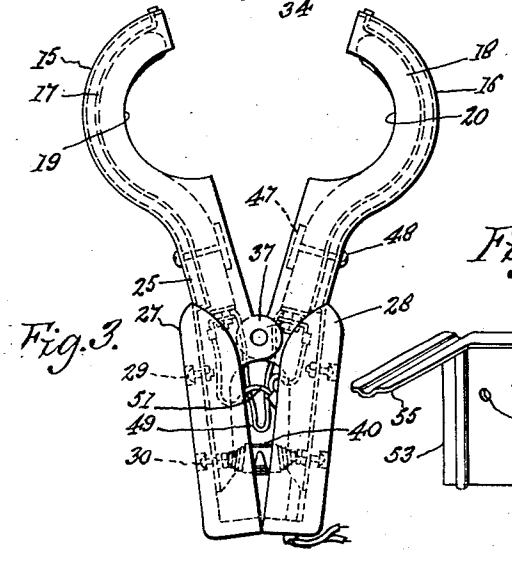


Fig. 3.

Fig. 4.

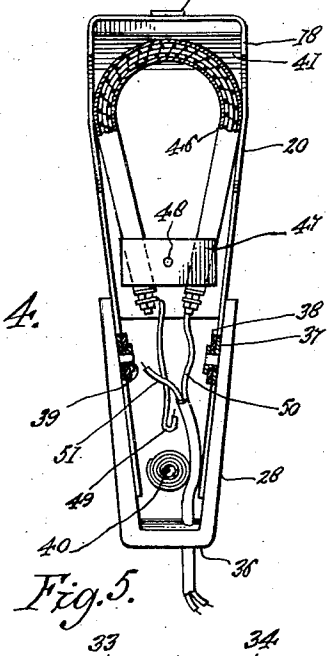


Fig. 5.

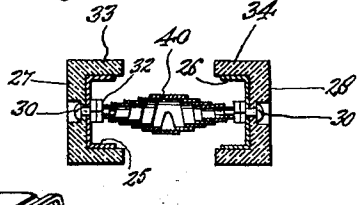


Fig. 6.

INVENTORS
Denton T. Ricketts
Max O. Huffman
and John D. Schmunk
by Wilkinson & Mawhinney
Attorneys

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MUFFLER REMOVER

Denton T. Ricketts, Max O. Huffman, and John D. Schmunk, Findlay, Ohio

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6 Claims. (Cl. 219—21)

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The present invention relates to improvements in muffler removers and has for an object to provide a device of this character which is an improvement over that disclosed in our co-pending application Serial No. 728,180, filed February 12, 1947, entitled Muffler removers and method of removing mufflers.

Another object of the present invention is to provide an improved muffler remover which is a positive, safe and economical device for separating rust and carbon sealed muffler slip or telescoped joints.

A further object of the present invention is to provide an improved device of this kind which will not mutilate or deform the parts comprising a muffler joint that is being separated.

A still further object of the present invention is to provide an improved device of this character which can be applied to heat a length of any automobile muffler or tail pipe joint, not to exceed its telescoped or slip margin.

The present invention aims to provide an improved muffler remover that will make any automobile muffler pipe joint accessible to being heated regardless of the proximity of the frame members.

With the foregoing and other objects in view, the invention will be hereinafter more fully described and more particularly pointed out in the appended claims.

In the drawings, in which the same parts are denoted by the same reference numerals throughout the several views,

Figure 1 is a fragmentary longitudinal view of the automobile muffler, tail pipe and exhaust pipe with parts broken away and parts shown in section and with the improved device applied to one of the joints in the act of treating the same for removal,

Figure 2 is a side elevational view of the improved device with parts broken away and parts in section and showing the device in closed position,

Figure 3 is a side elevational view of the improved device and showing it in open position,

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 2,

Figure 5 is a horizontal sectional view taken on the line 5—5 of Figure 2, and

Figure 6 is a perspective view of the bracket which supports the improved muffler remover while it is being preheated.

Referring more particularly to the drawings, 10 designates an exhaust pipe, 11 a muffler, and 12 a tail pipe, all of which are standard equipment on a conventional automobile. The muffler 11 has an internal nipple 13 telescoping into the rear end of the exhaust pipe 10 and forming the forward joint. A second internal nipple 14 projects from the rear of the muffler 11 and enters

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within the forward end of the tail pipe 12 to form the rear joint of the muffler.

The improved device comprises a pair of housings which can be formed of 20-gauge cold-rolled sheet steel and form jaws 15 and 16. The jaws 15 and 16 are substantially semi-circular and have inturned flanges 17 and 18, respectively. These flanges 17 and 18 when closed define inner marginal openings 19 and 20 which are of the external size of the pipe or joint about which the device is intended to fit, for instance, the tail pipe 12. The housings also include handle extensions 21 and 22 which are connected to the jaws 15 and 16 by shanks 23 and 24. The handle extensions 21 and 22 and the shanks 23 and 24 have inturned flanges 25 and 26.

Handles 27 and 28 which can be made of heat-resistant plastic are attached to the handle extensions 21 and 22, respectively, by machine screws 29 and 30 and nuts 31 and 32. The handles 27 and 28 have inturned side flanges 33 and 34 which have overlapping engagement with the respective flanges 25 and 26 of the handle extensions 21 and 22. The handles 27 and 28 also have inturned end flanges 35 and 36.

Each flange 25 has an ear 37 and each flange 26 has an ear 38. The ears 37 and 38 are arranged in overlapping pairs and the ear 38 of each pair has a clean hole punched therethrough and the ear 37 of each pair has a burred hole punched therein and the protrusion 39 formed thereby passes through the opening in the ear 38 and is peened or clinched over to hold the jaws 15 and 16 in pivotal relation. The holes in the ears 38 act as bearings for the protrusions 39 of the ears 37. For the purpose of normally maintaining the jaws 15 and 16 in their closed position a telescopic spring 40 has its opposite ends received by the machine screws 30.

Shields 41 conforming generally to the shape of the jaws 15 and 16 and the shanks 23 and 24 are disposed within each jaw 15 and 16 in spaced relation to the respective jaw and shank. Each shield 41 at its upper end has a lug 42 which passes through a slot in the jaw and is clinched against the outer face of the jaw. The lower end of each shield has an out-turned flange 43 which abuts against the inner face of the shank to space the shield from the jaw and shank. Asbestos 44 or other suitable heat insulating material is located between the inner face of each jaw and the inner face of its shield. A pair of electrical resistance elements 45 and 46, conforming in shape to the shields 41, are positioned within the shields so that a portion of the resistance elements projects into the openings 19 and 20. These resistance elements are substantially horse-shoe or U-shaped, as shown in Figure 4, and are held

in place by retainer clips 47, which bridge the legs of the U-shaped resistance elements near their open ends. The clips 47 are held in place by retainer bolts 48 which pass through the shields and the shanks. The two resistance elements can be connected in series or in any other manner, as shown in Figure 2, by a connecting wire 49 at one side and by lead-in wires 50 and 51 at the other side. The lead-in wires are connected to a plug connection 52 which may be plugged into any suitable socket or receptacle to a source of main current supply.

In Figure 6 is shown a bracket 53 which is adapted to be secured to a work bench or the like by screws 54. The bracket has spaced parallel arms 55 for receiving the shanks 23 and 24 of the muffler remover and upon which the jaws 15 and 16 rest to hold the muffler remover during the preheating phase.

In the use of the device the muffler remover is placed within the arms 55 of the bracket 53 and the plug 52 is fitted to an outlet receptacle whereupon the resistance elements 45 and 46 are energized and rapidly attain a high degree of heat. While the muffler remover is preheating in the bracket 53 the muffler clamps can be removed from the tail pipe. The handles 27 and 28 are squeezed together to open the jaws 15 and 16 against the normal closing action of the spring 40. The open condition of the jaws is shown in Figure 3 where the gap between the free ends of the jaws will slightly exceed the outside diameter of the exterior of the pipe 12. The jaws are then placed over the pipe 12 and nipple 14 and the grip on the handles 27 and 28 is relaxed permitting the spring 40 to close the jaws 15 and 16 as shown in Figure 2. The jaws 15 and 16 and their flanges 17 and 18 form a complete enclosure about the joint to be removed and the shields 41 which are of polished metal serve as a reflector to reflect the heat radially inward throughout the circumference of the jaws so as to reflect the heat from the resistance elements on to the pipe 12 throughout its entire circumference at the point where it encircles the nipple 14.

As pointed out in connection with Figure 2, portions of the resistance elements 45 and 46 extend into openings 19 and 20 and come into direction contact with a portion of the exterior surface of the pipe 12. It will, therefore, be seen that heat from the resistance elements 45 and 46 is conveyed to the pipe 12 through convection, radiation and conduction. It is only necessary to permit the muffler remover to remain on the pipe 12 for two or three minutes in order to break the rust and carbon of the joint. The tail pipe is then given a quick twist to remove it.

The outside surface of the jaws have a contour in the form of a compound curve and narrow down at the shanks 23 and 24 which form a compound curve mid-section to out-flared handle extensions 21 and 22. This construction assures that any automobile muffler pipe joint is accessible to being heated regardless of its proximity to frame members.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What we claim is:

1. A muffler joint expansion heater comprising a pair of jaws movably connected together and having recesses for enveloping a muffler joint and closing upon the joint, a pair of lining shields spaced from and conforming substantially to the shape of the jaws, each of said jaws having a slot therein, a lug carried by each of said shields and received by the slots in said jaws, the free end portions of said lugs being clinched over the jaws, each shield having a flange engaging the jaws for maintaining said lining shields in spaced relation to said jaws, and a pair of electric heating units conforming substantially to the shape of said shields and being held thereagainst, said lining shields having polished reflecting surfaces for reflecting the heat from the heating units onto the muffler joint.

2. A muffler joint expansion heater as claimed in claim 1 wherein each of said jaws is provided with a pair of overlapping ears, one ear of each pair having a clean bore hole therein and the other ear of the complemental jaw having a protrusion received by the hole.

3. A muffler joint expansion heater as claimed in claim 1 characterized by the fact that the holes provide bearings for the protrusions and that the protrusions are peened for interlocking the jaws pivotally together.

4. A muffler joint expansion heater comprising a pair of jaws movably connected together, a pair of upstanding flanges having recesses therein carried by each of said jaws for enveloping a muffler joint and closing upon the joint, a pair of lining shields spaced from and conforming substantially to the shape of said jaws and lying between said upstanding flanges of each of said jaws, heat insulating material between said lining shields and said jaws, each of said jaws having a slot therein, a lug carried by each of said shields and received by the slots in said jaws, the free end portions of said lugs being clinched over the jaws, each shield having a flange engaging the jaws for maintaining said lining shields in spaced relation to said jaws, and a pair of electric heating units conforming substantially to the shape of said shields and being held thereagainst, said lining shields having polished reflecting surfaces for reflecting the heat from the heating units onto the muffler joint.

5. A muffler joint expansion heater as claimed in claim 4 characterized by the fact that said jaws are substantially semi-circular and are provided with shanks having handle extensions thereon.

6. A muffler remover as claimed in claim 5 characterized by the fact that a telescopic spring is connected to each of said jaws proximate the base of the shanks, said telescopic spring being normally biased to an open position whereby the jaws at their recessed end are urged into abutting engagement.

DENTON T. RICKETTS.
MAX O. HUFFMAN.
JOHN D. SCHMUNK.

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