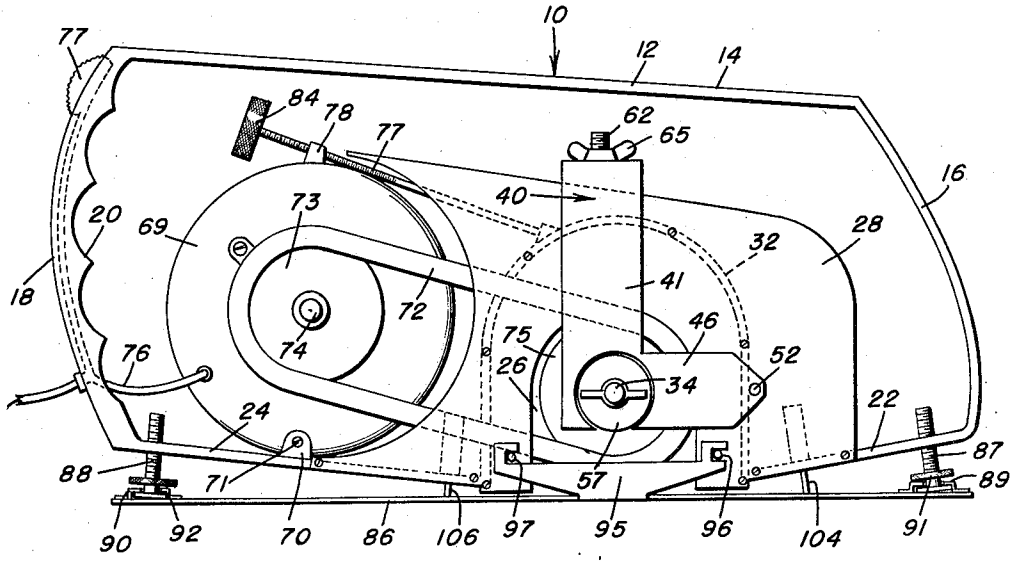
Oct. 22, 1957 W. E. DAVIS ET AL 2,810,240

ABRASION MACHINE

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Fig. 1



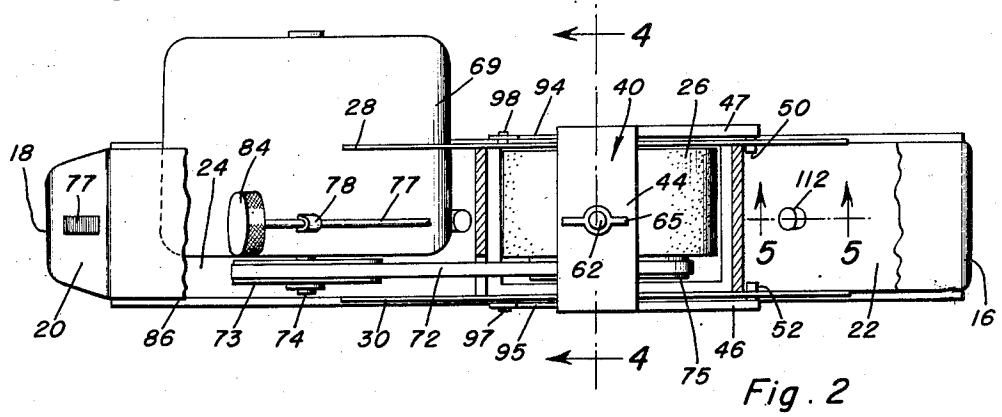
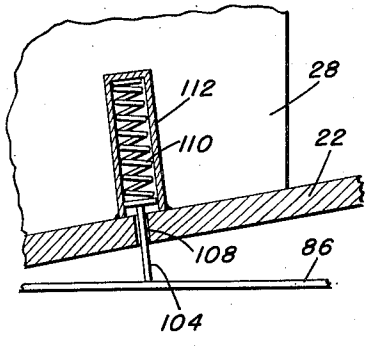


Fig. 2

Fig. 5



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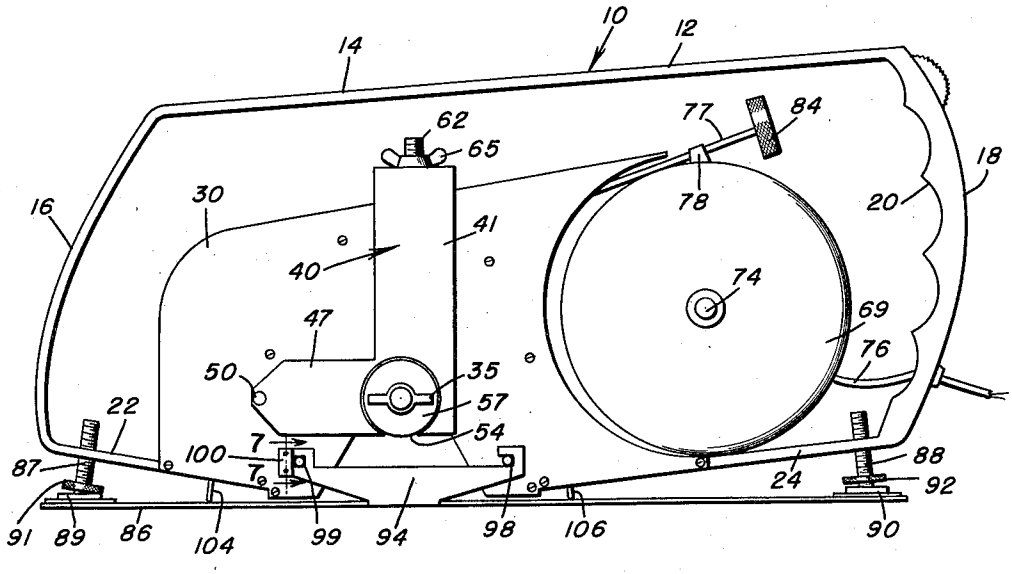
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ABRASION MACHINE

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Fig. 3



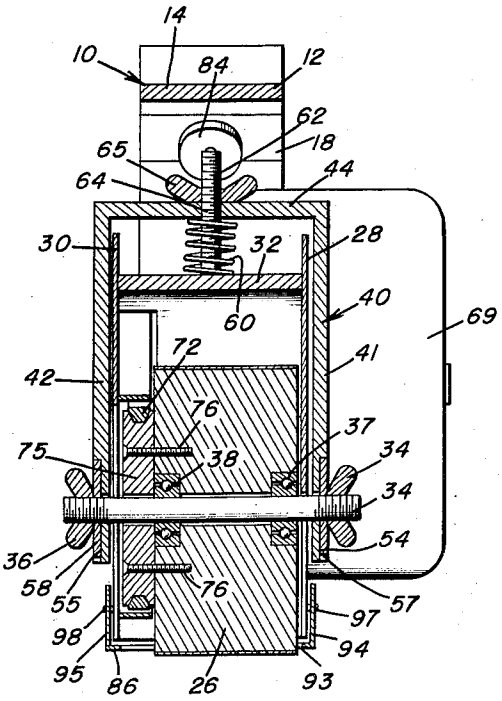


Fig. 4

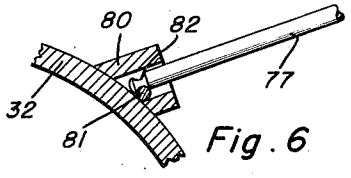


Fig. 6

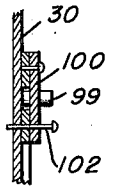


Fig. 7

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ABRASION MACHINE

Walter E. Davis and Merle E. Davis, Mapleton, Iowa

Application July 24, 1956, Serial No. 599,783

3 Claims. (Cl. 51—170)

This invention relates to power tools and more particularly to a machine for repairing damaged motor vehicle body parts.

A machine constructed in accordance with the invention is principally useful in repairing motor vehicle body parts after the damage has been partially repaired. The abrading machine is traversed over that part of the job where it will smooth off the metal or paint at the highest points and leave the low parts untouched. At this time the low spots can be raised with a hammer or other tool and the machine may then be run over the same damaged section in order to completely smooth the damaged part or bring it back to the original contour. Accordingly, an object of the present invention is to provide a machine which will more effectively serve the above functions.

A further object of the present invention is to provide a machine for grinding surfaces of motor vehicle body parts that have been damaged, the machine having a double handled frame provided with a grinding wheel that has a periphery protruding through an opening in a shoe adjustably carried by the frame, this shoe being flexible in order to fit the contours of the motor vehicle body.

A further object of the invention is to provide a practical, compact and easily handled machine for the special, but not exclusive purpose of facilitating automobile fender and body repair work.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view of a machine constructed in accordance with the invention;

Figure 2 is a top view of the machine in Figure 1, parts being broken away in section to illustrate otherwise hidden detail;

Figure 3 is an elevational view of the machine in Figure 1, showing the opposite side thereof;

Figure 4 is a transverse sectional view taken approximately on the line 4—4 of Figure 2 and being in enlarged scale;

Figure 5 is an enlarged sectional view taken approximately on the line 5—5 of Figure 2;

Figure 6 is a fragmentary sectional view showing the means of connecting the belt tightener and one end thereof;

Figure 7 is an enlarged fragmentary sectional view taken on the line 7—7 of Figure 3 and illustrating a part of the quick disconnect device for the flexible shoe.

In the accompanying drawings there is a machine 10 which illustrates the principles of the invention. This machine is an easily portable hand tool which is principally useful in connection with the repair of motor vehicle bodies, fenders and other similar or analogous parts. The machine consists of a frame 12 having an upper substantially flat strip 14 provided with curved ends 16 and 18 which function as handles. Hand grip 20 is

on handle 18, and, if desired, a similar hand grip may be provided on the end 16. By having two handles at opposite ends of the machine, it is more easily controlled by the mechanic. Frame 12 has a bottom made of two parts 22 and 24 which extend from the ends 16 and 18 respectively and which are spaced at their confronting ends in order to provide an opening through which the abrading wheel 26 is adapted to pass. The frame has plates 28 and 30 on the sides thereof, being attached by fasteners to the parts 22 and 24 of the bottom thereof and by fasteners, as screws, to the generally U-shaped abrading wheel guard 32 located within the frame. This guard extends over the top of the abrading wheel and has several functions.

Abrading wheel 26 is carried by spindle 34 having wing nuts 35 and 36 at opposite ends thereof and having anti-friction bearings 37 and 38 thereon. The abrading wheel is mounted for rotation on the anti-friction bearings, while spindle 34 is adapted to remain stationary in yoke 40 that has sides 41 and 42 connected to it by a top panel 44. The yoke has legs 46 and 47 protruding from the lower ends of the sides 41 and 42 thereof, and these legs are fitted with trunnions 50 and 52. The trunnions are disposed in openings in plates 28 and 30, thereby mounting the yoke 40 for oscillatory movement about the common axis of trunnions 50 and 52. There are recesses 54 and 55 formed in the sides 41 and 42 of the yoke 40 at the junction of the arms 46 and 47 therewith. Washers 57 and 58 are held captive in the recesses by means of the wing nuts 35 and 36, thereby separably connecting spindle 34 to the yoke 40.

Spring 60 is disposed on the top of the guard 32 and on the under surface of panel 44. Stud 62 is attached to top of guard 32 and passes through spring 60 as well as an opening 64 in panel 44. Wing nut 65 is threaded on stud 62, and by adjustment of this wing nut, the position of yoke 40 is altered, thereby altering the amount of the abrading wheel 26 that is passed through the opening in the bottom of the frame 12.

An electric motor 69 is mounted within the confines of frame 12. The mounting means for the motor consist of a bracket 70 on part 24 of the bottom of the frame and a pivot bolt 71 passed through the bracket 70 and also through the motor casing. This may be one of the through-bolts of the motor or may be a specially provided pivot bolt or pivotal mount. In either case, the motor 69 is capable of rocking motion so as to be adjustable in order to tighten belt 72. This belt is entrained around a pulley 73 on the shaft 74 of the motor 69 and is entrained around pulley 75. This pulley has bolts 76 attaching it directly to the wheel 26 (Figure 4), whereby there is a drive connection established between the motor and the grinding wheel 26. Line cord 76 extends from the motor, being interrupted by a switch 77 conveniently located on the handle 18.

The motor 69 is pivotally adjusted by screw 77 which is passed through a threaded sleeve 78 on motor 69 and which is attached to the abrading wheel guard 32 (Figure 6). The attachment is such that the screw is capable of rotation, but capable of susbtantially no longitudinal movement. This is accomplished by having a sleeve 80 welded or otherwise attached to the guard 32 and a pin 81 extending chordally across the sleeve and seated in an annular groove 82 in the inner end of the bolt 77. By rotating the knob 84 that is fixed on the outer extremity of screw 77, the position of the motor is adjusted.

The bottom of the frame 12 does not come in contact with the surface that is to be repaired during the normal operation of the machine 10. Instead, there is a shoe 86 made of flat spring material, as spring steel. Adjustable means attach shoe 86 to the frame 12, these adjustable means preferably being a pair of screws 87 and 88 whose

heads are held captive in cages **89** and **90** on the inner surface of shoe **86** and near the ends thereof. These cages permit the screws **87** and **88** to be rotated in tapped openings in parts **22** and **24** of the bottom of the frame **12**, but prevents the screws from being separated from the shoe. Lock nuts **91** and **92** are disposed on the screws **87** and **88** to function as such. The shoe **86** has an opening **93** between the ends thereof, this opening being in registry with the opening in the bottom of the frame **12**. Accordingly, the abrading wheel **26** is adapted to pass through the opening **93** (Figure 4) during the normal operation of the machine.

There are quick disconnect means intermediate the ends of the shoe in order to attach the shoe firmly to the body of the machine. These means comprise upwardly extending plates **94** and **95** in the region of opening **93**, there being laterally opening slots **96**, **97**, **98** and **99** on the ends of the plates **94** and **95**, these slots being engageable with pins that are carried by the plates **28** and **30**. A swinging latch **100** is carried by plate **30** and is operative adjacent to the pin **99** in order to hold the plates **94** and **95** against movement parallel to the longitudinal axis of the shoe **86**. The swinging latch is pivoted at one end to the plate **30** and has the other end releasably connected to the plate **30**, as by pin **102**, cotter key or an equivalent locking device. In using the machine, the shoe yields and flexes to suit the contour of the surface that is being worked on. There are yielding means opposing the flexing of the shoe **86** in one direction. These means are seen best in Figure 5 and consist of a front and a back spring loaded plunger **104** and **106** respectively. Plunger **104** passes through an opening **108** in part **22** of the farme **12** and reacts against spring **110** which is held captive in socket **112**, the latter being welded or otherwise attached to the part **22**. Plunger **106** has an identical spring biasing means connected with it.

In use of the machine, the mechanic grasps it in his hand in a manner which is most comfortable to him. Switch **77** is actuated and the machine is ready for operation.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous

modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A grinder for use in repairing vehicle body parts that have been damaged by bending, said grinder comprising a frame, an abrading wheel carried by said frame, a flexible shoe, means fastening said shoe on said frame so that as the shoe is moved over the damaged surface it yields to suit the surface contour, said means including screws connecting said shoe to said frame, and a quick disconnect fastening device between said screws holding said shoe connected to said frame.

2. A grinder for use in repairing vehicle body parts that have been damaged by bending, said grinder comprising a frame, an abrading wheel carried by said frame, a flexible shoe, means fastening said shoe on said frame so that as the shoe is moved over the damaged surface it yields to suit the surface contour, said means including screws connecting said shoe to said frame, and a quick disconnect fastening device between said screws holding said shoe connected to said frame, and resilient means reacting on said shoe and said frame normally biasing said shoe in one direction.

3. A grinder for use in repairing vehicle body parts that have been damaged by bending, said grinder comprising a farme, an abrading wheel carried by said frame, a flexible shoe, means fastening said shoe on said frame so that as the shoe is moved over the damaged surface it yields to suit the surface contour, said means including screws connecting said shoe to said frame, and a quick disconnect fastener device holding said shoe connected to said frame.

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