Feb. 2, 1954 H. E. McCRERY 2,667,824

BLADE ATTACHING MEANS

Filed March 19, 1947

Fig.-1

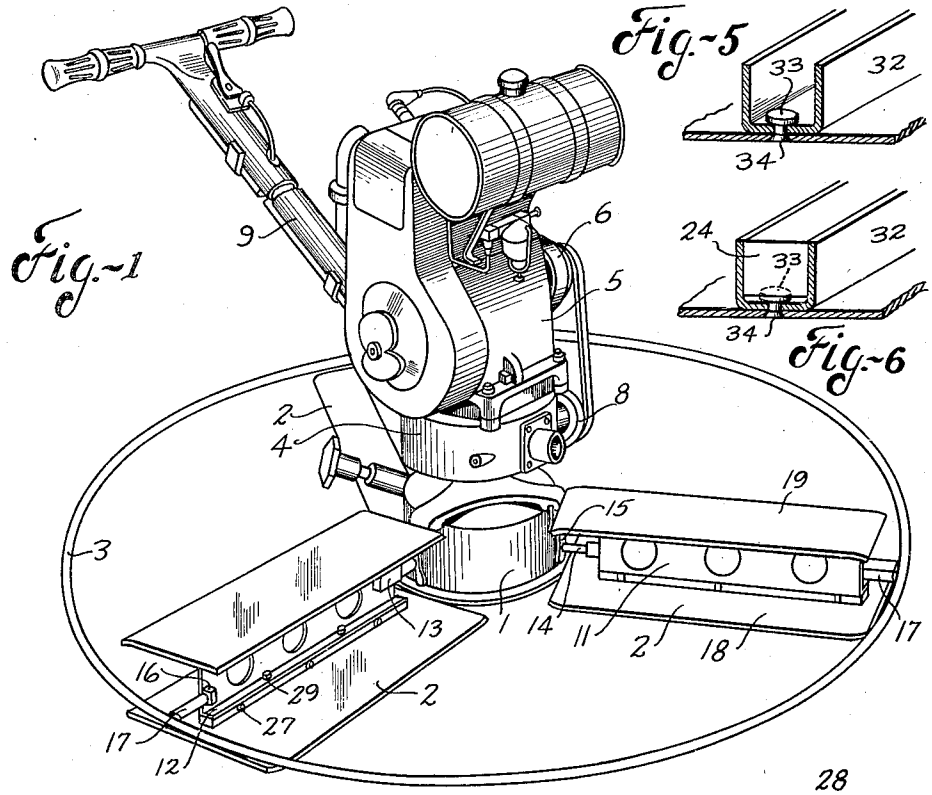


Fig.-5

Fig.-6

Fig.-2

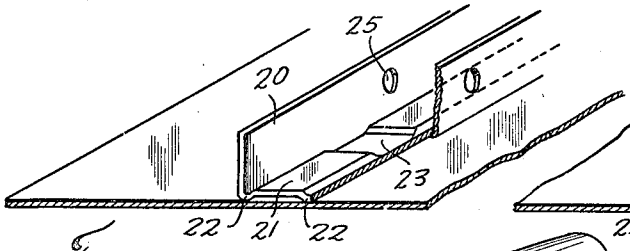


Fig.-3

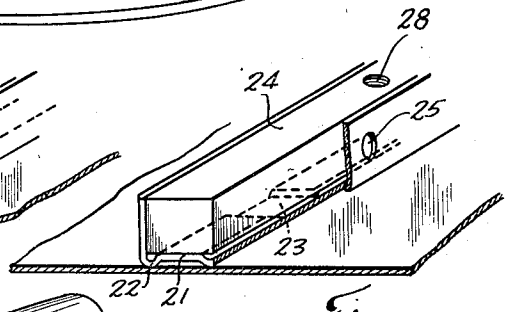
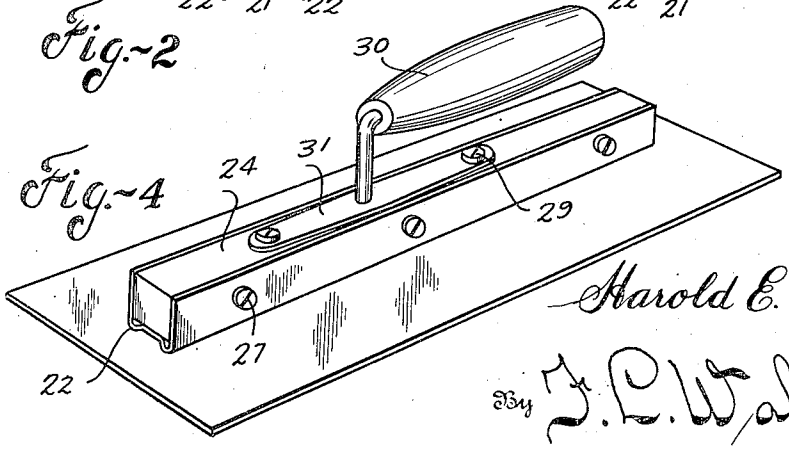


Fig.-4



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BLADE ATTACHING MEANS

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Application March 19, 1947, Serial No. 735,627

5 Claims. (Cl. 94—45)

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This invention pertains to surfacing implements, and more particularly to an apparatus having progressive wiping engagement over the surface upon which it is operated.

While for illustrative purposes, the invention is herein shown and described as embodied in a power operated concrete troweling machine or float for finishing concrete surfaces, of the type shown and described in the copending application of Harold S. Boulton, Serial No. 721,574, filed January 11, 1947, now Patent No. 2,605,683, it is equally applicable to other types of apparatus or to hand troweling blades. By substitution of suitable work engaging elements, the present construction may be used in assembling scrubbing brushes, abrasive work surfaces, or soft polishing surfaces.

The object of the present invention is to improve the construction of surface treating equipment whereby it may not only be economically constructed, but will be more efficient in use, uniform in action, of longer life, and be unlikely to get out of repair.

A further object of the invention is to minimize the time and labor required in the manufacture and assembly of such surface treating equipment.

A further object of the invention is to simplify the mounting of such surface treating implements.

A further and important object of the invention is to minimize the cost of repair or replacement of surface treating equipment of the present type.

A further object of the invention is to provide a mounting for surface treating implements embodying the advantageous structural features, the inherent meritorious characteristics and the mode of construction herein set forth, or their equivalents.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

In the accompanying drawings, wherein is shown the preferred, but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a perspective view of a power driven rotary concrete surfacing machine in which the present invention is embodied.

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Fig. 2 is a fragmentary perspective view, partly in section, of the blade mounting assembly.

Fig. 3 is a fragmentary perspective view, partly in section, of a blade assembly with the mounting bar in place.

Fig. 4 is a perspective view of a manual troweling blade embodying the present invention.

Figs. 5 and 6 are fragmentary perspective views, similar to Figs. 2 and 3, showing a modified form of construction.

Like parts are indicated by similar characters of reference throughout the several views.

The present disclosure is an improvement and further development of that shown and described in my pending application Serial No. 681,711, filed July 6, 1946, now Patent No. 2,594,331, and a further improvement of the invention claimed in the aforementioned Boulton application, of which pertinent portions are herein shown and described for illustrative purposes, but which, per se, form no part of the instant invention which is directed to the means of assembling the surfacing elements to the power driven apparatus of the above applications, or to appropriate handles for manual operation.

Referring to the accompanying drawing, the rotary surfacing machine in Fig. 1, comprises a rotary base 1 from which radiate a plurality of reversible sweeps 2—2, surrounded by a guard ring 3 upon which the outer ends of the sweeps 2 are pivoted. Located in axial relation above the revoluble base 1 is a gear housing 4 surmounted by a driving motor 5. The motor shown in Fig. 1 is a conventional explosive engine or hydrocarbon motor. An electric motor may be substituted for the explosive engine 5. A driving pulley 6 of the motor, of whatever type, is connected by V belt with a driven pulley 8 of the gear driving mechanism within the housing 4. A handle 9 extends upwardly and radially from the housing 4 for controlling and guiding the machine. Manually operated control devices 10 mounted on the handle 9 within easy reach of the operator, are connected through the handle shaft with the actuating motor 5.

The power transmission, driving, and adjusting features of the instant disclosure are substantially those of the copending applications aforementioned, to which reference is made.

Other types of surfacing elements may be substituted for the troweling plates 18—19, thereby converting the present power driven apparatus for types of work other than concrete surfacing.

The instant sweeps 2 comprise vertically disposed angle bars 11 having laterally projecting

marginal flanges 12. To the inner ends of the angle bars 11 are welded short rectangular bars 13 which extend beyond the angle bars as cylindrical trunnion shafts 14 aligned with the center line of the angle bars 11. At the opposite ends of the angle bars 11 there are welded thereto in axial alignment with the trunnions 14 rectangular collars 16 within which engage trunnion studs 17 welded to the surrounding guard ring 3.

The web portions of the angle bars 11 are disposed substantially coincident with the radii of the horizontal axis about which the sweeps are adjustable. Attached to the bottom flange of the bars 11 are surface plates or floats 18 which are comparatively wide and perform the initial concrete surfacing operations of distributing and leveling the concrete material. Additional flanges similar to the flanges 12 project from the top of the angle bars 11 in a direction opposite to flanges 12, finishing or secondary plates 19 being secured to such additional flanges. The construction of the finishing machine shown in Fig. 1 is such that the bars 11 may be rotated about their trunnions through 180 degrees to bring either the plates 18 or 19 into contact engagement with the surface being treated.

The foregoing brief description of the machine of Fig. 1 is simply for the purpose of illustrating one type of machine in which the subject matter of the instant invention may be utilized, such machine forming no part of the present invention and to which the present invention is in no way limited.

To connect the blades to the flanges 12, each blade is provided with a longitudinal extending channel member 20, secured to the blade by spot welding or other means at longitudinally spaced intervals. The channel member 20 is formed with a raised portion 21 in the bottom thereof thereby providing longitudinally extending beads 22 on the bottom of the channel and at the edges thereof, which have contact engagement with the blade.

At relatively spaced intervals throughout the length of the channel, the raised portion 21 is interrupted by depressions 23. Such depressions 23 are flush with the bottom of the beads 22 and contact the surface of the blade when the channel is placed thereon.

The channel is secured to the blade by spot welding or riveting, the attachment being made coincident with the depressions 23. The depressions are provided for this purpose since it is impractical, if not impossible, to interconnect the raised portions 21 and the blade.

Located within the channel 20 and resting upon the raised portions 21 thereof, is a bar 24 which interconnects the blade assembly 18—20 with the flanges 12 of the angle bars 11. The portions 21 of the channel are raised to provide support for the bar 24 in spaced relation with the bottom of the channel. Such channels are drawn with a slight radius in the corners thereof which, were it not for the existence of the raised portions 21, would prevent solid well supported seating engagement of a rectangular bar therewithin. Should an attempt be made to seat the bar on the bottom of a conventional channel member, the longitudinal edges of the bar must be reduced to conformity with the radius of the channel. This is quite difficult from a practical standpoint since the channels are not uniform and interchangeability of parts is practically impossible. To overcome this difficult and expensive operation, the present channels 20 are initially formed with the raised portions 21 therein upon which the rectangular bar 24 may rest in elevated relation with the extreme bottom of the channel. The elevation is just sufficient to support the lower edge of the bar 24 above the bend in the channel. With this construction the bar 24 is located within the vertical limits of the parallel side members of the channel and in elevated relation with the arcuate corners interconnecting the vertical and horizontal portions of the channel.

This method of construction is well adapted to mass production and assembly, since the parts are all interchangeable. Furthermore the bar 24 is firmly supported since the greater portion of the bottom of the channel is raised to be in supporting engagement with the bar.

A series of transversely aligned holes 25 are located in the side portions of the channel, in registry with the transverse holes 26 in the bar. The bar 24 is secured in position within the channel 20 by the bolts 27 which pass through the transversely aligned holes 25 and 26 in the channel and bar respectively.

There is also provided in the top surface of the bar 24 a series of vertical holes 28 which are tapped to receive the bolts 29 with which the assembled bar and blade are secured to the flanges 12 of the angle bars 11, or other carriers.

The present assembly is equally applicable to other carriers, as for example a hand trowel as shown in Fig. 4. In place of securing the bar 24 and attached channel and blade to the flange 12 of the angle bars 11 of the power driven machine, it may be attached to a handle 30 having longitudinally extending projections 31 with which the bolts 29 are engaged.

The angle bars 11 or handle 30 are carrier members, which, together with the bar 24 provide a carrier for the blade assembly comprising the blade 18 or 19 together with the channel 20 which is secured thereto.

Not only does the present structure permit rapid and efficient assembly of troweling blades, but the number of necessary manufacturing operations is materially reduced. The channels 20 are preformed and need only be cut to the desired length and drilled. The bars 24 are used as they are obtained from the mills with only a cutting, drilling and tapping operation required. The only other manufacturing operation required is the welding or riveting of the channels 20 to the blades.

In Figs. 5 and 6 there is shown an alternative form of construction in which the same objectives are obtained, without the use of a special channel 20.

In this embodiment of the invention, a standard channel form 32 is directly secured to the blade by means of the large head rivets 33. The rivet heads are of sufficient heighth to accomplish the same purpose as the elevations 21 in the channel 20, i. e., to support the mounting bar 24 in elevated relation with the bottom of the channel 32 so as to clear the lower corners thereof. The channel 32 is secured to the blade by a series of such rivets 33 located at longitudinally spaced intervals throughout the length of the assembly.

The blade is drilled at the appropriate points, the holes being countersunk as at 34. The rivet 33 is then located and riveted in a conventional manner or by heating in a spot welder. Such operation spreads the rivet into the countersink 34 on the under side of the blade producing

a substantially smooth uninterrupted surface thereon.

As shown in the drawing, the bar 24 when placed within the channel 32 rests upon and is supported by the rivet heads 33 in elevated spaced relation with the bottom of the channel. The bar is secured within the channel in the same manner as previously secured.

The present construction also permits efficient and economical replacement of blades. Due to the continual movement of the blades over rough and abrasive surfaces, they of course rapidly show signs of wear, and within a short time become unsuitable for further use. To replace worn blades it is only necessary to remove the three bolts 27, remove the worn blade and substitute a new one therefor. Because of the low cost production of the blade and channel assembly, the replacement blade is of low cost and easily obtainable. It should be noted that it is unnecessary to discard the blade mounting means, whether of the mechanical or hand type, when the blade becomes worn, but only the blade is replaced.

The present blade assembly is highly resistant to longitudinal flexing, since it is reinforced by the channel 20. Yet this highly desirable rigidity is achieved at very little additional expense and with very little additional weight or bulk. This is an important feature whether the blade is to form a part of a power driven machine, or merely a hand trowel.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. An implement for troweling cementitious surfaces of the type wherein a troweling blade is attached to a traveling carrier member, including a longitudinally extending channel member having curved corners secured to the blade, elevated portions in the bottom of said channel, said portions being in elevated spaced relation with the blade, and inwardly spaced relative to the sides of said channel, mounting means therefor comprising a rectangular bar seated within the channel upon the elevated portions thereof, and in contacting relation with the sides of said channel, and means for detachably interconnecting the carrier member and the channel with said interposed mounting means.

2. An implement for surfacing floors of the type wherein a work tool is attached to a traveling carrier member, including a channel member having curved corners, a series of spaced rivets interconnecting the channel member and work tool, enlarged heads on said rivets providing a series of spaced supporting areas in elevated relation with the bottom of the channel member, a coupling member having a flat lower face engageable within the channel member in contacting relation with the side walls of said channel and seated upon the elevated supporting areas in elevated spaced relation with the bottom of said channel, and engaging means detachably interconnecting the coupling member with the carrier member and with the channel member.

3. An implement for troweling cementitious surfaces of the type wherein a troweling blade is attached to a traveling carrier member, including a longitudinally extending channel member having curved corners secured to the blade, elevated portions in the bottom of said channel, said portions being in elevated spaced relation with the blade, and inwardly spaced relative to the sides of said channel, mounting means therefor comprising a bar having a flat lower face seated within the channel upon the elevated portions thereof, and in contacting relation with the sides of said channel, and means for detachably interconnecting the carrier member and the channel with said interposed mounting means.

4. An implement for troweling cementitious surfaces of the type wherein a troweling blade is attached to a carrier, including a longitudinally extended channel member having curved corners and secured to the blade, elevated portions in the bottom of said channel, said portions being in spaced relation to the blade and inwardly spaced relative to the sides of the channel, said carrier having a flat lower face seated within the channel upon the elevated portion thereof and in contacting relation with the sides of said channel, and means detachably interconnecting the carrier and the channel.

5. An implement for troweling cementitious surfaces of the type wherein a troweling blade is attached to a traveling carrier member, including a longitudinally extending channel member having curved corners secured to the blade, an elevated portion in the bottom of said channel, said portion being in elevated spaced relation with the blade, and inwardly spaced relative to the said sides of said channel, a series of spaced depressions interrupting said elevated portion and secured to said blade, mounting means therefor comprising a bar seated within the channel upon the elevated portion thereof, and in contacting relation with the sides of said channel, and means for detachably interconnecting the carrier member and the channel with said interposed mounting means.

HAROLD E. McCRERY.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
92,506	Ault	July 13, 1869
425,110	Smith	Apr. 8, 1890
653,795	Ecke	July 17, 1900
838,608	Curwen	Dec. 18, 1906
961,302	Linville	June 14, 1910
1,121,281	Olson	Dec. 15, 1914
1,501,192	Severns	July 15, 1924
2,048,529	Williams	July 21, 1936
2,083,400	Rose et al.	June 8, 1937
2,392,932	Macbeth	Jan. 15, 1946