March 24, 1959 R. G. BARNES 2,878,730

BLADE ASSEMBLY

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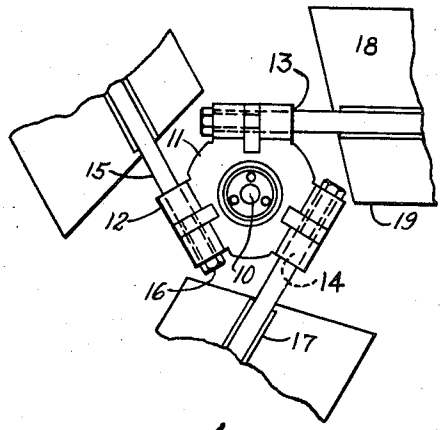


Fig-1

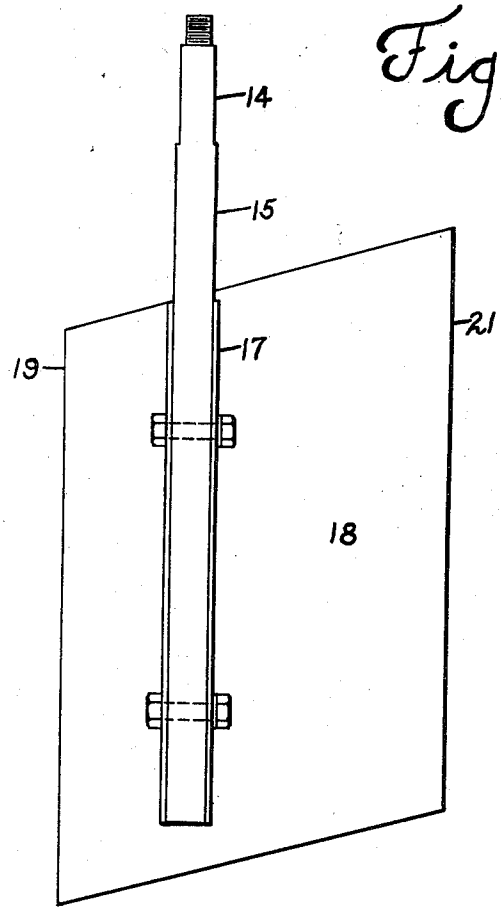


Fig-2

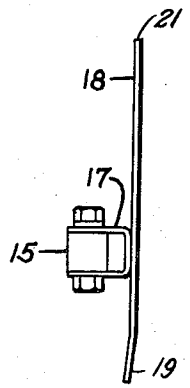


Fig-3

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BLADE ASSEMBLY

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6 Claims. (Cl. 94—45)

This invention relates to surfacing tools such as rotary troweling machines, and relates more particularly to the sweep blade mechanism thereof in which multiple blade assemblies make a progressive circular wiping engagement with the surface upon which the tool operates. Tools of the instant class are moved about over a bed of concrete or the like for floating and finishing the surface thereof.

The object of the invention is to simplify the construction as well as the means and mode of operation of blade assemblies, whereby such assemblies may not only be economically manufactured, but will be more efficient and satisfactory in use, adaptable to a wide variety of uses, having relatively few parts and be unlikely to get out of repair.

A further object of the invention is to enable the sweep blade mechanism to be made relatively small and light for better access to hard to reach areas of the surface being worked upon.

A further object of the invention is to enable the tool to be transported more easily to and from the work.

It is another object of the invention to achieve the foregoing reduction in size and weight without materially reducing the surface area of the working blades.

A further object of the invention is to provide a generally new configuration and mounting for the sweep blades to obtain a more compact relationship between the several sweep blades and a reduction in the diameter of the working area traversed by such blades.

A further object of the invention is to improve the sweeping action of the blades to more nearly resemble the finishing action done by hand.

A further object of the invention is to provide a blade assembly possessing the advantageous structural features, the inherent meritorious characteristics and the mode of operation herein mentioned.

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.

Referring to the accompanying drawing wherein is shown one but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a plan view, with some parts broken away, of a sweep blade mechanism in accordance with the illustrated embodiment of the invention;

Fig. 2 is a detail plan view, enlarged with respect to Fig. 1, of a blade assembly; and

Fig. 3 is an end view of the blade assembly of Fig. 2.

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

The invention is disclosed as embodied in a troweling machine for concrete finishing operations. Such a machine includes an engine, a handle and suitable controls not here shown, the operation of the tool serving positively to rotate a shaft **10** which is supported in a vertical

or upright position, substantially normal to the plane of the surface of the work. The shaft **10** rotatably drives a mounting boss **11** which carries a circumferential series of (in the present instance three) bearing members **12** which have longitudinal through bores **13** located in planes tangential to a common circle concentric with the shaft **10**. The bearing members **12** lie in the same horizontal plane and are spaced apart equal distances from one another about the peripheral edge of the boss **11**.

Received in each bore **13** is the shaft portion **14** of blade mounting arms **15**. The portion **14** of each arm **15** extends through and beyond its respective bearing member **12** and has a nut **16** screw threaded thereon to hold the blade mounting arms in assembled relation to the mounting boss **11**.

Projecting radially outwardly from the mounting boss **11** and bearing member **12** thereon, each of the arms **15** is received in and detachably secured to a channel piece **17** secured as by welding to the upper surface of a blade **18**. Each blade **18** has a generally flat planar formation and its bottom surface is made smooth for easy wiping engagement with the work. The blade **18** has a leading or forward edge **19** and a trailing or rearward edge **21**, the terms forward and rearward having reference to the direction of rotation of the shaft **10**. The leading edge **19** and adjacent area are angled upwardly and thus inclined slightly relatively to the body of the blade **18**.

The blade **18**, in each instance, has a swept back appearance, being given the shape of an oblique-angled parallelogram. The channel piece **17** is secured to the blade **18** in parallel relation to the leading and trailing edges and is offset from the longitudinal axis of the blade in the direction of the leading edge **19**. The mounting of the blade on the arm **15** is such as to place the trailing edge **21** in inwardly offset relation to the leading edge **19**. More particularly, the blade **18** is positioned with its leading edge in a plane approximately radial with respect to the axis of the shaft **10** and with the trailing edge extending more closely than the leading edge to an imaginary line passing through the axis of the shaft and normal to the longitudinal axis of the supporting or mounting arm **15**.

The described mounting of the troweling blades achieves in effect an interfitting relationship of the inner ends of the blades. Such relationship is effective to reduce the outside diameter of the path traveled by the blades without a material or corresponding reduction in the surface area of the blades. The tool being thus made smaller is more easily transported and handled and can readily be carried or moved through doorways and like openings. In operation, it can be brought more closely to corners and to obstructions in the work, obviating much of the supplemental hand troweling work heretofore necessary. The swept back angle of the blade also tends to duplicate the sweeping hand action of skilled manual finishing.

It will be understood that, in a manner which it is unnecessary here to consider, the blade arms **15** are rotatable to vary the angle of the blades relatively to the work surface so that smooth, hard and intermediate trowel finishes may be obtained.

From the above description it will be apparent that there is thus provided a devices 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 but one 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. In a power trowel, a rotary drive shaft, a blade carrying arm tangential to a circle concentric with the axis of said shaft, means connecting said arm to said shaft for moving said arm about the axis of said shaft in response to rotation of the shaft, and a blade mounted on said arm having spaced apart leading and trailing edges parallel to one another and to said arm, said blade having the shape of an oblique-angled parallelogram, the trailing corner of the parallelogram being offset closest to a line passing through the axis of the shaft and normal to the axis of said arm.

2. In a power trowel having a rotary drive shaft and blade arms connected to said shaft and disposed tangential to a circle concentric with the axis of said shaft, said arms being connected to said shaft for movement about the axis of said shaft in response to rotation of the shaft; a blade mounted on each of said arms having spaced apart leading and trailing edges parallel to one another and to said arm, said blade having the shape of an oblique-angled parallelogram, and being positioned on said arm with the inner end of its leading edge more distant than the inner end of its trailing edge from a line passing through the axis of the shaft normal to the longitudinal axis of the arm.

3. In a power trowel, a rotary drive shaft, a blade mounting boss in concentric relation to said shaft and rotatably driven thereby, blade arms having their inner ends installed in said mounting boss, said arms lying tangential to a circle concentric to said shaft, and troweling blades in the form of oblique angled parallelograms on said arms with their leading and trailing edges parallel thereto, said blades having their inner ends adjacent said mounting boss, the respective innermost ends of the leading edges of each of said blades being adjacent the inner end of one of said arms and the trailing corner of each of said parallelograms being offset closest to a line passing through the axis of said shaft and normal to the axis of the arm to which it mounts.

4. In a power trowel, a vertical drive shaft, a plurality of blade arms each tangential to a circle concentric with the axis of said shaft, a blade in the shape of an oblique-angled parallelogram mounted on each of said arms having its leading edge in a plane approximately radial with respect to the axis of said shaft and its trailing and leading edges in parallel spaced relation to the arm to which it mounts, the trailing edge being more distant from said arm than said leading edge and means connecting said arms to said shaft, the leading edge of each of said blades being inclined relatively to its body whereby to enable duplication of the sweeping hand action of skilled manual finishing.

5. In a power trowel, a blade assembly including an arm having inner and outer ends, a blade attached to said arm to have leading and trailing edges parallel to one another and to said arm, said blade having the shape of an oblique-angled parallelogram and being positioned on said arm with the trailing edge offset relative to the leading edge at either end toward the inner end of said arm.

6. In a power trowel, a rotary drive shaft having a mounting boss connected thereto, a plurality of blade arms peripherally and tangentially connected to said boss, troweling blades in the form of oblique-angled parallelograms supported by said arms to revolve in following relation to one another in response to rotation of said shaft, the inner ends of said blades being positioned immediately adjacent said boss with their trailing corners being offset closest to a line passing through the axis of the shaft and normal to the axis of the arm to which they mount.

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