Nov. 28, 1939. C. A. LEISTNER ET AL 2,181,375

FINISHING DEVICE FOR CEMENT SURFACES

Filed June 10, 1938 2 Sheets-Sheet 1

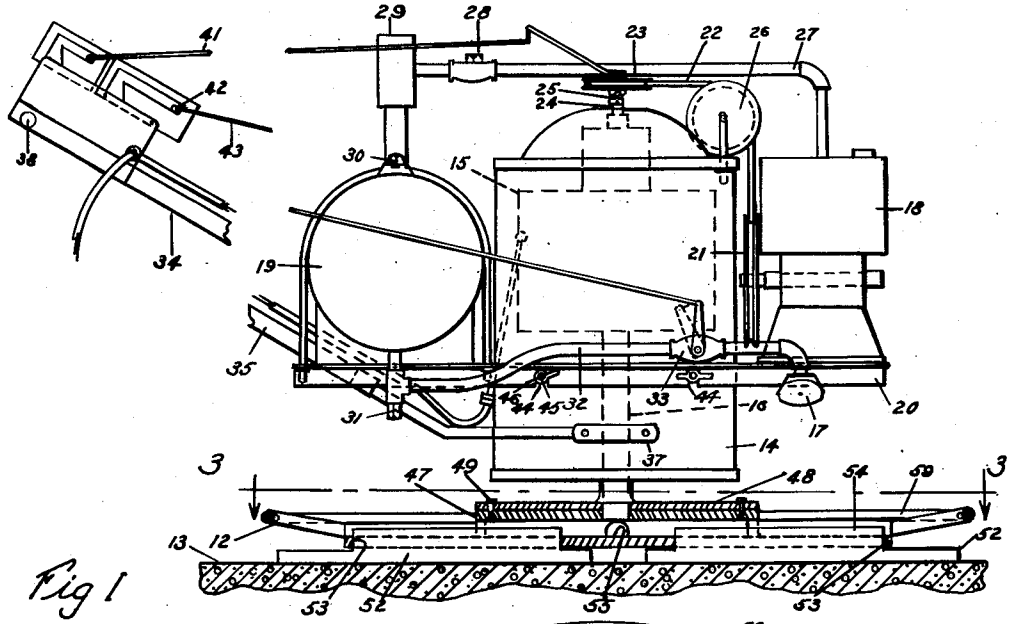


Fig 1

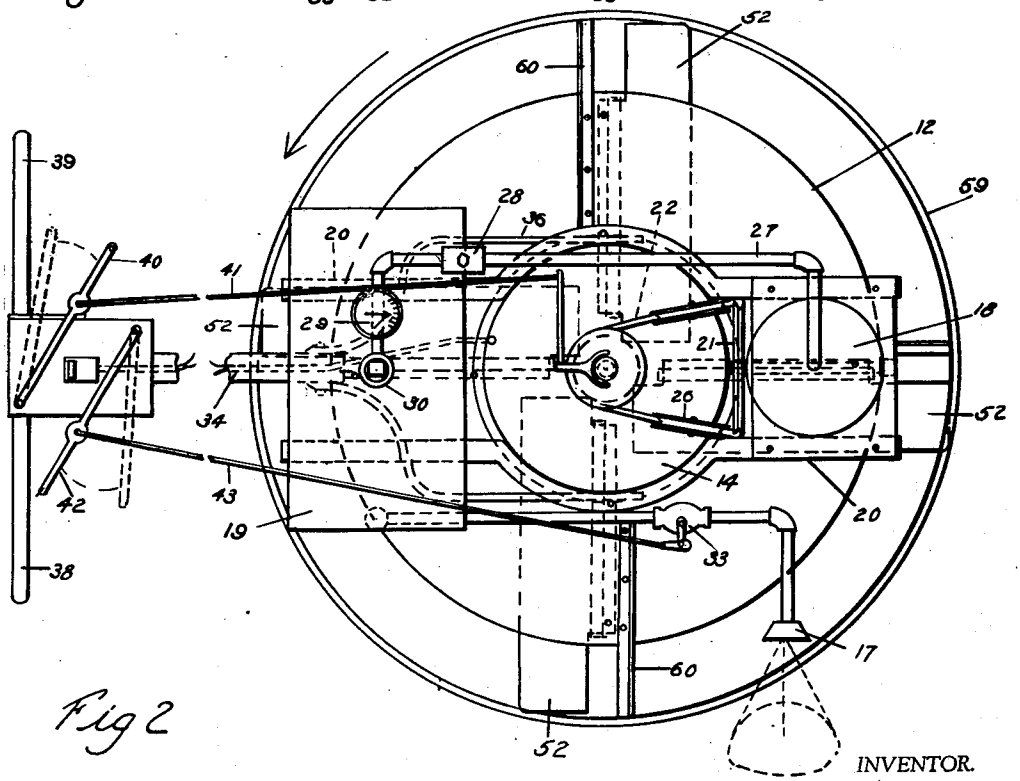


Fig 2

INVENTOR.
Charles A. Leistner.
Roy. Conway.
BY Murray Jackhoff & Paddack
ATTORNEY.

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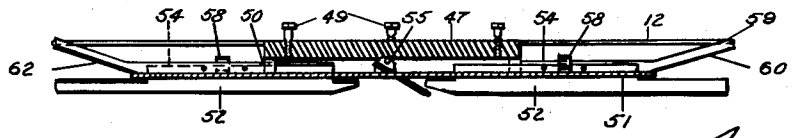


Fig 4

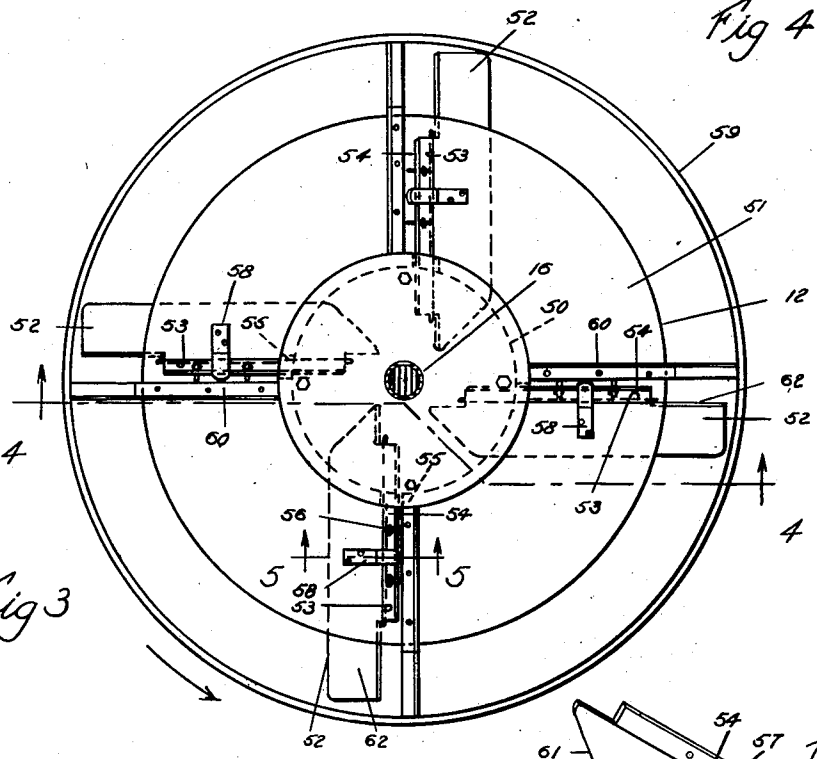


Fig 3

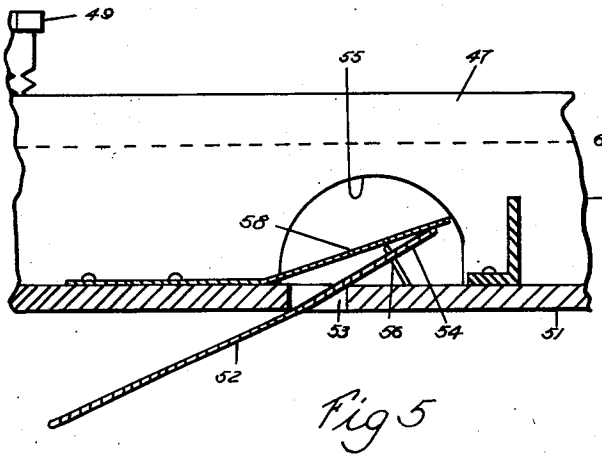


Fig 5

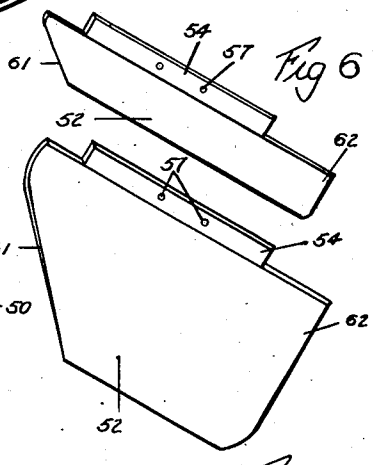


Fig 6

Fig 7

INVENTOR.
Charles A. Leistner.
Roy. Conway.
BY Murray Sachhoff & Paddach.
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,181,375

FINISHING DEVICE FOR CEMENT SURFACES

Charles A. Leistner, Covington, and Roy Conway, Fort Thomas, Ky.

Application June 10, 1938, Serial No. 213,008

2 Claims. (Cl. 94—45)

This invention relates to a machine for use in treating the surface of cement and particularly adapted to apply the finished surface to cement before final setting thereof.

An object of the invention is to provide an improved rotary member for a machine of this type which is devised to carry a number of demountable blades and fastened thereon by a novel arrangement of parts.

Another object of the invention is to provide a machine which will operate with equally good results upon cement surfaces in a condition for hand trowelling and upon relatively hard surfaces where hand trowelling would be ineffective.

A further object of the invention is to provide a machine which will effect a great saving in time and labor in the particular field of its usefulness.

Another object of the invention is to provide a novel means for applying a trowelling operation to a cement surface and also novel means of constructing and associating the parts therefor.

These and other objects will be apparent from the following specification and drawings, in which:

Fig. 1 is a fragmental side elevational view of our surfacing machine, parts thereof being shown in cross-section.

Fig. 2 is a fragmental, top plan view of the machine shown in Fig. 1.

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1 showing the details of the rotary surfacing member of the device.

Fig. 4 is a cross-sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is an enlarged cross-sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is a perspective view of a trowel for the device.

Fig. 7 is a perspective view of a modification of the trowel shown in Fig. 6.

The embodiment of our invention comprises a rotary finishing member 12 resting upon a cement surface 13 and supporting a motor housing 14. The motor 15 within the housing is fastened to a vertically disposed driving shaft 16 which is suitably connected at its lower end to the rotary finishing member.

In using our device for the purposes intended, it is necessary to provide a means for directing water upon the treated surface of the cement, and it is also highly important that the water be applied upon the portions of the cement which require it; further, the water applied should be sprayed in finely divided form because of the danger of leaving water marks on the finished surface. To accomplish the foregoing advantages, we provide our device with a pressure spray head 17 which is directed to spray finely divided liquid on the cement surface. The means devised for delivering water under pressure to this spray head consists of an air compressor 18 and a water pressure tank 19 disposed on opposite sides of the motor housing and supported by a frame 20. The air compressor is actuated by means of a driven wheel 21 which engages an endless belt 22, said belt being driven by wheel 23 freely mounted on motor shaft 24 and rotated thereby means of a jaw clutch 25. The belt is directed from a horizontal to a vertical position by means of pulleys 26 which are mounted on the motor housing 14. The pressure delivery port of the air compressor is connected with the water pressure tank by means of pipe line 27, said pipe line being provided with a back-check valve 28 and a pressure gauge 29. Water pressure tank has water filling opening 30 and a water drain tap 31 and it is connected to the spray head by means of pipe line 32, the latter having a conventional quick-action spring valve 33 interposed between the tank and the head.

The means for manipulating the entire unit comprises a handle 34 consisting of a post 35 which is provided at its lower end with a dividing member 36 which is fastened to the motor housing 14 by means of clamps 37. The upper end of the handle is provided with two oppositely disposed and horizontal shafts 38 and 39 which are manually held by the operator of the device for controlling its directional movement. This portion of the handle is also provided with a lever 40 which is connected by a suitable link 41 to operate the jaw clutch 25. Another lever 42 is adapted by means of link 43 to actuate quick-action valve 33.

It is also contemplated that the spray head and the entire water pressure mechanism may be removed from the device. The frame 20 is provided with slots 44 which rest upon threaded lugs 45 extending from the motor housing. Wing nuts 46 cooperate with the lugs to hold the frame stationary in the housing. To remove the frame and the water pressure mechanism, it is only necessary to loosen the wing nuts and move said frame upwardly in a vertical direction, thus relieving the tension on the belt 22 to release it from the pulley 23. The links 41 and 43 may be then removed from their levers, thus leaving the motor and finishing disk in a condition to be

used for other purposes not requiring said water mechanism.

The rotary finishing member, adapted to rest on the surface of the cement and support the entire unit, comprises a circular hub 47 (Figs. 1, 3 and 4) which is driven by the motor by means of a rotary member 48 mounted on the motor shaft 16, said rotary member being removably fastened to the hub by bolts 49. The hub is provided with a downwardly extending, peripheral rim 50, the lower edge of the rim being welded or otherwise fastened to a relatively large disk 51 which is disposed coaxially with the hub. The disk has a number of radially positioned and flexible trowel blades 52 fastened to and depending from the lower surface thereof and disposed at an acute angle thereto in the direction counter to the rotation of the disk (Figs. 3 and 5).

The means for removably fastening the trowel blades to the disk comprises a plurality of radial, elongated slots 53 (Figs. 1, 3 and 5) formed wholly through the disk and which extend beneath the hub to a point adjacent the center of the disk and terminate near the peripheral edge of said disk. The trowel blades are provided with foreshortened flange portions 54 which are adapted to be snugly received in the slots 53 and project above the upper surface of the disk. To allow sufficient clearance for the flanges which are subjacent the hub, the rim of said hub is provided with cut-out portions 55. A number of upstanding pins 56 are mounted upon the upper surface of the disk adjacent the slots and are adapted to loosely receive complementary holes 57 formed in the flanges 54 of the trowel blades. Spring fingers 58 fastened to the upper surface of the disk contact the upper edge of the flanges intermediate the pins and are adapted to exert a downward pressure thereon to preclude disengagement of said flanges and pins. It will therefore be understood that the trowel blades may be removably fastened to the disk by inserting the flanges thereof into the slots 53 so that the pins 56 engage the holes 57 of the flanges, the spring fingers 58 serving to hold the trowels in fastened position. A circular guard member 59 is disposed concentrically of the disk and is positioned above and beyond the outer edges of the blades by means of angle bars 60 which are fastened to the upper surface of the disk and welded to the guard member.

As hereinbefore described, the trowel blades are made from flexible sheet material and, when placed in operative position upon the surface of the cement, resiliently hold the entire surfacing unit on said surface, thus precluding the engagement of the lower contacting surface of the blades with the lower surface of said disk. The inner edge of the trowel has a cutaway portion 61 (Figs. 6 and 7) to prevent back motion of the trowel adjacent the center of the disk. As shown in Fig. 7, the trowel blade may be of any dimension depending upon the consistency and/or hardness of the cement upon which the unit is desired to be used, the large trowel being adapted for cement of relatively soft composition, whereas the small blade may be used upon cement surfaces having a hard consistency. The outer edge 62 of the blade is not given the support which the central and inner portion of the blade receives by means of flanges 54. This portion of the blade is therefore very flexible to prevent scratching and marring of the cement surface when the unit is moved or tilted by the operator thereof.

What is claimed is:

1. In a machine for finishing the surface of cement, the combination of a rotary finishing member resting upon the surface, a housing supported by the member, a motor within the housing, a handle for manipulating the entire unit, said finishing member comprising a circular hub driven by the motor and having a downwardly extending, peripheral rim, a relatively large disk fastened to the rim and disposed coaxially with the hub, a plurality of radial, elongated slots formed wholly through the disk which extend beneath the hub and terminate near the peripheral edge of the disk, cut out portions in the rim adjacent the slots, a number of flexible trowel blades depending from the disk and disposed at an acute angle thereto in the direction counter to the rotation of the member, said blades extending a substantial distance beyond the periphery of the disk, means for removably holding the blades on the disk and comprising a flange for the blades adapted to be received in the slots, upstanding pins on the disk for engagement with complementary holes formed in the flange, and spring fingers contacting the edge of the flange intermediate the pins and adapted to exert a downward pressure thereon, and a circular guard positioned on the disk and disposed above and beyond the outer edges of the blades.

2. In a machine for finishing the surface of cement, the combination of a rotary finishing member resting upon the surface, a housing supported by the member, a motor within the housing, a handle for manipulating the entire unit, said finishing member comprising a circular hub driven by the motor and having a downwardly extending, peripheral rim, a relatively large disk fastened to the rim and disposed coaxially with the hub, a plurality of radial, elongated slots formed wholly through the disk which extend beneath the hub and terminate near the peripheral edge of the disk, cut out portions in the rim adjacent the slots, a number of flexible trowel blades depending from the disk and disposed at an acute angle thereto in the direction counter to the rotation of the member, said blades extending a substantial distance beyond the periphery of the disk, means for removably holding the blades on the disk and comprising a flange for the blades adapted to be received in the slots, and a circular guard positioned on the disk and disposed above and beyond the outer edges of the blades.

CHARLES A. LEISTNER.
ROY CONWAY.