March 23, 1965 C. E. WITTMACK, JR 3,174,413

MATERIAL SPREADER

Filed Feb. 8, 1962 2 Sheets-Sheet 1

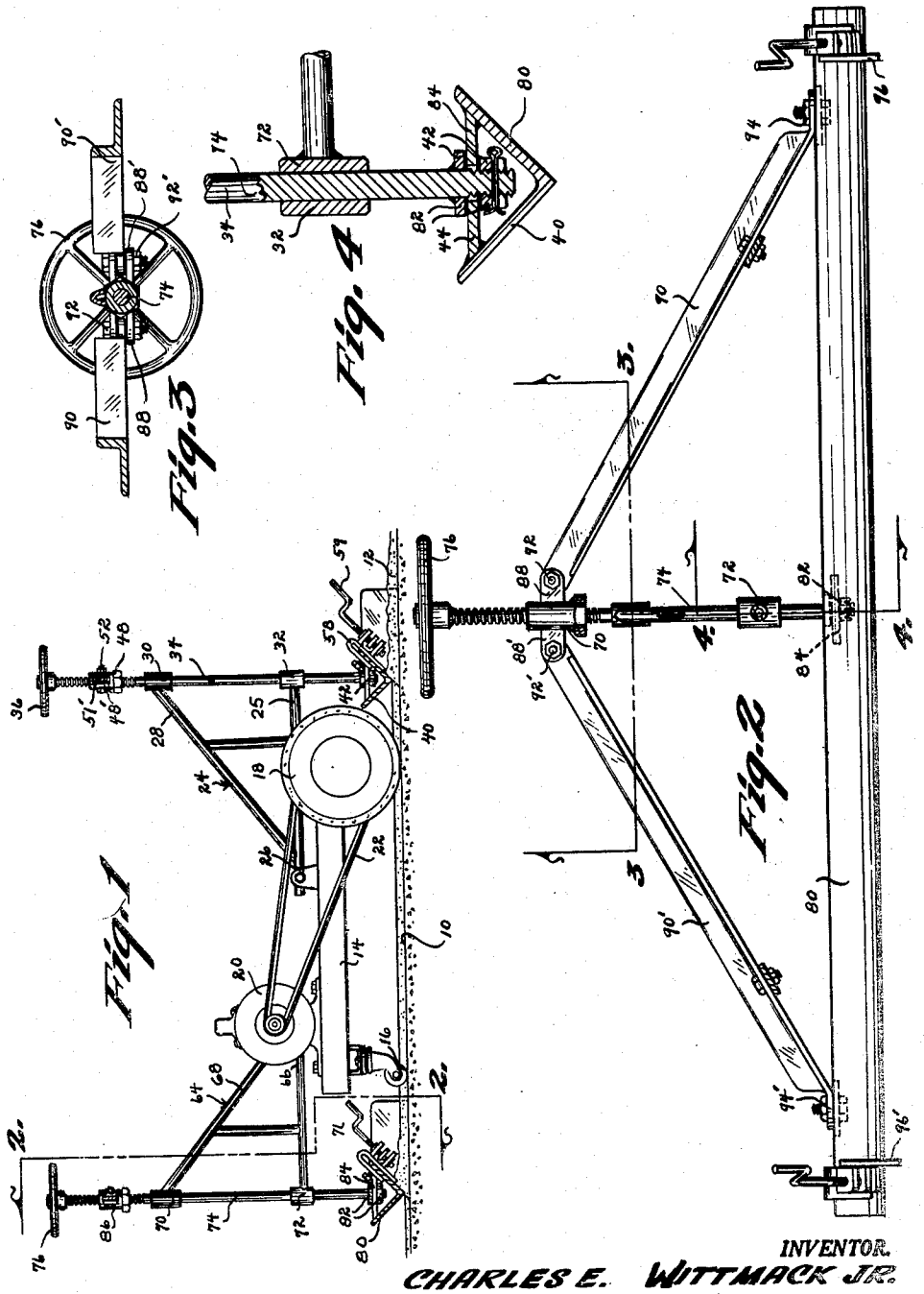


Fig. 1

Fig. 3

Fig. 4

Fig. 2

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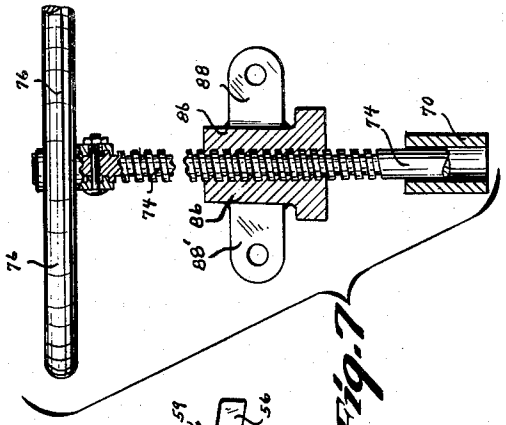


Fig. 7

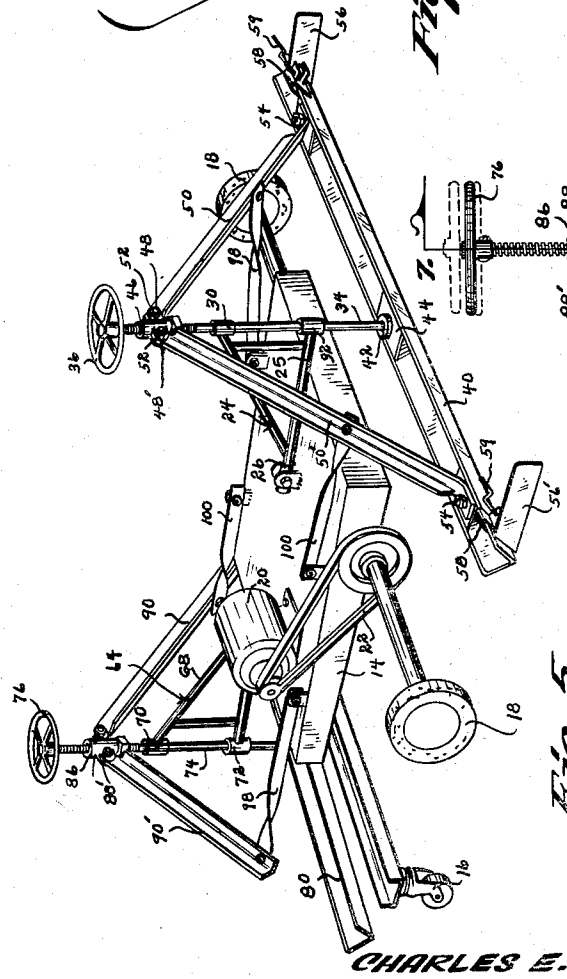


Fig. 5

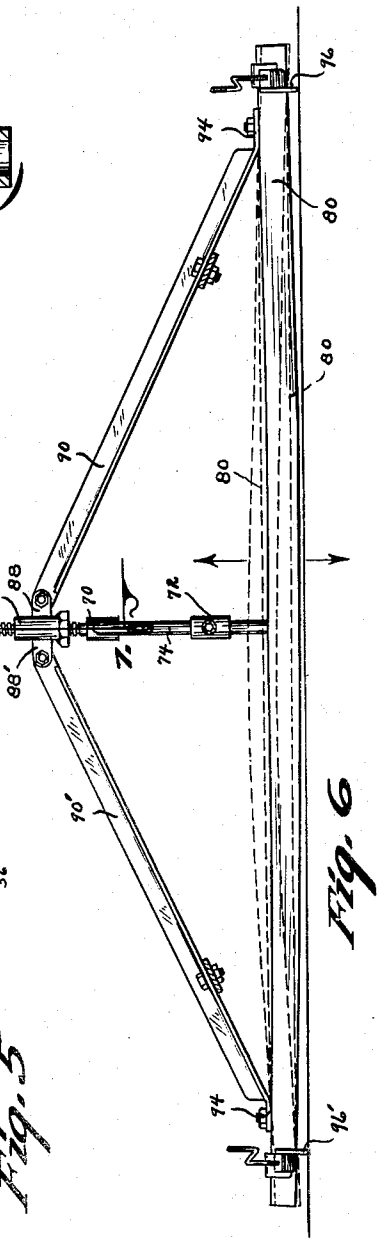


Fig. 6

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MATERIAL SPREADER

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2 Claims. (Cl. 94—45)

This invention relates to material spreaders and more particularly to spreaders for epoxy resin floor coating material, or like. Of the epoxy resins and their various applications, a new epoxy resin compound, commercially referred to as "Ionite" has been developed. The best application as yet devised for "Ionite" is in the form of a coating or covering for a worn out commercial, industrial, factory, or like, floor. "Ionite" has proved to be a substantially indestructible floor surface covering.

However, several problems occur in applying "Ionite" or like materials to floors. First, due to the very high cost of such coatings, extreme economy must be practiced in the volume or thickness of the material applied to a floor. Secondly, the surfaces of many old floors to be repaired are concave in cross section while other floors are flat or even convex in cross section. Therefore, it has heretofore been very difficult or impossible to spreadably apply a thin, even, smooth coat of "Ionite" or the like, over the entire surface of worn hallways or room floors. Thirdly, such materials do not lend themselves to hand troweling.

Therefore, one of the principal objects of my invention is to provide a floor covering material spreader that is particularly adapted for use with epoxy resin floor covering compounds, such as "Ionite" and the like.

Another object of this invention is to provide a floor covering material spreader that is capable of applying a thin, even, smooth, coat of such material onto a plurality of floor surfaces of different characteristics or designs.

Still another object of my invention is to provide a floor covering material spreader that is capable of closely, adjustably conforming to a concave, flat, or convex floor surface.

Still further objects of this invention are to provide a floor covering material spreader that is economical in manufacture, durable in use, and precise in adjustment.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangements, and combination, of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in my claims, and illustrated in the accompanying drawings, in which:

FIG. 1 is a side view of my device in use;

FIG. 2 is an enlarged cross-sectional view of the device taken on line 2—2 of FIG. 1;

FIG. 3 is an enlarged horizontal sectional view of one of the spreader unit means taken on line 3—3 of FIG. 2;

FIG. 4 is an enlarged cross-sectional view of one of the adjustable scraping, smoothing and levelling blades taken on line 4—4 of FIG. 2;

FIG. 5 is a perspective view of my machine and more fully illustrates its construction;

FIG. 6 is an end view of the machine and illustrates the adjustment of the scraper blade; and

FIG. 7 is an enlarged sectional view of the blade adjustment means taken on line 7—7 of FIG. 6.

In the drawings, I have used the numeral 10 to generally designate a worn out floor or like surface that is to be refinished with a coating of "Ionite" or selected compound 12. The numeral 14 generally designates the base, platform, or frame of my spreader. This platform 14 can support a workman and is supported in spaced parallel relation to and above the floor 10 by means such as the caster wheels 16 rotatably operatively mounted to the

platform 14 and the drive wheels 18 and their shaft which is rotatably mounted near the other end of the platform 14. The numeral 20 generally designates a prime mover means, such as an internal combustion engine or electric motor, disposed on the base platform 14 and adapted to rotate the drive wheels 18 by any suitable means, such as a belt 22 and pulley wheels on the motor and drive shaft of the wheels 18. The gearing between the prime mover 20 and the drive wheels 18 is such that the rate of travel of the base frame means 14 over the floor surface 10 may be approximately one foot per minute. The numeral 24 generally designates a frame having an elongated rod 25 pivotally secured at its inner end 26 to base platform 14 for vertical movement and an elongated rod 28 secured to rod 25, adjacent inner end 26 and extending upwardly therefrom at an acute angle. A hollow bearing conduit 32 is secured to the outer end of rod 25 while a hollow bearing conduit 30 is secured to the upper end of rod 28 and are vertically aligned. Hollow bearing conduits 30 and 32 are spaced outwardly beyond base platform 14 and wheels 18 as seen in FIG. 1. The numeral 34 designates a vertical rod having threads around its upper portion. This rod 34 extends rotatably slidably through the bearing conduits 30 and 32. The numeral 36 generally designates a horizontally disposed wheel rigidly secured to the top of the rod 34 for facilitating the manual rotation of the rod 34. The numeral 40 generally designates an elongated horizontal spreader bar that is horizontally rotatably secured at its center length to the lower end of the rod 34 in any suitable manner, such as by the revolving key means 42 and the bracket therefor 44. The spreader bar 40 is V-shaped in cross section and is disposed transverse to the direction of travel of the base frame means 14. The numeral 46 generally designates a bearing threaded on and around the upper portion of the rod 34 between the conduit 30 and the wheel 36. The numerals 48 and 48′ generally designate horizontally extending tabs that extend radially from the body of the bearing 46 and are diametrically opposite each other. The numerals 50 and 50′ generally designate brace arms that are detachably vertically hinged to the tabs 48 and 48′ by bolt means, or like, 52 and 52′. The brace arms 50 and 50′ extend outwardly and downwardly from their respective hinges and are detachably secured to respective outer end sections of the material spreader bar 40, as at 54 and 54′. The numerals 56 and 56′ generally respectively designate an adjustable clearance measuring and guide plate device disposed at the respective end terminations of the spreader bar 40. These adjustable free floating guide means 56 and 56′ may be detachably secured to the blade 40 by clamp means 58 and 58′, as shown in FIG. 5. A threaded crank arm 59 is used for adjustably lowering or raising the plates 56 and 56′ relative to the blade. This described unit for one end of the machine is duplicated at the other end of the machine.

The numeral 64 generally designates a second frame having an elongated rod 66 pivotally secured at its inner end to base platform 14 for vertical movement and an elongated rod 68 secured to rod 66 adjacent the inner end thereof and extending upwardly therefrom at an acute angle. A hollow bearing conduit 70 is secured to the upper end of rod 68 and a hollow bearing conduit 72 is secured to the outer end of rod 66 and are vertically aligned. Hollow bearing conduits 70 and 72 are spaced outwardly beyond base platform 14 and caster wheels 16 as seen in FIG. 1. The numeral 74 designates a rod having threads around its upper area. This rod 74 rotatably slidably extends through the bearing conduit 70 and bearing conduit 72. The numeral 76 generally designates a horizontally disposed wheel rigidly secured to the top of the rod 74 for facilitating the manual rotation of the rod 74. The numeral 80 designates an elognated horizon-

tal spreading and material surface smoothing finisher bar that is horizontally rotatably secured to the lower end of the rod 74 in any suitable manner, such as by the revolving key means 82 and bracket therefor 84. The spreader, smoother and finisher bar 80 is V-shaped in cross section similar to the spreader bar 40 and is also disposed transverse to the direction of travel of the base frame means 14. The numeral 86 designates a bearing threaded on and around the upper area of the rod 74 between the conduit 70 and the wheel 76. The numerals 88 and 88' generally designate horizontally extending tabs that extend radially from the body of the bearing 86 and are diametrically opposite each other. The numerals 90 and 90' generally designate brace arms that are detachably vertically hinged to the tabs 88 and 88' by bolt means, or like, 92 and 92', respectively. The brace arms 90 and 90' extend outwardly and downwardly from their respective hinges and are detachably secured to the respective outer end sections of the material smoother and finisher bar 80, as at 94 and 94'. The numerals 96 and 96' designate the adjustable clearance, measuring, and floating plate guide device disposed at the respective end terminations of the material smoother and finisher bar 80, as shown in FIG. 2. These two adjustable plate means are duplicates of the two adjustable plate means 56 and 56' on the blade 40.

From the foregoing it will be appreciated that there is a scraping, smoothing, finishing blade unit means at each end of the base frame 14 and that these two units are substantially duplicates of each other. When the wheel 36 is rotated the central area of the blade 40 will either be raised upwardly or forced downwardly in order to cause it to go upwardly as shown by the broken lines in FIG. 6, or caused to be moved downwardly, or caused to assume a horizontally straight condition. In like manner, when the wheel 76 is rotated, the blade 80 will be yieldingly bent into an upwardly or downwardly curved path, or caused to assume a straight horizontal condition. The reason for this is that when the wheels 36 and 76 are rotated, their respective shaft rods 34 and 74 will be either raised or lowered and the vertical height positions of the braces 50 and 50', 90 and 90' will remain stationary, thus holding the other ends of the material contacting blades stationary while permitting the upward or downward adjustable bowing of the blades as seen in FIG. 6. By the blade units on each end of base frame 14 being separately adjustable, as shown in FIG. 5, the bearings 46 and 86 may be individually vertically adjustably set, and thereby effect the adjustment of the blades 40 and 80 to accommodate surface requirements.

In operation, my spreader-finisher device is placed on the surface 10 to be refinished. The clearance measuring guide devices 56–56' and 96–96' are then adjusted to give a suitable clearance between the blades 40–80 and the floor 10. It is suggested that the primary spreader blade 40 have a clearance of approximately one-fourth inch and that the smoother-finisher blade 80 have a clearance of approximately one-eighth inch. Next, the frames 24 and 64 are vertically moved, and thereby the respective blades 40 and 80, in such a manner that the respective clearance and guide devices 56–56' and 96–96' are touching and in contact with the surface 10. Substantially simultaneously along with their respective associated clearance guides, the rods 34 and 74 are respectively rotatably vertically adjusted, thereby adjusting the center section of their respective bars 40 and 80, to be either bowed up, horizontally straight, or bowed downwardly, depending on the specific contour of the surface to be refinished. After the bars 40 and 80 have been adjusted to closely follow the contour of the floor 10, "Ionite" or compound 12 is then roughly distributed in front of the spreader bar 40, the prime mover 20 started, thus actuating the driving wheels 18, and the spreading, smoothing and finishing operation is begun. The spreader bar 40 engages the "Ionite" or like 12, and spreads it evenly in the above predetermined thickness over the contour of the surface of the floor 10. Thereafter, the spreader, smoother and finisher bar 80 passes onto the layer of "Ionite" or like 12, spread by the bar 40, further spreads the "Ionite" or like 12 evenly over the contour of the surface of the floor 10, smooths the layer and finishes off the newly presented thin layer of "Ionite" or like 12 so that it presents a smooth, even, finished surface. If the surface contour of the surface 10 is uneven, or has places wherein it changes from concave to convex, or vice versa, the operator can turn the wheels 36 and 76, respectively, and thereby adjust the contour of the bars 40 and 80 to accomplish the desired result.

All wheels 16 and 18 should be beyond the planes of the ends of the bars 40 and 80 so as not to mar the composition being installed on the surface 10.

Each of the bars 40 and 80 is constructed out of relatively springy material, such as aluminum or the like.

Stabilizing braces 98 and 100 extend between each blade 40 and 80 and the base 14 as shown in FIG. 5. The ends of the braces 98 and 100 that extend to the platform base 14 are vertically hingedly secured to the platform base. The pivot points of the braces 98 and 100 of the blade 40 are in line with the pivot point of the frame 24. In like manner, the pivoted ends of the braces 98 and 100 of the blade 80 are in line with the pivot axis of the frame 64. By each end unit being so pivoted to the base platform, each unit will yieldingly "float" over and on the composition being laid. In operation usually a workman will ride on the base platform 14. If he wishes he may exert downward pressure on the wheel 36 or wheel 76, to bring a blade to a lower operating position relative to the surface 10. Also, if desired a workman may pull upwardly and inwardly on one of the wheels 36 or 76 and thereby cause that wheel's unit to swing upwardly and over the platform 14. This possibility is highly desirable as the thickness of the composition being laid may be controlled, a blade may be raised to pass over an obstruction, or even manually raised to pass over a pile of the composition to be laid. Quite often an operator on the platform 14 will deposit material forward of or to the rear of a blade.

Some changes may be made in the construction and arrangement of my material spreader without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. A material spreader for coating floors, comprising in combination,

a platform,

rotatable wheels disposed on and supporting said platform in spaced parallel relation to said floor, said wheels comprising a front driving set and a rear caster set thereof,

a means for securing an elongated spreader bar in front of said platform and said wheels, said elongated spreader bar being disposed substantially transverse to the forward direction of travel of said platform,

said means including an elongated rod pivotally secured to said platform, and extending outwardly therefrom, a hollow bearing secured to the outer end of said elongated rod; a second elongated rod secured to said first elongated rod adjacent the inner end thereof and extending upwardly therefrom at an acute angle; a hollow bearing secured to the outer end of said second elongated rod; said hollow bearings being in a vertical disposed relationship; a shaft rotatably slidably extending downwardly through said hollow bearings; said shaft being threaded at its upper end; a bearing threadably embracing said shaft adjacent its upper end; a means for rotating said shaft at times; said shaft being rotatably secured at its lower end to said elongated spreader at the center of its length;

a first brace secured to said threaded bearing on said shaft and extending downwardly and outwardly and secured at its other end to one end of said elongated spreader bar; a second brace secured to said threaded bearing on said shaft and extending downwardly and outwardly and secured at its other end to the other end of said elongated spreader bar;

a guide means detachably secured to both ends of said elongated spreader bar,

said guide means adapted to engage said floor, and means associated with said guide means for raising and lowering said guide means relative to said spreader bar;

said elongated spreader bar being V-shaped in cross-section.

2. A material spreader for coating floors, comprising in combination,

a platform,

rotatable wheels disposed on and supporting said platform in spaced parallel relation to said floor, said wheels comprising a front driving set and a rear caster set thereof,

a means for securing a first elongated spreader bar in front of said platform and said wheels, said first elongated spreader bar being disposed substantially transverse to the forward direction of travel of said platform,

said means including an elongated rod pivotally secured to said platform, and extending outwardly therefrom, a hollow bearing secured to the outer end of said elongated rod; a second elongated rod secured to said first elongated rod adjacent the inner end thereof and extending upwardly therefrom at an acute angle; a hollow bearing secured to the outer end of said second elongated rod; said hollow bearings being in a vertical disposed relationship; a shaft rotatably slidably extending downwardly through said hollow bearings; said shaft being threaded at its upper end; a bearing threadably embracing said shaft adjacent its upper end; a means for rotating said shaft at times;

said shaft being rotatably secured at its lower end to said first elongated spreader at the center of its length; a first brace secured to said threaded bearing on said shaft and extending downwardly and outwardly and secured at its other end to one end of said first elongated spreader bar; a second brace secured to said threaded bearing on said shaft and extending downwardly and outwardly and secured at its other end to the other end of said first elongated spreader bar;

a guide means detachably secured to both ends of said first elongated spreader bar,

said guide means adapted to engage said floor, and means associated with said guide means for raising and lowering said guide means relative to said spreader bar,

a means for securing a second elongated spreader bar in back of said platform and said wheels, said second elongated spreader bar being disposed substantially transverse to the forward direction of travel of said platform,

said means being identical to that of said first elongated spreader bar,

said first and second elongated spreader bars being V-shaped in cross-section.

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