

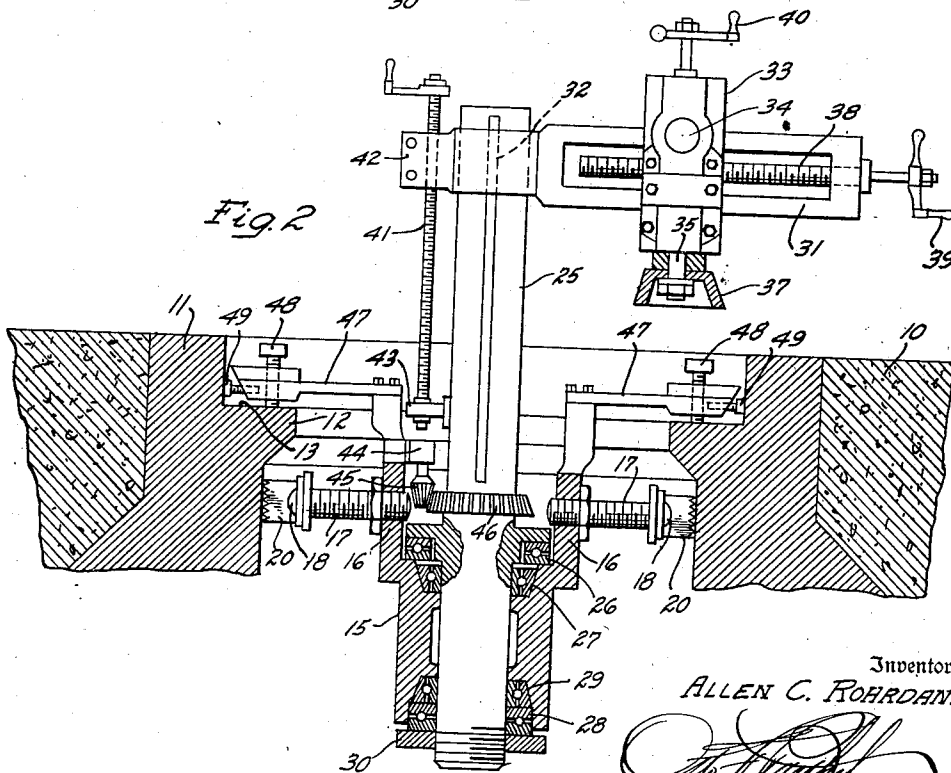
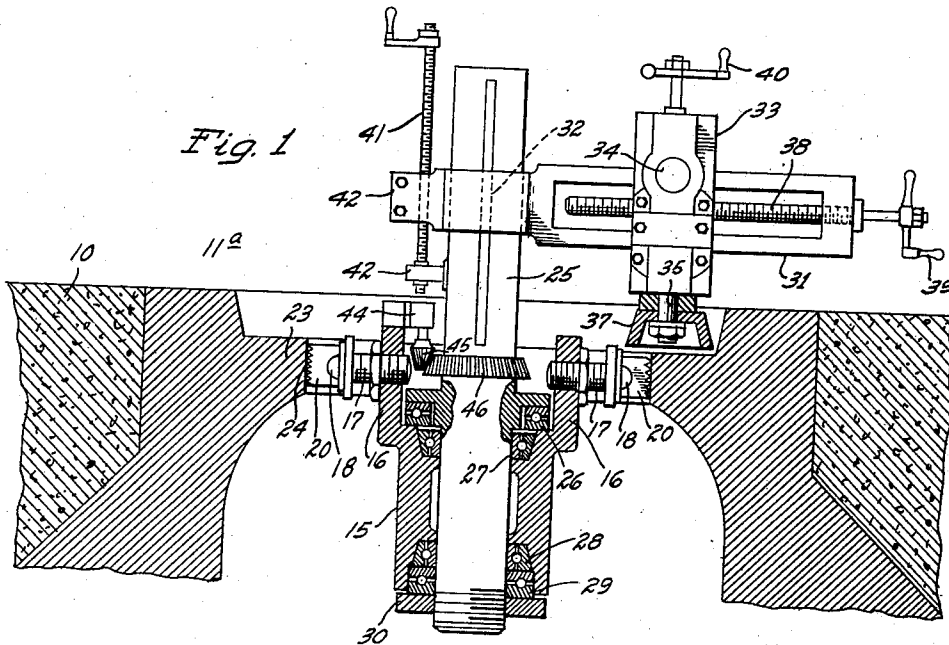
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MANHOLE GRINDING MACHINE

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MANHOLE GRINDING MACHINE

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5 Claims. (Cl. 51—241)

This invention relates generally to grinding machines and more particularly to portable machines for grinding and resurfacing or facing manhole seats.

Manhole seats and their covers, because of changes in temperature, corrosion, settling of ground, pounding by vehicles and other causes, become warped with the result that when vehicles run over them they make an annoying, clicking noise. These ill-fitting manhole covers are, of course, particularly objectionable in residential districts from which utility companies are continuously receiving complaints. It is not much of a problem to remove and reseat or resurface the cover, but to resurface the cover seat without removing the frame from the ground presents a problem which to my knowledge has never been satisfactorily solved. To remove the frame to a shop for resurfacing the cover seat is, of course, expensive and insofar as I am aware such machines as have been proposed to resurface a manhole seat without removing the frame from the ground have been unsatisfactory.

Accordingly it is an object of my invention to provide a new and improved portable machine for resurfacing manhole seats quickly and satisfactorily.

Another object of the present invention is to provide a machine for the above mentioned purpose which may be quickly and readily set up accurately in a manhole preparatory to resurfacing the seat thereof.

Another object of the invention is to provide a resurfacing machine for manhole frames and one which is adaptable to various type or construction of manhole frames.

Other objects of the invention will become apparent from the following description taken in connection with the accompanying drawing in which—

Figure 1 is a vertical central sectional view of my improved manhole resurfacing machine shown vertically and horizontally adjusted in a particular type of manhole frame in the ground;

Fig. 2 is a view of my resurfacing machine set up in a different type of manhole frame.

Referring to the drawings by characters of reference and first to Fig. 2, the numeral 10 designates the asphalt of a paved street having a hole in which a conventional type of manhole frame 11 is secured, the frame 11 having, adjacent the street surface, an inner, annular flange or shoulder 12 providing an upwardly facing seating surface 13 for a manhole cover (not shown). Occasionally, the seating surface 13,

and the side wall surface 14 thereof together with the seating surface of the cover need to be resurfaced in order that the cover will fit properly.

In order to resurface the seat 13 and also the side wall surface 14 properly and without removing the frame 11 from the ground, I provide a resurfacing machine which may be mounted in a manhole and adjusted to resurface the seat or the side wall 14 accurately. This machine includes a tubular support 15 which is positioned and extends vertically within the manhole, the support 15 having at its upper end integral and radially spaced spider flanges 16 in which radially spaced screws 17 are adjustably screw-threaded for rigidly securing the machine in the manhole. The outer ends of the screws engage in sockets 18 in chuck jaws 20 which are thrust outward by the screws and are arranged to bite, in the side wall of the frame, below the flange 12. In Fig. 1, there is shown a different type of manhole frame 11a, employed by certain utility companies, which frame 11a has a curved wall, as at 22 below the seat flange 23, requiring the chuck jaws 20 to engage the side wall surface 24 just above the curved wall 22.

Extending vertically through the tubular support 15 is a rotatable post or shaft 25 having within the tubular support 15 a flange seating on an upper end thrust bearing, designated in general by the numeral 26 and immediately below the bearing 26 is a side thrust bearing 27 for the shaft 25. Similarly a lower end thrust bearing 28 and a lower side thrust bearing 29 are provided, in the lower end of the tubular support 15, for the shaft, the bearings being supported and held in place by a nut 30 which may be screwthreaded onto the lower end of the shaft 25.

The shaft 25 projects upwardly out of the manhole and carries a laterally extending arm 31 which is keyed, as at 32, to the shaft to rotate therewith. Mounted on the arm 31, a support 33 carries a motor 34 which drives a shaft 35 on the lower end of which there is a rotatable grinding tool 37 for resurfacing the manhole seat and other adjoining surfaces. The motor may be an air, or electric or any other suitable type of motor. The motor and tool support 33 is slidably guided on the arm 31 and is adjustable therealong by a screw 38 which is conveniently rotated by a handle 39. Also, the tool support 33 may be adjusted vertically on the arm 31 by means of handle 40, which adjustment is well known in these type of tool carriers or com-

pounds, as they are commonly called, and therefore the details of the adjustment are not shown. In addition, there is preferably a second adjustment screw 41 for moving the arm 31 vertically to quickly position the tool after which more accurate adjustments are made by operation of handle 40. The screw 41 screwthreads into an extension 42 of the arm 31 and is connected at its lower end to a bracket 43 which is rigidly secured to the shaft 25.

Mounted on the spider or support 15 there is a motor 44 which drives a bevel gear 45 in mesh with a driven gear 46 secured to the rotatable shaft or post 25. The motor 44 may be an air or any other type of motor suitable to rotate the shaft.

Removably secured to the upper end of the spider or support 15 are radially spaced arms 47 of which there are preferably four and adjacent their outer ends they are provided with vertical adjustment screws 48 which seat at their lower ends on the manhole frame seating surface 13. By means of the adjustment screws 48 it will be seen that the device may be aligned vertically in a manhole to insure an accurate resurfacing operation. Also, the arms 47 are each provided in their outer ends with an adjustment screw 49 by means of which the device may be centered in the manhole frame, these adjustments, of course, being made before the chuck jaws 20 are tightened down.

After the chuck jaws 20 are tightened, and the leveling and centering arms 47 are removed, the tool 37 may be lowered onto the surface to be ground and motors 34 and 44 started. Motor 44, through gears 45, 47 will rotate the vertical shaft 25 and the resurfacing tool or grinding wheel 37 will revolve about the vertical axis of the shaft as the seat or surface is ground.

From the foregoing description it will now be seen that I have provided a device which may be rigidly secured to and in a manhole frame and regrind the cover seat thereof without removing the frame from the ground.

While I have shown and described my invention in detail it is to be understood that the same is to be limited only by the appended claims for many changes may be made without departing from the spirit and scope of the invention.

What I claim is:

1. In a device for resurfacing a cover seat of a manhole frame in the ground, a self-aligning support, a vertical shaft rotatably mounted on said support, an arm adjustably mounted on and rotatable with said shaft externally of the manhole frame, means to rotate said shaft, a cutting tool for resurfacing said seat and carried by said arm, and means for releasably securing said support to and within the manhole frame, and

means for manually moving said arm on said shaft located adjacent the axis thereof.

2. In a device for grinding the cover seat of a manhole frame in the ground, a self-aligning support positioned within the manhole frame, a vertical shaft rotatably mounted in said support, a laterally extending arm adjustably mounted on and rotatable with said shaft, a grinding tool mounted on said arm, a motor for rotating and depending from said shaft and mounted on said support, and means for releasably securing said support to and within the manhole frame, and manual means for moving said arm on said shaft to cause the tool to traverse the interior seat surface of the manhole.

3. In a device for grinding the cover seat of a manhole frame in the ground, a spider positioned within the manhole frame, chuck jaws mounted on said spider and arranged to engage the manhole frame below the seat thereof to secure said support rigidly to the frame, a vertical shaft rotatably mounted in said spider and projecting externally of the manhole frame, a laterally extending arm adjustably mounted on and rotatable with said shaft, a grinding tool adjustably mounted on said arm, a motor for rotating said shaft and mounted on said spider, and manual means for raising and lowering said arm to cause the tool to traverse the interior seat surface of the frame.

4. A device for resurfacing a cover seat of a manhole frame, a cylindrical support having an enlarged annular housing portion, a vertical shaft rotatably mounted on said support, a gear wheel secured to said shaft confined in said enlarged annular housing, a motor carried by said housing, having a drive pinion meshing with said gear wheel, an arm slidably mounted on the upper end of said shaft, a cutting tool adjustably supported on the free end of said arm and clamping members carried by said support to secure said support within the manhole frame.

5. A device for resurfacing a cover seat of a manhole frame, a cylindrical support having an annular housing portion, a vertical shaft rotatably mounted in said support, a gear wheel secured to said shaft confined within said housing, a motor supported by said housing having a pinion engaging said gear wheel, an arm slidably mounted on the upper end of the shaft, a cutting tool depending from said arm, manual adjusting means located adjacent the axis of the shaft for causing said arm to traverse the frame seat and clamping members carried by said support to engage the vertical walls of a manhole frame and secure said support therein.

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