April 14, 1942. H. W. HUDSON 2,279,621

TOOL FOR APPLYING GRANULAR MATERIAL

Filed Nov. 25, 1938

Fig. 1.

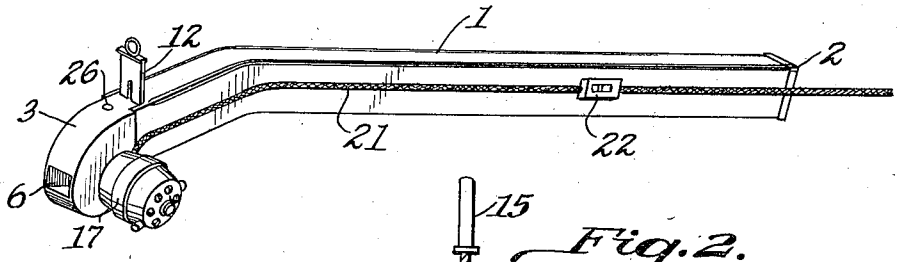


Fig. 2.

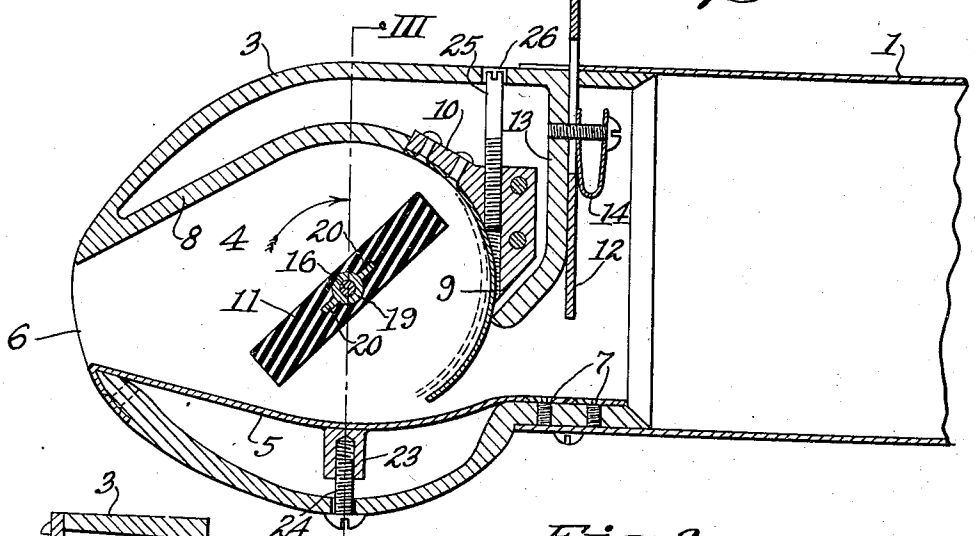
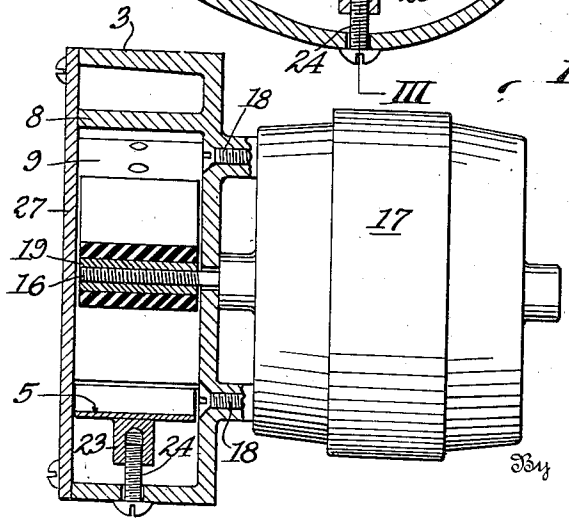


Fig. 3.



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TOOL FOR APPLYING GRANULAR MATERIAL

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Application November 25, 1938, Serial No. 242,148

7 Claims. (Cl. 91—44)

This invention relates to the art of reconditioning worn composition roofs, such as that described in my copending application Serial No. 194,261 filed March 7, 1938, in which a relatively thin coating of a bituminous compound is applied to the roof and a layer of granulated mineral material afterward forcibly embedded therein.

Specifically, this invention is directed to a device for applying the granulated mineral matter, the primary object being the provision of a simple tool which forcibly flings or impels the particles into the soft coating on the roof.

An object also resides in the provision of an elongated receptacle for the mineral particles which can be held in the operator's hands and will be provided with a motor driven impeller in the outer end to forcibly expel the particles from the tool in a direction controlled by the operator.

A further object rests in constructing the impeller from soft flexible rubber to increase the effectiveness of its operation and decrease the wear resulting from engagement with the granulated minerals.

It is a still further object to provide the tool with a guide wall which is mounted for adjustment toward and away from the impeller to adapt the tool to mineral particles of various sizes, the passage between the receptacle and the impeller chamber being subject to variation in size for the same reason.

Another object rests in providing a movable gate between the mineral receptacle and the impeller chamber to prevent the loss of the minerals when the tool is being handled during times other than when in actual use, the gate being frictionally held in any of its adjusted positions to control the flow of materials to the impeller.

Additional objects will be apparent from the following description and the accompanying drawing.

In the drawing:

Fig. 1 is a perspective view of a tool formed in accordance with the present invention;

Fig. 2 is a vertical longitudinal sectional view taken through the forward end of the tool shown in Fig. 1;

Fig. 3 is a vertical transverse sectional view taken through the forward end of the tool on the plane indicated by the line III—III of Fig. 2.

Referring more particularly to the drawing, it will be noted that the tool is formed to include an elongated hollow body 1 formed of sheet metal or other suitable material. The rear end of the body 1 is provided with a removable cap 2, the removal of which will permit the insertion of the granular mineral matter to be applied by the tool. At the forward end, the body 1 is connected to a housing 3 in which is formed a chamber 4. The housing is preferably formed from a metallic casting and is open at one side to allow the mechanism which is disposed in the chamber to be installed. The housing is provided at its lower portion with a false guide wall 5, the forward end of which is bent downwardly around the lower edge of the discharge opening 6 of the housing. At its rear end, the wall 5 includes a plurality of slots through which screws 7 extend, the threaded portions of the screws being received within similarly threaded openings in the lower wall of the housing. The housing also includes an intermediate wall 8, the under surface of which extends from the upper edge of the discharge opening 6 rearwardly and upwardly, the rear portion of the wall curving downwardly to meet a flexible strip 9 secured at one end to an insert block 10.

The strip 9 is also curved to conform substantially to the path of movement of an impeller 11 rotatably positioned in the chamber. The lower free end of the strip 9 terminates in spaced relation from the wall 5 and means are provided to adjust this spacing to vary the size of the inlet to the chamber from the body 1. This adjustment permits the tool to be adapted to mineral patricles of various sizes. The inlet to the chamber 4 may be closed by a slidable gate 12 carried with an inner wall 13 of the housing. A flat spring 14 engages the gate 12 to yieldably resist movement thereof. The upper end of the gate extends through a slot in the top wall of the housing and is equipped with a ring 15, or other suitable handle, to provide for the movement of the gate by the operator of the tool. The gate will be maintained in any of its positions of adjustment by reason of the force applied by the spring 14.

To rotatably support the impeller 11, the housing is provided with a transversely extending shaft 16 constituting an extension of the armature shaft of an electric motor 17. The latter member is secured to the exterior wall of the housing by means of screws 18. The impeller is composed of resilient material such as soft rubber and has a sleeve 19 molded thereto. The sleeve is provided with fins 20 to prevent its rotation within the impeller. The internal bore of the sleeve is threaded in order that it may be secured to the similarly threaded portion of the shaft 16.

Current is supplied to the motor 17 through a conduit 21 carried with the body 1. A toggle switch 22 is positioned in the line 21 within convenient reach of the operator. When the switch is actuated, the motor will revolve, imparting similar movement to the impeller which will revolve in the direction indicated by the arrow in Fig. 2. The ends of the impeller blade

nearest the guide wall 5 move in a direction from the inlet to the chamber toward the outlet. When the gate 12 is opened and the forward end of the tool lowered sufficiently to permit the granules in the body to move into the chamber, the impeller will strike the granules and force them through the outlet opening 6. The direction of movement of the granules is controlled by the operator merely by pointing the tool in the direction desired.

To further adapt the tool to granules of various sizes, the guide wall 5 is formed of spring material and has a threaded boss 23 secured to its under side. The inner end of a set screw 24 is positioned in the boss and adjustment of the screw will move the wall toward or away from the impeller. By moving the wall toward the impeller, the tool will be adapted to mineral particles of small size and compensation made for wear. The strip 9 is adjusted to vary the size of the inlet to the chamber by means of a second set screw 25 carried by the insert block 10. The housing 3 is formed to include an opening 26 through which a screw driver may be inserted to adjust the screw 25. The open side of the housing is closed by a removable wall 27.

In use, the operator holds the body 1 with the forward or housing carrying end in the direction in which it is desired to discharge the mineral particles. By reason of the length of the body, the operator may service a large arear of the roof without moving from his position. In the event a smaller tool is desired for work in close places, the body 1 may be removed and a shorter body substituted.

The tool above described is characterized by its simplicity and convenience of operation.

As shown in Fig. 1, the body is preferably bent downward a short distance from the front end to enable the operator to direct the stream of granules against the roof at an angle of approximately 90° without requiring the tool to be held at such an angle. This feature also enables the ready application of the particles to small portions of the roof when the operator cannot conveniently stand, such as where the end of the ridge of a roof is cut off at an angle.

What I believe to be new and desire to secure by Letters Patent is set forth in the following claims:

1. A device of the character described comprising an elongated magazine for receiving granular material, said magazine serving as a handle for the device, a chamber provided at one end of said magazine, said chamber being provided with an entrance from said magazine and an outlet to the exterior, a motor driven impeller disposed in said chamber between said outlet and said entrance, and a guide wall plate adjustable relatively to the impeller to regulate the size of the space between the impeller and plate through which the granular material is fed, and means for adjusting said plate.

2. A device of the character described comprising an elongated magazine for receiving granular material, a chamber provided at one end of said magazine, said chamber being provided with an entrance from said magazine and an outlet to the exterior, means for varying the size of said entrance, a motor driven impeller disposed in said chamber between said outlet and said entrance, a radially adjustable guide wall adjacent the impeller, means for adjusting said guide wall and gate means between the magazine and chamber.

3. A device of the character described comprising a magazine for the reception of granular material, a chamber in communication with said magazine, a gate disposed between said magazine and chamber for controlling the flow of material from the former to the latter, a shaft extending transversely of said chamber, means connected with said shaft for imparting rotary movement thereto, an impeller positioned in said chamber and secured for rotation with said shaft, said chamber being formed with an outlet in one wall, and plate means having a section thereof unattached to said chamber to allow movement therebetween and means to move said plate to or from the impeller for regulating the width of the space between the impeller and an adjacent wall of the chamber.

4. In a device of the character described, a housing provided with a chamber having an inlet and an outlet, a guide wall movably supported within said chamber and extending from said inlet to said outlet, a shaft extending transversely of said chamber, means for imparting rotary movement to said shaft, an impeller blade disposed in said chamber and secured for rotation with said shaft, the ends of said blade nearest said guide wall moving in a direction from the inlet toward the outlet upon rotation of said shaft, and means for moving said guide wall toward and away from said impeller.

5. A device of the character described comprising an elongated magazine for receiving granular material and serving as a handle for the device, a housing carried by the forward end of said magazine, said housing having a chamber formed therein in open communication with said magazine, said chamber also being provided with an outlet, a motor driven impeller journaled within said chamber between said outlet and said magazine, a bottom wall adjustably supported within said housing for movement relative to said impeller, means for adjusting said wall, and gate means for controlling the movement of material from said magazine to said chamber.

6. A device of the character described comprising a housing provided with a substantially circular chamber and an inlet and outlet therefor, a shaft extending transversely of said chamber, a rubber impeller rigidly secured to said shaft for rotation therewith, a wall extending from the inlet to the outlet and secured at its ends to said housing, and means for adjusting a portion of said wall relative to said impeller.

7. A device of the character described comprising a housing open at its ends, an upper wall extending into said housing from one edge of the opening at one end, said wall terminating at its inner end in an arcuate portion, a curved flexible wall member secured at one end in said housing and constituting a continuation of the curved portion of said upper wall, a shaft extending transversely of said chamber, a resilient impeller fixed for rotation with said shaft, the ends of the blades of said impeller terminating in limited spaced relation from said curved walls, a bottom wall extending between the openings at the ends of said housing and secured at its ends thereto, said bottom wall being spaced from the free end of said curved flexible wall, and means for adjusting said bottom wall with respect to said impeller and the free end of said curved wall with respect to said bottom wall.

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