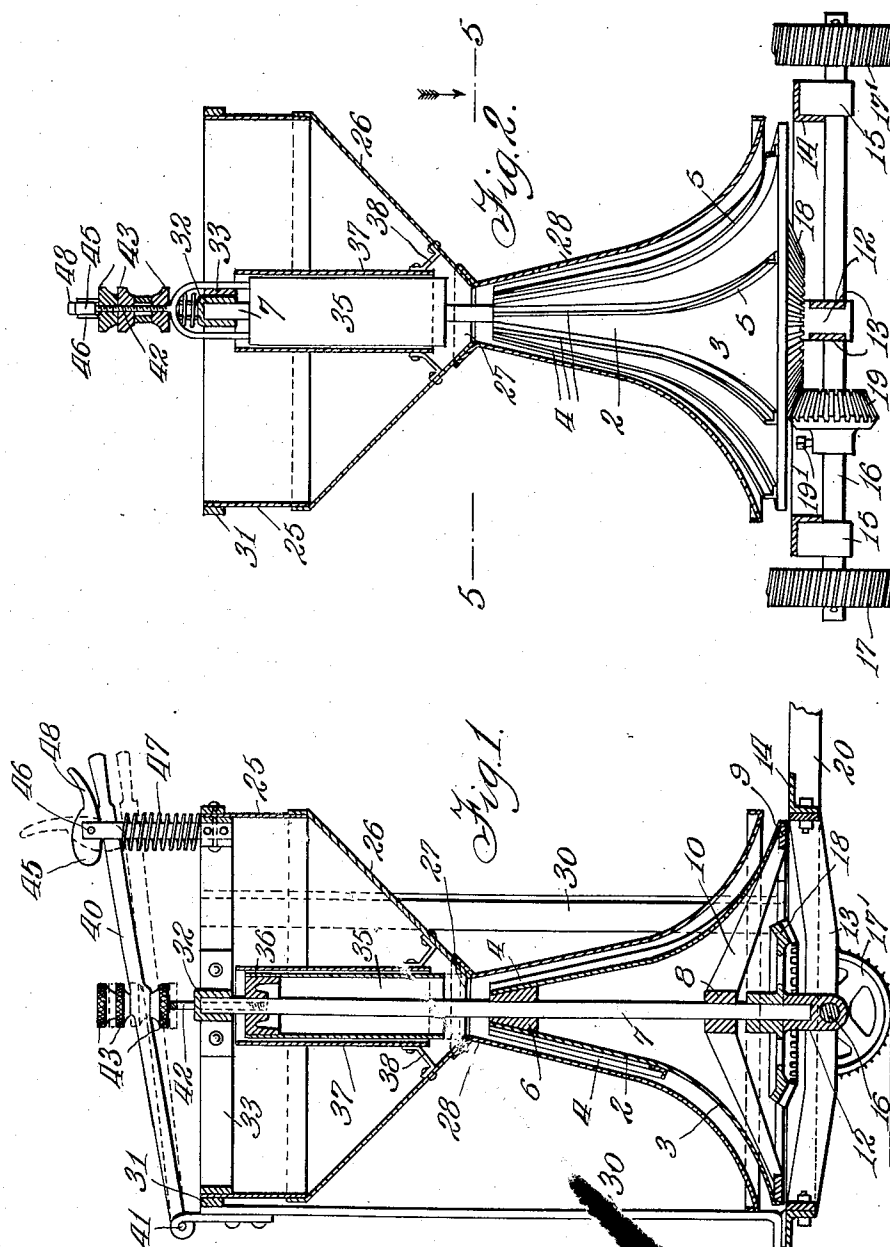


1,026,092.

T. ION.
MATERIAL SPREADER.
APPLICATION FILED MAY 22, 1911.

Patented May 14, 1912.

2 SHEETS-SHEET 1.



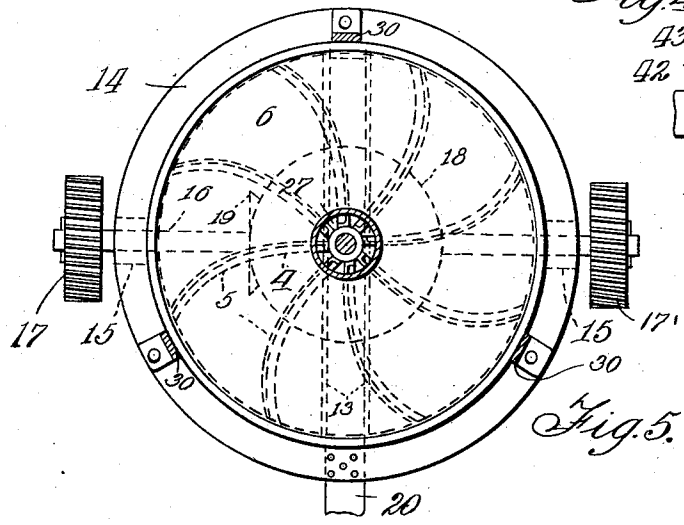
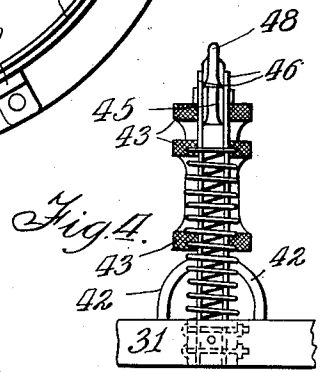
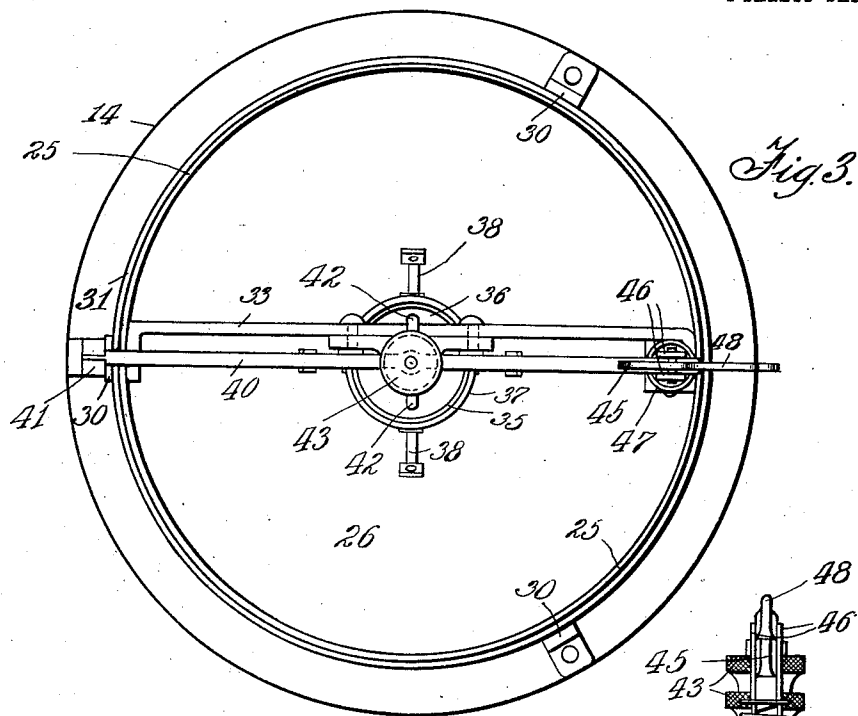
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2 SHEETS—SHEET 2.



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MATERIAL-SPREADER.

1,026,092.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed May 22, 1911. Serial No. 628,802.

To all whom it may concern:

Be it known that I, THOMAS ION, a subject of the King of Great Britain, of Westmount, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Material-Spreaders; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates more particularly to a device intended for use in spreading material, such as sand or the like on slippery pavements, such as snow or ice covered sidewalks, to render the surfaces thereof adhesive, the object of the invention being to provide an improved device of this kind which will be readily portable and simple and efficient in operation, and which will permit of the material being properly spread on walks or pavements of different widths, and will also enable the amount of the material spread to be varied.

The invention consists briefly, of a rotatable distributor and a valve controlling the supply of material thereto, these parts being of particular construction as will be more particularly pointed out in the following description and appended claims.

For a full comprehension, however, of my invention reference must be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate the same parts and wherein—

Figure 1 is a vertical axial sectional view of a material spreader constructed according to my invention; Fig. 2 is a vertical sectional view thereof taken at right angles to Fig. 1, the rotary distributor and valve being shown in elevation; Fig. 3 is a plan view of the spreader, the top parts only being shown; Fig. 4 is an enlarged detail end elevation of a portion, of the valve operating device; and Fig. 5 is a horizontal section taken on line 5 5 Fig. 2 looking down.

My improved spreader comprises a rotatable annular distributor in the form substantially of a cone-shaped shell 2, the lower end being outwardly flared to bell mouth shape as shown at 3, the outer periphery of the distributor being provided with vanes 4 extending preferably from top to bottom of the distributor, the lower halves of the vanes being curved backwardly as at 5 to present a spiral formation, (see Figs. 2 and 5). The vanes may conveniently be formed of angle irons riveted to the shell 2.

This distributor is preferably mounted in a manner to cause it to be automatically rotated by movement of the spreader along the surface on which the material is to be spread as follows: The upper end of the distributor is provided with a hub 6 fixed upon a vertical shaft 7 while the lower end is supported by a wheel like member comprising a hub 8 rigid on the shaft 7 and an outer rim 9 connected to the hub by spokes 10, the rim 9 having the lower end of the shell 2 fixed thereto in any suitable manner. The shaft 7 is mounted at its lower end (the upper end being supported in a manner to be hereinafter set forth) in a bearing 12 formed on a casting 13 which forms part of the frame of the carrier upon which the distributor is mounted, the main frame of the carrier comprising an annular member 14, preferably of angle bar formation in cross section and between opposite sides of which the casting 13 extends. This frame is provided on opposite sides with bearings 15 in which is journaled a shaft or axle 16 having upon its opposite ends a pair of toothed wheels 17, 17', respectively, upon which the spreader rests, one of the wheels, 17, being tight upon the shaft to furnish the driving power to the distributor as will be presently pointed out, and the other, 17' being loose to accommodate differential movement in the two wheels, as when the spreader is rounding corners or curves. Power is transmitted to the shaft 7 from the shaft 16 by means of a pair of intermeshing bevel gears 18 and 19 respectively mounted upon the said shafts 7 and 16.

To enable the distributor to be moved along the surface a draw bar 20 is secured to the frame 14 and is adapted to be attached to any suitable draft device not necessary here to be shown.

The material to be spread is delivered upon the upper end of the spreader from a circular hopper 25 having a conical bottom 26 provided with an opening 27 communicating with the upper end of the distributor. A sheath or casing 28, having its upper end connected to the bottom 26 and registering with the opening 27, surrounds the distributor in parallel relation with the periphery thereof, the lower end of the casing terminating a short distance above the lower end of the distributor and being secured to and braced by legs or standards 30 projecting upwardly from the carrier frame and con-

nected to a ring 31 surrounding and fastened to the hopper, which the legs thereby support, the shaft 7 passing concentrically upwardly through the opening 27 and hopper 25 and being journaled at its upper end in a bearing 32 on a spider 33 in the top of the hopper. This casing serves to direct the material from the hopper upon the distributor and causes it to be delivered from the lower end thereof at the annular space between such lower end and the lower end of the casing.

To regulate the discharge of material from the hopper through the opening 27 I have devised an improved valve and valve operating means, the valve comprising a vertical tube 35 located above the opening 27 concentrically therewith and inclosing the shaft 7 this tube being of slightly larger diameter than the opening 27 and adapted to be adjusted in a straight line vertically toward and away from the wall 26 to regulate the discharge from the hopper, the top of the tube having fixed therein a plug 36 formed with a central opening through which the shaft 7 passes freely. A sleeve 37 surrounds such tube, the lower end of the sleeve terminating at a point adjacent the lower end of the tube 25 (when the latter is raised) the sleeve being fastened at its upper end to the spider 33, the lower end of the sleeve being braced by struts 38 secured at opposite ends respectively thereto and to the hopper bottom 26, this sleeve serving both to brace the lower end of the valve and to facilitate its operation. The advantage of this type of valve in regulating material such as sand or the like will be apparent as the tube may be readily forced downwardly through the material into or out of engagement with the bottom of the hopper.

The improved means which I have provided to operate the valve comprises a vertically swinging lever 40 fulcrumed to a bracket 41 fixed to the upper end of one of the standards 30, the lever extending across the top of the hopper and being operatively connected at a point intermediate its ends to the valve tube 35 by means of a forked rod or link 42 the lower branched ends whereof are attached to the plug 36 while the upper screw threaded end passes through an opening in the lever and is locked to the lever by means of the nuts or hand wheels 43, this means providing an adjustable connection between the lever and valve.

I prefer to operate the lever by means of a cam 45 located above the free end of the lever and pivoted to and between a pair of bars 46 projecting upwardly from the hopper and straddling the lever which is pressed yieldingly upward against the cam by a spring 47 encircling the said bars and bearing at its lower end against the top of the hopper wall, the cam being provided with a

handle 48. It will be readily seen that by rotating this cam the lever can be operated to seat the end of the valve or tube 25 upon the bottom wall of the hopper or "close the valve" as shown in dotted lines in Fig. 1, while by adjusting the rod 42 relatively to the lever the opening presented between the valve and hopper bottom when the valve is full open (or with the cam in the position shown in full lines in Fig. 1) may be varied, thus the valve may be repeatedly closed and opened to any fixed extent by simply operating cam 45.

Operation: In operation the hopper is first filled and the spreader is drawn over the surface upon which the material is to be spread and the rotation of wheel 17 as it travels over the surface causes the distributor to revolve (through shaft 16, gears 18 and 19, and shaft 7). Upon the valve being opened, which is done by simply rotating cam 45 and allowing spring 47 to throw the lever upwardly, the material falls upon the distributor and is caused to whirl around in the spiral path by the vanes 4, the centrifugal force developed, aided by the spiral formation of the lower parts of the vanes causing the material to be thrown laterally off the lower end of the distributor.

When it is desired to vary the transverse width of the surface upon which the material will fall the same may be done by changing one of the bevel gears to vary the relative diameters thereof and so vary the speed of rotation of the distributor, the gear 19 being shown adjustably secured to the shaft 16 by a set screw 19' to enable it to be shifted to intermesh with a larger or smaller gear upon the lower end of shaft 7.

I claim:

1. In a material spreader, the combination with a distributor, and a hopper for containing the material to be spread, such hopper having an opening in its bottom communicating with the said distributor, of a valve for controlling the discharge of material from the hopper and comprising a tube located above and being of larger diameter than the said opening, and means for adjusting the tube toward and away from the said bottom wall and retaining it at varying distances therefrom.

2. In a material spreader, the combination with a distributor, and a hopper for containing the material to be spread, such hopper having an opening in its bottom communicating with the distributor, of a valve for controlling the discharge of the material from the hopper and comprising a tube located above and being of larger diameter than the said opening, a sleeve supported on the hopper and inclosing the said tube, and means for adjusting the tube toward and away from the said bottom wall.

3. In a material spreader, the combination

with a distributor and a hopper for containing the material to be spread, such hopper having an opening in its bottom communicating with the said distributor, of a non-rotary reciprocatory valve located within the hopper above the said opening for controlling the discharge of material therethrough, and a vertically movable lever supported upon the hopper, and operatively connected to the valve, and means for guiding such valve.

4. In a material spreader, the combination with a distributor and a hopper for containing the material to be spread, and having a discharge opening communicating with the distributor, a valve for controlling the discharge opening, a lever operatively connected to the valve, a spring normally retaining the lever in position with the valve open, and a cam adapted to operate the lever to close the said valve.

5. In a material spreader, the combination with a distributor and a hopper for containing the material to be spread, and having a discharge opening communicating with the distributor, a valve controlling the discharge opening, a lever fulcrumed upon the hopper, a link connecting the lever and valve, means for adjusting the link relatively to the lever, a spring normally retaining the lever in position with the valve open, and a cam adapted to operate the lever to close the said valve.

6. A material spreader comprising a carrier, a rotatable distributor comprising a substantially conical shell having its lower portion flared outwardly to substantially bell-mouth form, such shell having its outer

peripheral surface provided with vanes, a casing surrounding such distributor and having its side wall substantially parallel with the periphery of the latter, such casing having its upper end connected to the hopper bottom and registering with the opening therein, the lower end of the casing terminating at a point a short distance above the lower end of the casing, a hopper above such distributor having an opening in its bottom communicating therewith, and a valve controlling the said opening.

7. A material spreader comprising a hopper, a supporting frame for the hopper, wheels upon which such frame is mounted, a rotatable cone shaped distributor located below the hopper and in communication therewith, and having its periphery formed with vanes, a valve controlling the communication between the hopper and distributor, a casing surrounding the distributor, such casing having its upper end connected to the hopper bottom and registering with the opening therein, a vertical shaft on which the distributor is mounted, such shaft extending upwardly through the hopper and being journaled at its top and bottom in the said frame, and means operatively connecting one of the said wheels to the shaft to cause rotation thereof to rotate the shaft.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS ION.

Witnesses:

ALEX CURRIE,
FRED J. SEARS.