G. E. AND J. VAN VORST.

ROOFING MACHINE.

APPLICATION FILED MAR 19, 1920.

1,427,871.

Patented Sept. 5, 1922.

3 SHEETS—SHEET 1.

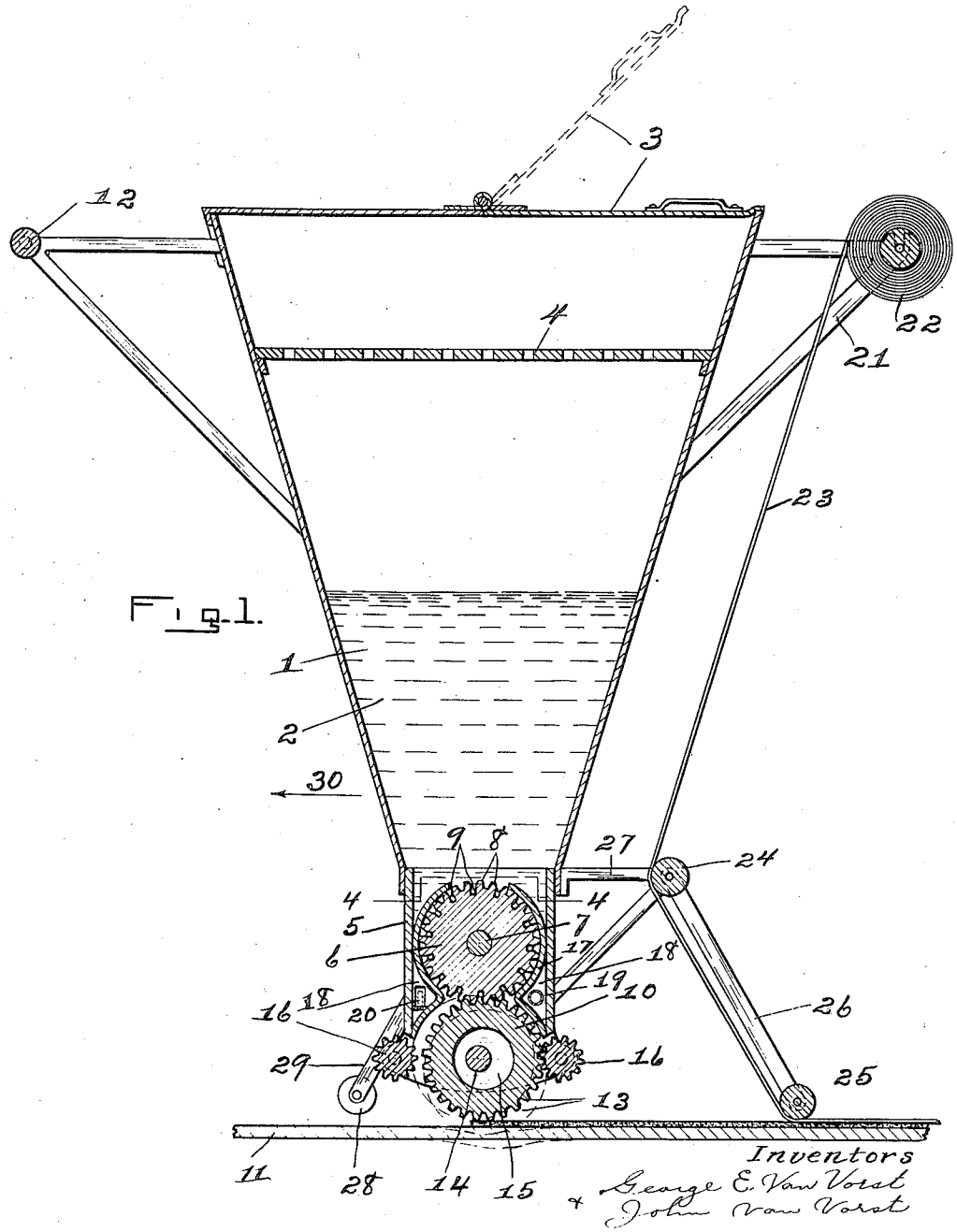


Fig. 1.

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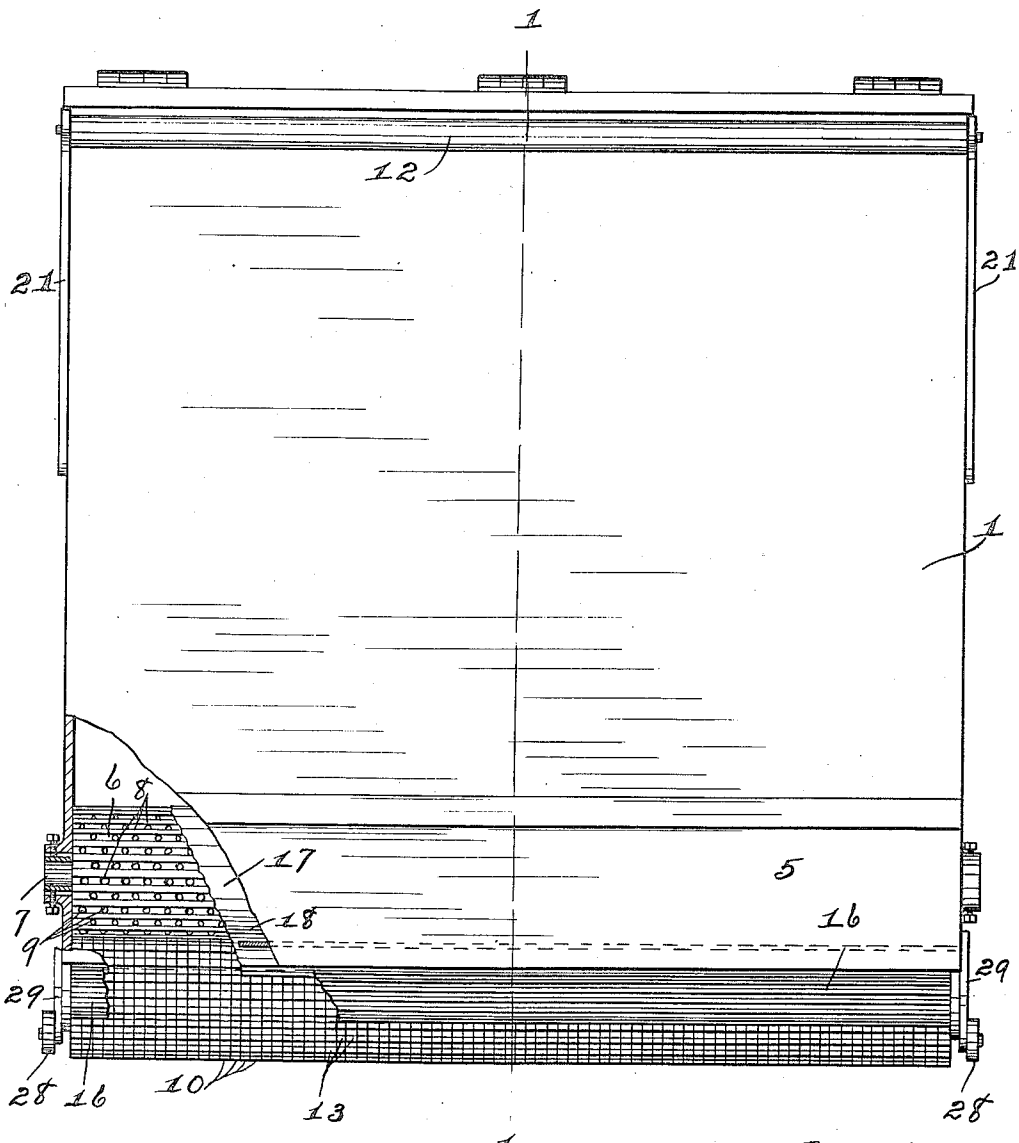
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3 SHEETS—SHEET 2.

Fig. 2.



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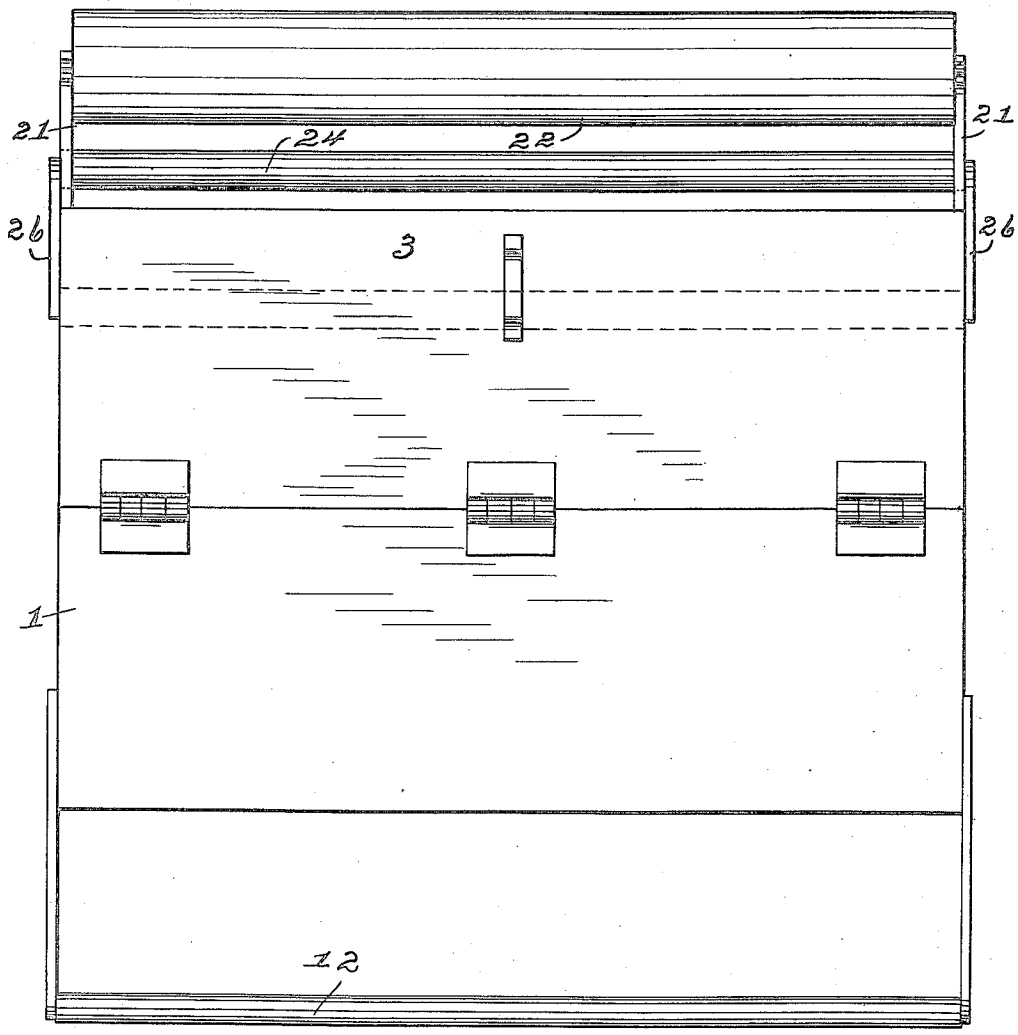


Fig. 3.

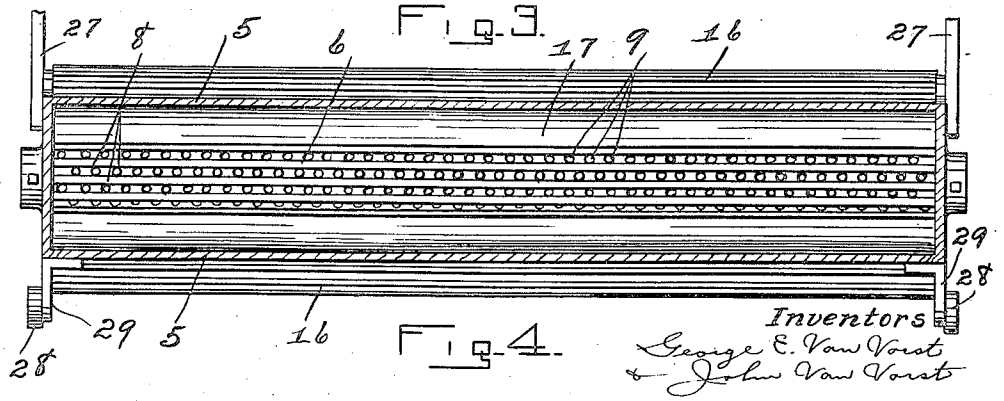


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE E. VAN VORST AND JOHN VAN VORST, OF SCOTIA, NEW YORK.

ROOFING MACHINE.

Application filed March 19, 1920. Serial No. 367,204.

To all whom it may concern:

Be it known that we, GEORGE E. VAN VORST and JOHN VAN VORST, citizens of the United States of America, residing at Scotia, county of Schenectady, and State of New York, have invented certain new and useful Improvements in Roofing Machines, of which the following is a specification.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

This invention relates to machines for adherently laying upon roofs or the like, a covering of roofing-paper or the like.

In covering roofs with roofing-paper, the common practice is to apply to the roof-surface a coating of hot asphalt or tar by means of a mop or swab and then to lay upon the surface thus coated, strips or sheets of roofing-paper which is usually tarred or waterproofed.

The principal objects of our invention are to apply the coating of asphalt or the like to the roof-surface, and lay the roofing-paper or the like thereupon as a substantially simultaneous operation; and to regulate the coating of asphalt or the like applied to the roof-surface.

Other objects will appear in connection with the following description.

Fig. 1 of the drawings is a vertical longitudinal section of a roofing-machine embodying our invention, the section being taken on the broken line 1—1 in Fig. 2.

Fig. 2 is a view in front elevation of the machine.

Fig. 3 is a top plan view of the machine.

Fig. 4 is a horizontal cross-section of the machine taken on the broken line 4—4 in Fig. 1.

Referring to the drawings wherein the invention is shown in preferred form, 1 is a tank, adapted to contain a supply, 2, of heated asphalt, pitch or the like, the tank being provided with a top opening closed by a door, 3, and with a strainer-diaphragm, 4, adapted to prevent lumps or solid substances in the asphalt from passing to the lower portion of the tank.

The tank preferably tapers downwardly toward a throat-portion, 5, within which is rotatively mounted a feed-roll, 6, supported by a shaft, 7, mounted in the walls of said throat.

The feed-roll, 6, extends the full width of the tank, and is formed with longitudinal teeth, 8, similar in cross-sectional form to gear-teeth.

Along certain of the grooves between said teeth, 8, the feed-roll, 6, is provided with a series of cup-like recesses or pockets, 9, arranged longitudinally of the groove.

Immediately below the feed-roll, 6, is a distributing-roll made up of a series of disks, 10, arranged side by side and adapted to roll over the surface, 11, of a roof or the like as the tank, 1, is drawn along over said surface by means of a handle, 12.

These disks, 10, are formed with peripheral teeth, 13, adapted to mesh with the elongated teeth, 8, on the feed-roll, 6, whereby as the machine is propelled over the roof-surface, the disks, 10, are caused to roll over said surface and to impart a rotatory movement to the feed-roll, 6.

A shaft, 14, mounted in the walls of the throat, 5, passes through an aperture, 15, of considerably larger diameter in the respective disks, 10, tending to support the disks to prevent their escape from the throat, 5.

Toothed pinions, 16, rotatively mounted upon the throat, 5, on opposite sides of the roll formed by the disks, 10, serve to engage said toothed-disks, one of said pinions when the machine is being propelled in one direction and the other when the machine is being propelled in the opposite direction, whereby the movement of the disks, 10, toward the front or the rear of the machine is limited without the engagement of the teeth of said disks with the walls of the throat-portion, 5.

An interior housing, 17, within the throat-portion 5, closely encloses the feed-roll, 6, and also encloses the upper portion of the roll formed by the disks, 10.

This housing is introverted into the angle between the feed-roll, 6, and the roll formed by the disks, 10, thereby forming with the walls of the throat-portion, 5, heating-chambers, 18, adapted to contain means for maintaining the feed-roll and the material delivered by the feed-roll in heated condition.

In one of said chambers, 18, I have shown a pipe, 19, forming a gas or oil burner which may be supplied with fuel in any known manner.

In the other of said chambers, 18, I have

shown a brick, 20, of slow combustion charcoal which may be used as the heating means.

Mounted upon the rear of the tank by means of a bracket, 21, is a roll, 22, of roofing-paper, 23, which may be coated or impregnated with tar or other protective or waterproof material.

The paper passes from the roll, 22, over an idle roll, 24, and beneath a pressing roll, 25, which is rotatively mounted upon the lower end of a pair of links, 26, the upper ends of which are pivotally mounted concentrically with the idle roll, 24, upon a bracket, 27, which projects rearwardly from the tank, 1.

A pair of wheels or rollers, 28, are mounted upon brackets, 29, projecting from the front of the throat-portion, 5, of the tank in position to engage the roof-surface when the tank is tipped or tilted forwardly; and they serve as truck-wheels in propelling the tank from place to place and for quickly changing the direction of movement of the tank.

The operation of the machine is as follows:

The machine having been supplied with a roll of roofing-paper, 23, rotatively mounted upon the bracket, 21, and with a supply, 2, of hot asphalt, pitch or the like, is drawn over the roof-surface in the direction of the arrow, 30, by means of the handle, 12.

As the machine is thus propelled over the roof-surface the disks, 10, roll along said surface in mesh with the rearward pinion, 16, and cause the feed-roll, 6, to be rotated in mesh with more or less of said disks, 10.

As the feed-roll, 6, is rotated its upper portion being exposed to the body, 2, of hot asphalt or pitch the grooves between its teeth, 8, and the pockets, 9, along the bottoms of said grooves become filled with the hot asphalt or pitch thus carrying from the tank to the disks, 10, measured quantities of the liquid contents of the tank, which quantities are received by the disks, 10, and carried downward to and are deposited upon the roof-surface, 11, thereby applying to said surface a coating of asphalt or pitch adapted to adherently unite to the roof-surface the covering paper, 23.

The roll, 25, is of sufficient weight to press the paper, 23, down firmly upon the asphalt-coated roof-surface.

The openings, 15, in the disks, 10, being substantially larger in diameter than the shaft, 14, extending therethrough, the respective disks engage the roof-surface independently of each other so that the disks accommodate themselves to irregularities in the roof-surface, and tend to deliver the asphalt or pitch quite uniformly to the roof-surface in spite of such inequalities.

The heating mechanism, 19 or 20, may be employed if desired to maintain the temperature of the asphalt or pitch as it is delivered from the feed-roll to the distributing-roll formed by the disks, 10.

When it is desired to transport the machine from place to place or to quickly change its direction of movement, the machine is tilted forwardly upon the wheels or rollers, 28, until the distributing roll formed by the disks, 10, is raised above the roof-surface, the wheels or rollers, 28, thus acting in the usual manner of truck-wheels.

The machine is preferably made throughout of metal and particularly the tank, 1, its throat-portion, 5, and the various rolls and pinions so that the machine can be preheated in a heating oven or chamber if desired before being supplied with the heated asphalt or pitch.

What we claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed-feed roll rotatively mounted within said throat; and a toothed distributing-roll rotatively mounted under said feed-roll with which it is adapted to mesh to drive the feed-roll, said distributing-roll being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled.

2. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed-feed roll rotatively mounted within said throat; a toothed distributing-roll rotatively mounted under said feed-roll with which it is adapted to mesh to drive the feed-roll, said distributing roll being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled; a paper-roll-holder; and a paper-laying-roller movably mounted upon said tank in rear thereof.

3. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat; a plurality of toothed disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface.

4. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat; a plurality of toothed disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-

roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface; a paper-roll-holder; and a paper-laying-roller movably mounted upon said tank in rear thereof.

5. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat, and provided with numerous pockets in certain of the grooves between neighboring teeth; and a toothed distributing-roll rotatively mounted under said feed-roll with which it is adapted to mesh to drive the feed-roll, said distributing-roll being adapted to roll upon and distribute liquid contents of said tank to, a surface over which said tank is propelled.

6. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat, and provided with numerous pockets in certain of the grooves between neighboring teeth; and a toothed distributing-roll rotatively mounted under said feed-roll with which it is adapted to mesh to drive the feed-roll, said distributing-roll being adapted to roll upon and distribute liquid contents of said tank to, a surface over which said tank is propelled; a paper-roll-holder; and a paper-laying-roller movably mounted upon said tank in rear thereof.

7. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat and provided with numerous pockets in certain of the grooves between neighboring teeth; a plurality of toothed disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface.

8. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat and provided with numerous pockets in certain of the grooves between neighboring teeth; a plurality of toothed disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface; a paper-roll-holder; and a paper-laying-roller movably mounted upon said tank in rear thereof.

9. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; and a plurality of disks mounted side by side adapted to receive and distribute liquid contents delivered from said tank through said throat, said disks being adapted to roll upon, and distribute said liquid to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface.

10. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; and a plurality of disks mounted side by side adapted to receive and distribute liquid contents delivered from said tank through said throat, said disks being adapted to roll upon, and distribute said liquid to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface: a paper-roll-holder; and a paper-laying-roller movably mounted upon said tank in rear thereof.

11. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat; a plurality of disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface; and pinion-rolls rotatively mounted upon said tank in position to mesh with opposite sides of said toothed disks.

12. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat; a plurality of disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface; pinion-rolls rotatively mounted upon said tank in position to mesh with opposite sides of said toothed disks; a paper-roll-holder; and a paper-laying-roller

movably mounted upon said tank in rear thereof.

13. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat; a toothed feed-roll rotatively mounted within said throat; a plurality of toothed disks rotatively mounted under said feed-roll with which they are severally adapted to mesh to drive the feed-roll, said disks being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled, and being capable of independent vertical movement whereby the disks are free to adapt themselves to inequalities in said surface; and a shaft extending through the several disks with lost-motion to permit said movement of the disks.

14. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat formed with heating chambers outside the throat; and a feed-roll rotatively mounted within said throat.

15. In a machine of the class described and in combination, a tank having at its lower end an outlet-throat formed with heating chambers; a toothed feed-roll rotatively mounted within said throat; and a toothed distributing-roll rotatively mounted under said feed-roll with which it is adapted to mesh to drive the feed-roll, said distributing-roll being adapted to roll upon, and distribute liquid contents of said tank to, a surface over which said tank is propelled.

In testimony whereof, we have hereunto set our hands this 13th day of March, 1920.

GEO. E. VAN VORST.
JOHN VAN VORST.