

Fig.1

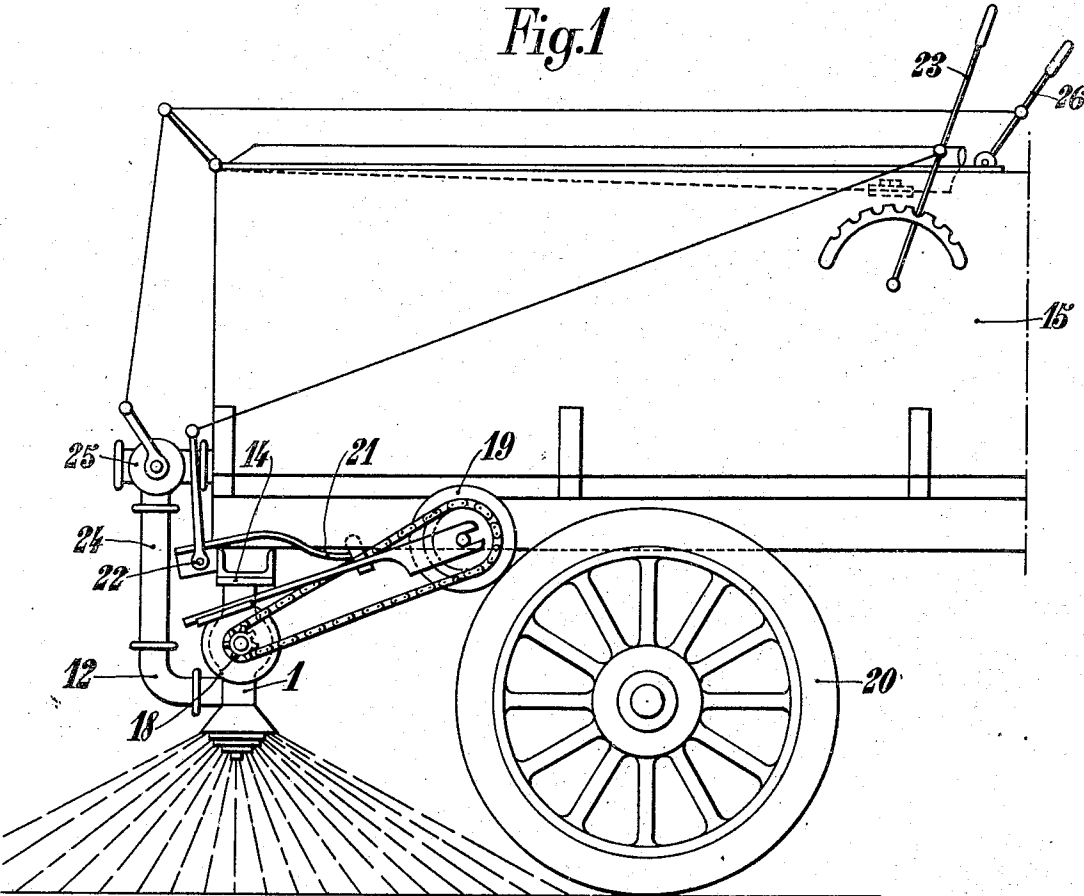
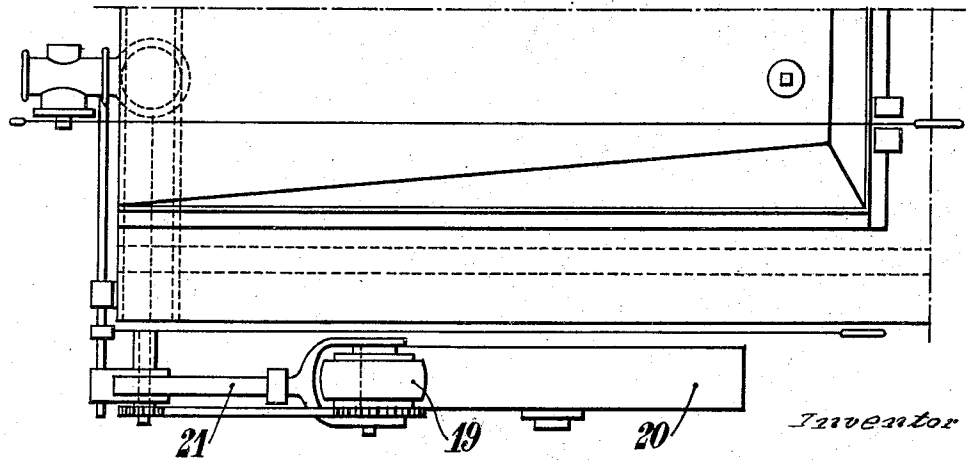


Fig.3



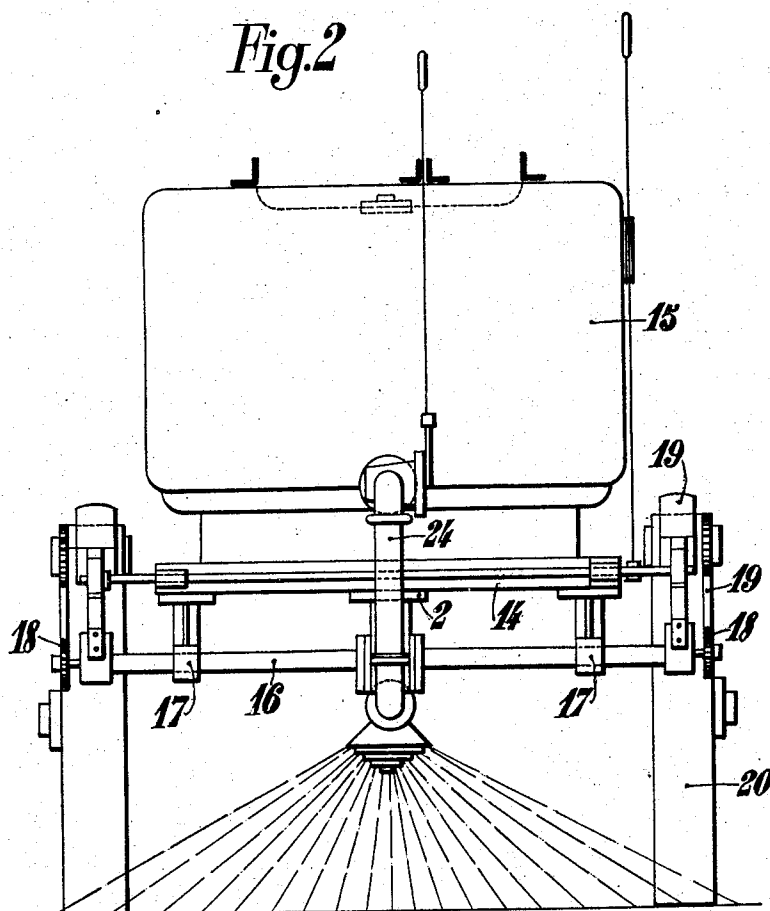
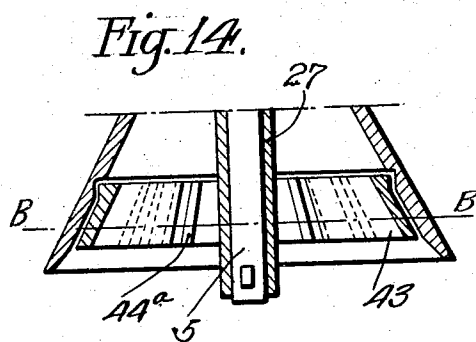
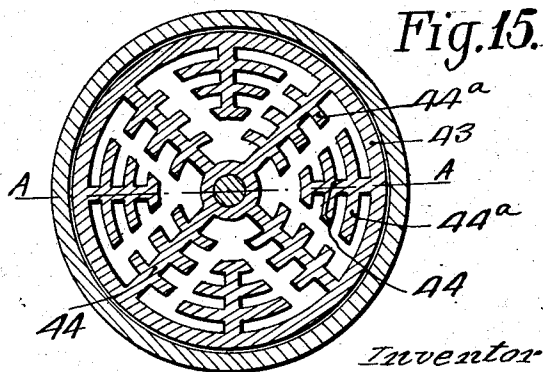
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March 25, 1930.

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CENTRIFUGAL DIFFUSING APPARATUS FOR SPREADING
PRODUCTS FOR THE MAINTENANCE OF ROADWAYS
Filed Jan. 10, 1928

1,751,531

4 Sheets-Sheet 2



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Fig.5

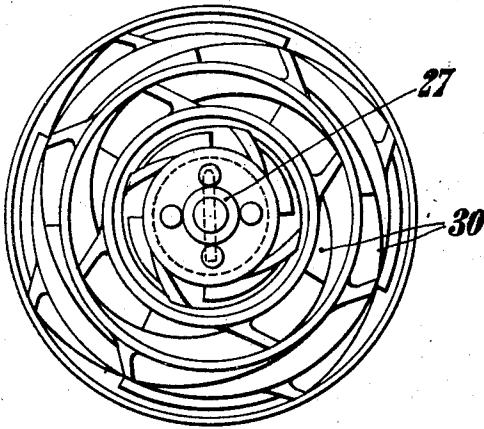


Fig.9

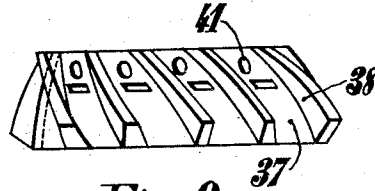


Fig.8

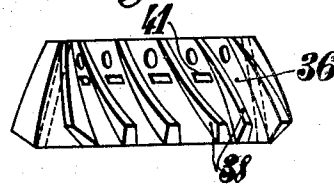


Fig.4

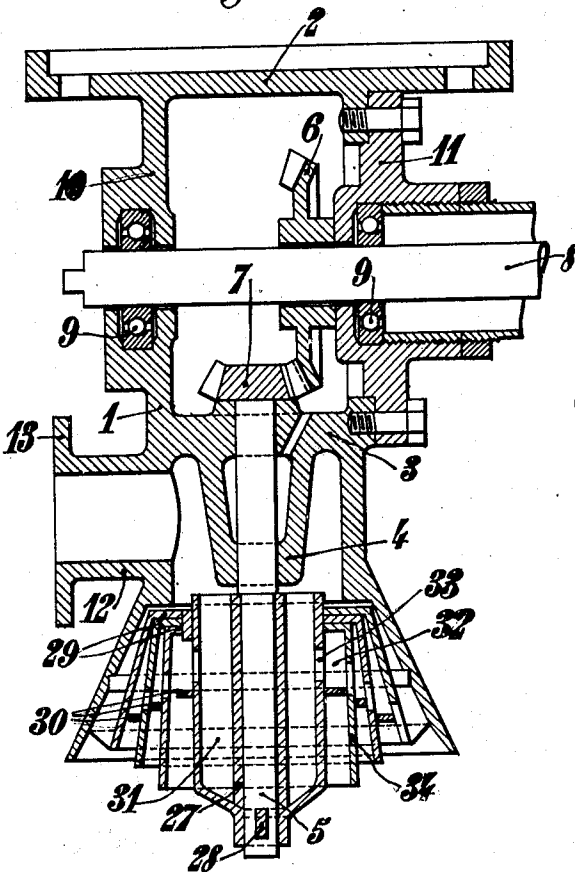


Fig.7

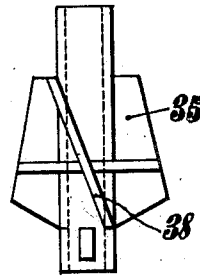
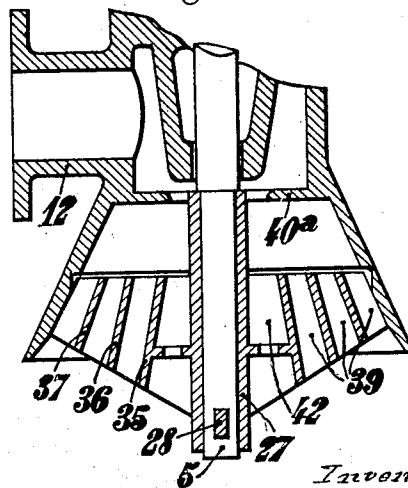


Fig.6



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Fig.11

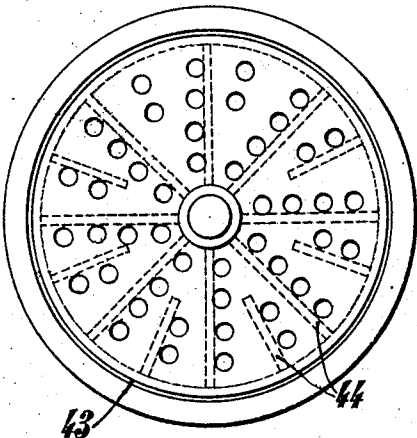


Fig.13

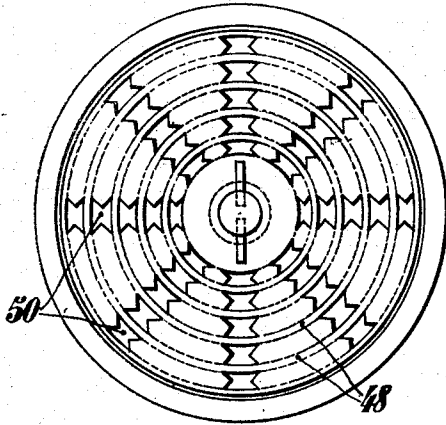


Fig.10

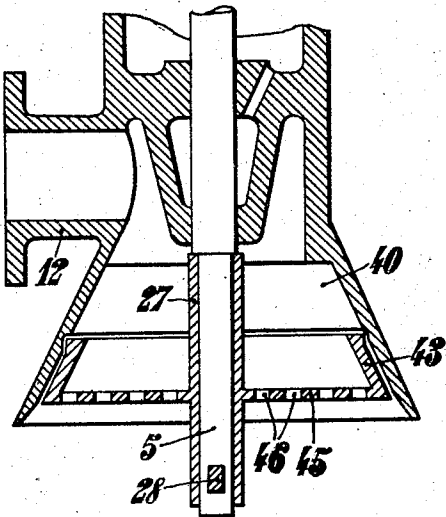
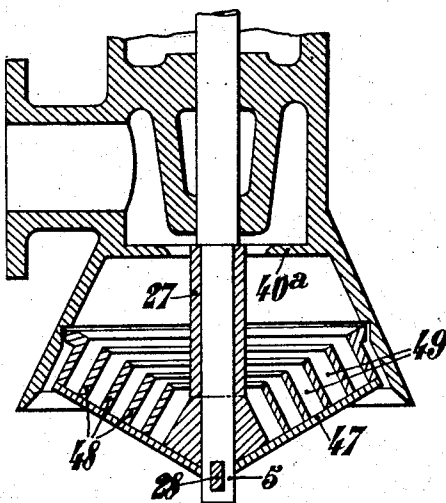


Fig.12



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UNITED STATES PATENT OFFICE

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CENTRIFUGAL DIFFUSING APPARATUS FOR SPREADING PRODUCTS FOR THE MAINTENANCE OF ROADWAYS

Application filed January 10, 1928, Serial No. 245,751, and in France January 26, 1927.

The present invention relates to a centrifugal diffusing apparatus for spreading, in the hot or cold state, products for the maintenance of roadways, such as asphalt, bitumen, tar, pitch, bituminous or tarry mastics, melted or in aqueous emulsions, or materials such as sand.

This diffusing apparatus, which fits on a vehicle provided with a tank for supplying the material to be spread and receiving its movement from any suitable driving mechanism, is characterized by the arrangement, on an axis capable of receiving a continuous rotary movement, of walls providing between them zones fed with material to be spread and from which centrifugal force enters in action for projecting the said material by dispersing it according to a conical zone the theoretical axis of which mingles with the axis of rotation of the walls.

The arrangement of the rotating walls is variable with the nature of the product to be spread, its degree of fluidity, or its homogeneity.

The accompanying drawing illustrates, by way of example only, various forms of construction of the diffusing apparatus forming the subject-matter of the invention, as well as a form of construction of a mechanism for driving this diffusing apparatus.

Fig. 1 is an elevation of the rear part of a vehicle provided with the improved diffusing apparatus and its driving mechanism.

Fig. 2 is a rear end view, and Fig. 3 a partial plan view.

Fig. 4 is an axial sectional view of a diffusing apparatus and of its frame.

Fig. 5 is an underside plan view of the diffusing apparatus of Fig. 4.

Fig. 6 is a constructional modification of the diffusing apparatus, illustrated in axial section.

Figs. 7, 8 and 9 illustrate, in elevation, the three constituent elements of the diffusing apparatus of Fig. 6.

Figs. 10 and 11 respectively illustrate in axial section and underside plan view a third form of construction of the diffusing apparatus.

Figs. 12 and 13 are views similar to Figs.

10 and 11 and relate to a fourth form of construction of the diffusing apparatus.

Figs. 14 and 15 are views similar to Figs. 10 and 11 illustrating another form of construction of the diffusing apparatus.

As indicated in the foregoing, the arrangement of the rotating walls of the diffusing apparatus varies according to the material to be spread and the condition of fluidity or of homogeneity of the latter. A vehicle transporting the tank containing the material to be spread is provided with a mechanism permanently mounted on a rotating axis to which can be rapidly secured the diffusing apparatus proper which is specially suited to the material to be spread.

Fig. 4 shows a form of construction of the frame of the diffusing apparatus which has the aspect of a casing 1 made of cast metal, for instance. This casing 1 is provided with a bed plate 2 for securing it at any suitable place on the vehicle as will be explained later on. It is divided into two distinct chambers by a partition 3 on which is provided a bearing 4 for the axis 5 which receives the diffusing apparatus proper and imparts to the same its rotary movement. The upper chamber constitutes a transmission box, and, in the example illustrated, contains two bevel pinions 6 and 7 respectively secured on the axis 5 and on a transverse shaft 8. The latter, suitably supported in ball bearings 9 or other types of suitable bearings arranged in the fixed partition 10 and in a wall 11, receives its movement from any suitable source of power and transmits it to the axis 5.

The lower chamber is provided with a tube 12 connected by a flange 13 and any suitable junction means to a pipe for feeding under pressure, or simply by gravity, the material to be dispersed.

In Figs. 1 to 3, it will be seen that the casing 1 is secured by its bed plate 2 on a cross bar 14 arranged at the rear of the frame of the vehicle which carries the tank 15 containing the material to be spread. The vehicle can be of any desired arrangement and its construction does not concern the invention. It can be provided, if need be, with means for heating and stirring the material.

In the example illustrated, use is made of a single diffusing apparatus arranged in the axis of the vehicle. It is obvious and in particular in the case of large zones to be covered with protecting material, that several diffusing apparatus can be arranged on one and the same vehicle.

The rotation of the shaft can be effected by an independent motor or, and as illustrated, by the carrying wheels of the vehicle.

A transverse shaft 16, suitably supported in bearings 17 secured on the frame of the vehicle, carries at its ends pinions 18 connected by chains to pulleys 19 in contact with the rims of the wheels 20 which drive them when the vehicle is in motion.

The bearings for the axes of the pulleys 19 can be arranged at the ends of forks 21, pivoted at 22 on the frame of the vehicle and which can be caused to rock by connecting them, through any suitable rigging, to an operating lever arranged within reach of the driver of the vehicle. The rollers or pulleys 19 can also be brought in contact with the wheels 20 or spaced from the latter in order to effect the throwing in or out of gear of the axis 5 carrying the diffusing apparatus. But, of course, the driving mechanism which has just been described is only an example of realization for which can be substituted, without departing from the scope of the invention, any mechanism capable of giving the same results. The axis of the pulley 19 can be devised for receiving a crank. It can, for instance, be provided with an end having a square cross section on which fits the head of the crank. It is thus possible, by lifting the pulley 19 for moving it away from the wheel 20, to cause the diffusing apparatus to rotate by manually acting on the crank for allowing apparatus of small dimensions to sprinkle small surfaces by leaving the apparatus at rest.

The tube 12 is connected by a pipe 24 to a cock 25 arranged at the lower rear part of the tank 15 and operated from a distance by means of a lever 26 within reach of the driver of the vehicle.

The type of diffusing apparatus illustrated in Figs. 4 and 5 is constituted by a series of co-axial walls. The central wall 27 constitutes a socket for mounting the whole structure on the axis 5, and it is secured by a key 28 or any equivalent means. The other walls are conical surfaces with generating lines progressively raised relatively to the axis 5. All these walls provide between them annular spaces closed at their upper part by heads 29 and they are provided with helical inclines 30 suitably inclined relatively to the direction of rotation, so as to accelerate the flow of the material towards the ground.

The material flowing from the tank 15 enters the space 31 and centrifugal force drives

a portion of the same into the annular space 32, through openings 33 provided in the wall 34, then in the following space, and so on to the peripheral wall. The vanes or blades 30 disperse the material in a conical sheet towards the ground. The material to be spread is divided by the orifices such as 33 and the inclines 30, into very small drops regularly dispersed in a conical space having for axis the theoretical axis of rotation of the diffusing apparatus. The form of construction of the diffusing apparatus which has just been described is particularly convenient for the spreading of very fluid products.

In the example of construction illustrated in Figs. 6, 7, 8 and 9, the diffusing apparatus is adapted to spread products of thick consistency. It comprises co-axial cones 35, 36 and 37 which are centered relatively to each other by the helical vanes or blades 38 provided on their outer faces. The annular spaces 39 comprised between the walls of the cones, are open at their upper part, but the product to be spread flows directly away owing to a wall 40^a in the central cavity 42. The walls of the cones 36 and 37 are perforated at 41, so that centrifugal force enters in action for dividing the product by causing it to partly pass from a space 39 into the other by starting from the central space 42.

For spreading very liquid materials and even pulverized materials, such as sand for instance, use can be made of the diffusing apparatus illustrated in Figs. 10 and 11. This diffusing apparatus has a frustum-shaped bowl 43 provided with radial vanes or blades 44 and with a perforated bottom 45 constituting a grate. This perforated bottom can be replaced by a wire gauze the sizes of the meshes of which are suitably chosen. The materials enter the chamber 40 and penetrate into the spaces comprised between the radial walls 44 of the diffusing apparatus; they are projected on the ground directly through the openings 46 of the bottom 45. It might be moreover possible, in particular for spreading gravel, to dispense with the perforated bottom 45 and to provide on the walls 44, transverse vanes or blades 44^a as shown in Figs. 14 and 15, facilitating the regular dispersion of the gravel.

The diffusing apparatus illustrated in Figs. 12 and 13 is more particularly devised for spreading materials which are not very fluid and of viscous consistency. It comprises a conical bowl 47 having a rectilinear or curvilinear generating line, provided with co-axial conical partitions 48 providing between them annular spaces 49 the bottom of which is perforated with openings 50 for the projection of the material on the ground. As in the diffusing apparatus shown in Fig. 6, a wall 40^a directs the flow of the material towards the central portion of the bowl 47.

As indicated in the foregoing, any type of

diffusing apparatus can be secured on the driving axis 5, for instance by means of a central socket 27 secured by a key 28 or any other suitable securing means.

5 The various types of diffusing apparatus which have just been described are only simple examples of realization to which modifications can be made or to which elements can be added, according to the materials to be
10 treated, without departing from the scope of the invention.

The object sought for by the arrangements described is to put centrifugal force in action for dispersing the material and dividing it by
15 partitions and apertures, this material being fed to the diffusing apparatus by gravity or under pressure, by any suitable means.

What I claim as my invention and desire to secure by Letters Patent is:

20 1. In a centrifugal diffusing apparatus for spreading products on roadways, a fixed frustum-shaped casing, means for feeding said casing at its part of smallest diameter with the product to be spread, said casing being
25 open at its part of largest diameter, a rotating member fitted in the said casing, a shaft co-axial with the casing and keyed on the said rotating member, and means to rotate the said shaft.

30 2. In a centrifugal diffusing apparatus for spreading products on roadways, a fixed frustum-shaped casing fed, at its part of smaller diameter with the product to be spread, and open at its part of largest diameter, a rotating
35 member having walls spaced apart some of which are perforated, a shaft co-axial with the said casing and keyed on the said rotating member, and means to rotate the said shaft.

40 3. In a centrifugal diffusing apparatus according to claim 1, said feeding means comprising a pipe connected with said casing and arranged to cause the product to be spread, to fall down at the central part of said rotating member.

45 4. An apparatus as defined in claim 1, said feeding means embodying a tank for the product to be spread and a pipe therefrom to said casing, a wheeled chassis carrying said diffusing apparatus and tank; said driving means
50 comprising a sprocket wheel on said shaft, a second sprocket wheel, a chain connecting said sprocket wheels, a pulley connected to the second sprocket wheel and arranged in the plane of a carrying wheel of the chassis, and
55 means to permit the driver of the machine to put said pulley into and out of contact with said carrying wheel.

In testimony whereof I have signed my name to this specification.

60 ALPHONSE JOSEPH SCHARS.