Aug. 27, 1957 E. G. F. SWEET 2,804,309

SAND SPREADER

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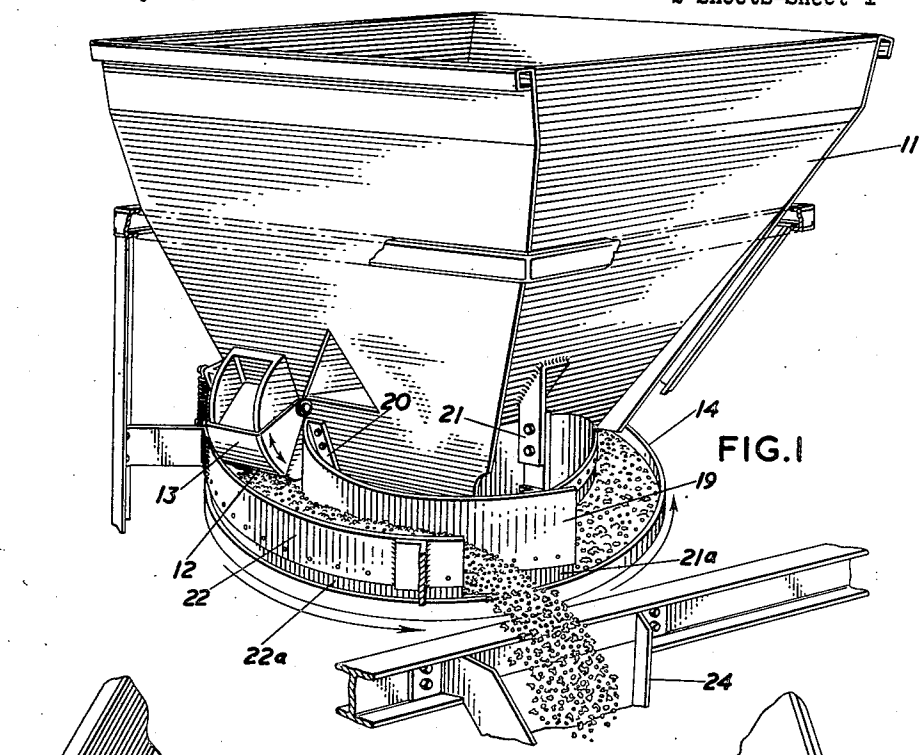


FIG. 1

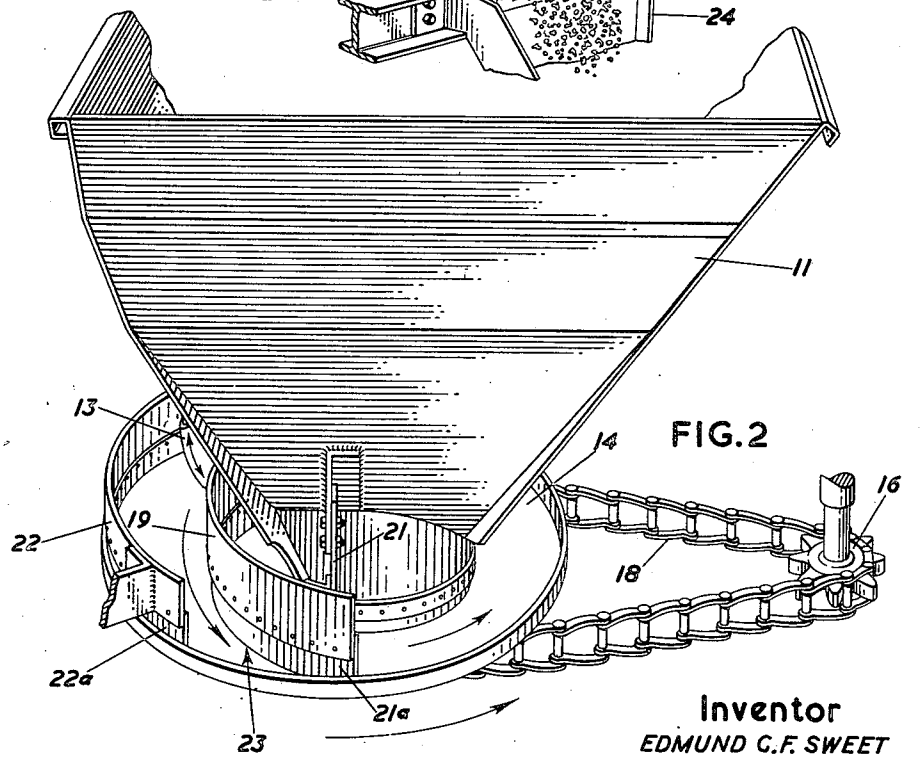


FIG. 2

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FIG.3

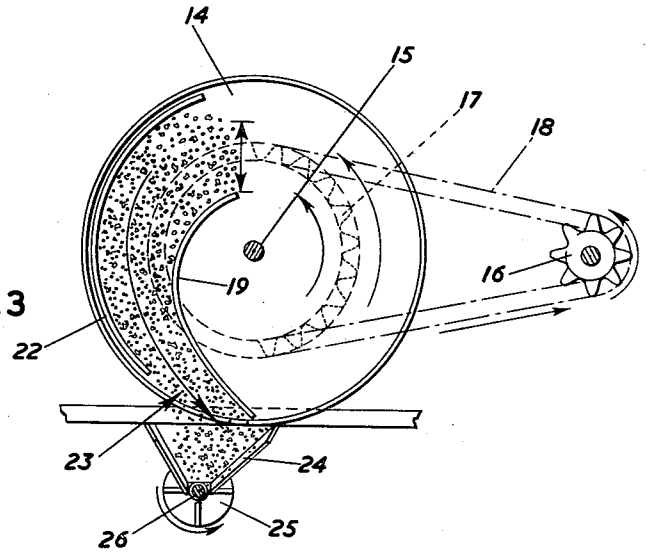
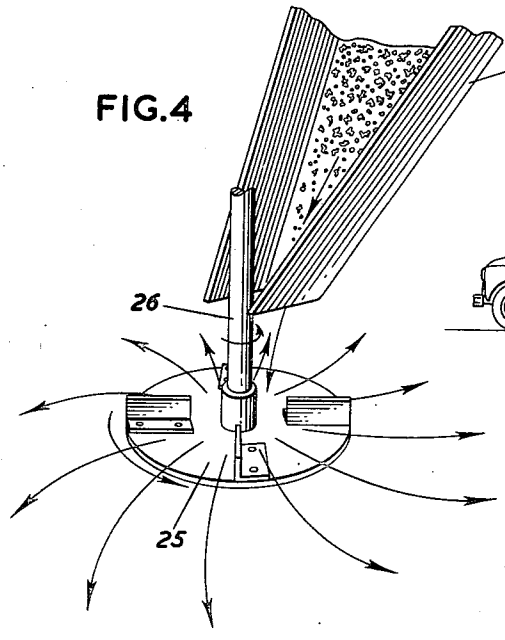


FIG.4



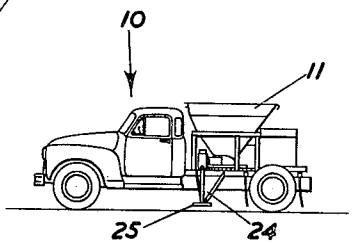


FIG.5

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SAND SPREADER

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Application July 26, 1954, Serial No. 445,566

5 Claims. (Cl. 275—8)

This invention relates to a device for spreading sand on roads.

Sand spreaders wherein sand is spread on roads from a travelling vehicle by means of a horizontally disposed spreading disk that is caused to rotate at a high rate of speed to spread sand dropped thereon by centrifugal force are well known. I have devised a novel apparatus for conveying the flow of sand or other material to be spread from a hopper to the spreading disk.

My conveying means includes a slowly revolving conveying plate that is mounted beneath a sand hopper. Fences are rigidly mounted above the plate adjacent where the hopper discharges thereonto for the purpose of pushing the discharge of sand from the hopper to the plate off the edge of the plate. Means are provided for guiding the flow of sand from the edge of the slowly revolving plate towards the spreading disk which revolves at a high rate of speed to spread the sand or other material on the road by centrifugal force.

The invention will be clearly understood after reference to the following detailed specification read in conjunction with the drawings.

In the drawings:

Figure 1 is a perspective view of a hopper and conveying plate according to my invention.

Figure 2 is a partial perspective view of the hopper illustrated in Figure 1 from a different angle.

Figure 3 is a plan view illustrating the slowly revolving conveying plate and the fences that are mounted thereabove to push the sand therefrom.

Figure 4 is an enlarged view illustrating the manner in which the chute which carries the sand or other material from the slowly revolving conveying plate to the spreading disk, discharges onto the latter.

Figure 5 is a side view of a truck having a unit of the type under consideration mounted thereon.

In Figure 5 of the drawings I illustrate a truck **10** having sand spreading apparatus according to the invention mounted thereon. The sand spreading apparatus which is better illustrated in Figures 1 to 4 inclusive, includes a hopper **11** which is rigidly mounted on the body of the truck **10** by any suitable means, which latter means are not the subject matter of this invention and have not been illustrated in detail in this application. The hopper has a discharge opening **12** adjacent its lower end which is opened and closed by means of the gate **13**. A round plate **14** is rotatably mounted underneath the discharge opening **12** of the hopper **11** so that the sand or other material in the hopper can extend down onto the plate **14** through the opening **12**. The plate **14** is mounted on a rotatable shaft indicated by the numeral **15**. Shaft **15** carries gear **17** and is rotatably driven from the pinion gear **16** by means of the chain **18**. Pinion gear **16** is powered in any suitable manner and, since the actual drive means is not an inventive feature of this invention, detail of the power means is not illustrated.

It will be noted that the discharge opening **12** overlies

the plate **14** eccentrically of the center of rotation of shaft **15** and, as indicated by the arrow on Figure 3, it discharges onto the conveying portion of conveying plate **14** adjacent the fence **19**, so that the plate will carry it between the two fences **19** and **22**, and inwardly of the outer edge of the conveying plate **14**, so that the material that is not pushed from the plate by the fence **19** but passes thereunder, as shown in Figure 1, can readily reenter the passage between the fences **19** and **22** adjacent the outer fence **22**.

A fence **19** is rigidly mounted above the plate **14** by means of the brackets **20** and **21** which attach to the hopper **11**. Fence **19** extends spirally from a point adjacent the inner extremity of the hopper discharge on the plate **14** towards the edge of the conveyor plate whereby in use it pushes the sand or other material that flows from the hopper to the plate laterally off the conveyor plate. It will be noted that the fence **19** has a substantial length and that the material is conveyed a substantial distance across the body of the truck before being pushed off of the disk by the fence. Preferably the lower edge of the fence **19** has a rubber skirt **21***a* secured thereto which will yield to permit bits of sand and the like in the hopper discharge to pass thereunder. These pieces might otherwise become jammed between the bottom edge of the fence and the revolving plate **14**.

Numeral **22** indicates a second fence which co-extends with fence **19** around the outer edge of the conveyor plate **14** from a point adjacent the hopper flow onto the plate to a point spaced from the point where the first fence **19** communicates with the edge of the plate whereby to define an opening **23** for the hopper discharge. Fence **22** serves the purpose of preventing the discharge from the hopper from spilling over the edge prior to the discharge opening **23**. It also preferably has a resilient skirt **22***a* secured to the bottom edge thereof so that pieces of sand and the like will not become jammed between the bottom of the plate **14** and the bottom of the fence **22**.

Aligned with the discharge opening **23** and rigidly secured to the frame of the truck by bolting or any other suitable means, is a trough **24** which gathers the discharge from the conveying plate **14** and conducts it downwardly to the spreading disk **25**. The upper end of the trough **24** is illustrated in Figure 1 of the drawings. The lower end, where it discharges onto the spreading disk **25**, is illustrated in Figure 4 of the drawings. Disk **25** is rigidly secured to the shaft **26** which is rotatably mounted in a suitable manner in the truck body and driven from a suitable source of power in a known manner. The operation of spreading disks like the disk **25** is well known in the art and need not be illustrated in this application.

In use, the hopper **11** is filled with sand, salt, or other material to be spread upon the road. The gate **13** of opening **12** is then opened to let the desired amount of material to be spread to flow onto the conveying plate **14**. The material is deposited as illustrated between the fence **19** and fence **22**, and as the conveying plate **14** rotates the fence **19** pushes the material spirally outwardly thereof towards the edge to discharge it at the discharge gate **23**. Discharge gate **23** is aligned with guide trough **24** which guides the sand or other material onto the spreading disk **25** which is, in turn, rotating at a high rate of speed and spreads the material so deposited on it by centrifugal force.

The skirts **21***a* and **22***a* on the fences **19** and **22** respectively are adapted to permit small quantities of the material to be spread to pass under the fences to which they are attached and prevent these particles from becoming jammed between the rotating plate **14** and the lower edge of the gates.

In use, plate **14** is driven relatively slowly at about 10 R. P. M. to 15 R. P. M. I have used a plate with a 48" diameter with success. Variations in R. P. M. and plate diameter are, of course, possible within the scope of the invention. Speed would change with plate diameter and even with the particular material being spread. It would also vary with the speed of the truck unit as a whole. Plate **14**, however, is a conveying plate and not a spreader plate that spreads by centrifugal force.

What I claim as my invention is:

1. A vehicle for spreading sand or the like comprising a body, a conveyor plate rotatably mounted on said body, means for rotating said conveyor plate, a hopper rigidly mounted on said body above said conveyor plate, said conveyor plate having a marginal edge portion extending laterally of the bottom of said hopper that is adapted to act as a conveying surface in use, a gate adjacent the lower end of said hopper adapted to discharge onto the conveying surface of said conveyor plate, first fence means rigidly mounted above the conveying surface of said conveyor plate, a second fence means rigidly mounted above the conveying surface of said conveyor plate adjacent the edge of said conveyor plate spaced from said first fence means but substantially co-extensive therewith, said first fence means extending spirally of the conveyor plate and transversely of said vehicle body to the edge of said conveyor plate from a point adjacent the inner limit of the conveying surface of said conveyor plate adjacent where said gate deposits material thereon in use whereby to define with said second fence means a passage means over the conveying surface of said conveyor plate from adjacent where said gate deposits material on said conveyor plate and terminating at the edge of said conveyor plate, said first fence means being adapted in use to push the major portion of material carried through said passage means by the conveying surface of said disk over the edge of said disk at the termination of said passage means, the remainder passing under said first fence means, said gate being adapted to discharge the contents

of said hopper on said conveying surface of said conveyor plate adjacent said first fence means and inwardly of the outer edge of the conveying surface of said conveyor plate, whereby in use material that is not pushed from said conveyor plate by said first fence means but passes thereunder as aforesaid can readily re-enter said passage means adjacent said second fence means, a spreading disk rotatably mounted on said body beneath said conveying disk to receive material thereon that is pushed from said conveyor plate as aforesaid, and means for rotating said spreading disk at a high rate of speed to spread the material dropped thereon by centrifugal force.

2. A vehicle as claimed in claim 1 having guide means for guiding material from said conveyor plate to said spreading disk.

3. A vehicle for spreading sand as claimed in claim 1 in which the lower edge of at least said first fence means has a skirt of a resilient material secured to its lower edge.

4. A vehicle for spreading sand or the like as claimed in claim 1 in which said drive means for rotating said conveying plate rotates it at a speed between 8 and 17 R. P. M.

5. A vehicle for spreading sand or the like as claimed in claim 1 in which said drive means for rotating said conveying plate rotates it at a speed between 10 and 15 R. P. M., and in which said conveying plate has a diameter of between 40 and 56 inches.

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