

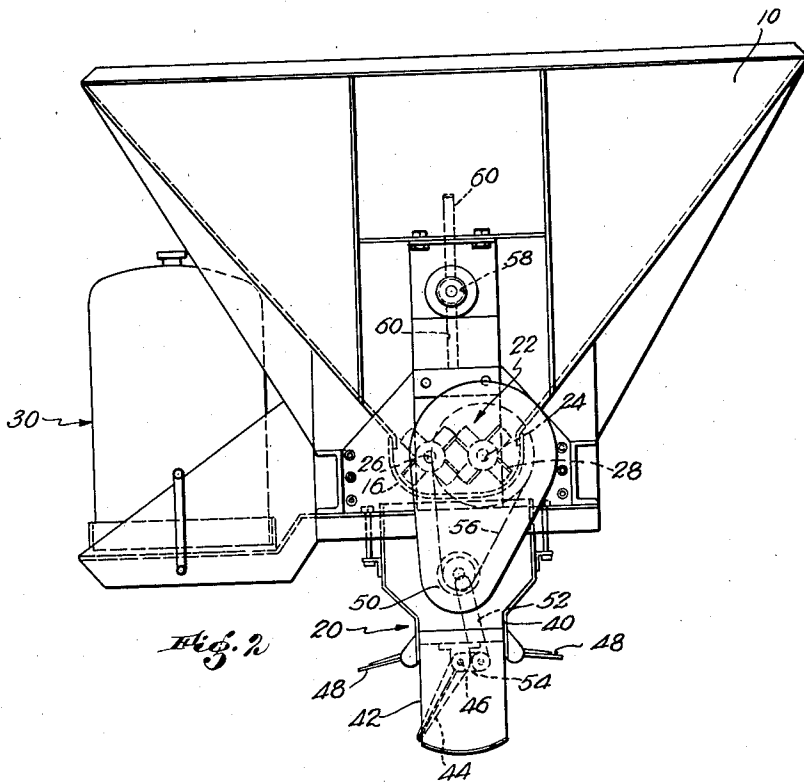
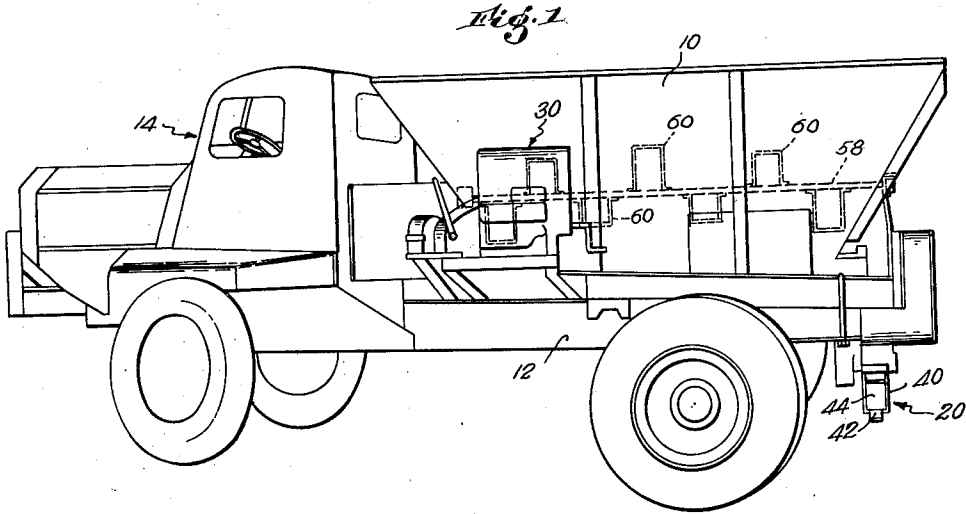
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E. B. MYOTT
SANDING APPARATUS

2,489,801

Filed May 10, 1947

2 Sheets-Sheet 1



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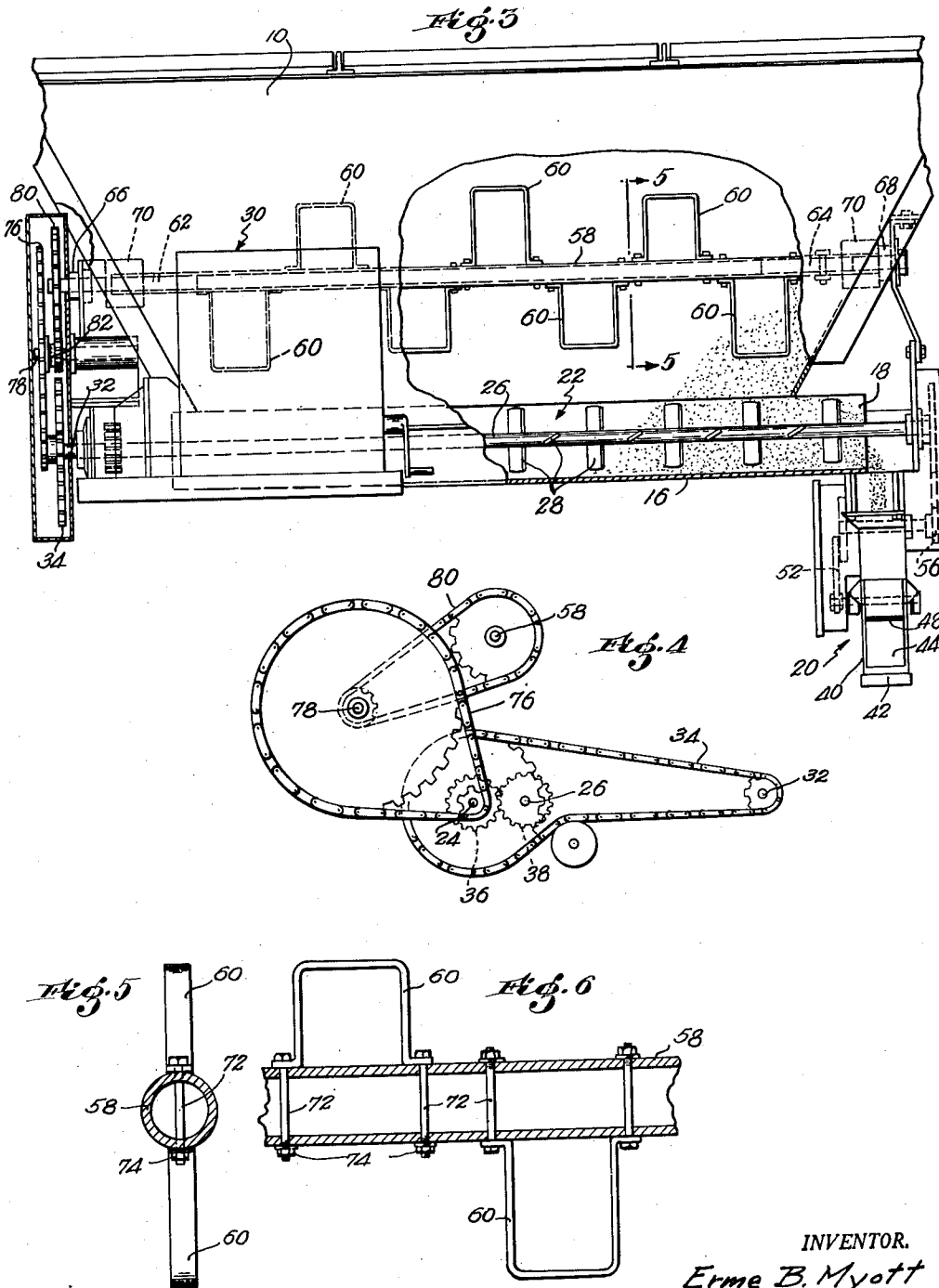
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SANDING APPARATUS

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1 Claim. (Cl. 275-2)

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This invention relates to sanding apparatus. The invention has for an object to provide novel and improved sanding apparatus adapted to be mounted on a vehicle for spreading sand or other loose or granular material upon the roadway and in which provision is made for carrying a bulk supply of the material and for feeding the same from the bulk supply to the spreading unit in a manner such as to provide a continuous and substantially uniform stream of the material to be spread.

With this general object in view, and such others as may hereinafter appear, the invention consists in the sanding apparatus and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is a perspective view of sanding apparatus embodying the present invention, shown mounted on a vehicle; Fig. 2 is a rear elevation of the sanding apparatus shown in Fig. 1; Fig. 3 is a side elevation, partly in cross section, of the present sanding apparatus; Fig. 4 is a detail view illustrating the driving mechanism as viewed from the left in Fig. 3; Fig. 5 is a detail view in cross section taken on the line 5-5 of Fig. 3 of the agitator embodied in the present invention; and Fig. 6 is a side elevation in cross section of a portion of the agitator shown in Fig. 3.

In general, the present invention contemplates novel sanding apparatus adapted to be mounted on a vehicle such as a motor truck and which is capable of distributing the sand or other loose or granular material evenly over the surface of the roadway as the truck proceeds along the road. The present sanding apparatus includes a supply hopper for containing a bulk supply of the material to be spread, a spreader unit attached to the rear of the apparatus, and means for feeding the material through an opening in the hopper to the mouth of the spreader unit. Provision is preferably made for positively feeding the material from the supply hopper to the spreader unit in a manner such as to supply a substantially continuous and uniform stream to the spreader unit, and, in its preferred form, the invention contemplates agitating means disposed in the supply hopper for maintaining the sand in a loose and flowable condition, particularly adapted to prevent bridging of the material across the walls of the supply hopper. Provision is also made in the preferred embodiment of the

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invention for driving the apparatus including the feeding means and the spreader unit through common driving means whereby to effect feeding of the material at a rate commensurate with the capacity of the spreader unit to distribute the material.

Referring now to the drawings, 10 represents a supply hopper forming a part of the sanding apparatus embodying the present invention and illustrated herein as mounted on the chassis 12 of a vehicle such as a motor truck 14. As herein shown, the hopper 10 is provided with downwardly and inwardly sloping side and end walls arranged to guide the sand contained therein into an elongated and longitudinally extending U-shaped trough 16 comprising the bottom wall of the hopper, and in practice, provision is made for positively feeding the sand rearwardly out through the open end of the rearwardly extended portion 18 of the trough. The material thus discharged is arranged to be received by a sand spreading unit, indicated generally at 20, which is adapted to forcibly eject the sand through side openings provided therein to distribute the material evenly over the entire surface of the roadway over which the vehicle is passing.

The mechanism for discharging the sand out through the open end of the trough 16 may comprise a duplex feeding unit, indicated generally at 22, disposed within the trough and includes a pair of parallel shafts 24, 26 extending longitudinally of the trough and provided with a plurality of radially extended blades or paddles 28 disposed at a suitable angle to effect advancement of the material along the trough upon rotation of the shafts. The blades 28 may and preferably will be arranged in staggered relation along the shafts 24, 26, and, in practice, the blades are effective to break up any lumpy material to render it loose and free flowing when it is discharged into the sanding unit 20 to thereby enable the sanding unit to operate with maximum efficiency.

As herein shown, the shafts 24, 26 may be journaled in suitable bearings attached to the frame of the apparatus and are arranged to be driven from a power unit, indicated generally at 30, and which may comprise a gasoline engine of any usual or preferred form having a power take-off shaft 32 connected by a chain and sprocket drive 34 to one shaft 24 of the duplex feeding unit, the other shaft 26 being connected thereto by cooperating spur gears 36, 38 for rotation of the shafts in opposed directions. Thus, in operation, the angular blades 28 cooperate to

advance the material in the trough toward the opening adjacent the rear of the hopper 10.

The sand spreading unit 20 may comprise any usual or preferred form of sanding unit now upon the market, the unit herein illustrated comprising the sand spreader illustrated and described in the United States patent to Humphrey, No. 2,152,259, issued March 28, 1939 and which, in general, comprises a funnel 40 arranged to receive the material through the top thereof and to discharge the material through side openings 42 by means of an impeller 44 mounted to rock on a pivot 46 and to forcibly eject the material flowing downwardly through the funnel to be strewn upon the roadway. The funnel 40 may and preferably will be provided with gates 48 adjustably mounted to control the spread of the material across the road. The impeller 44 is arranged to be rocked by a crank disc 50 connected by a link 52 to an arm 54 secured to the pivot shaft 46. The crank disc 50 may be rotated in timed relation to the rotation of the feed shafts 24, 26 through a chain and sprocket connection 56 driven by the feed shaft 24, as clearly shown in Fig. 2.

In order to further assure maintenance of the material contained in the supply hopper 10 in a loose and flowable condition, and to prevent bridging of the material across the sloping walls of the supply hopper, provision is made for stirring or agitating the material during the operation of the apparatus. As herein shown, the agitator may comprise an elongated hollow shaft 58 extending lengthwise of the supply hopper 10 and provided with a plurality of U-shaped stirrers 60 secured to and mounted to rotate with the shaft. The hollow agitator shaft 58 is disposed substantially centrally of the hopper 10 and is provided with short supporting shafts 62, 64 secured thereto at either end, the shafts being supported in suitable bearings 66, 68 preferably of the self aligning type. Suitable dust proof units 70 may also be provided for the shaft 58 to protect the bearings from the sand.

The U-shaped stirrers 60 are arranged lengthwise of the hollow shaft and may be secured thereto in any suitable manner such as by bolts 72 extending through the shaft and detachably secured thereto by nuts 74. In practice alternate or selected ones of the stirrers 60 may be of unequal radial extent, the stirrers herein shown at either end of the shaft and in the center being relatively longer than the stirrers intermediate the ends and the center. The unequal structure of the stirrers tends to prevent the bridging of the material above the agitator. The U-shaped stirrers form agitators of open structure which may be moved through the sand with minimum power, thus effectively serving to maintain the sand in a loose freely flowing condition.

Provision is made for driving the agitator shaft through connections from the feed shaft 24 and preferably at a relatively slower rate than the feed shafts, and, as herein shown, suitable speed reduction means may be provided between the shafts 24, 58 herein illustrated as comprising a chain and sprocket drive 76 from the feed shaft 24 to an idler shaft 78, and a second chain and sprocket drive 80 from the idler shaft 78 to the

agitator shaft 58. In practice, suitable provision may also be made for disconnecting the drive between the shaft 24 and the agitator shaft 58 to permit discontinuance of the agitator mechanism when desired. Such provision may comprise a clutching unit indicated generally at 82 mounted on the idler shaft 78.

From the above description of the invention it will be observed that in the operation of the apparatus the sand contained in the supply hopper 10 is maintained in a loose and flowable condition in the hopper, the agitator serving to prevent bridging of the material between the side walls of the hopper and to assure a constant and uniform supply to the feed trough 16, and, the duplex feeding unit 22 operating to break up any lumpy material and to feed the material at a continuous and substantially uniform rate into the spreader unit 20. It will be further observed that the spreader unit 20 being driven in timed relation to the feeding unit and the agitator is adapted to forcibly eject the stream fed thereto alternately through either side opening 42 to provide a uniform spread of sand along the roadway.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claim.

Having thus described the invention, what is claimed is:

In a sand spreading apparatus having a horizontally elongated hopper with downwardly sloping side walls and a discharging conveyer therein, the improvement comprising; a rotatable horizontal shaft in said hopper above and generally parallel to said conveyer, said shaft being supported by bearings at each end thereof, a plurality of U-shaped radially extending agitating elements carried by said shaft, the radially extended legs of an individual element being axially spaced and in radial alignment and fixed to said shaft, the adjacent legs of adjacent elements being axially spaced along said shaft, said adjacent elements being also relatively angularly displaced about said shaft and certain alternate ones of said elements being of a different radial length from the next adjacent elements.

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