Nov. 6, 1962 V. R. McCOY 3,062,522

PORTABLE MULTI-PURPOSE MIXING APPARATUS

Filed Jan. 15, 1960

FIG-1

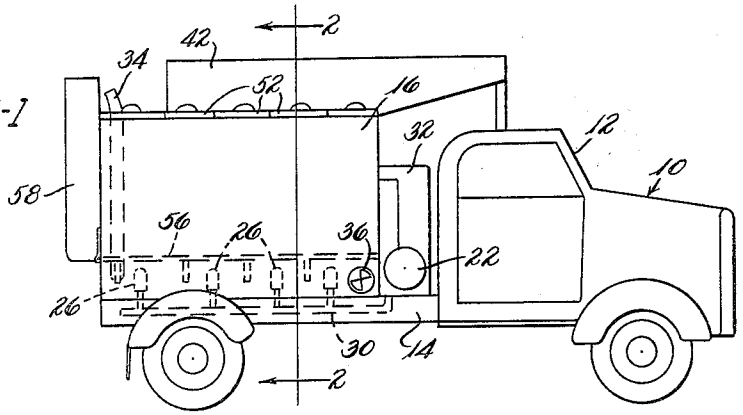
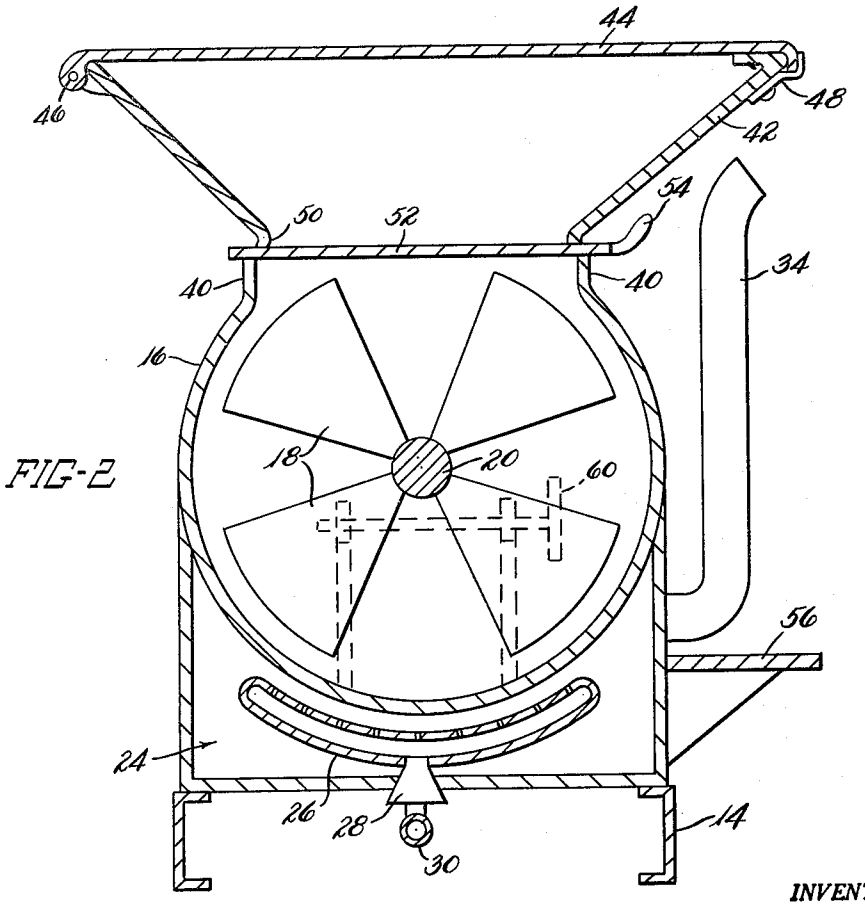


FIG-2



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United States Patent Office

3,062,522
Patented Nov. 6, 1962

3,062,522

PORTABLE MULTI-PURPOSE MIXING APPARATUS

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Filed Jan. 15, 1960, Ser. No. 2,652
2 Claims. (Cl. 263—25)

This invention relates to portable mixing apparatus, for example of the concrete mixing truck type, but adapted to perform a plurality of mixing functions.

Heretofore, concrete mixing trucks have been provided in relatively large size which is economical for large production jobs, but which becomes quite uneconomical if only half a load of concrete is required on a smaller construction job. Moreover, with conventional concrete mixers once the concrete ingredients have been placed in the mixing truck at the plant and are then transmitted to the job the concrete must be used within a limited period of time at the job and before it begins to set up. Should the pouring forms not be ready at the job, or should adverse weather conditions set in which would make the pouring of the concrete inadvisable it then becomes necessary to get rid of the concrete by dumping it in any available place out of the truck before it sets up in the mixing chamber, and concrete is often wasted in this manner.

Moreover, no concrete mixing trucks are now available commercially in which hot paving mixes can likewise be transported, nor is it possible in known concrete mixing trucks to transport additional dry materials to a job in the truck with these dry materials actually being mixed by the truck at the job as required.

It is the general object of the invention to avoid and overcome the foregoing and other objections to prior art practices by the provision of portable mixing and transporting apparatus of rugged but inexpensive type adapted for mixing and transporting concrete, hot surfacing or pavement mixes, for washing and drying gravel, and for providing a storage bin for surplus materials over and above those being mixed or dried.

Another object of the invention is to provide a portable mixing apparatus and truck combination of the character described and wherein a storage bin is associated with the top of the mixing container, with dry concrete materials being carried in the storage bin in complete safety and without setting up in any way, these materials being readily passed to the mixing container and with water being added and the ingredients mixed at the job and as required.

Another object of the invention is the provision of portable mixing apparatus in combination with a truck, the mixing chamber having associated therewith suitable mixing paddles and suitable heat applying means so that pavement mixes, and the like, can be transported by and delivered from the apparatus of the invention.

Another object of the invention is the provision of heating means in combination with a portable mixing chamber whereby gravel or other materials can be dried or washed and dried en route or on a job, and whereby concrete can be heated during mixing and/or in transit to permit mixing, delivery and pouring of concrete during freezing weather.

The foregoing objects of the invention, and other objects which will become apparent as the description proceeds, are achieved by the provision of a multi-purpose apparatus comprising in combination, a truck, a substantially cylindrical container mounted behind the cab of the truck and extending lengthwise of the frame but spaced vertically above the frame, said container having a central longitudinal opening along its top of a width just slightly smaller than the diameter of the container

and defined by vertical flanges forming continuations of the walls of the container, an enclosed chamber positioned between the truck frame and the container substantially of a width equal to the truck frame, a plurality of burners positioned in the chamber at longitudinally spaced points therein and beneath the container, a fuel line extending lengthwise beneath the chamber and connected to each burner, a supply of fuel connected to the fuel line, an exhaust stack connected to the chamber at the rear end thereof, adjustable opening means at the front end of the chamber, rotary paddles in the container mounted on a horizontal axis, means for rotating the paddles, a storage bin positioned above the container of inverted truncated triangular shape and extending above the truck cab at its forward end and terminating at its rear end short of the rear end of the container, said bin being at its top of greater width than the container and secured at its bottom to the vertical flanges of the container, movable means releasably closing the top of the bin, said bin having a volume approaching that of the container, a plurality of slides movable horizontally to open or close the opening between the container and the storage bin, a walkway positioned horizontally along the chamber, chute means connected to the container for delivering material therefrom, and adjustable closure means for connecting the inside of the container with the chute.

For a better understanding of the invention reference should be had to the accompanying drawings wherein FIG. 1 is a side elevation of the apparatus of the invention in combination with a truck; and

FIG. 2 is an enlarged cross-sectional view taken substantially on line 2—2 of FIG. 1.

In the drawings, the numeral 10 indicates generally a truck, for example of a five ton size, having a cab 12 and a rearwardly extending frame or chassis 14. Mounted above the frame 14 and extending longitudinally thereof to the rear of the cab 12 is a substantially cylindrical container 16 positioned vertically above the frame 14 and of a size to contain, for example, two and one-half cubic yards of material.

Rotatably positioned inside of the cylindrical container 16 are mixing paddles 18 these being carried on a horizontal shaft 20 journalled at its ends in the ends of the container 16, and with the mixing paddles 18 being adapted to be rotated by a power takeoff and gear reducer 22 from the engine of the truck 10, this being well understood by those skilled in the art, and the details thereof forming no part of the present invention. Attention is directed to applicant's prior U.S. Patent No. 2,698,742 for the construction of rubber mixing paddles, which may be used, but which may be made readily interchangeable with steel paddles which may be preferred in the mixing of asphalt.

Positioned between the cylindrical container 16 and the frame 14 of the truck 10 is a chamber 24 which is entirely enclosed, and which has a plurality of burners 26 contained therein, and preferably contoured to and positioned directly below the lower surface of the cylindrical container 16, all in the manner seen in FIG. 2. The burners 26 are connected by an air fuel mixer 28 to a supply conduit 30 which extends to a fuel tank 32 carried normally between the cab 12 and the cylindrical container 16. The fuel in the tank 32 may be either liquid or gaseous, and will be of a quantity to supply a controlled amount of heat over the entire bottom of the cylindrical container 16 for a plurality of hours sufficient to adequately perform the job of the apparatus.

At one end of the chamber 24, usually the rear, an exhaust stack 34 is provided for the hot gases of combustion from the chamber 24, and at the opposite end of the chamber 24 adjustable opening louvers 36 provide for the controlled entrance of air. The adjust-

ment of the louvers 36 together with an adjustment on the amount of fuel supplied to the burners 26 from the fuel storage 32 results in a controlled amount of heat applied, when desired, to the bottom of the cylindrical container 16. The burners 26 may be lit either from a pilot burner or through louver openings 36. The burners 26 are, of course, used when hot mixes for pavement repair or building, and the like, are handled by the apparatus. But they can also be used for drying gravel or similar jobs wherein the combination of the mixing paddles 18 and the burners 26 cooperate very effectively.

The container 16 is provided with a longitudinal opening along its upper surface and of a width somewhat less than the diameter of the container, this opening being defined by vertically extending flanges 40 forming a continuation of the wall of the cylindrical container. Secured to the flanges 40 is a storage bin 42 of inverted and truncated triangular shape, the storage bin 42 extending out over the top of the cab 12 towards the front of the truck and supported thereon, but terminating short of the rear end of the cylindrical container 16, in the manner illustrated in FIG. 1. The capacity of the storage bin 42 approximates that of the cylindrical container 16 in one embodiment of the invention, and in another is made approximately one-half of the capacity of the cylindrical container 16. The storage bin 42 is made with a removable weather-tight cover 44, conveniently hinged at one side, as at 46, and locked with a plurality of hasps 48 at the other.

Removably closing the opening 50 between the storage bin 42 and the cylindrical container 16 are a plurality of horizontally positioned slides 52 having operating handles 54 which can be gripped and pulled by an operator standing on a walkway 56 extending along one side of the chamber 24 to open the space between the storage bin 42 and the container 16, to thereby allow materials stored in the bin 42 to fall into the container 16. Thus, a load of dry concrete materials carried in the storage bin 42 can be transported to a job and after the materials in the container 16 have been emptied by way of a folding chute 58 the additional materials from the storage bin 42 can be passed to the container 16 and mixed therein with the addition of water at the job.

Terminating the storage bin 42 short of the back or rear end of the container 16 allows an operator to visually observe from the walkway 56 the materials in the container 16, a slide 52 being pulled out in part or entirely for this purpose.

It will be understood that the chute 58 is associated with suitable closure means 60 at the rear end of the container 16, for example such as those disclosed in applicant's prior U.S. Patent No. 2,698,742.

It is believed that the operation of the apparatus will be understood from the foregoing description. Suffice it to say here that the apparatus of the invention constitutes a combination whereby a plurality of jobs of construction, pavement repair, concrete transportation, mixing, and the like, can be performed by a single piece of equipment having a plurality of uses.

While in accord with the patent statutes, one best known embodiment of the invention has been illustrated and described in detail, it is to be understood that the invention is not to be limited thereto or thereby, but that its scope is defined in the appended claims.

What is claimed is:

1. A multi-purpose apparatus comprising in combination a truck, a substantially cylindrical container mounted behind the cab of the truck and extending lengthwise of the frame but spaced vertically above the frame, said container having a diameter at least equal to the width of the truck frame, and said container having a central longitudinal opening along the full length of its top of a width just slightly smaller than the diameter of the container and defined by vertical flanges forming continuations of the walls of the container, an enclosed chamber positioned between the truck frame and only the bottom portion of the container substantially of a width equal to the truck frame, a plurality of burners positioned in the chamber at longitudinally spaced points therein and beneath the container, a fuel line extending lengthwise beneath the chamber and connected to each burner, a supply of fuel connected to the fuel line, an exhaust stack connected to the chamber at the rear end thereof, adjustable opening means at the front end of the chamber, rotary paddles in the container mounted on a horizontal axis, means for rotating the paddles, a storage bin positioned above the container of inverted truncated triangular shape and extending above the truck cab at its forward end and terminating at its rear end short of the rear end of the container, said bin being at its top of greater width than the container and secured at its bottom to the vertical flanges of the container, movable means releasably closing the top of the bin, said bin having a volume approaching that of the container, a plurality of slides movable horizontally to open or close the opening between the container and the storage bin and to open or close the opening in the portion of the container not covered by the bin, a walkway positioned horizontally along the chamber, chute means connected to the container for delivering material therefrom, and adjustable closure means for connecting the inside of the container with the chute.

2. A multi-purpose apparatus comprising in combination a truck, a substantially cylindrical container mounted behind the cab of the truck and extending lengthwise of the frame but spaced vertically above the frame, said container having a diameter at least equal to the width of the truck frame, and said container having a central longitudinal opening along its top of a width just slightly smaller than the diameter of the container and defined by vertical flanges forming continuations of the walls of the container, an enclosed chamber positioned between the truck frame and the bottom only of the container substantially of a width equal to the truck frame, a plurality of burners positioned in the chamber at longitudinally spaced points therein and beneath the container, a fuel line extending lengthwise beneath the chamber and connected to each burner, a supply of fuel connected to the fuel line, an exhaust stack connected to the chamber at the rear and thereof, adjustable opening means at the front end of the chamber, rotary paddles in the container mounted on a horizontal axis, means for rotating the paddles, a storage bin positioned above the container, said bin being secured at its bottom to the vertical flanges of the container, movable means releasably closing the top of the bin, said bin having a volume substantially equal to that of the container, and a plurality of slides movable horizontally to open or close the opening between the container and the storage bin.

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