Aug. 13, 1940. G. DASHNER 2,211,256

SAND SPRAYER

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FIG. 1

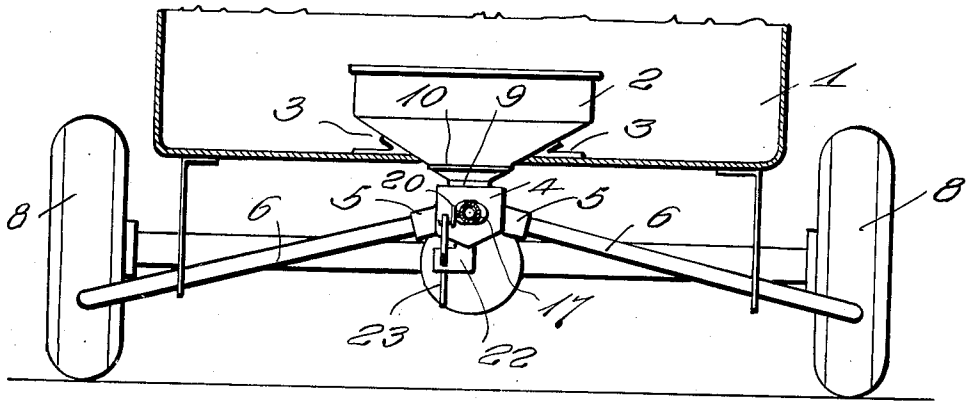
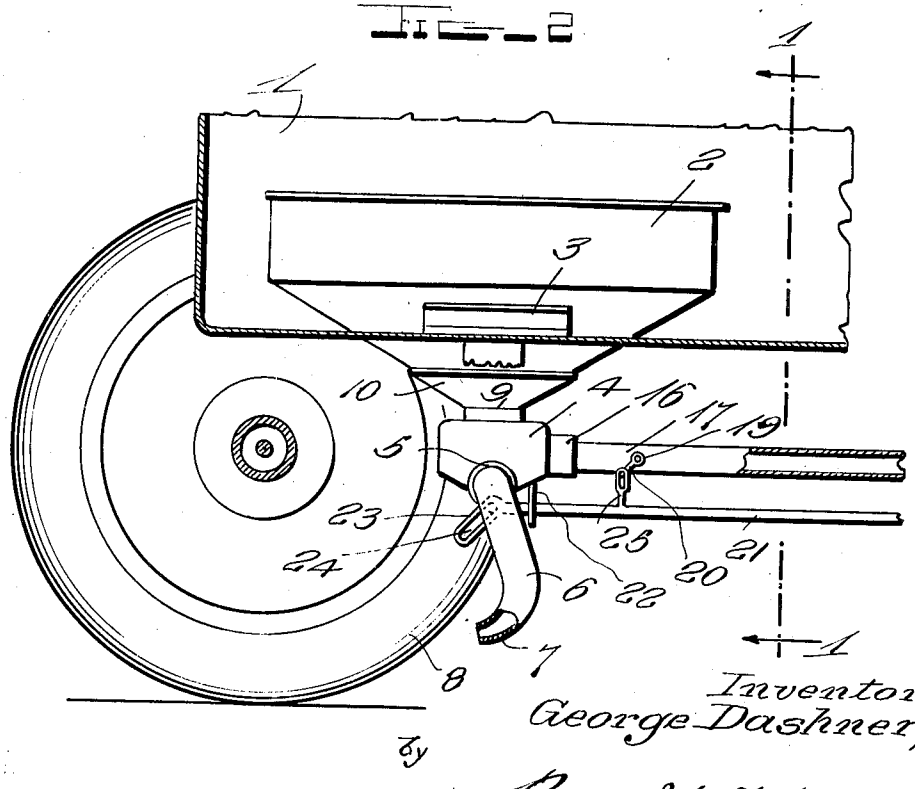


FIG. 2



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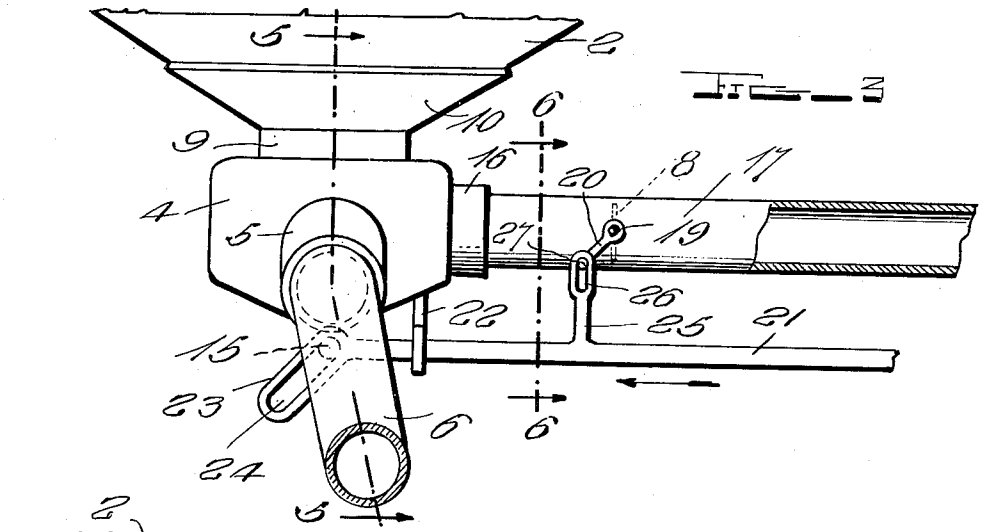


Fig. 3

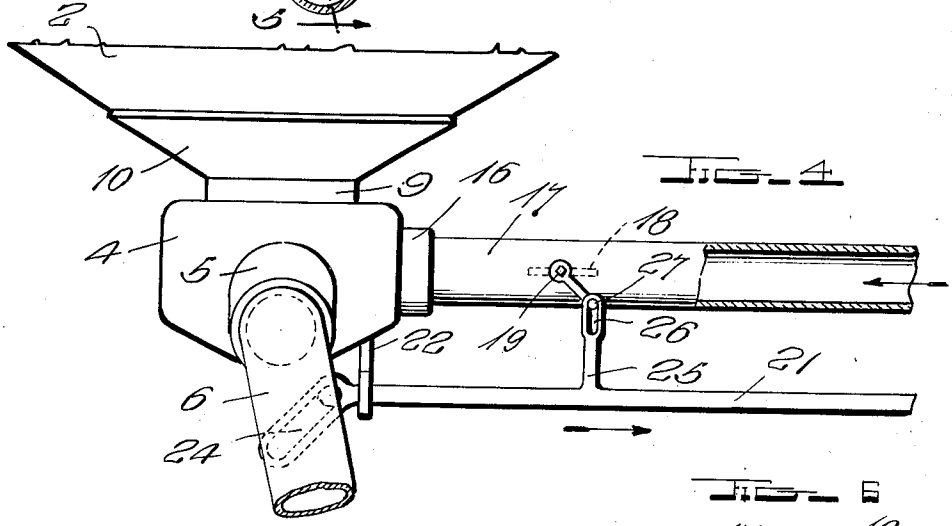


Fig. 4

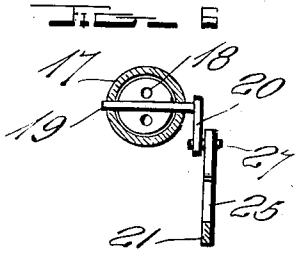


Fig. 6

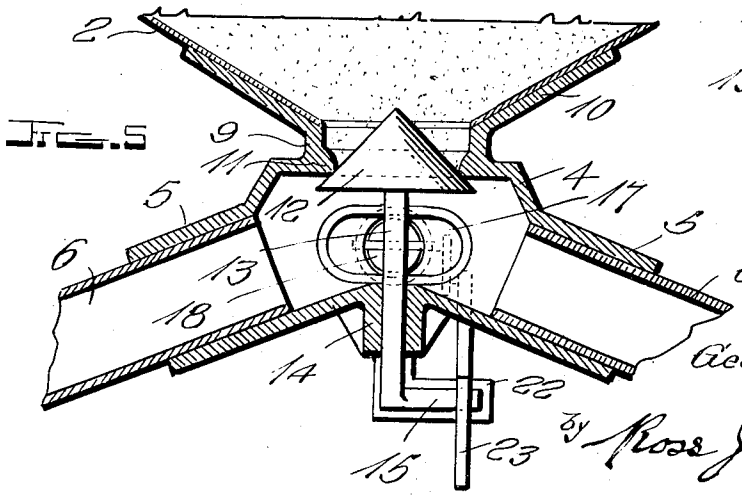


Fig. 5

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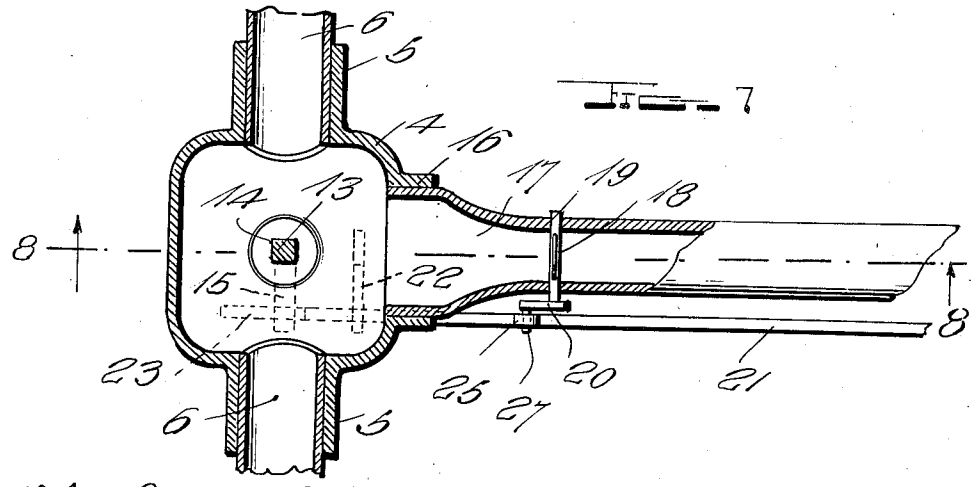


FIG. 7

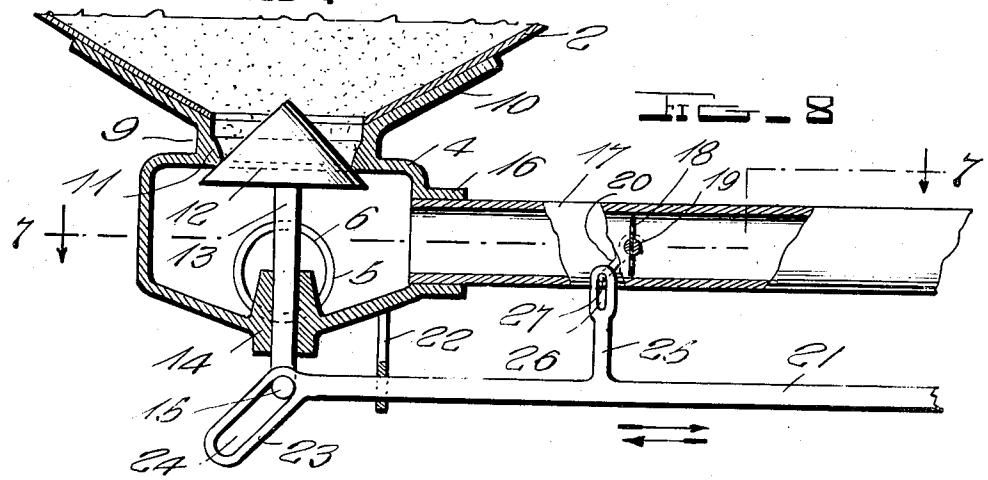


FIG. 8

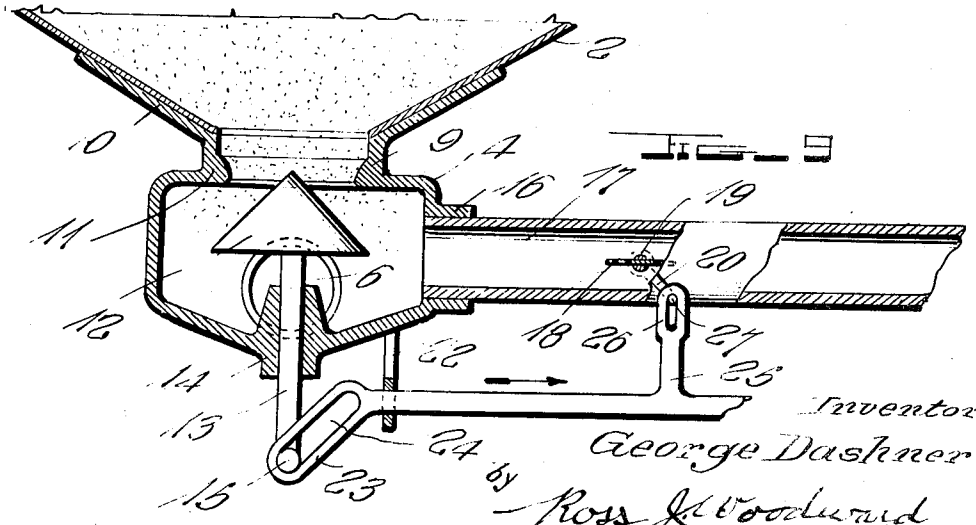


FIG. 9

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UNITED STATES PATENT OFFICE

2,211,256

SAND SPRAYER

George Dashner, Peshtigo, Wis.

Application August 7, 1939, Serial No. 288,854

4 Claims. (Cl. 291—3)

This invention relates to a sand sprayer for use in connection with an automobile or other vehicle and it is one object of the invention to provide an apparatus of this character which may be applied to the motor vehicle and be actuated by exhaust gases to discharge sand in front of the rear wheels. It will thus be seen that when streets or roads are covered with snow or ice, sand may be sprayed on the ground in front of the rear driving wheels and these wheels prevented from skidding or slipping and failing to properly propel the vehicle.

Another object of the invention is to provide an apparatus wherein the hopper holding the sand may be mounted under the rear seat or in the baggage compartment of the vehicle and sand discharged through pipes leading from the hopper by gases diverted from the exhaust pipe and flowing under pressure through a pipe to a coupling connecting discharge pipes with the sand hopper.

Another object of the invention is to so form the coupling connecting the discharge pipes with the hopper that it also serves as a valve housing in which is mounted a valve for controlling the flow of sand from the hopper.

Another object of the invention is to provide actuating means for the valve in the coupling and a valve in the pipe through which exhaust gases pass to the coupling, the actuating means serving to simultaneously adjust both valves and thus cause proper flow of sand and exhaust gases when the sander is in operation.

Another object of the invention is to provide a sander which is of simple construction, consists of a comparatively few number of parts and is not liable to get out of order and need repairs.

The invention is illustrated in the accompanying drawings, wherein:

Fig. 1 is a view partly in elevation and partly in section, showing the improved sander applied to a motor vehicle, the view being taken on the line 1—1 of Fig. 2.

Fig. 2 is a view taken at right angles to Fig. 1, the view being partly in side elevation and partly in section.

Fig. 3 is a side elevation of the sander with the valves closed.

Fig. 4 is a view similar to Fig. 3, showing the valves open for operation of the sander.

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 3, with the valve closed.

Fig. 6 is a fragmentary sectional view of the line 6—6 of Fig. 3.

Fig. 7 is a horizontal sectional view on the line 7—7 of Fig. 8.

Fig. 8 is a longitudinal sectional view on the line 8—8 of Fig. 7, with the valve closed.

Fig. 9 is a view similar to Fig. 8, with the valve open.

The automobile or other vehicle to which the sander is applied has a body 1 in the rear portion of which the hopper 2 is mounted with a portion thereof projecting downwardly through the bottom of the body. The hopper may be mounted under the rear seat of an automobile, in the baggage compartment at the rear thereof, or at any other convenient place. Brackets 3 serve to secure the hopper firmly in place through the opening through which it extends and may be secured to the hopper and the bottom of the body in any desired manner. This hopper is to be filled with sand which is poured into the open top thereof and renewed when necessary.

Under the hopper is a hollow casing 4 constituting a valve housing or coupling from the opposite sides of which extend sleeves 5 in which the inner ends of outlet pipes 6 are mounted. These pipes extend transversely of the automobile and have their outer end portions curved rearwardly and terminating in nozzles 7 from which sand is to be sprayed toward the drive wheels 8 by means of which the automobile is propelled along a road or street. The nozzles are in front of the wheels 8 since the vehicle is usually propelled forwardly, but it is to be understood that when the wheels are rotating in a forward direction at a high speed, the sand will be carried rearwardly of the wheels. Therefore, if an automobile is stalled and one or both rear wheels turn without moving the automobile, sand may be discharged in front of the rear wheels and, if the wheels do not propel the vehicle forwardly, it may be backed and, as a portion of the sand will have been carried back of the wheels, they will obtain sufficient traction to move the vehicle rearwardly. It will thus be seen that a stalled automobile may be driven either forwardly or rearwardly and the surface over which the driving wheels move, sanded to provide a good traction surface.

At its top, the casing 4 is formed with a neck 9 carrying a flaring throat 10 fitting snugly about the lower end portion of the hopper 2 to which it is secured in any desired manner. The neck is inwardly thickened to form a valve seat 11 for engagement by a conical valve head 12 which operates vertically in the casing 4 and is provided with a depending stem 13. This stem is

rectangular in cross section to prevent it from turning in the neck or sleeve 14 through which it passes and the lower portion of the stem is provided with a side arm 15 by means of which the valve stem is connected with means for shifting the valve vertically into and out of a raised or closed position.

A sleeve 16, which is flattened transversely, as shown in Fig. 5, projects forwardly from the casing 4 to receive the flared forward end portion of a pipe 17. This pipe extends forwardly under the automobile body with its front end connected with the exhaust pipe of the engine and when the engine is in operation, a portion of the exhaust gases will flow through the pipe 17 into the casing and out through the discharge pipes 6. When the valve 12 is open and sand flows therethrough down into the casing, the sand will be taken up by the exhaust gases and carried through the pipes 6 from which the sand is discharged as a spray through the nozzles 7 onto the rear wheels and the ground in front thereof. Flow of exhaust gases through the pipe 17 is controlled by a butterfly valve 18 having a stem or pivot rod 19 journaled through the pipe transversely thereof and carrying a crank 20 by means of which the valve is to be turned in the pipe toward an open or closed position.

In order to simultaneously adjust the valves 12 and 18, there has been provided an opening rod 21 extending longitudinally of the pipe 17 under the same. This rod is to be shifted longitudinally by the operator of the automobile and will have its front end provided with suitable actuating means in such position that it may be easily reached by a person in the driver's seat of the vehicle. The rear end portion of the rod is slidably mounted through a bracket 22 depending from the casing 4 and at its rear end is formed with a downwardly extending rearwardly inclined head or arm 23 formed with a longitudinally extending slot 24 through which the side arm 15 of the valve stem 13 engages. Referring to Figs. 8 and 9, it will be seen that when the rod is in the position shown in Fig. 8, the valve 12 will be closed, whereas when the rod is shifted forwardly and the side arm 15 is moved through the slot 24, downward pull will be exerted on the valve stem and the valve will be shifted downwardly to the open position shown in Fig. 9. By properly adjusting the rod, the valve may be either partly or fully opened, and flow of sand from the hopper thus controlled. An arm 25 extends upwardly from the rod 21 forwardly of the head 23 and, at its upper end, is formed with a vertically extending slot 26 to receive the shank 27 of the crank 20 carried by the pivot rod of the butterfly valve 18. When the valve 12 is fully opened, the butterfly valve will also be fully opened, but when the rod 21 is shifted rearwardly to close the valve 12, turning motion will be imparted to the crank 20 to move the butterfly valve toward closed position. Therefore, the two valves will be simultaneously adjusted and sand and exhaust gases in the proper proportions delivered into the casing 4, from which the sand is discharged by the gases through the pipes 6. It should be noted, however, that when the valve 12 is fully closed, the butterfly valve will still be slightly open. Therefore, a certain amount of exhaust gases may still pass through the pipe 17 into the casing 4 and out through the pipes 6. The hot gases will serve to heat the casing 4, pipes 6, and lower portion of the hopper. This will keep the sand in the hopper dry for free flowing and also prevent accumulation of water, snow or ice in the pipes 6. Therefore, when the valve 12 is opened, sand will flow freely from the hopper into the casing 4 and the exhaust gases will carry the sand through the pipes 6 and spray the sand from the nozzles 7 onto the driving wheels and the ground in front thereof. When the valve 12 is again closed, flow of sand into the casing will be shut off.

Having thus described the invention, what is claimed is:

1. In a sanding device, a hopper having an outlet at its bottom, a coupling supported by said hopper and surrounding the outlet thereof and depending from the hopper, said coupling being formed with an outlet and an inlet, a discharge pipe extending from the outlet and provided with a nozzle at its end, an inlet pipe communication with the inlet of the coupling for leading exhaust gases from an engine into the coupling, the upper portion of said coupling being formed with a neck communicating with the hopper through the outlet thereof and being formed with a valve seat, a valve in the coupling shiftable upwardly into engagement with the valve seat and having a depending stem protruding through the bottom of the coupling and formed with a side arm, a valve in the inlet pipe having a stem journaled through walls of the pipe and provided with a crank at one end, an actuating rod for said valves slidable longitudinally of the inlet pipe, an arm extending from said rod and formed with a slot receiving said crank to adjust the valve in the pipe when the rod is slid longitudinally, and a head extending at an incline from the rod and formed with a slot receiving the side arm of the stem of the valve in the coupling for opening and closing the valve when the rod is shifted longitudinally.

2. In a sanding device, a receptacle for sand having an outlet at its bottom, a casing under said receptacle supported thereby and having an entrance for sand at its top surrounding the outlet of the receptacle and formed with a valve seat, a fluid pipe for delivering hot gases under pressure from the exhaust of an engine communicating with said casing, a valve for said pipe, discharge pipes leading from opposite sides of said casing and terminating in rearwardly extending nozzles for discharging sand toward traction wheels of a vehicle, a boss carried by the bottom of said casing and formed with a bore in axial alinement with the valve seat, a valve in the casing having a conical head disposed under the valve seat and a stem depending from the head and slidably engaged through the bore of said boss, a rod under said fluid pipe slidable longitudinally of the pipe and connected with the stem for shifting the valve head toward and away from the valve seat when the rod is shifted longitudinally, and means connecting said rod with the valve of the fluid pipe for opening and closing the same when the rod is shifted longitudinally.

3. In a sanding device, a receptacle for sand adapted to be mounted in the body of a motor vehicle and having a downwardly tapered lower portion for passing through the bottom of the body, a casing, an upwardly extending inlet neck for said casing having a flared mouth secured about the lower portion of said receptacle to support the casing therefrom and dispose the neck in alinement with the outlet of the receptacle, said neck having a valve seat about its lower

end, a boss carried by the bottom of said casing and formed with a bore axially alined with the valve seat, a valve having a conical head in the casing for entering the neck and seating against the valve seat, a depending stem for the valve head slidably passing through the bore of said boss and at its lower end provided with a side arm, a discharge pipe extending laterally from said casing and terminating in a nozzle, a pipe for delivering gases under pressure from the exhaust of an engine into said casing, a butterfly valve for the fluid pipe having a stem journaled through opposite side portions of the fluid pipe and provided with a crank at one end, a rod extending longitudinally of the fluid pipe under the same, a hanger carried by said casing and slidably supporting said rod, an arm rising from said rod and formed with a slot receiving said crank, and a head extending downwardly at an incline from the rod and formed with a slot receiving the side arm of the valve stem.

4. In combination with a motor driven vehicle including a body and traction wheels, a sander comprising a hopper mounted in the vehicle body and having its lower portion extending downwardly through the bottom of the body and provided with an outlet, a casing carried by and depending from said hopper and surrounding the outlet for receiving sand therefrom, said casing having pipes for discharging sand in front of the traction wheels, a pipe for delivering hot gases under pressure from the discharge manifold of the vehicle engine into the casing for carrying sand through the discharge pipes, a valve shiftable vertically in said casing for controlling flow of sand from the hopper into the casing having a stem slidable through the bottom of the casing and projecting downwardly from the casing, a valve for controlling flow of gases through the gas pipe having a rotatably mounted stem protruding from a side of the pipe and provided with a crank at one end, an actuating rod mounted for sliding adjustment longitudinally of the pipe, an arm extending from said rod and formed with a slot receiving the crank for turning the valve of the pipe to adjusted position when the rod is shifted longitudinally, and an arm extending from the rear end of the rod and slidably connected with the stem of the valve in the casing for opening and closing the same in proportion to opening and closing of the pipe valve when the rod is shifted longitudinally.

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