A. A. ROTH & B. B. JAMES.

SANDER FOR AUTOMOBILES.

APPLICATION FILED JUNE 19, 1916. RENEWED MAR. 6, 1917.

1,243,632.

Patented Oct. 16, 1917.

3 SHEETS—SHEET 1.

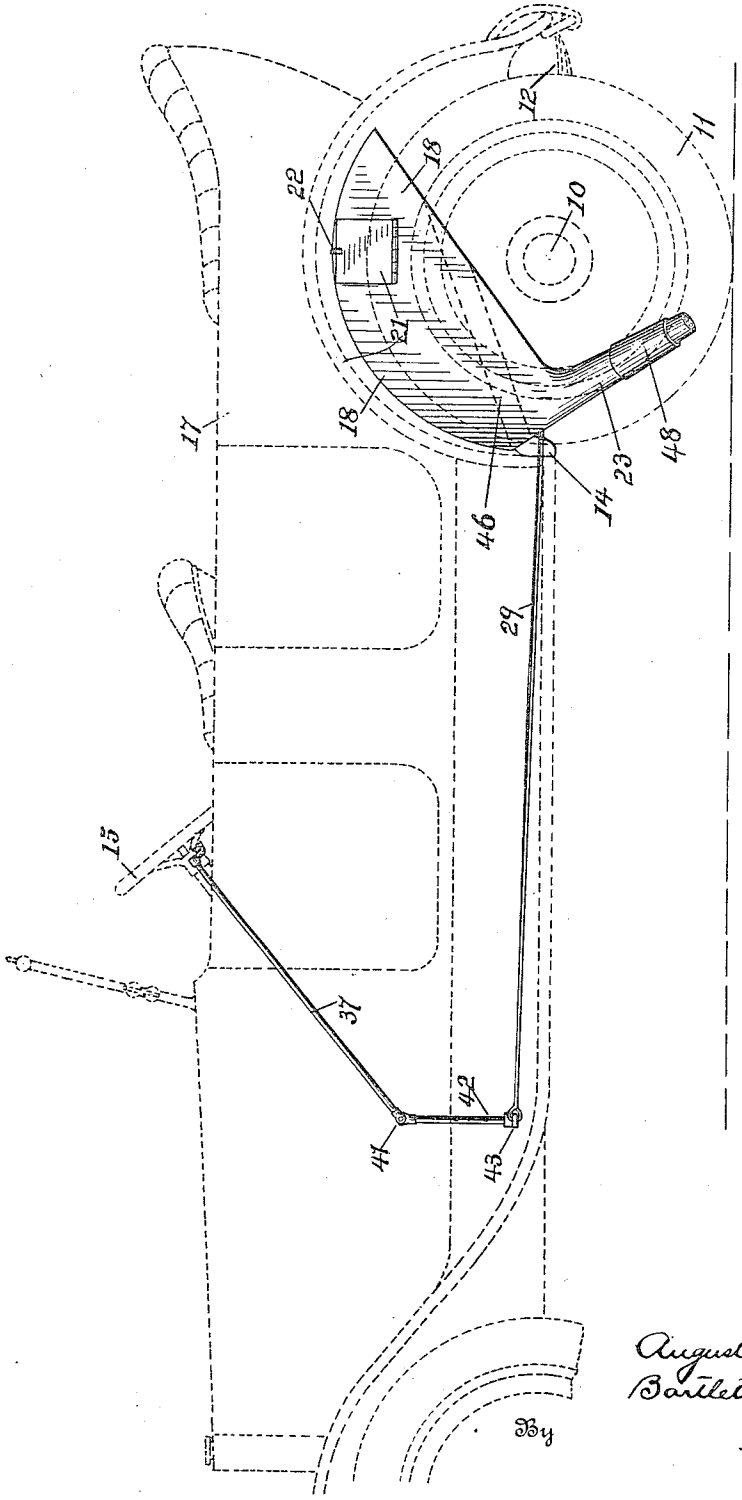


Fig. 1.

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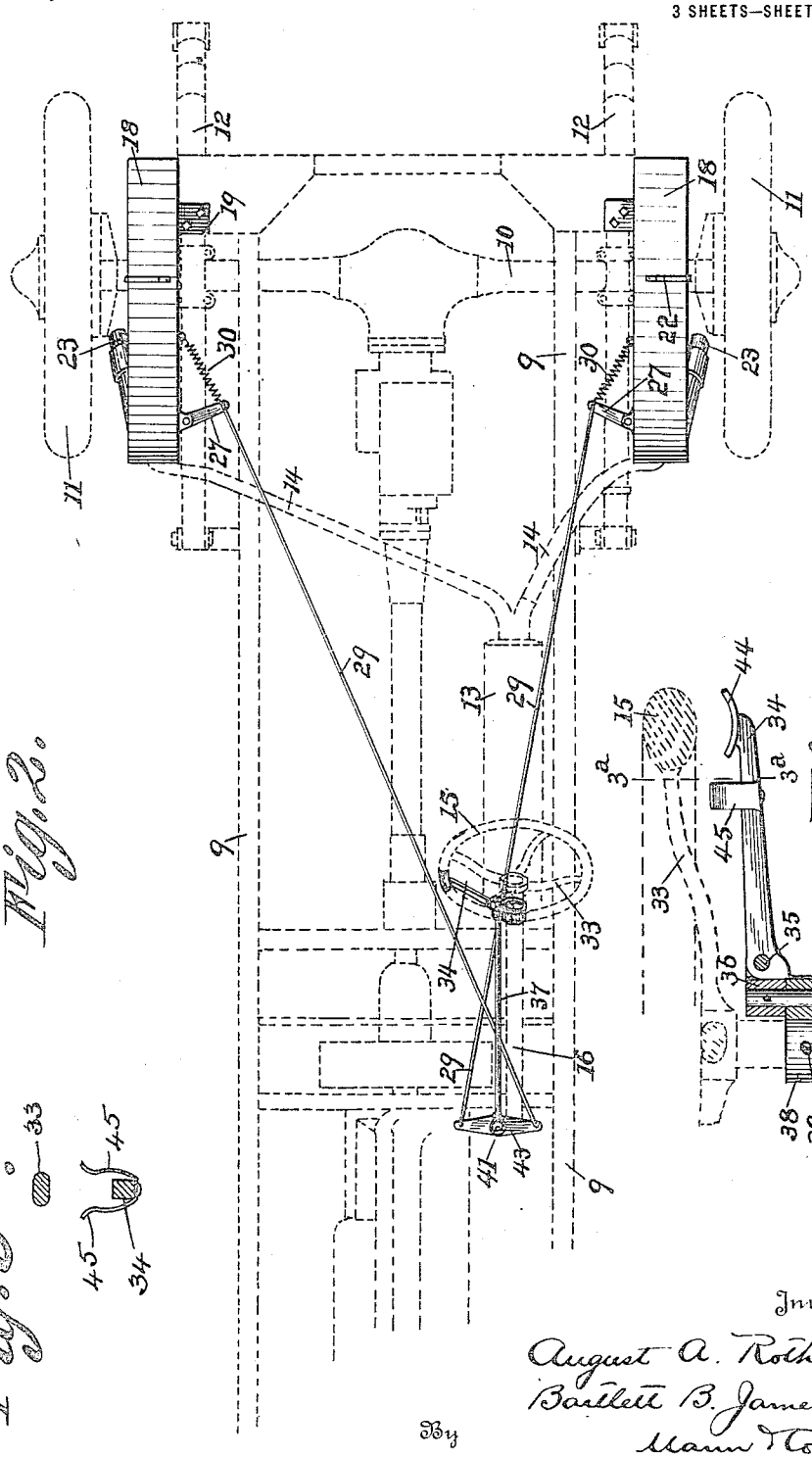


Fig. 2.

Fig. 3.

Fig. 3a.

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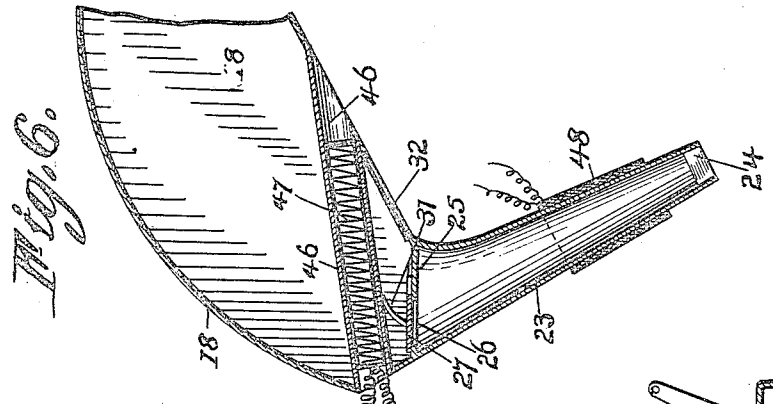


Fig. 6.

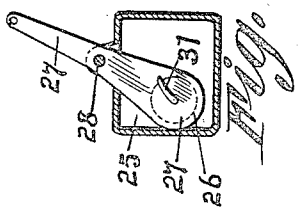


Fig. 7.

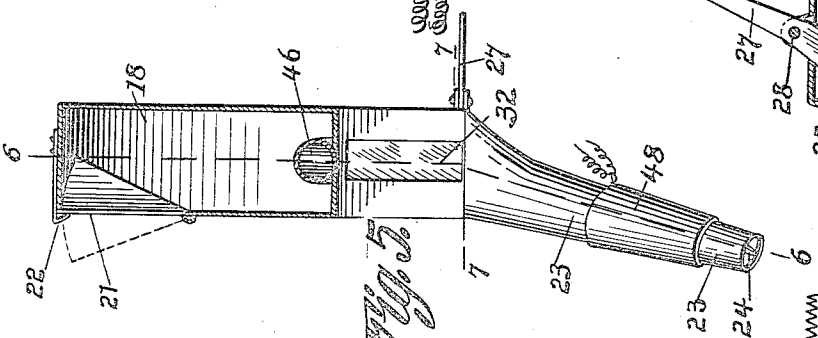


Fig. 5.

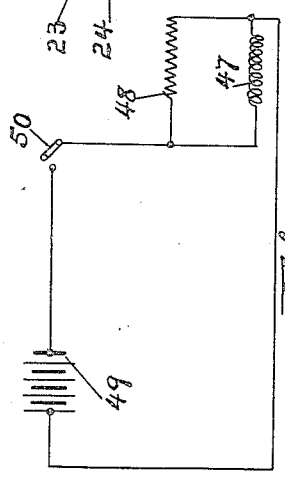


Fig. 8.

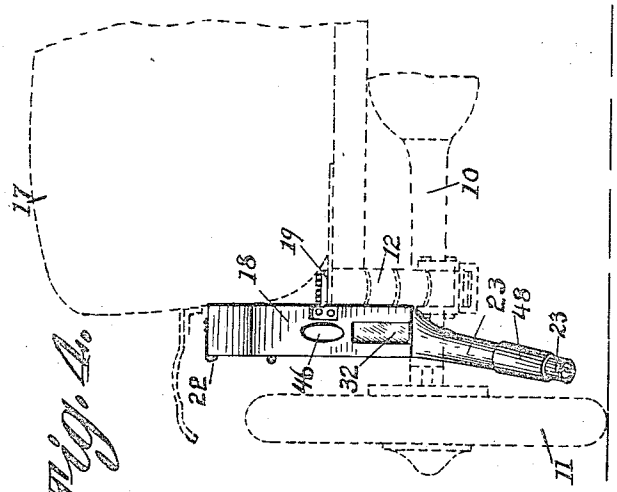


Fig. 4.

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UNITED STATES PATENT OFFICE.

AUGUST A. ROTH AND BARTLETT B. JAMES, OF BALTIMORE, MARYLAND, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO SURFACE GRIP CORPORATION, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

SANDER FOR AUTOMOBILES.

1,243,632. Specification of Letters Patent. Patented Oct. 16, 1917.

Application filed June 19, 1916, Serial No. 104,504. Renewed March 6, 1917. Serial No. 152,877.

To all whom it may concern:

Be it known that we, AUGUST A. ROTH and BARTLETT B. JAMES, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Sanders for Automobiles, of which the following is a specification.

This invention relates to a new and improved road-sanding device for self-propelled road vehicles, to apply sand when the vehicle is moving over a road whose surface is wet and slippery.

What is known as "skidding" is an involuntary side-slipping of the driving wheels of automobiles in a direction at an angle to the intended forward direction, and such skidding is the cause of numerous accidents.

One object of the present invention is to provide an automobile with means for supplying sand, or other granular friction material, to a road surface at a point adjacent the inner side of that part of the tire of a driving-wheel that is in contact with the road.

Another object of the invention is to provide means that will apply sand on the road surface in the manner just described, for one driving-wheel only, and without delivery at the same time of any sand for the other driving-wheel, and said means being also arranged to operate reversely so as to be used for either one of the two opposite driving-wheels. It will be understood the sand is to be applied at the moment the emergency requires, and this method of applying sand to the road surface adjacent the inner side of the driving-wheel tire insures that when the wheels are slipping sidewise the sand will be positioned at the spot adjacent the particular driving-wheel where it will be most effective in producing friction.

Another object of the invention is to provide a hand-operated sand control-lever which shall be so combined with the steering-wheel that one hand of the chauffeur may at the same time grasp both said sand control-lever and also the steering wheel.

Another object of the invention is to provide means whereby the direction to which the steering wheel may be turned in guiding the car will determine which driving wheel shall receive near its inner side an application of sand, as the sand must go on the road surface adjacent that wheel which will laterally slide over the said sand.

The invention is illustrated in the accompanying drawing in which,—

Figure 1, is a diagrammatic broken line elevation of the outline of an automobile, and in full lines showing the sander and the relative position of its several parts.

Fig. 2, is a diagrammatic broken-line plan view of an automobile, and in full lines showing the sander parts.

Fig. 3, is a side elevation of the sander control-lever, and shows in broken lines a part of the steering wheel.

Fig. 3^a, is a vertical section view on the line 3^a—3^a of Fig. 3, and shows the clip on the sand control-lever that may engage with a spoke of the steering wheel.

Fig. 4, shows the position of one of the sander discharge pipes relative to a driving wheel, as seen when looking at a rear elevation of an automobile.

Fig. 5, is a rear vertical elevation partly in section of one sander magazine on a larger scale.

Fig. 6, is a vertical section view of a sander magazine taken on the line 6—6 of Fig. 5.

Fig. 7, is a horizontal section of the sander valve taken on the line 7—7 of Fig. 5.

Fig. 8, is a diagram of an electric rheostat circuit for heating the sand-discharge tube.

Referring now to the drawings the numeral 9, designates the chassis frame, 10 the rear axle of the automobile, 11 the tire of a driving wheel, 12 a body-supporting spring, 13 a muffler, 14 exhaust pipes, 15 the steering wheel, 16 the tube in which the steering shaft is inclosed, and 17 designates the outline of the automobile body; all the parts just mentioned are familiar parts of an ordinary automobile.

The improved sander apparatus has two magazines or reservoirs 18, to contain sand or other granular friction material and each one is mounted near a driving wheel on the chassis or over the spring 12, by any suitable means, such as a laterally-projecting plate 19. Each sand reservoir has near its top a door 21, that closes an inlet which admits the sand. When this door is open it serves as a chute as indicated in Fig. 6, to direct the sand into the reservoir; a spring catch 22, serves to keep the door closed.

A discharge pipe 23, has its upper end attached to the reservoir and therefrom said pipe inclines downward toward the rear as shown in Fig. 1, and also inclines sidewise which causes the lower end of the pipe to point toward the inner side of a driving wheel 11, as shown in Figs. 2 and 4; thus sand issuing from the lower end of this pipe will drop on the road surface adjacent the inner side of the tire 11, of a driving wheel near the point where said tire contacts with the road.

The lower end of the discharge pipe has an interior thin plate 24, diametrically across the nozzle end dividing it into two passages; the upper end of the discharge pipe has a horizontal plate 25, provided with a circular port 26, and a valve 27, covers this port. The valve comprises a horizontal plate having an arm that projects to the outside of the case; this valve-plate is held by a pivot-pin 28, which affords a swinging movement to the said valve and its arm. The valve is opened by a thin flexible metal ribbon or tape 29; one end of such metal tape is attached to the free end of the valve-arm 27, and by pulling the tape the valve swings on its pivot 28, and opens the port 26. The valve is closed by the action of a spiral spring 30, drawing on the projecting arm 27; normally the valve is in the closed position. The valve is provided on top with a suitably curved prong or finger 31, that normally has position in the sand; when the valve swings either to open or close, this prong serves to stir or agitate the sand that is next above the valve, and thus loosens the sand.

An opening in the bottom wall of the sand reservoir is closed by a transparent glass plate 32, which affords an inspection of the interior.

The steering wheel 15, shown in broken lines is indicated in Figs. 1, 2 and 3. This wheel as usual, has spokes 33, and is mounted on the upper end of an inclined shaft that partly revolves, and is inclosed in a fixed tube 16.

A sand-controlled lever 34, has one end secured by a pivot bolt 35, to a head 36, which is attached to a rod 37, that extends parallel with the inclined steering shaft that carries the steering wheel 15. The pivot bolt 35, permits an up and down movement to the free end of the lever 34.

A collar 38, is on the said fixed tube 16, of the steering shaft, and this collar is secured to the tube by a pin or screw 39, which prevents the collar from movement; the collar has a lateral lug 40, with a hole through which the said rod 37, passes freely so that the rod may turn in response to a movement of the lever 34.

The said rod 37, has its lower end connected by a universal joint 41, with the shank of an inverted T-shaped swivel 43, shown in Figs. 1 and 2; the shank 42, stands upright and its lower end is fixed to the cross-head swivel 43. Two flexible metal tapes 29, are used—one tape extending diagonally connects the left-hand end of the cross-head 43, with the valve-arm 27, of the sander at the right-hand side of the chassis, and the other tape 29, extends diagonally in the opposite direction, and crosses the first named tape, and connects the right-hand end of the cross-head with the valve-arm 27, of the sander at the left-hand side of the chassis. Thus when the steering wheel 15, is turned to the right to guide the car in that direction, the sand-control lever 34, under said steering wheel being grasped by the chauffeur's hand will also be swung to the right, and the effect will be to open the sand-valve 27, at the right-hand side and apply sand on the road-surface adjacent the inner side of the tire of the driving wheel at the right-hand side; this operation of the movement of the steering wheel 15, and at the same time the like movement of the sand-control lever 34, shows the co-operative relation of said two parts.

The sand control lever 34, in the present instance, carries at its free end a small plate 44, that will contact with the lower surface of the circular rim of the steering wheel 15, when said sand-control lever is raised. The sand-control lever 34, also carries two upward-projecting prongs 45, which are spaced apart, and shown in Figs. 3 and 3ª; these prongs may engage with a spoke 33, on the steering wheel when the lever 34, is raised, and enables one hand of the chauffeur to grasp both the said lever and the wheel.

To keep the sand in the magazines or reservoirs 18, in a dry condition to the end that it readily flow or run out when valve 27, is opened, we provide for applying heat to the magazines and the sand therein. The means employed to effect this heating may vary as will readily be seen by reference to Figs. 2, 5 and 6 of the drawings.

In carrying out this part of the invention however, we provide each magazine or reservoir 18, with a tube 46, which tube, in the present instance, extends through the magazine from front to rear. In the form of device shown in Fig. 2, we connect the two exhaust pipes 14, which carry off the heated spent gases, directly with the forward end of the tubes 46, so that the heated exhaust-products will pass through said tubes 46, and escape therefrom to the atmosphere.

In this example the heat from the said exhaust will keep the tubes 46, heated and the sand around those tubes will take up the heat and thus be kept free of moisture.

In the second form of heater device shown in Figs. 5 and 6, we provide an electric

heater,—the resistance coils 47, of which are located in the tubes 46, so that the heat from the coils will effect a heating of said tubes and from the latter the heat will be conducted to the sand around the tubes. We may also provide an electric resistance collar or coil 48, about the discharge pipe 23, as shown in Figs. 5 and 6, whereby the sand-discharge pipe 23, may be heated as well as the tubes 46, in the magazines.

In the use of the electric form of heater the current may be supplied from a current-supply or battery 49, as shown in the diagrammatic wiring view illustrated in Fig. 8, a switch 50, being provided in the circuit to cut out the heating means when desired.

This invention contemplates that sand will be applied only at the moment of emergency, and then applied only adjacent that driving wheel which is most remote from the side-slipping direction to which the rear wheels threaten to move, and then finally applied on the road surface adjacent the inner side of said driving wheel, thus when said wheel actually slides sidewise that part of the tire resting on the road surface will be certain to scrape over the sanded surface and thereby the skidding will be stopped or retarded. It is understood that this method of applying sand is new.

Having described our invention what we claim is,—

1. In a road-sander device for automobile cars the combination of two driving wheels one at each side of the car; two magazines for containing sand or other granular material each of said magazines being mounted on the chassis at an opposite side from the other so that each magazine will have position at the inner side of a different driving wheel; a sand-discharge pipe leading from each magazine and the lower end of said pipe terminating at a point near the road surface and adjacent that part of the inner side of a driving wheel that contacts with the road surface; a valve at each of said two sand-discharge pipes; a sand-control lever at the steering wheel of the automobile, and means connecting between the said control lever and each of said two valves, whereby sand may be applied to the road surface adjacent either one of said driving wheels without applying it to the road adjacent the other wheel.

2. In a road-sander device for automobile cars the combination of two driving wheels one at each side of the car; two magazines for containing sand or other granular material each of said magazines being mounted on the chassis at an opposite side from the other so that each magazine will have position at the inner side of a different driving wheel; a sand-discharge pipe leading from each magazine and the lower end of said pipe terminating at a point near the road surface and adjacent that part of the inner side of a driving wheel that contacts with the road surface; two sets of independent means each set leading from within reach of the driver's seat and each communicating with only one of said magazines to open and close said sand-discharge pipe, and one means manually controlled by the driver to operate either one of said two sets of means.

3. In a road-sander device for automobile cars the combination of two driving wheels one at each side of the car; two magazines for containing sand or other granular material each of said magazines being mounted on the chassis at an opposite side from the other so that each magazine will have position at the inner side of a different driving wheel; a sand-discharge pipe leading from each magazine and the lower end of said pipe terminating at a point near the road surface and adjacent that part of the inner side of a driving wheel that contacts with the road surface; a steering wheel for the automobile; a sand-control lever attached to the support of said steering wheel and said lever adapted to be brought in close relation with said steering wheel so that the driver's hand may grasp both the lever and said wheel to guide the automobile and to control the discharge of sand.

4. In a road-sander device for automobile cars the combination of two driving wheels one at each side of the car; two magazines for containing sand or other granular material each of said magazines being mounted on the chassis at an opposite side from the other so that each magazine will have position at the inner side of a different driving wheel; a sand-discharge pipe leading from each magazine and the lower end of said pipe terminating at a point near the road surface and adjacent that part of the inner side of a driving wheel that contacts with the road surface; a steering wheel for guiding the automobile, and means coöperating with said steering wheel and also with both of said sand-discharge pipes whereby the direction to which the steering wheel may be turned in guiding will determine which driving wheel shall receive near its inner side an application of sand to the road surface.

5. In a road-sander device for automobile cars, the combination of a sand-magazine; a sand-discharge pipe for each of two driving wheels at opposite sides of a car and each pipe provided with a valve; a steering wheel for guiding the automobile; a sand-control lever pivoted to the tube of the steering wheel; and reverse means connecting between said pivoted lever and the valves of two sand-discharge pipes at opposite sides of the car.

6. In a road-sander for automobiles, the combination with the driving wheels, of a magazine for the storage of sand; a sand-discharge pipe leading from the magazine and terminating at the inner side of the driving wheel; valve means for controlling the escape of sand from the magazine to the sand-discharge pipe; means whereby the driver may operate said valve means, and means in the magazine for applying heat to the sand therein.

7. In a road-sander for automobiles, the combination with the driving wheels, of a magazine for the storage of sand; a sand-discharge pipe leading from the magazine and terminating at the inner side of the driving wheel; valve means for controlling the escape of sand from the magazine to the sand-discharge pipe; means whereby the driver may operate said valve means; a tube extending through the magazine; and means for heating said tube.

In testimony whereof we affix our signatures in the presence of two witnesses.

AUGUST A. ROTH.
BARTLETT B. JAMES.

Witnesses:
CHAS. B. MANN,
BERTHA K. WALTER.