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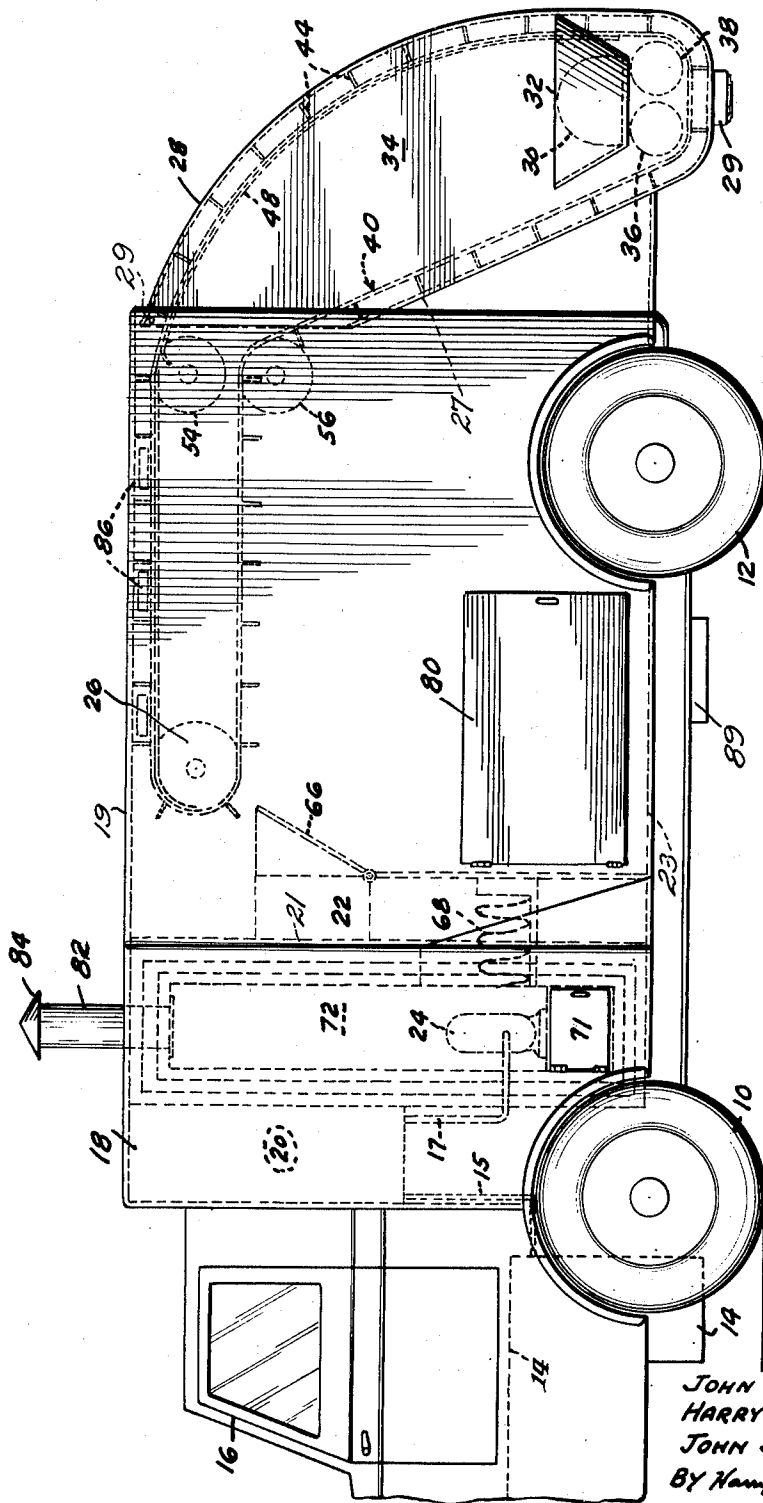
2,601,657

MOBILE INCINERATOR

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4 Sheets-Sheet 1

Fig. 1.



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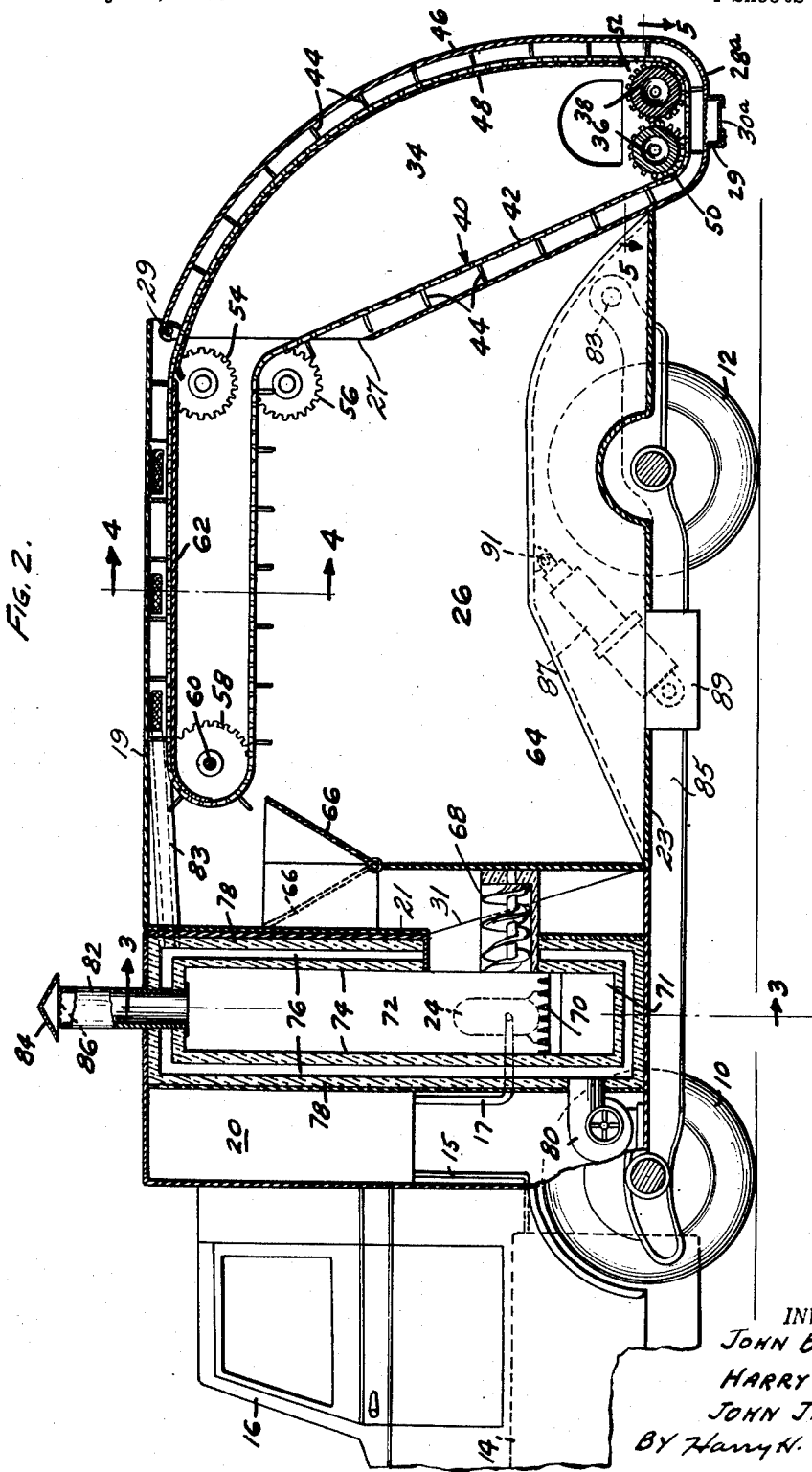
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MOBILE INCINERATOR

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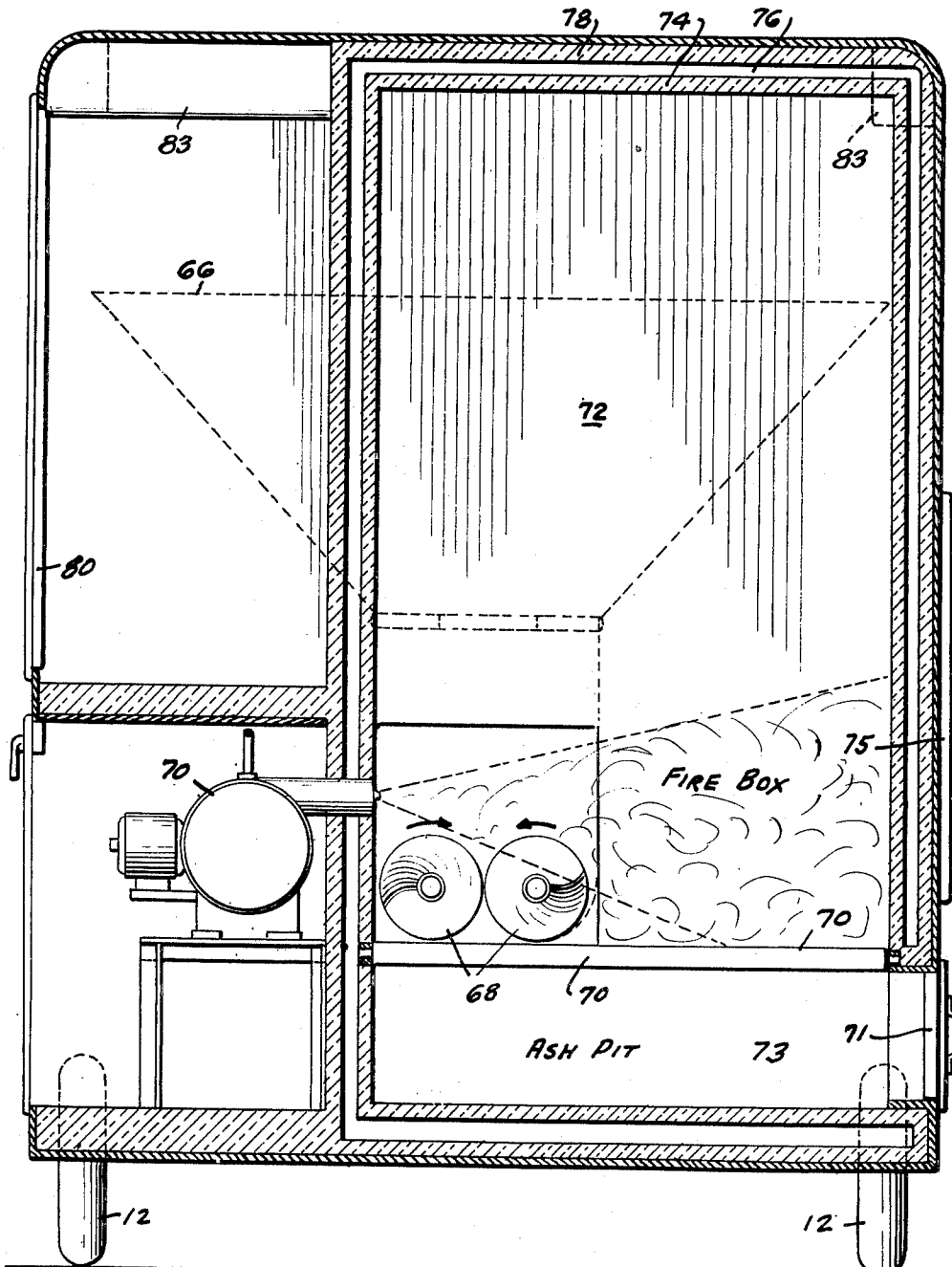


FIG. 3.

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FIG. 4.

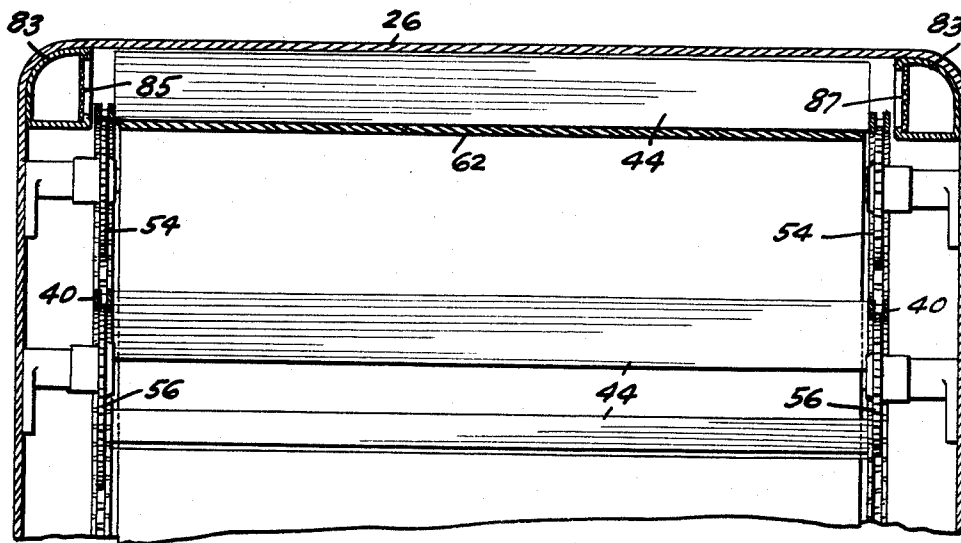
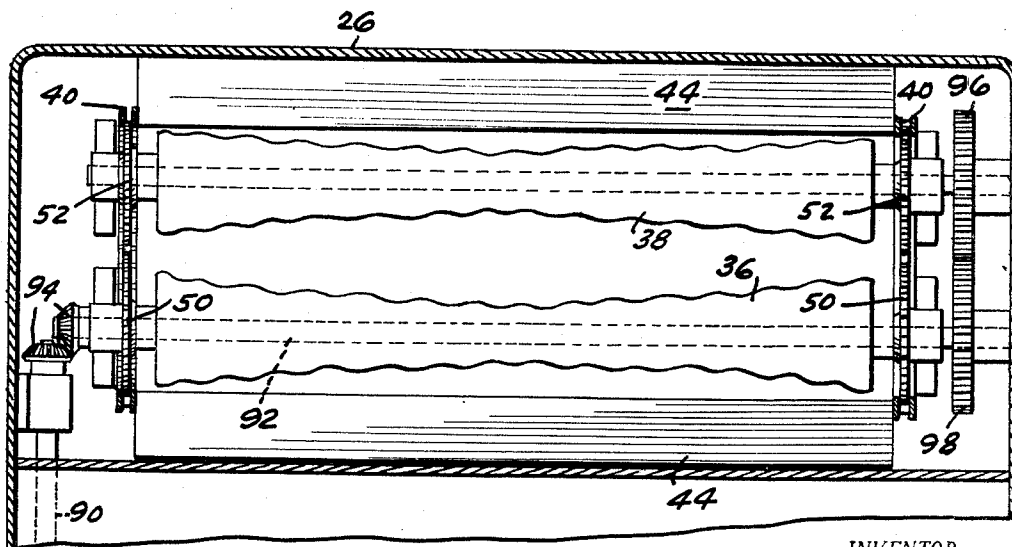


FIG. 5.



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UNITED STATES PATENT OFFICE

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MOBILE INCINERATOR

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11 Claims. (Cl. 110—8)

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Our invention relates to mobile incinerators.

Our invention relates more particularly to an incinerator of the type which may be transported from house to house, as in towns, villages and cities, to collect, pulverize, dehydrate and burn garbage or similar combustible refuse, reducing it to ashes and storing the ashes on the conveyance for the incinerator until it is necessary to dump the ashes.

The principal object of the present invention is to provide a mobile incinerator for collecting and burning garbage or similar combustible refuse, said incinerator, ash pit and associated parts being of sufficient size so that a considerable amount of garbage or other combustible material may be disposed of per hour, the principal use of the incinerator being in the pick up from house to house of garbage, refuse, etc., as now required in most villages, towns and cities either by municipally owned equipment or by private scavengers.

A further object of the invention is to provide a mobile incinerator in an assembly which may include all of the usual equipment presently found in commercial garbage collection trucks, the incinerator being assembled therewith so that in the truck ashes and other non-combustibles can be collected and stored, while paper, trash, garbage and other combustibles may be burned as the truck travels on its collection route.

A further object of the invention is to provide an improved mobile incinerator for burning papers, trash and garbage which includes crusher or pulverizing rolls, a heating or dehydrating chamber and a furnace, all designed and arranged in connection with the usual garbage disposal trucks at present on the market.

A further object of the invention is to provide apparatus of the type described capable of continuous operation so that the garbage disposal truck may be driven on a regular pick-up route to collect ashes, garbage and trash, the incinerator and associated equipment serving to dispose of all garbage and combustible trash as it is collected, so that the disposal truck need only be driven to a dump and emptied when the ash receiving portion of the body is filled with ashes.

For a more comprehensive understanding of the features of the invention, reference may be had to the accompanying drawings, upon which:

Fig. 1 is a side elevational view of a mobile incinerator constructed in accordance with our invention;

Fig. 2 is a longitudinal sectional view thereof;

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Fig. 3 is a vertical cross-sectional view through the furnace or combustion chamber and associated parts, and is taken generally on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view taken through the conveyor mechanism generally on the lines 4—4 of Fig. 2; and

Fig. 5 is a plan sectional view through the pulverizing rolls and associated parts taken generally on the line 5—5 of Fig. 2.

In the embodiment of the invention which we have chosen to illustrate and describe in Fig. 1 we have shown the usual type of garbage and refuse collecting vehicle which may include the front and back sets of wheels 10 and 12, and a motor 14 for driving the same mounted below a cab 16 located at the forward end of the vehicle.

In the construction which we provide the vehicle will generally be divided into three parts, the forward portion 18 being stationary with the frame of the vehicle and adapted to contain the fuel reservoir 20, incinerator or furnace 22, oil burner 24, and associated parts. The second part may comprise the dump truck body 26 which is provided with the usual mechanism for pivotally raising the forward end of the same about a pair of pivots 28 adjacent the back end of the truck frame 25 so that the contents thereof may be dumped out of the open back end 27 when desired. This mechanism, as is well known in the art, includes a telescoping hydraulic piston assembly 31 mounted on a base 32 on the truck frame 25, the upper end being pivotally connected at 33 to the floor of the dump truck body. The dump truck body may have the top wall 19, forward wall 21, and bottom wall 23, the front wall having a lower opening 34 for a purpose which will hereinafter be apparent.

The hollow tail gate portion 28 of the conveyance may be provided with a pair of wide wall openings 30 leading to the interior thereof so that garbage or other refuse in drums or large barrels may be raised up, the edge positioned on the top of the funnel member 32, and the garbage or refuse dumped through the openings 30. As is usual with hollow tail gates of this type, we mount the same upon pivots 29 adjacent the top rear end of the dump truck body 26 so that when the dump truck body is raised by the hydraulic piston assembly 31, the gate will swing away to permit the dumping of materials in the dump truck body.

Referring now more particularly to Fig. 2, the refuse which is dumped through the openings 30

in the side walls 34 of the tail gate portion is adapted to be received between a pair of crusher rolls 36 and 38 which pulverize or reduce the size of material dumped into the same so that it may be carried upwardly by means of the conveyor 40. The conveyor 40 comprises a pair of spaced endless chain members 42 having spaced blade members 44 connected between the spaced chains 42, the blade members 44 adapted to ride upwardly at the back of the tail gate between the end wall 46 of the same and a supporting wall 48, so that material disposed upon the blades 44 will be carried upwardly in the space provided.

The conveyor chains 42 are trained about a pair of idler sprockets 50 and 52 in the lower part of the tail gate 28 over similar idler sprockets 54 and 56 in the dump body portion 26 and over driven sprockets 58 which are keyed to the shaft 60 that may be driven in any suitable manner from the motor 14.

The spaced wall 48 in the tail gate has its upper end terminating adjacent a horizontally disposed platform portion 62 which supports the conveyor blades 44 during their forward travel in the upper end of the dump body 26, the blades carrying garbage and other refuse forward and permitting the same to be dropped either into the chamber 64 in the dump body 26 or over an angularly disposed gate 66 which directs the material to a pair of spiral members 68 of the type used in stoker furnaces to move material to be burned forward upon the grate 70 in the furnace or combustion chamber 72.

The combustion chamber 72 may be generally rectangular, as shown in Figs. 2 and 3, having the fire brick walls 74 and an air space 76 between the same and a similar fire wall 78 upon the outside of the air space 76.

The air space which is provided about the combustion chamber of the incinerator thus prevents the outside walls of the truck from becoming extremely hot, and in addition provides a passageway about the combustion chamber so that the air which is heated thereby may be forced upwardly therefrom by means of a fan member 80 through a pair of passageways or ducts 82-83 that are mounted in the upper side walls of the dump body 26.

The passageways or ducts 82-83 are provided with a plurality of screen covered outlets 86 and 88 directed from the sides thereof into the interior of the dump body chamber 64 above the platform 62 for the purpose of heating or dehydrating the garbage or other material that is being conveyed forward thereon by the conveyor member 40.

In this manner and by the introduction of the heated air continuously into the garbage and other material being moved forward to be burned, the same is thoroughly dehydrated during its passage to the combustion chamber, so that when it reaches the combustion chamber it is bound to burn easily and quickly, thus greatly increasing the efficiency of the mobile incinerator and permitting the garbage and other combustible materials to be burned at a rate of speed so that the incinerator can be moved forward from house to house to pick up the garbage and other combustible material and burn the same without any time-consuming delays between stops.

The fuel for the oil burner 70 may be stored in the oil tank 20, the engine 14 being preferably of the diesel type so that fuel oil of the same type may be consumed therein. For this

purpose fuel oil conduits 15 extend from the tank to the engine, and conduit 17 extends from the tank to the oil burner 24, the same being of the forced draft jet type so that an extremely high temperature fire may be easily and quickly obtained.

An ash door 71 may be provided at the end of the ash pit 73 below the grate 70 in the combustion chamber, as well as a clean-out door 75 to permit entrance into the fire box of the furnace when desired.

In order to permit the disposal of ashes and other non-combustible material into the dump truck body 26, we provide the loading doors 80 upon the sides thereof, it being understood that ashes, tin cans, etc. which are not subject to burning, are loaded into the dump truck body without the use of the conveyor means provided in the tail gate.

We have provided the usual smoke stack 82 extending upwardly from the combustion chamber 72, the stack having a cover 84 thereon and a screen 86 therein to prevent the hot ashes, sparks and other particles from leaving the combustion chamber, thereby eliminating a possible fire hazard in the use of the mobile incinerator. When desired, in order to eliminate obnoxious odors from the burning of garbage or similar refuse, a suitable odor destroying chemical may be provided in connection with the same.

At the lower end of the tail gate 28 in the housing 28a in which the crusher rolls are mounted, we have provided a chamber 29 therebeneath having a slide gate 30 thereon, being for the purpose of collecting fluid refuse which develops in the crusher, and which may be dumped in the sewer at convenient times and locations.

The drive for the crusher rolls, as best shown in Fig. 5, may include a shaft 90 extending back from the motor 14, the shaft driving the crusher roll shaft 92 by means of bevelled gears 94, the crusher roll 38 being driven from the crusher roll 36 by means of face gears 96 and 98 on one side of the same. Since one of these rollers is driven clockwise and the other counterclockwise, the material dumped upon the same is moved inwardly, crushed or pulverized between the same, and dropped in the chamber 28a where it may be picked up by the conveyor blades 44 and carried forward to its desired destination.

Non-combustible material may be dumped at this point if desired and carried forward by the conveyor chains and blades 44 and dumped into the chamber 64 in the dump truck body portion 26. For this purpose the gate 66 is swung to the left and held in the dotted line position shown in Fig. 2 so that the material carried forward, instead of being dumped into the combustion chamber of the furnace, will be dumped directly into the dump truck chamber 64.

From the above and foregoing description it can be seen by those skilled in the art that we have provided a mobile incinerator by means of which garbage and refuse collection in cities, towns and villages can be quickly and effectively accomplished, the incinerator being such that it burns up the garbage and combustible material as the dump truck is moved from house to house. Since even in the northern climates over 80% of the refuse collected is combustible for over seven months of the year, it can thus be seen that by the use of one of the mobile incinerators which we have provided it is possible to quickly, effi-

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ciently and cheaply collect and dispose of garbage and other waste material.

We contemplate that changes and modifications may be made in the exact details shown and we do not intend to be limited in any particular; rather what we desire to secure and protect by Letters Patent of the United States is:

1. The combination with a garbage dump truck, a fuel tank on said truck, a combustion chamber on the forward end of said truck, of an oil burner operatively associated with said combustion chamber, an ash pit therebelow, a conduit from said fuel tank to said oil burner, said oil burner, combustion chamber and ash pit being insulated from the truck, a dump body separate from said burner and combustion chamber mounted on said truck and disposed rearwardly thereof, said dump body having a storage chamber therein, a hopper at the rear end of said dump body, a dehydrating chamber on said truck between the hopper and the combustion chamber, a conveyor in said dump body extending forward from the lower end of said hopper through said dehydrating chamber, and means operatively associated with said combustion chamber and said storage chamber for directing refuse carried by said conveyor either to said combustion chamber or to said storage chamber on said dump truck body, said dump truck body having a passageway therein for carrying heat from said combustion chamber to said dehydrating chamber to dehydrate refuse during its movement therein.

2. In combination, a truck frame, a dump truck body mounted thereon, a hollow tail gate pivotally connected at the top of said body and closing the end of the same, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted below said openings in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of endless chains, spaced blade members connected therebetween, sprockets on both sides of said dump truck body, said chains trained about said sprockets, said sprockets mounted in the lower end of said tail gate below said crusher rolls, idler sprockets mounted adjacent the top of said dump truck body and drive sprockets mounted adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body aligned with the wall parallel to the arcuate back wall of said tail gate to form a continuation of the passageway from said tail gate, said blade members connected between said chains and adapted to move material from below said crusher rolls and through the passageways above mentioned, a combustion chamber disposed at the forward end of said platform into which material moved by said blades may be dropped, ducts from the combustion chamber to the sides of said platform in heating relationship thereto, and a blower operatively associated with said ducts for directing hot air from said chamber through said ducts.

3. In combination, a truck frame, a dump truck body mounted thereon, a hollow tail gate pivotally connected at the top of said body and closing the end of the same, said tail gate having an arcuate back wall and openings in the side walls of the same, crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail

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gate to form a passageway, a conveyor comprising a pair of endless chains with spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body aligned with the wall parallel to the arcuate back wall of said tail gate to form a continuation of the passageway from said tail gate, a combustion chamber at the forward end of said platform, means forming a vertical passageway into which material moved by said blades may be dropped, ducts extending from the combustion chamber to the sides of said platform, a blower for directing hot air from said chamber through said ducts, said vertical passageway at the forward end of said truck frame being in communication with said combustion chamber.

4. In combination, a truck frame, a dump truck body mounted thereon, a hollow tail gate pivotally connected at the top of said body and closing the end of the same, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of endless chains having spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body aligned with the wall parallel to the arcuate back wall of said tail gate to form a continuation of the passageway from said tail gate, a combustion chamber at the forward end of said platform, means forming a vertical passageway into which material moved by said blade members may be dropped, ducts extending from the combustion chamber to the sides of said platform, a blower for directing hot air from said chamber through said ducts, said vertical passageway at the forward end of said truck frame being in communication with said combustion chamber, and a pivoted gate at the top of the same movable to open or close said vertical passageway.

5. In combination, a truck frame, a dump truck body mounted thereon, a hollow tail gate pivotally connected at the top of said body and closing the end of the same, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of endless chains having spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body aligned with the wall parallel to the arcuate back wall of said tail gate to form

a continuation of the passageway from said tail gate; a combustion chamber at the forward end of said platform, ducts extending from the combustion chamber to the sides of said platform; a blower for directing hot air from said chamber through said ducts, means defining a vertical passageway at the forward end of said platform in communication with said combustion chamber into which material moved by the said conveyor may be dropped, and a pivoted gate at the top of the same movable to open or close said vertical passageway, said combustion chamber being mounted on said truck body ahead of said dump truck body.

6. The combination with a truck frame having a cab, an oil reservoir, a combustion chamber and an oil burner on the front of the same, of a dump truck body pivotally mounted thereon, a pair of pivots adjacent the rear top end of said dump truck body, a hollow tail gate mounted on said pivots and adapted to close the end of said dump truck body, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of endless chains having spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body defining a dehydrating chamber with the roof and side walls of said dump truck body, said combustion chamber being disposed at the forward end of said dehydrating chamber and adapted to receive material being carried forward through said dehydrating chamber by said conveyor, ducts extending from the combustion chamber to the sides of said dehydrating chamber, and a blower for directing hot air from said combustion chamber through said ducts to said dehydrating chamber.

7. The combination with a truck frame having a cab, an oil reservoir, a combustion chamber and an oil burner on the front of the same, of a dump truck body pivotally mounted thereon, a pair of pivots adjacent the end of said dump truck body, a hollow tail gate mounted on said pivots and adapted to close the rear end of said dump truck body, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of endless chains, having spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body defining a dehydrating chamber with the roof and side walls of said dump truck body, ducts extending from the combustion chamber to the sides of said platform with openings to said dehydrating chamber, a blower for directing hot air from said combustion chamber through said ducts to said dehydrating cham-

ber, and a gate pivotally mounted above said combustion chamber for optionally directing material moved forward through said dehydrating chamber into said dump truck body or into said combustion chamber.

8. In combination, a truck frame, a dump truck body mounted thereon, a pair of pivots adjacent the top and back end of said dump truck body, a hollow tail gate mounted on said pivots and adapted to close the end of said dump truck body, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of parallel spaced endless chains with spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body over which said blade members slide, said platform and the top of said dump truck body forming a continuation of the passageway in said tail gate, and a combustion chamber positioned below the forward end of said platform whereby material carried forward on said platform by said blade members will drop by gravity into said combustion chamber.

9. In combination, a truck frame, a dump truck body mounted thereon, a pair of pivots adjacent the top and rear of said dump truck body, a hollow tail gate mounted on said pivots and adapted to close the end of said dump truck body, said tail gate having an arcuate back wall and openings in the side walls of the same, a pair of spaced parallel crusher rolls mounted in the lower end of said tail gate, a wall parallel to and spaced from the arcuate back wall of said tail gate to form a passageway, a conveyor comprising a pair of parallel spaced endless chains with spaced blade members connected therebetween, said chains trained about sprockets mounted at each side in the lower end of said tail gate below said crusher rolls, idler sprockets at each side adjacent the top of said dump truck body and drive sprockets at each side adjacent the front of said body, a platform below said spaced blade members adjacent the top of said dump truck body over which said blade members slide, said platform and the top of said dump truck body forming a continuation of the passageway in said tail gate, and a combustion chamber at the forward end of said platform, said dump truck frame having a tiltable gate below the forward end of said platform for optionally guiding material carried forward into said dump truck body or into said combustion chamber.

10. The combination with an automotive vehicle having a fuel tank, of a combustion chamber in the forward end of the vehicle, a burner therefor connected to said fuel tank, a dump truck body mounted on said vehicle, a hollow tail gate pivotally connected to the top at the back end of said dump truck body, a crusher rolls mounted in the lower end of said hollow tail gate for pulverizing materials dumped therein, and conveyor means passing beneath said crusher rolls for moving said pulverized materials, said conveyor means extending forwardly from said hollow tail gate adjacent the top of said dump truck body

to said combustion chamber, said conveyor means including a pair of spaced endless chains, blades connected therebetween and a wall adjacent the top of said dump truck body over which said blades move said material to said combustion chamber. 5

11. The combination with an automotive vehicle having a fuel tank, of a combustion chamber in the forward end of the vehicle, a burner therefor connected to said fuel tank, a dump truck body mounted on said vehicle, a hollow tail gate 10 pivotally connected to the top at the back end of said dump truck body, crusher rolls mounted in the lower end of said tail gate for pulverizing materials dumped therein, and conveyor means passing beneath said crusher rolls for moving said 15 pulverizing materials, said conveyor means extending forwardly from said hollow tail gate adjacent the top of said dump truck body to said combustion chamber, said conveyor means including a pair of spaced endless chains, blades connected therebetween and a wall parallel to and 20

adjacent the top of said dump truck body over which said blades move said material to said combustion chamber, and heating means associated with said conveyor means for drying said material during movement.

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