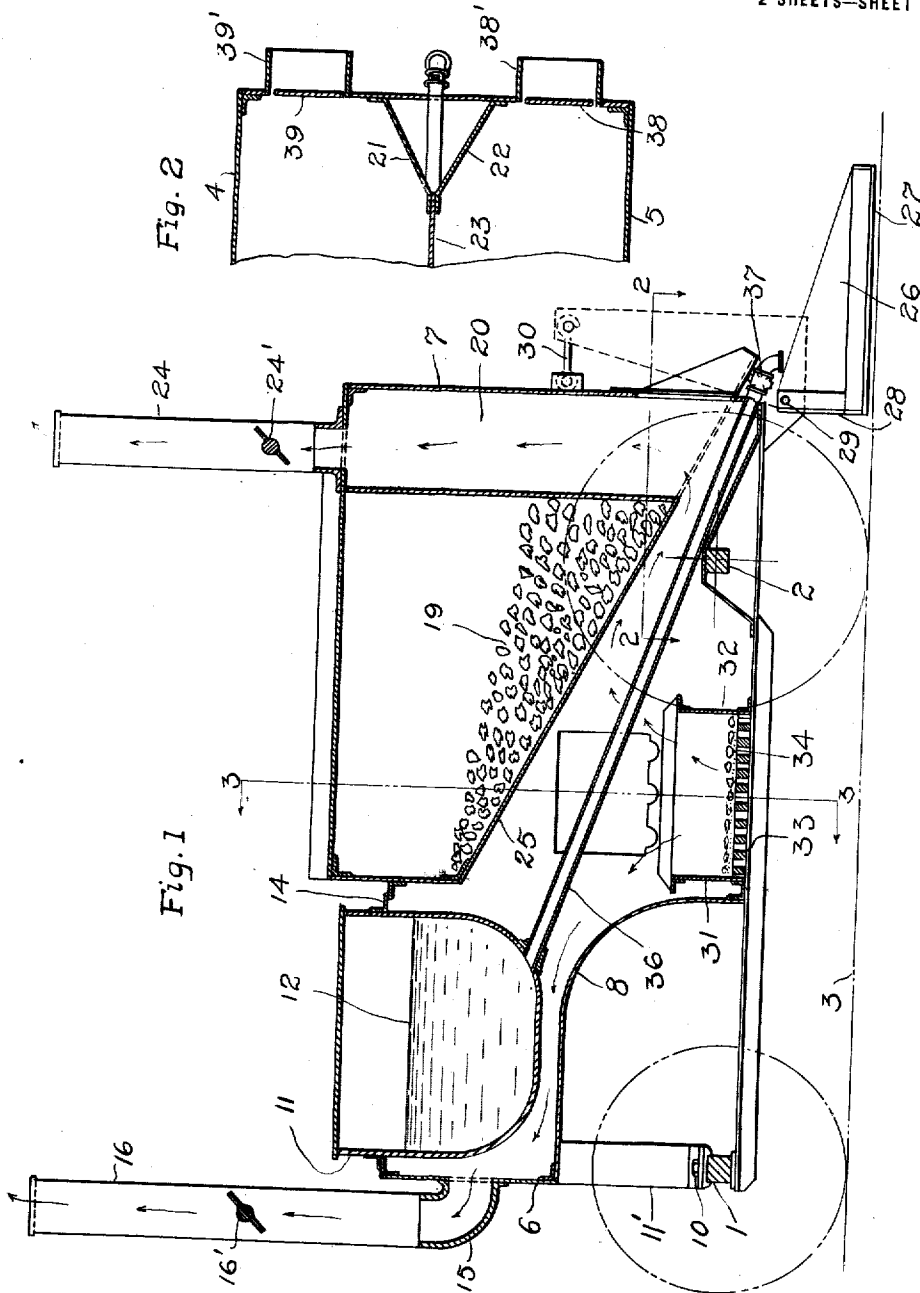


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APPLICATION FILED FEB. 24, 1920.

1,340,131.

Patented May 11, 1920.
2 SHEETS—SHEET 1.

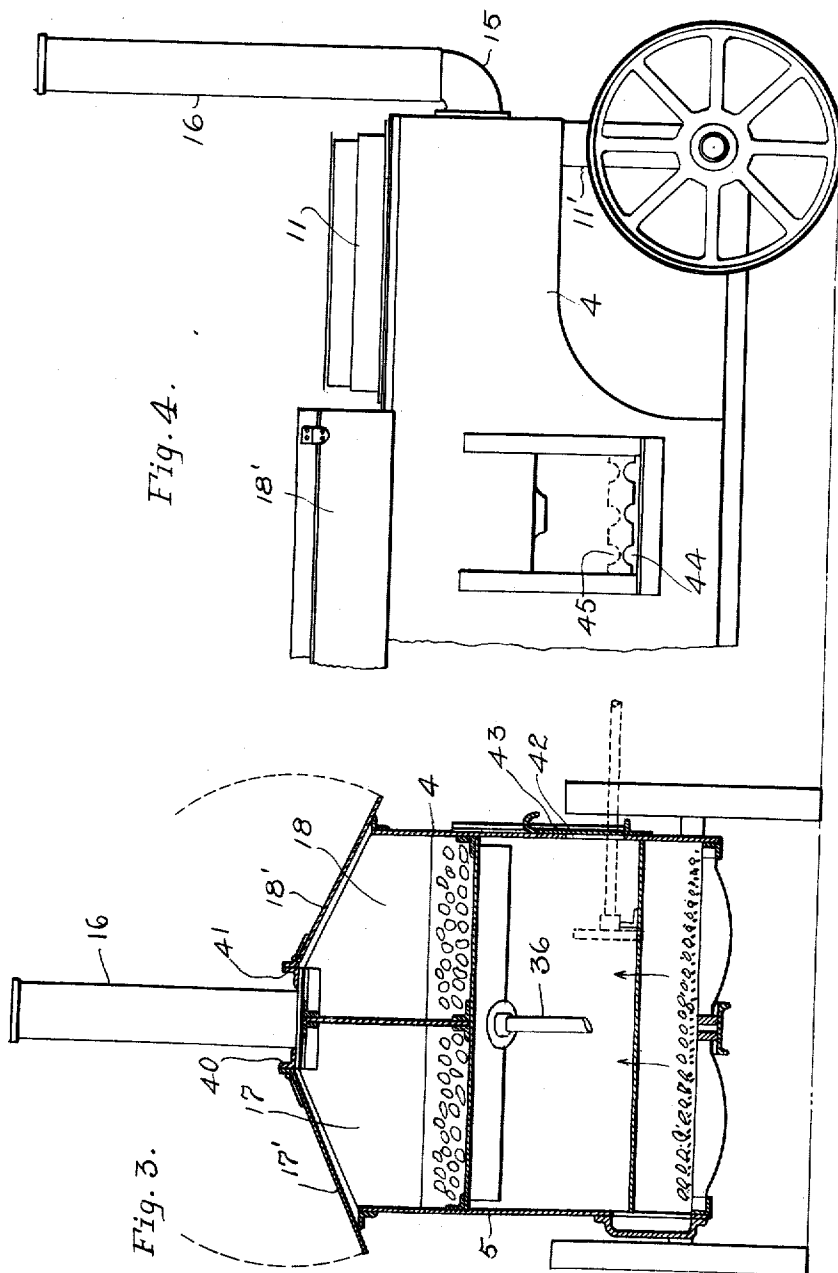


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UNITED STATES PATENT OFFICE.

HERMAN P. ANDRESEN, OF CHICAGO, ILLINOIS.

COMBINATION HEATER AND MAINTENANCE-WAGON.

1,340,131.

Specification of Letters Patent.

Patented May 11, 1920.

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To all whom it may concern:

Be it known that I, HERMAN P. ANDRESEN, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented a certain new, useful, and Improved Combination Heater and Maintenance-Wagon, of which the following is a specification.

My invention relates generally to wagons or portable apparatus for use in construction work, and relates more particularly to wagons or portable apparatus adapted for use in construction work in which the characteristics of some of the material requires heat for use.

For patching or repairing roads or pavements of a bituminous nature, such, for example, as asphalt, tar bound aggregate and the like, it is necessary to heat the materials. It frequently happens that two materials of different characteristics, such, for example, as tar and aggregate, *i. e.* sand and stone (or one or both) must be heated and oftentimes mixed for application to the road or pavement. Difficulty has been encountered in properly heating or tempering the different materials for, in some instances, if the aggregate be properly heated and dried, it is likely to subject the bituminous material to such heat as to coke or burn it and thereby destroy or impair its usefulness. Again, if the bituminous material be heated only to desired temperature it may result in failure to bring the aggregate to desired working temperature. This has led to the practice of providing heating devices for each material.

In cement concrete construction work, it is oftentimes necessary, during the winter months, to heat the water, stone, sand and the like (or one or more thereof) before mixing. It is also desirable to provide means for bringing the materials to the required temperature without bringing any thereof to a temperature above that desired.

For many of the paving or patching operations, it is necessary to heat tools of different kinds, such as tampers, smoothing irons and the like, and for this purpose it has been customary to provide a separate fire wagon.

The general object of my invention is to provide a wagon or portable apparatus of such character that a single fire shall serve

to heat materials of different characteristics to such temperature as is desired or as is best suited for the work in hand.

A further object of my invention is to provide a wagon or portable apparatus adapted to heat materials of different characteristics to desired temperature economically and to provide a pipe for the discharge of liquid or semi-liquid materials, which pipe shall be heated substantially throughout its length thereby permitting the proper flow of materials (such for example—bitumens) which would otherwise congeal.

Again it is an object of my invention to provide an apparatus adapted, with a single fire, to heat materials of different kinds; to heat tools such as tamping irons, smoothers and the like to proper working temperature; and to provide means for the convenient discharge of desired quantities of the respective materials upon a suitable mixing pan; and to provide a construction enabling the convenient insertion and removal of the tools to be heated, all by the use of a small amount of fuel and with a minimum of labor.

My invention consists generally in the form, arrangement, construction and cooperation of the parts whereby the above named objects, together with others which will appear hereinafter, are attainable; and my invention will be more readily understood by reference to the accompanying drawings which illustrate what I consider, at the present time, to be the preferred embodiment thereof.

In said drawings:

Figure 1, is a central longitudinal section through apparatus embodying my invention.

Fig. 2, is a detailed view substantially on the line 2—2 of Fig. 1.

Fig. 3, is a transverse vertical section substantially on the line 3—3 of Fig. 1; and

Fig. 4, is a front elevation of the front end of the apparatus viewed from the direction opposite from that direction from which Fig. 1 is viewed.

Apparatus of this character is much used in repairing and patching roads and pavements of a bituminous nature such as asphalt, tar bound aggregate, etc., and, for this reason, I shall describe the especial features of the apparatus with relation to such

work. I do not mean thereby to limit the invention to such use unless specific limitations be made in the claims to that end.

The apparatus here shown may be termed a wagon, since it comprises a front axle 1 and a rear axle 2 upon which suitable road wheels are mounted for travel over the ground 3. Upon these wheels and axles a super-structure of novel form is mounted. The super-structure, as here shown, is composed of the side plates 4 and 5 which are spaced apart and which, together with the front plate 6, rear plate 7, and the bottom plates 8 and 9, form a box-like inclosure hereinafter termed a fire box. It will be observed that the lower front part of the side plates is cut away to permit the front wheels to swing thereunder when the wagon is turned. The front axle 1 is mounted on a king bolt 10 which passes through the supporting bracket 11' and enables swinging movement of the axle.

At the forward part of the apparatus I arrange a vessel or tank 11 in which the material 12 is heated. This material will frequently be a bituminous material such as tar, asphalt and the like which must be brought to proper temperature for use. The vessel 11 is suitably supported from the side and end plates by means of the angle irons 13 and 14, and the bottom of the vessel is supported somewhat above the plate 8 thereby forming a passageway for the gases of combustion.

An elbow 15 is secured to the end plate 6 and thereon is supported a smoke stack or pipe 16 of any desired length.

At the rear end of the wagon I have provided bins or containers 17 and 18 in which, ordinarily, aggregate 19 will be placed. In order to be able to bring the aggregate up to desired temperature quickly, I prefer to provide a central passageway 20 at the rear of the apparatus, and which is formed by the rear plate 7 and the angularly disposed plates 21 and 22 that unite with the central division plate 23. The passageway 20 is continued into the smoke stack or pipe 24 which may be of such height as is necessary to provide a sufficient draft.

The bottom plate 25 of the aggregate bins is inclined at such an angle as will enable the aggregate material to slide or fall, by gravity, when the control gates are opened.

It is frequently desirable to mix the aggregate material with the material or liquid contained in the vessel 11 and for this purpose I provide a mixing pan 26. This pan is composed of a bottom 27 and an inner wall 28 together with substantially triangular end walls. The whole pan is mounted upon a pivot 29, carried in a bracket depending from the apparatus, thus adapting the pan to be swung upwardly to the position shown by the dotted lines in Fig. 1.

When the pan is in the vertical position, shown by means of dotted lines, it serves as a holder in which various tools such as smoothers, tampers and the like may be placed. To lock the pan in the upright position, I prefer to provide a hook or latch 30.

I shall now describe the fire box and the operation of distributing products of combustion. In the present instance a fuel box is formed by providing the transversely disposed spaced vertical plate members 31 and 32 which, together with the side walls 4 and 5 of the apparatus, form a box, the bottom of which is provided with grate bars 33 for support of the fuel 34. Fuel is placed upon the grate through the fuel door 35. The fuel-box or grate is arranged substantially centrally of the apparatus so that the products of combustion may find escape through both the chimneys 16 and 24, if desired, taking the general passage indicated, during which passage they come in contact with the walls of a vessel 11 and the walls of the aggregate bins. The construction is such that the gases contact the walls of these chambers for a considerable period of time, thereby imparting most of their heat before escaping through the smoke stacks. I prefer to provide the smoke stacks 16 and 24 with dampers 16' and 24' respectively whereby the effective size thereof may be varied. These dampers or valves are provided not only for the purpose of regulating the amount of air that shall pass through the grates for combustion purposes, but also to the end that a smaller quantity of the gases of combustion may pass through one of the smoke stacks than through the other. In other words, by regulating the dampers or valves 16' and 24' relative to one another such proportion of the total volume of the gases of combustion generated may be caused to flow through one smoke stack, as is desired, thus causing the remainder to pass through the other stack. Thus all danger of overheating one or underheating the other of the materials is avoided while both can be raised to desired temperature.

For the discharge of the material from the vessel 11 an inclined pipe 36 is provided which projects through the rear wall 7 and there terminates in an elbow. Since the pipe 36 is throughout substantially its entire length, in contact with the gases of combustion even such materials as asphalt and tar will flow freely by gravity through the pipe. For controlling the discharge of material through the pipe 36 a valve 37 is provided.

Discharge of aggregate from either or both of the bins 17 and 18 is controlled by means of the gate valves 38 and 39 which when raised will permit the flow of material, by gravity. In order to confine the

discharge of material to the mixing pan 26 hoods 38' and 39' are provided. By the means disclosed so much of the various materials, as is desired, can be discharged upon the pan 26, for mixture or removal, all without necessity of any other operation than that of opening the control gates or valves.

As shown, the aggregate bins are closed by hinge doors 17' and 18' respectively. The hinges for the doors 17' and 18' are attached to spaced members 40 and 41, which members form walls between which materials, such as bags of cement, tools and the like, can be placed.

In the claims the term "burner" is used broadly to cover any device with, on or by which heat can be generated, as for example a grate, a liquid fuel burner, a gaseous fuel burner, etc., and the term "smoke stack" is used broadly to cover an outlet for the products of combustion.

I have also provided means whereby the single fire provided shall also serve effectually to heat the various tools such as tamping members, smoothing irons and the like, without interfering, in any way, with the operation of the fire. To this end, I provide an opening 42 in the side wall 4 which is normally closed by a vertical slidable gate or door 43. The lower part of the gate 43 is provided with a number of notches 44 and the material defining the lower part of the opening 42 is reversely notched as indicated by means of dotted lines in Fig. 4 at 45. When no tools are being heated the gate occupies the lower position shown in Fig. 4. When, however, it is desired to place tools to be heated in the position shown by dotted lines in Fig. 3, the gate 43 is lifted to permit placement of the tool into the fire and then the gate is permitted to fall. It will be understood that the lower part of the handle of the tool rests in one depression 45 and the upper portion thereof is encompassed by the notch 44 of the gate, thus effectually closing the gap and preventing the admission of an undesirable amount of air. The gate, for the placement of the tools is shown only at one side of the apparatus but, if desired, the gate may be upon the other side or upon both sides.

It should also be understood that while two aggregate bins are shown one only will be provided by the mere elimination of the central partition.

The advantageous features of construction and operation will be understood by those skilled in this art without further comment.

I claim:

1. An apparatus of the class described embodying therein a portable fire box, a plurality of separate material receptacles

in said fire box, a burner near the middle of the fire box, a smoke stack near each end of said fire box, and means for regulating the draft through each of said smoke stacks whereby the heat can be properly proportioned between said receptacles.

2. An apparatus of the class described embodying therein a portable fire box, smoke stacks leading from spaced points thereof, separate material receptacles arranged in the fire box, a burner positioned to discharge products of combustion into the fire box, and means for regulating the proportionate flow of the products of combustion through respective smoke stacks.

3. An apparatus of the class described embodying therein a portable fire box, a burner arranged in the fire box, a tool door in the fire box adjacent the burner, smoke stacks leading from spaced points on the fire box, separate material receptacles arranged in the fire box, and means for regulating the proportionate flow of the products of combustion through respective smoke stacks.

4. An apparatus of the class described embodying therein a portable fire box, a burner arranged in the fire box, a fire door at one side thereof, and a tool door at the other, smoke stacks leading from spaced points of the fire box, separate material receptacles arranged in the fire box, and means for regulating the proportionate flow of the products of combustion through respective smoke stacks.

5. An apparatus of the class described embodying therein a portable fire box, a burner arranged thereon, a tool door in the fire box adjacent the burner, said tool door being notched to receive the handle of a tool, smoke stacks leading from spaced points on the fire box, separate material receptacles arranged in the fire box and means for regulating the proportionate flow of the products of combustion through respective smoke stacks.

6. An apparatus of the class described embodying therein a portable fire box, smoke stacks leading from spaced points, thereof, separate material receptacles arranged in the fire box, a burner positioned to discharge products of combustion into the fire box, means for regulating the proportionate flow of the products of combustion through respective smoke stacks and means for discharging material by gravity from the respective receptacles.

7. An apparatus of the class described embodying therein a portable fire box, smoke stacks leading from spaced points thereof, a burner positioned to discharge products of combustion into the fire box, separate material receptacles arranged in the fire box, means for regulating the proportionate flow of the products of combustion through respective smoke stacks, a material mixing

pan secured to the apparatus, and means for discharging material by gravity from the respective receptacles and upon the material mixing pan.

- 5 8. An apparatus of the class described embodying therein a portable fire box, smoke stacks leading from spaced points thereof, separate material receptacles arranged in the fire box, at least one thereof constituting an aggregate receptacle, a burner positioned to discharge the products of combustion into the fire box, means for regulating the proportionate flow of the products of combustion through respective smoke stacks, 10 and a flue formed upwardly adjacent the

aggregate receptacle and leading to one of said smoke stacks.

9. An apparatus of the class described embodying therein a portable fire box, a receptacle at one end for heating solid aggregates, a receptacle at the other end for heating material that is flowed when hot, a burner arranged underneath the receptacles and intermediate the receptacles for heating same, and a discharge pipe carried through the fire box to convey the material that is to be flowed when hot. 20 25

In testimony whereof I have hereunto set my hand, this 19th day of February, 1920.

HERMAN P. ANDRESEN.