

July 28, 1936.

C. G. PORTERFIELD

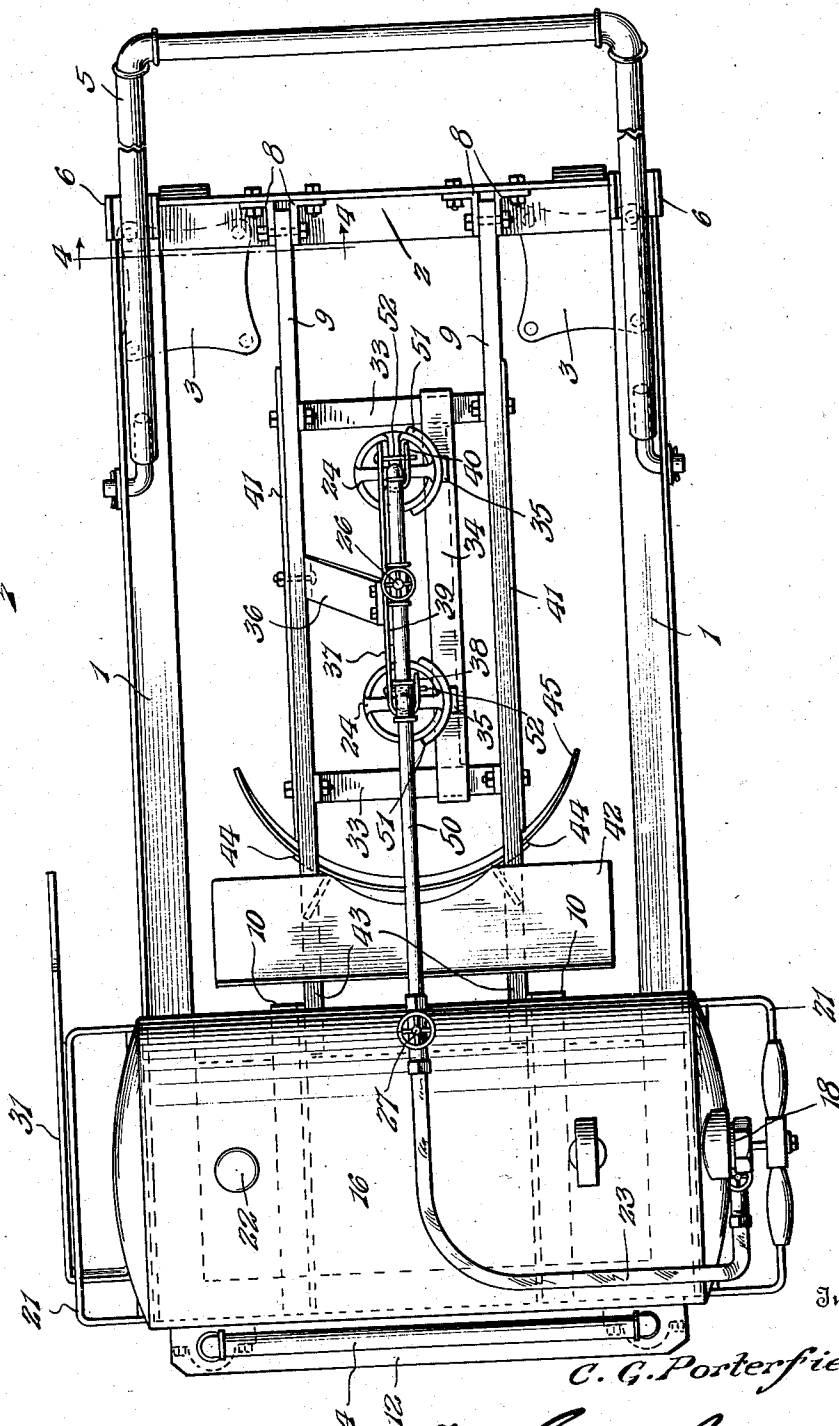
2,048,813

ROAD REPAIRING MACHINE

Filed Sept. 18, 1933

3 Sheets-Sheet 2

Fig. 2.



Inventor

C. G. Porterfield.

By

Lacey, Lacey,

Attorneys

July 28, 1936.

C. G. PORTERFIELD

2,048,813

ROAD REPAIRING MACHINE

Filed Sept. 18, 1933

3 Sheets-Sheet 3

Fig. 3.

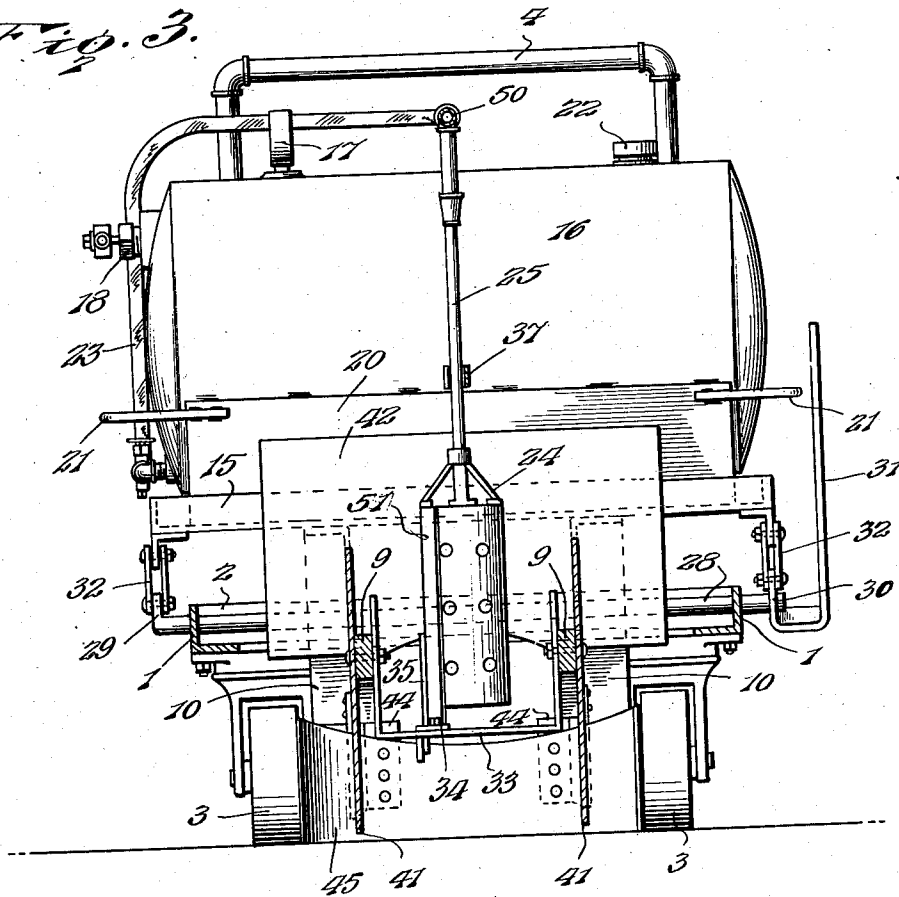
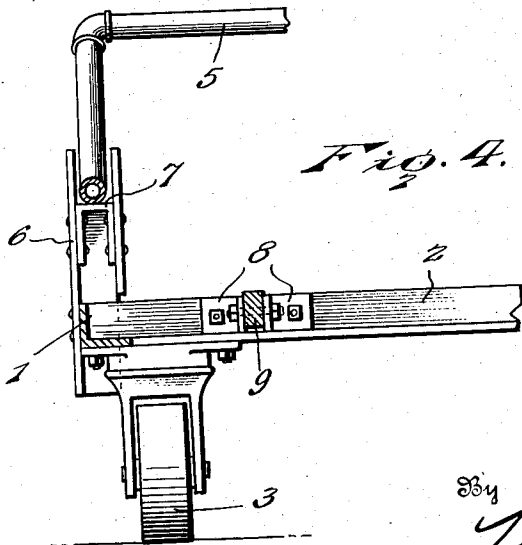


Fig. 4.



Inventor

C. G. Porterfield.

By

Lacey & Lacey

Attorneys

UNITED STATES PATENT OFFICE

2,048,813

ROAD-REPAIRING MACHINE

Clyde G. Porterfield, Marion, Ohio

Application September 18, 1933, Serial No. 689,967

4 Claims. (Cl. 94-42)

This invention relates to road machinery and has special reference to machines for treating cracks in concrete pavements. Concrete pavements are provided with transverse and longitudinal joints at intervals in their area to accommodate expansion or contraction and, under weather stresses, cracks develop which extend in various directions throughout the length and breadth of the pavement and if not given some attention will result in rapid deterioration of the pavement. It is the practice to apply a bituminous filling to these joints and cracks so as to seal the same, and the sealing operation must be repeated at intervals of greater or less duration in order to prevent spreading of the cracks and resulting increasing damage to the pavement. The pavements are treated usually in the spring and fall seasons and, in the course of time, surplus material accumulates upon the road surface at the sides of and along the cracks and joints and forms ridges which are objectionable. It is the object of the present invention to provide a machine whereby the surplus filling may be readily removed and the filling material caused or permitted to sink lower in the crack so as to perfect the seal. The invention also seeks to provide a machine of simple construction which may be easily manipulated and which, as it is caused to travel along the cracks, will melt the filling and scrape the surplus from the surface of the road. These objects, and other objects which will appear incidentally in the course of the following description, are attained in such an apparatus as is illustrated in the accompanying drawings, and the invention resides in certain novel features which will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a machine embodying the present invention,

Fig. 2 is a plan view of the same,

Fig. 3 is a transverse section on the line 3-3 of Fig. 1,

Fig. 4 is a detail section on the line 4-4 of Fig. 2.

The main frame of the machine consists of side bars 1, and end bars 2 of angle iron which are secured together at their ends so as to form a rectangular frame, as clearly shown. Casters 3 are mounted upon the frame at the corners of the same so that it may be easily moved from place to place over a road, and a rear handle member 4 is provided at the rear end of the frame so that the operator may guide and control the movement of the machine. Near the front ends of the side bars 1, a second handle member 5 is pivoted to said bars and both handles are preferably composed of

tubular members joined to produce an inverted U-shaped frame, as will be understood upon reference to the drawings. The front handle provides a means whereby the operator's helper may tow or pull the machine and aid in maintaining the blade over the joint or crack being treated. At the front corners of the main frame posts 6 are secured and these posts consist of sections of channel bars having end portions of one flange and of the intermediate web cut away. Inverted U shaped brackets 7 are secured to and between the flanges of these posts and constitute rests upon which the side members of the handle member 5 may rest, as shown clearly in Fig. 4. If desired, pins or bolts may be inserted through the posts immediately above the side arms to attain rigidity.

To the upstanding flange of the front end bar 2, I secure brackets 8 arranged in pairs, and to and between the members of each pair is pivoted the front end of an inner beam 9. The rear ends of the beams 9 have secured thereto the lower ends of leg members 10 which extend upwardly to points above the plane of the side bars 1 of the main frame and are connected at their upper ends to rearwardly extending arms 11, the rear ends of which are connected by a transverse bar 12 having openings therethrough near its ends to accommodate the side members of the rear handle 4. Secured to the vertical flange of the cross bar 12 are eyes or brackets 13 which receive the lower ends of the handle 4 and carry set screws 14 whereby the handle may be secured in the brackets and be adjusted vertically therein to suit the convenience of the operator. Mounted upon the upper sides of the arms 11 is a platform or supporting frame 15 in which is supported a fuel tank 16. This fuel tank may be of any well-known or approved construction and is equipped with a pressure gage 17 and an air pump, indicated at 18, which may be of any approved detailed form. A supplemental frame 19 is fitted upon the platform 15 and includes front and rear plates 20 set on edge and having their upper edges welded to the tank so that the tank will be very firmly supported. Bails or U-shaped members 21 are provided at the ends of the frame 20 and project beyond the ends of the tank, as shown in Figs. 1 and 3, so that they constitute handles for use in lifting the tank into position, and it may be noted that this supplemental frame structure is a part of the tank unit provided by the tank manufacturer to furnish a flat support for the tank and facilitate handling of the tank. The fuel tank is provided with a filling opening normally

covered by a cap 22 and a burner supply hose 23 is coupled to the tank at the bottom of the same and extends upwardly and then forwardly to supply burners, indicated conventionally at 24. The burners 24 are carried by branch pipes 25 coupled to and depending from the main fuel supply pipe 50 and in said main supply pipe, between the branch pipes, is a cut-off valve 26 whereby the flow of fuel to the front burner may be cut off or regulated. A cut-off valve 27 is provided at any convenient point at the rear of the branch pipes so that the flow to both burners may be regulated as desired, this valve 27 being part of a union which couples the pipe to the hose 23. It will be readily seen that by properly manipulating the valves, the front burner may be entirely cut off and the rear burner permitted to operate and the flow to both burners may be easily regulated.

Journalled in the side bars 1 of the main frame adjacent the rear ends thereof is a rock shaft 28 having a crank arm 29 at one end while at the opposite end of the rock shaft a crank 30 is firmly secured, said crank 30 being preferably formed as an integral part of a hand lever 31. Links 32 connect the respective cranks with the sides of the platform or supplemental frame 11 so that if the hand lever be rocked, said frame and the elements carried thereby will be raised or lowered as desired. The pivoted beams 9 are connected between their ends by transverse stirrups or bars 33 and these bars or stirrups are in turn connected by a longitudinally extended bar 34 which is disposed between and parallel with the beams 9, as clearly shown in Fig. 2. The burners 24 are disposed between the beams 9 and also between the cross bars or stirrups 33, and engaged through slots in the bar 34 are posts or brackets 35 which are secured to the sides of the burners and thereby serve to maintain the burners in proper position and aid in supporting the same, strain upon the fuel pipes being consequently minimized. As best seen in Fig. 3, the brackets 35 are fixed to or form parts of the generating pans 51 and project slightly beyond the ends of the pans so that by inserting the ends of the brackets through the slots in the bar 34, the ends of the pans may be caused to rest on the bar and thereby support the burners in such a manner that relative movement of the lower ends of the burners will be prevented. Secured to the beam 9 more remote from the bar 34 is a standard 36 to the upper end of which is secured a longitudinally extending strap or bracket 37 having one end hooked around the adjacent fuel pipe 25, as shown at 38. A supplemental bracket or strap 39 is disposed against the inner side of the strap 37 and has its end offset, as shown at 40, to pass around the adjacent pipe 25 so that lateral sway of the pipes will be resisted and the structure thoroughly braced, pins 52 being inserted through the end of the hook 38 and the end of the U-shaped terminal 40 after the pipes are engaged therein.

Secured to the outer sides of the beams 9 are vertically disposed plates 41 which extend longitudinally of the beams and constitute flame shields to prevent excessive spread of the flames from the burners and to concentrate the same upon the material to be melted. A third flame shield 42 is provided at the rear of the flame shields 41 and consists of a metal plate disposed obliquely, as shown most clearly in Fig. 1, and extending transversely of the machine above the beams 9. This transverse flame shield is carried by brackets 43 projecting forwardly from the

frame 11 and serves to deflect the heat from the fuel tank 16.

At the rear of the side flame shield plates 41 and below the plate 42, brackets 44 are secured to the beams 9 and depend below the beams, as shown clearly in Fig. 1, a transverse blade or scraper 45 being bolted to the lower ends of the brackets and projecting laterally beyond the plates 41 and bridging the space between the plates, as clearly shown in Fig. 2. This scraper blade is sharply curved from end to end but is straight from top to bottom and presents its concave face forwardly with its lower edge slightly in advance and resting on the pavement, so that it will scrape accumulations from the surface of the pavement as the machine is drawn along the cracks and will direct the surplus material toward the center of the blade which is to be disposed directly over the crack and, consequently, will turn the material into the crack. The blade is reversible so that the unused edge may be brought into use when one edge is worn out, and is cut so as to permit uniform contact of the entire cutting edge with the pavement, the ends of the blade being wider than its center. The brackets 44 are welded to the beams 9, the upper edges of the brackets being slitted so as to receive the lower edge portions of the beams and permit the brackets to be welded to the opposite sides of the beam and thereby very rigidly secured.

It is thought the operation of the machine will be readily understood from the foregoing description, taken in connection with the accompanying drawings. To prepare the machine for operation, the burners and the pipes feeding them are lifted from the carrier and placed upon some convenient flat surface so that the generator pans will hold a small charge of fuel which is supplied through pipes 25 or otherwise. This charge is ignited and consumed thereby raising the temperature of the pipes feeding the burners so as to start vaporization in the well-known manner. The burners are then returned to their operative positions and the machine is moved into position over a joint or crack. The lever 31 is swung downward and forward to set the scraper blade in contact with the pavement, and the machine is drawn along the crack so as to operate upon the material in the crack and accumulated upon the surface of the road at the sides of the crack, the helper pulling the machine by the handle 5 while the operator controls the movement by the handle 4. The fuel is permitted to flow to the burners and ignited at the burners and will issue therefrom to play directly upon the surface of the bituminous material which has been deposited previously in the crack and which, through successive deposits and possible careless workmanship, has accumulated upon the surface of the road along the sides of a crack to form a ridge which is undesirable. It will be understood that any liquid fuel may be employed and the air pump which is mounted in the upper portion of the fuel tank will serve to supply a pressure which will force the fuel to flow to the burners when the regulating valves are open. As the machine is moved along the crack, the filling material in the crack will be melted by the heat from the burners and the scraper blade 45, resting on the surface of the road, will act upon the melted material so as to direct the same into the crack to perfect the seal and will also scrape from the surface of the road all material in the ridge so that the ridge will be eliminated and the surface of

the road left even and smooth to conduce the comfortable riding. Should the material in front of the blade accumulate to such an extent that it cannot be redeposited in a crack or joint, the machine is shifted to the side of the road and this accumulated material deposited beyond the pavement. The scraper blade may be raised or lowered by manipulation of the lever 31 which will cause the frame 11 to move upwardly or downwardly, the beams 9 which support said frame swinging about their pivotal connections with the front end bar 2 in an obvious manner, and it may be noted that the pivotal connection of the links 32 with the supplemental frame may be varied as may be deemed desirable to obtain the desired range of adjustment. When the machine is to be moved from one place of use to another place, the blade may be raised out of contact with the road surface and held in the elevated position until it is again to operate. The machine may be manipulated very easily and quickly to follow the course of cracks or to shift from one crack to another crack disposed at a sharp angle to the first crack inasmuch as the casters 3 will turn quickly and respond instantly to any variation in the direction of travel.

The machine is generally operated from side to side of the road. When a trip across the road has been made, the lever 31 is swung upwardly and rearwardly thereby lifting the blade and discharging the accumulated material. The lever is left in the raised position until the next operation is to start.

Having thus described the invention, I claim:

1. A road-repairing machine comprising a portable frame, an auxiliary frame extending longitudinally in the main frame and vertically adjustable, a burner mounted upon the auxiliary frame, a fuel tank carried by the auxiliary frame for supplying fuel to the burner, flame shields extending longitudinally of the auxiliary frame and detachably secured thereto at opposite sides

of the burner, a transverse flame shield at the rear of the longitudinal flame shields and disposed in an elevated position over the auxiliary frame in front of the fuel tank, and a transverse scraper blade carried by the auxiliary frame under the same at the rear of the longitudinal flame shields and below the transverse flame shield and cooperating with the longitudinal shields to confine flame.

2. A road-repairing machine comprising a portable frame, beams pivoted at their front ends upon the frame, a platform carried by the rear ends of said beams, a fuel tank on said platform, burners supported from the beams in advance of the fuel tank, and means acting on the platform to raise and lower the same and the burners.

3. A road-repairing machine comprising a portable frame, a supplemental frame disposed within and mounted upon the portable frame, burners supported on the supplemental frame, a fuel tank carried by the supplemental frame, fuel pipes connecting the tank with the burners, a brace rising from the supplemental frame and engaging the fuel pipes, and means mounted on the main frame and connected with the rear end of the supplemental frame for raising and lowering the supplemental frame.

4. A road repairing machine comprising a portable frame having side and end members, a supplemental frame mounted in the portable frame between the side members and at its front end pivoted to an end member for vertical swinging movement to adjusted positions, means for shifting the supplemental frame vertically and supporting the same in an adjusted position, burners carried by the forward portion of the supplemental frame in position to direct flame downwardly, and a fuel tank carried by the supplemental frame over the rear portion thereof and having a pipe extending forwardly therefrom for supplying fuel to the burners.

CLYDE G. PORTERFIELD.