Oct. 6, 1959 R. R. LOVE 2,907,319

ROAD PAVING MACHINE

Filed March 25, 1952 2 Sheets-Sheet 1

Fig. 1.

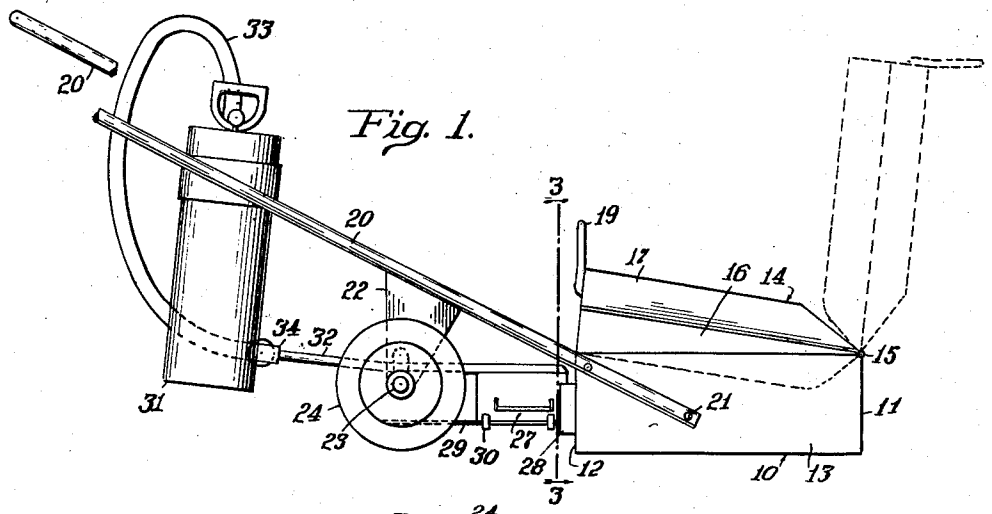


Fig. 2.

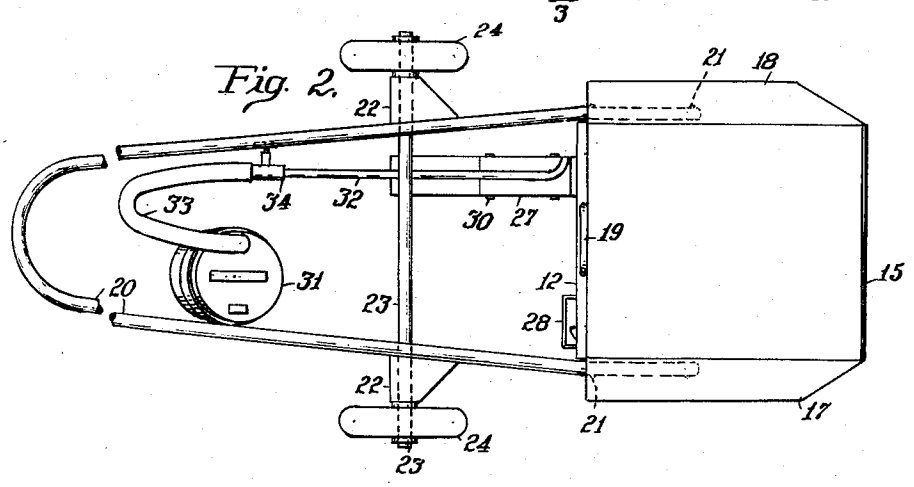
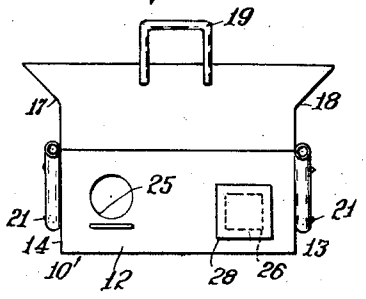


Fig. 3.



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Fig. 4.

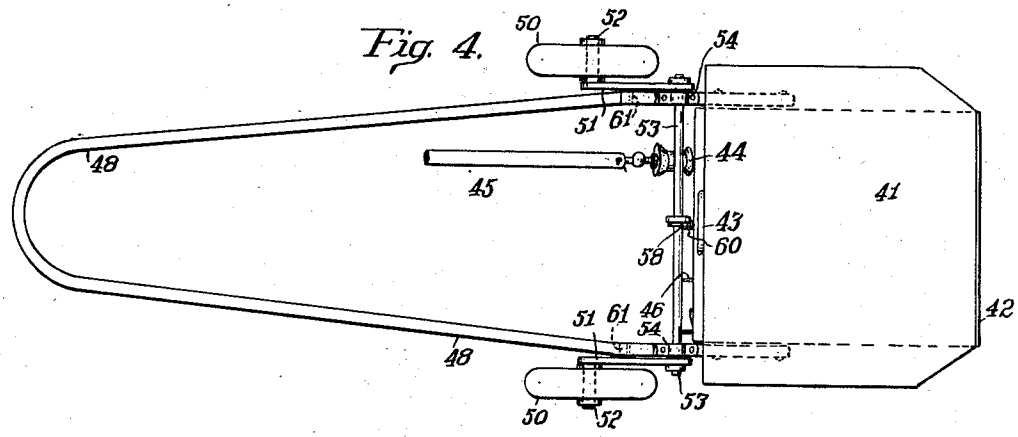
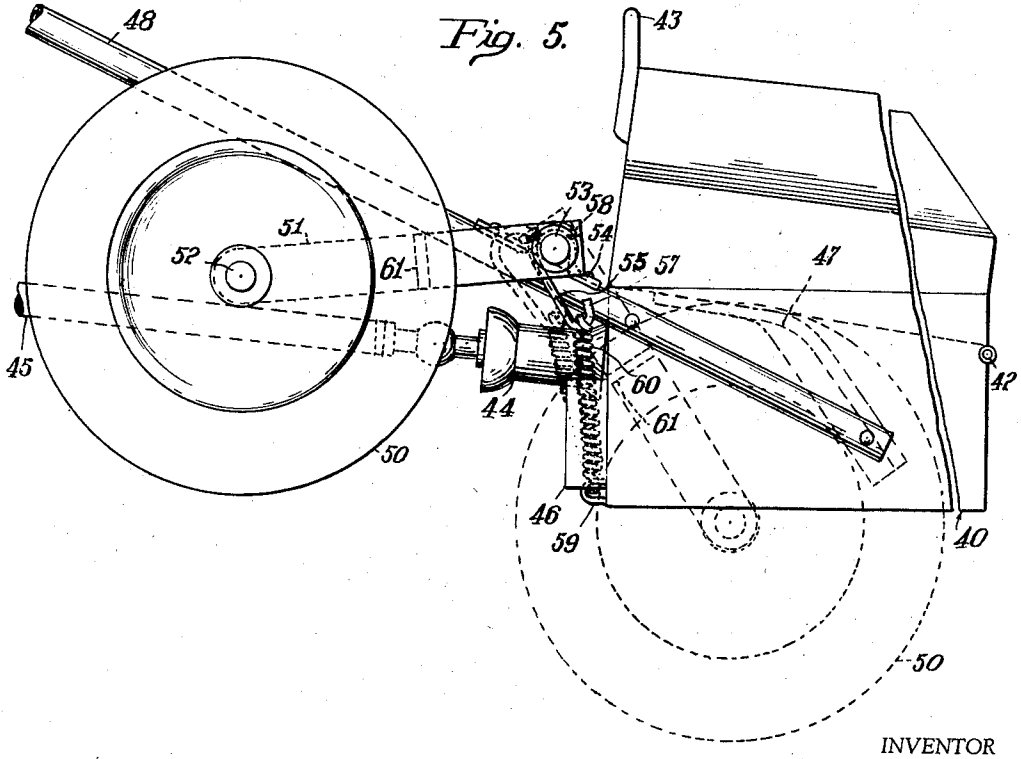


Fig. 5.



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ROAD PAVING MACHINE

Richard R. Love, Buhl, Idaho

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7 Claims. (Cl. 126—343.5)

This invention relates to improvements in road paving machines, and in particular to a machine for patching roads or streets, in cold and wet weather.

It is an object of this invention to provide a means for repairing holes and breaks in roads which makes it possible to undertake repairing during cold or otherwise inclement weather.

It is a further object of this invention to devise a simple inexpensive device which is of light weight and can be easily moved from place to place.

Another object of this invention is to devise a machine having self-contained heating equipment for heating road surfaces having holes therein so as to prepare said surfaces for patching and similar repairing.

A still further object of this invention is to provide a machine having means for simultaneously heating road surfaces and material to be deposited in holes, crevices or other faults prior to the placing of said material into said faults, coupled with means for conveniently depositing said material into the faults immediately after heating.

Yet another object of my invention is to provide a readily portable paving machine having a means for conveniently raising and lowering heating means over road areas being repaired.

These and other objects and advantages will become apparent from the following description and the accompanying drawings, in which:

Figure 1 is a side elevational view of the road paving machine.

Figure 2 is a plan view.

Figure 3 is a rear elevational view partly in section and with some parts being removed for clarity of showing.

Figure 4 is a plan view of another form of my invention.

Figure 5 is a fragmentary elevational view of the device of Figure 4.

Similar reference characters indicate similar parts in the several figures.

It is particularly difficult to accomplish repairs on oiled and similarly paved roads and streets during the winter or in wet weather. This is primarily due to the poor bond obtained between a patching mixture and a wet or cold hole. It is common knowledge that patching work done under such conditions does not last. In fact, the usual practice is to defer repairing of such roads until better weather. This of course results in holes becoming bigger, more difficult to fix and more dangerous.

It has long been deemed desirable to have a means of thoroughly and adequately conditioning holes, etc. and mixes used in patching them, so that a secure bond of the hole and mix will result. During warm and dry weather it is ordinarily not necessary to heat the holes, etc. But particularly during the winter and during wet weather it is necessary to thoroughly heat the hole and surrounding area of the road to drive out moisture and raise the temperature. If such is not done the patchwork soon crumbles.

It will be apparent from the following description that I have devised paving equipment which is adapted for use in patching, etc. during inclement weather. The device comprises in general a cart or wagon which can be readily moved about having a self-contained heating unit for heating simultaneously the roadway and patching materials.

The wagon is adapted to be moved over a hole to be patched so as to heat the roadway in the vicinity. In addition a tiltable bucket or mix container is provided which is adapted to be heated at the same time the hole is being heated and by the same source of heat. The bucket is further adapted to be tilted upon removal of the wagon from the hole so as to deposit the patching mixture in the hole.

One modification of my invention has supporting wheels which are pivotally connected to the frame. Through such a connection the heating means can be lowered over a hole so as to insure proper heating, and the wheels can be pivoted to adapt the machines for towing by a truck or similar vehicle.

Referring now in particular to the drawings, **10** indicates a generally rectangular shaped heat container or furnace having a front **11**, a rear **12** and two sides **13**. Mix container **14** is pivotally connected as by hinge **15** to the upper portion of front **11**. Container **14** comprises a pan **16**, two diverging side panels **17** and a back **18**. Handle **19** is securely fastened to back **18**. Furnace **10** is open at its top and bottom, and pan **16** is so formed that it closes the top opening when the pan is in its normal position, as shown in full lines in Figure 1. The pan-like mix container closes the top of the furnace. When the mix container is in its normal position it closes the top of the furnace and is heated by the heat introduced into the furnace. At the same time as the mix container is heated it deflects a considerable portion of the heat downwardly toward the open bottom end of the furnace. Stated in another way, the invention comprises a furnace. The furnace is closed at its upper end and at its sides, with the exception of suitable ports for introducing heat and venting the furnace. The bottom end of the furnace is open and adapted to be brought in close proximity with a road surface. A portion of the furnace is formed by or delineated by a pan-like container. The container is adapted to receive and contain a quantity of material to be heated. This material is heated by the same heat that is used to heat the roadway, and the container functions as a part of the furnace during the heating of the roadway. The container, however, is movably connected to the other portions of the furnace and can be moved to dump the material which is contained therein during the heating of the roadway. As shown in the preferred embodiment, the container is pivotally mounted and can be swung upwardly about its pivotal connection to dump the materials that have been heated therein.

V-shaped handle **20** is attached to the furnace **10** by any suitable means, such as nuts and bolts **21**. Brackets **22** diverge downwardly from the handle and engage shaft **23**. Wheels **24** are rotatably mounted on the shaft in any suitable manner.

As shown in Figure 3, back **12** of furnace **10** has two openings **25** and **26**. Opening **25** is a burner opening through which heat from burner **27** enters. Opening **26** prevents the build-up of dangerous pressures within the furnace. Shield **28** is provided to reduce heat loss and protect operators of the equipment.

A slide **29** is affixed to back or rear **12** in any convenient manner. Burner **27** is slidably mounted on the slide. Four V-shaped members **30** are attached to the burner and clampingly engage the slide. Burner **27** is connected to fuel tank **31** by pipe **32** and hose **33**. A

valve 34 may be provided. Tank 31 may be of the pressure type shown and is supported on handle 20 in any convenient fashion. The burner may be provided with the usual flame adjusting means. Through means of the slide the burner can be adjusted longitudinally for proper entrance of the flame into the furnace. Clamp or other types of lock means may be provided for securing the burner in a selected position on the slide.

In operation the furnace is placed over a hole to be filled and the burner adjusted to give the proper heat for warming and drying the roadway in a reasonable time. The patching mixture is placed in container 14 prior to heating the road, and while the hole is being prepared, the mixture is warmed to the proper temperature for patching work and/or maintained at such temperature.

After sufficient heating has been accomplished the vehicle is drawn back so as to uncover the hole. Container 14 can then be tilted to deposit the mix in the hole.

The form of my device illustrated in Figures 4 and 5 comprises a furnace or heat container 40 of the same general shape and construction as the furnace of the first described modification. Mix container 41 is constructed along the lines of container 14. Container 41 is pivotally connected to the furnace by hinge 42 and is provided with a handle 43. A burner 44 which may use liquid gas, is supported in proper position for entrance of the flame through an opening in the furnace similar to opening 25. The burner may be fed from a tank mounted on a highway truck through a hose 45. The exact method of supporting the burner is not shown since such depends on the type and make of burner. Blast shield 46 prevents blow back through an opening similar to opening 26.

A heat deflector 47 is fastened to mix container 41 directly in front of the burner and diverts part of the heat more directly to the center of the hole to be patched. Handle 48 is connected to the heat container by any suitable means, such as nuts and bolts.

The supporting wheels 50 are mounted on brackets 51 by stub shafts 52. Brackets 51 are secured to shaft 53 at their upper ends in any convenient manner. Shaft 53 extends across handle 48 and is pivotally mounted thereon by trunnion cap 54. Shaft 53 is provided with an overcenter device comprising a rod 55 having U-shaped portions 56 and 57. The upper end of the rod is pivotally secured to shaft 53 at 58 by a bolt, pin or similar means mounted in suitable brackets not shown. U-shaped bracket 59 is mounted on furnace 40. Spring 60 is attached to bracket 59 and the lower end 57 of rod 55.

In transporting from one place to another, the wheels are in the dotted line position shown in Fig. 5. When the device is in the vicinity of the hole to be patched, the vehicle is tilted and the wheels are moved to the full line position of Fig. 5 through rotation of shaft 53. A stop 61 is attached to each of the brackets 51. The stops engage handle 48 in both extreme pivoted positions of the wheels. Rod 55 assumes the positions shown when the wheels are in their respective extreme positions. Movement of the rod from one position to the other is effected by rotation of shaft 53 as the wheels are moved.

The heating of the road and patching mix is accomplished in the same manner with both modifications of my device. The furnaces of my road machines can be raised from the roadway by simply pushing down on the ends of the handles. When the handles are pushed down at their rearmost ends the furnaces will pivot about the wheels. Thus the furnaces can be readily moved from one hole in a roadway to another.

The simple devices described above will make it possible to properly repair roads during the most inclement weather, at a reasonable cost. Because of their light construction and comparatively small size they can be easily moved from place to place by truck or other convenient means. This makes it possible to quickly repair bad spots, holes, breaks, etc. in roadways no matter where they may be. As a result such road faults can be repaired before they spread and cause greater deterioration to the roadway.

The previous practice of deferring repairing of oiled or similar roads until spring, which results in greater expense in repairing, increased damage to the road and inconvenience to users of the road can be changed through use of my invention.

While I have shown and described a preferred form of my invention, it will be understood that variations in details of form may be made without departure from the invention as defined in the appended claims.

I claim:

1. A road patching machine comprising a furnace, said furnace having means forming a side, said means defining an open bottom and an open top, the perimeter of the bottom opening being engageable with a roadway, a pan-like mix container, said mix container having a bottom member and means forming the side of said container, the side of said mix container being formed generally complementary to the side of said furnace, said mix container resting on said side of said furnace and substantially completely closing the open top thereof, said mix container being pivotally connected to said furnace by pivot means connected to said side of said furnace and said side of said mix container, means for directing a heated medium laterally of the side of said furnace within said furnace, a baffle attached to the bottom of said container and extending downwardly into said furnace when said container rests on said furnace side, said baffle being positioned to intercept the heated medium received from the last named means and extending downwardly toward the bottom end of said furnace to direct said heated medium downwardly beneath said furnace.

2. A road paving machine comprising, in combination, a wheeled combined road heating furnace and patch mix heating container, said machine including side members, a top member bridging said side members, said side and said top members forming said furnace, said top member being vertically supported by said side members and completely closing the top of said furnace, said side members defining an open bottom of said furnace, the interior of said furnace comprising a hollow chamber extending from said top member to said open bottom, means for introducing a heated medium into said hollow chamber, said top member forming a deflector for forcing said heated medium downwardly through said open bottom, said patch mix heating container having a bottom, said top member forming said bottom of said container, said container having side means extending upwardly from said top member and forming the side of said container, said container being pivotally attached to said furnace by means pivotally connecting said container to one side of said furnace.

3. The apparatus of claim 2 in which the means pivotally connecting said mix container to said furnace comprises a hinge connected to one side of said furnace and to one side of said mix container.

4. A road paving machine comprising, in combination, a road heating furnace having a means forming sides thereof and a patch mix heating container, said furnace being positioned beneath and in part formed by said mix container with said mix container forming the top part of said furnace, said furnace being designed to heat a road area beneath said furnace, said furnace having an open bottom and constituting a hollow chamber open at its bottom but closed at its top by said mix container, means for introducing a heated medium into said furnace, said container and said sides being constructed to confine said heated medium within said furnace, prevent upward escape of said heated medium and force said medium outwardly of said furnace through the open bottom of said furnace.

5. A road patching machine comprising, in combina-

tion, a furnace, wheels, said wheels having a normally horizontally disposed axis of rotation, means movably connecting said wheels to said machine comprising a shaft rotatably connected to said machine, said shaft having an axis, brackets connected to said shaft, said wheels being pivotally connected to said brackets, said brackets being movable through rotatable movement of said shaft with respect to said machine to move said axis of said wheels from a first position in which said axis of said wheels is at one side of said furnace and at one side of a vertical plane through said axis of said shaft to a second position in which said axis of said wheels is beneath said furnace and at an opposite side of said vertical plane, a rod having a first portion formed complementarily to the circumference of said shaft, means pivotally connecting said rod to said shaft adjacent said first portion of said rod at a point spaced laterally from the axis of said shaft, said rod being pivotal with respect to said shaft about an axis parallel to the axis of said shaft, said shaft being received in said rod first portion when said wheels are in said first position, said rod having a second portion extending from said rod first portion laterally of said shaft axis, resilient means connected to said rod second portion, said resilient means being connected to said machine at a point spaced laterally of said shaft axis, the latter point being diagonally opposite said first portion with respect to said shaft when said axis of said wheels is in said first position, said resilient means normally tensioning said rod to move laterally of said shaft axis, said means pivotally connecting said rod to said shaft being movable in an arc during rotation of said shaft, said point of connection of said resilient means to said machine lying in a plane extending through said axis of said shaft, said means pivotally connecting said rod to said shaft lying on one side of the latter plane when said wheel axis is in said first position and being movable with said shaft, laterally across the latter plane when said shaft is rotated to move said wheel axis from said first position to said second postion.

6. A road patching machine comprising, in combination, a furnace, wheels, said wheels having a normally horizontally disposed axis of rotation, means movably connecting said wheels to said machine comprising a shaft rotatably connected to said machine, said shaft having an axis, brackets connected to said shaft, said wheels being pivotally connected to said brackets, said brackets being movable through rotatable movement of said shaft with respect to said machine to move said axis of said wheels

from a first position in which said axis of said wheels is at one side of said furnace and at one side of a vertical plane through said axis of said shaft to a second position in which said axis of said wheels is beneath said furnace and at an opposite side of said vertical plane, a rod, means pivotally connecting said rod to said shaft, resilient means connected to said rod, said resilient means being connected to said machine at a point spaced laterally of said shaft axis, said point being laterally opposite said means pivotally connecting said rod to said shaft, with respect to said axis of said shaft, when said axis of said wheels is in said first position, said resilient means normally tensioning said rod to move laterally of said shaft, said means pivotally connecting said rod to said shaft being movable in an arc during rotation of said shaft, said point of connection of said resilient means to said machine lying in a plane extending through said axis of said shaft, said means pivotally connecting said rod to said shaft lying on one side of the latter plane when said wheel axis is in said first position and being movable with said shaft laterally across the latter plane when said shaft is rotated to move said wheel axis from said first position to said second position.

7. The combination of claim 6 including means connected to said brackets adapted to supportingly bear again said machine when said wheel axis is moved to said first position, and means connected to said brackets adapted to supportingly bear against said machine when said wheel axis is moved to said second position for supporting said machine on said wheels when said axis is in either of said positions.

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