

March 27, 1934.

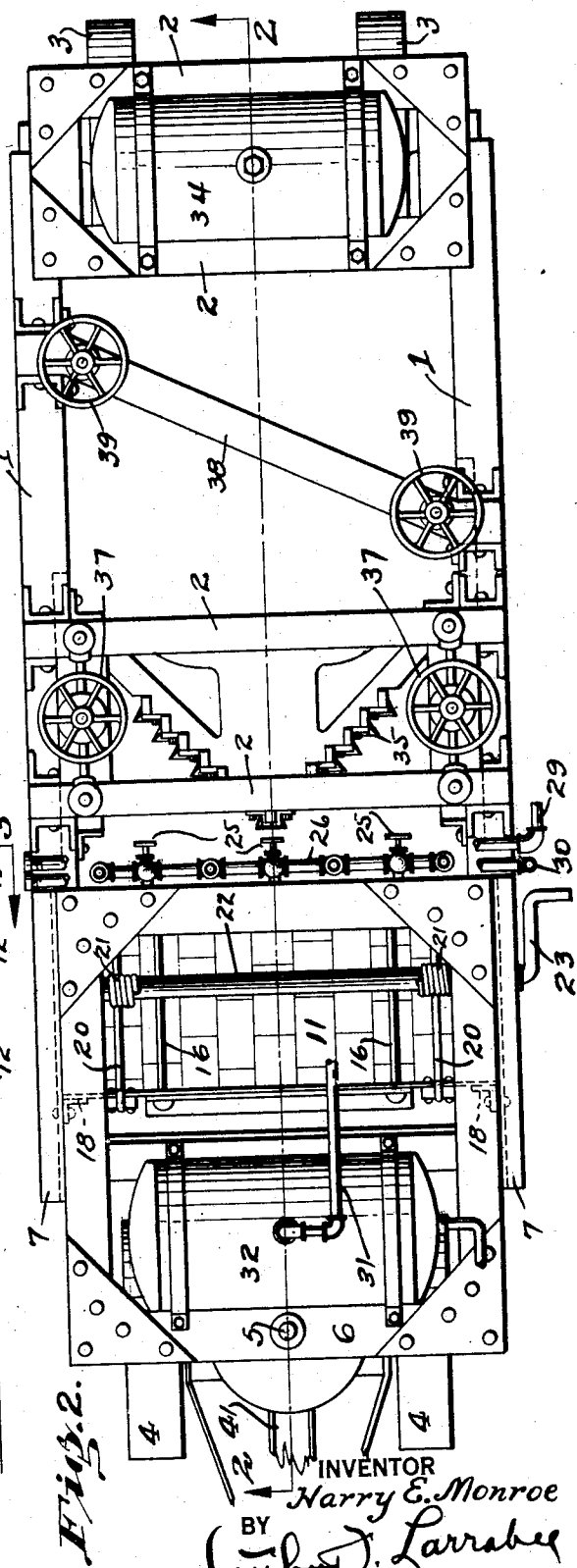
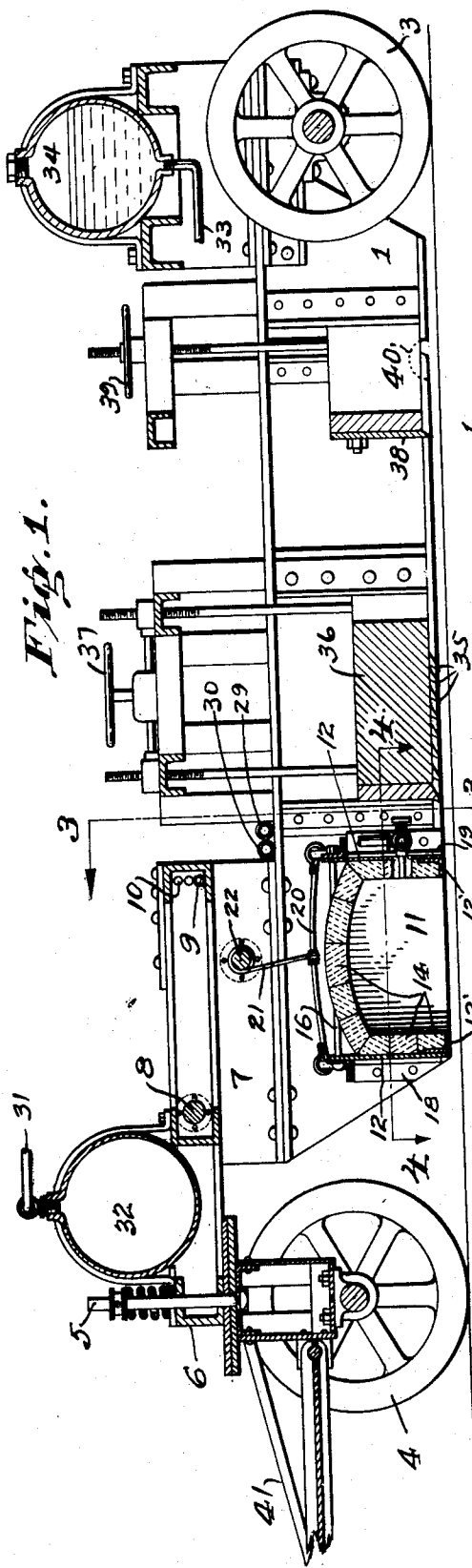
H. E. MONROE

1,952,452

MEANS FOR PLANING AND GRADING ROAD SURFACES

Filed Sept. 5, 1928

2 Sheets-Sheet 1



INVENTOR
Harry E. Monroe
BY
C. J. Larrabee
his ATTORNEY.

March 27, 1934.

H. E. MONROE

1,952,452

MEANS FOR PLANING AND GRADING ROAD SURFACES

Filed Sept. 5, 1928

2 Sheets-Sheet 2

Fig. 3.

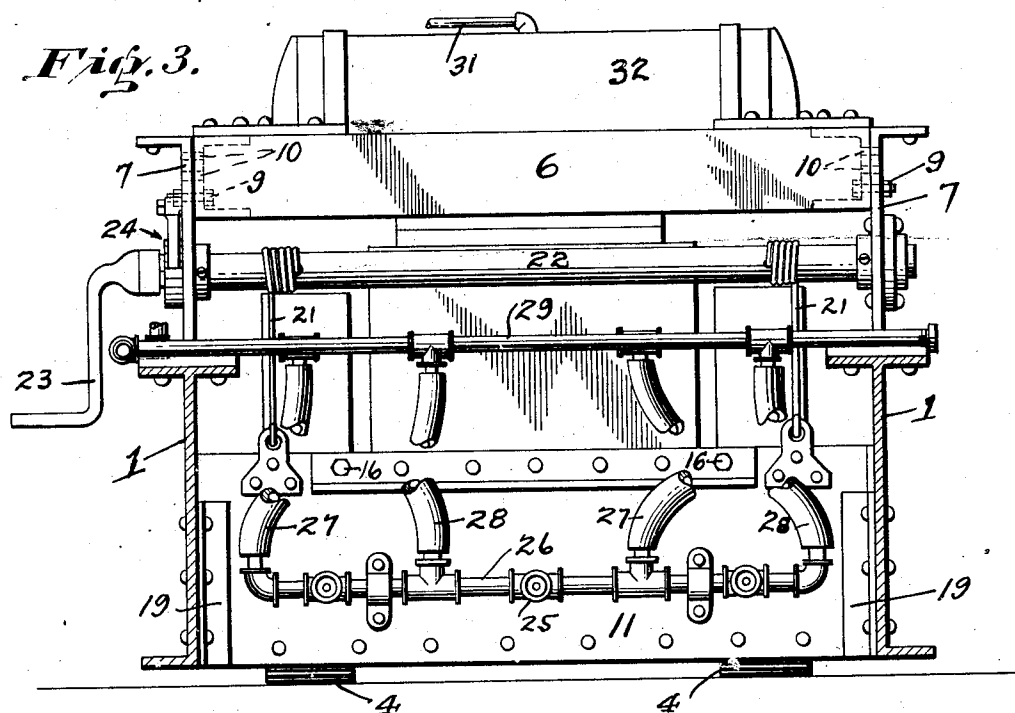


Fig. 5.

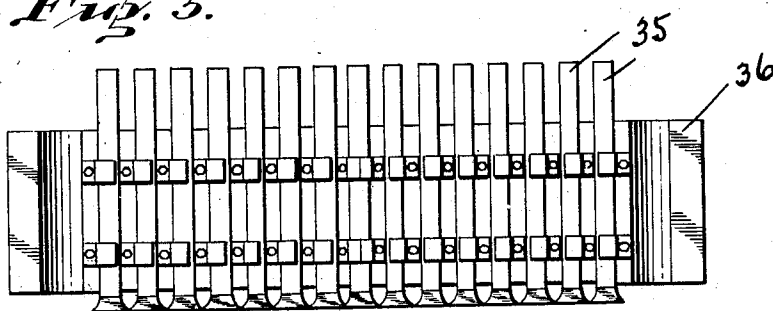
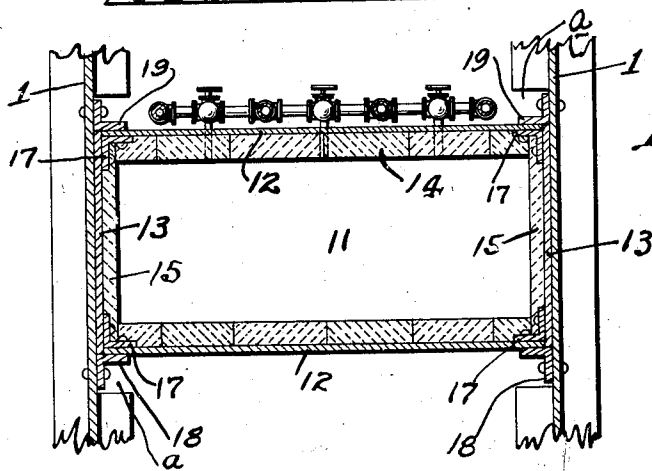


Fig. 4.



INVENTOR.

Harry E Monroe

BY

BY
William J. Larrabee
 his ATTORNEY

his ATTORNEY.

UNITED STATES PATENT OFFICE

1,952,452

MEANS FOR PLANING AND GRADING ROAD SURFACES

Harry E. Monroe, Los Angeles, Calif.

Application September 5, 1928, Serial No. 304,100

7 Claims. (Cl. 94—39)

My invention relates to means for planing and smoothing the surface of macadam and asphalt roads or pavements, and the principal object of my invention is to provide a new and novel device of the above character that may be easily and economically operated to cut off and level or smooth out any irregularities in the surface of such roadways and to further provide a device of such a character that will be highly efficient in its operation.

Another object of my invention is to provide novel means to first soften the top surface of an asphalt or macadam roadway prior to leveling the same without likelihood of injuring the base or foundation of such roadway.

My invention includes the parts and combination of parts as well as the method of planing, grading or smoothing road surfaces as more particularly hereinafter described and set forth in detail.

Other objects, advantages, and features of invention may appear from the accompanying drawings, the subjoined detail description and the appended claims.

The accompanying drawings illustrate the invention and in which,

Figure 1 is a side elevation of a road planer and grader constructed in accordance with my invention. Portions are broken away to contract the view and to provide for purposes of clearness.

Fig. 2 is a top plan view of the device shown in Fig. 1, portions being broken away for purposes of clearness and to contract the view.

Fig. 3 is a transverse section on enlarged scale, taken approximately on line 3—3 Fig. 1.

Fig. 4 is a fragmental cross section taken approximately on line 4—4 Fig. 1.

Fig. 5 is a fragmental front elevation of the teeth mounting block and the teeth with associated parts disconnected.

The main body or frame of my device comprises a pair of elongate side members 1 which are preferably I beams that are spaced a suitable distance apart and which are framed together by suitable transverse members 2. The frame 1 is supported at its rear end by a pair of wheels 3 that are adjustably mounted in the frame so as to raise and lower the frame relative to the road surface over which the wheels 3 travel, and the forward end of the frame 1 is supported by wheels 4 which are connected to the frame by means of a king bolt 5 that passes through a forward extension member 6 that is vertically connected to uprights 7 secured to the upper forward ends of the I beams forming the frame 1.

The forward extension member 6 is fastened intermediate its ends to the uprights 7 as at 8, and the rear end of said extension member is adjustably secured to the uprights by means of a bolt 9 that is adapted to be inserted into a selected hole 10 of a plurality of such holes formed in the uprights 7.

An oven 11 is adjustably mounted for vertical movement in the frame 1, and comprises side members 12, end members 13 and is lined with fire brick 14 along its sides and over the top, and is provided with slabs of any suitable fire brick material 15 along the end walls 13. The rods 16 secure the side members 12 together, and flanges in the form of angle irons 17 secured to the lower edge of the side members 12 prevent the fire brick 14 from dropping out of the oven 11.

The end members 13 are secured to the side members 12 by means of angle irons 17 that are suitably secured to the end and side members respectively.

As shown, in Figs. 1 and 4 the oven 11 is open at its lower end, and is slidably mounted for vertical movement between guide rails 18, 19, secured to the I beams forming the frame 1. The lower web of the I beams adjacent the oven are cut away as at a so as to permit the oven to slide below the lower edge of the frame 1.

The oven 11 may be raised or lowered by any suitable means and as shown comprises cross members 20 secured to the side members 12 and to which cross members is secured a flexible member 21 such as a wire cable or chain that is adapted to be wound upon a shaft 22 that extends across to, and is secured in the uprights 7. A handle 23 is provided at one end of the shaft 22 for operation thereof, and a dog and ratchet arrangement 24 prevents reverse movement of the shaft 22, and maintains the oven in elevated or lowered position.

Suitable means are provided to permit a flame to be introduced into the oven 11 as shown, comprising a plurality of burners 25 that extend into the oven 11 from a header pipe 26 which is supplied with air and fuel by means of flexible connections 27 and 28 respectively that are connected to header pipes 29 and 30 respectively that are fastened to the frame 1, the header pipe 29 is supplied with air by connections 31 leading from an air compressor tank 32 which is connected to an air compressor not shown.

The header pipe 30 is supplied with fuel by means of suitable connections 33 leading from a fuel tank 34 that is preferably mounted at the rear of the frame 1. The operation of the burners

is well known in the art and comprises any standard construction forming no part of this invention, except in the combination shown.

To the rear of the oven 11 and spaced therefrom, I provide a plurality of disintegrators 35 in the form of teeth that have an outwardly flaring cutting surface which are arranged in a V-shape and which overlap one with the other, and said teeth are secured to a mounting block 36 that is adapted to be raised and lowered by any suitable means, such as the hand wheels 37 that are operably connected to suitable elevating means.

To the rear of and spaced from the disintegrators 35 I provide a smoothing blade 38 that is mounted between the I beams forming the frame 1 that is adapted to be raised or lowered relative to the road surface by any suitable means, such as the hand wheels 39 and its connections. The smoothing blade 38 is disposed at an angle relative to the frame 1 so that any loosened particles of pavement will be moved by gravity to one edge of the smoothing blade, and such loosened particles pass through an opening 40 formed in the side of the frame 1 and are disposed in a furrow outside of the device.

The machine may be drawn forwardly by a tractor or other suitable motive power that may be connected to the tongue member 41.

It will readily be apparent to one versed in the art that the resultant road surface provided from the use of a roller or a scraper will differ materially, and as will be seen from the foregoing description, the device as described intends the use of a scraper to provide the character of road surface resultant from such scraper. The use of a scraper on so-called asphalt roads or streets requires that the surfacing material be pre-heated to a certain degree for softening, then scarified and agitated by contact with a plurality of cutting edges that the material be broken into small particles, which is readily accomplished by use of the device herein described, and further, to remove the excess of material gathered up by the scraper, contact by the scraper with the surface must be made while the surface material is still heated, and thus leave the new surface material smooth, which, upon cooling, solidified into a hard compact road surfacing of the character desired.

It has been found in practice that in the resurfacing of asphalt paved streets in metropolitan areas, that working conditions prohibit the use of the conventional forms of road surfacing machinery, and therefore, the applicant devised the herein described new and novel road surfacing machine, combining into one operable unit the several elements required to do the work desired, producing a unitary machine that at one operation of passing over a road surface heats, scarified and planes the surface, producing a new road surface from the original paving material previously in use as a road surfacing material.

I claim:

1. In a macadam or asphalt road surface planing and grading machine, the combination with a unitary wheeled supporting frame adapted to be drawn along the road surface, of a road surface heating oven adjustably supported on said frame, a road surface scarifier comprising longitudinally overlapping teeth supported on the frame in position for following in the path of the oven, and a heated and scarified surface smoothing scraper adjustably supported on the frame in position for travelling in the path of the oven

and scarifier for the purpose of finishing said heated and scarified surface in a new plane.

2. In a macadam or asphalt road surface planing and grading machine, having a unitary wheeled supporting frame adapted to be drawn along the road surface, the combination with an adjustable road surface heating oven supported on said frame, of a road surface scarifier comprising longitudinally overlapping teeth supported on the frame in position for following in the path of the oven, a heated and scarified surface smoothing scraper adjustably supported on the frame in position for travelling in the path of the oven and scarifier, said scraper being adapted to be adjusted relative to the road surface to remove sufficient material to present a new plane of road surface and side walls carried by the frame and closing the sides of the machine down close to the road surface from the position of the oven back to and beyond the scraper, one of said walls having an opening therein to pass surplus scrapings from the scraper.

3. In a macadam or asphalt road surface planing and grading machine, having a unitary wheeled supporting frame adapted to be drawn along the road surface, the combination with a road surface heating oven supported on said frame, of a road surface scarifier supported on the frame, in position for following in the path of the oven, and a heated and scarified surface smoothing scraper adjustably supported on the frame in position for travelling in the path of the oven and scarifier, said scarifiers being in the nature of individual teeth positioned in staggered relation whereby they travel in individual overlapping paths.

4. In a macadam or asphalt road surface planing and grading machine, having a unitary wheeled supporting frame adapted to be drawn along the road surface, the combination with a road surface heating oven adjustably supported on said frame, of a road surface scarifier adjustably supported on the frame in position for following in the path of the oven, a heated and scarified surface smoothing scraper adjustably supported on the frame in position for travelling in the path of the oven and scarifier, and means on said frame to effect independent vertical adjustments of the oven, the scarifier and the scraper relative to each other and to the road surface for the purpose of producing a new plane of road surface.

5. In a road surfacer the combination with a supporting element having a road surface heating device, of a road scarifier comprising a plurality of individual teeth positioned in staggered and overlapping relation to each other in their direction of travel to contact the entire road surface heated by said oven, and road planing means comprising a knife like scraper adapted to contact said heated and scarified road surface and remove therefrom a predetermined amount of material for the purpose of presenting a new plane of road surface, said removed material being automatically deposited to one side of the path of the new road surface.

6. In a road surfacer the combination with a supporting element having attached thereto a road surface heating device adapted to heat the road surface to a predetermined depth, of a scarifier element adapted to contact the entire surface of the said heated road surface comprising a plurality of longitudinally overlapping teeth adjustably mounted on said support, and a road

surface finishing element adjustably attached to said support comprising a scraper adapted to contact the said heated and scarified road surface to a predetermined depth and remove therefrom excess material and deposit the excess material to one side of the path of the road surfacer for the purpose of providing a new plane of road surface.

7. In a road surfacer the combination with a supporting element having adjustably attached thereto a road surface scarifier, of a scraping element adjustably attached to said supporting element and adapted to contact said scarified road surface and remove therefrom material in excess

over a predetermined depth of surfacing operation and to deposit said excess material to one side of the path of the road surfacer, and an oven adjustably attached to said supporting element ahead of the said scarifier and the said scraper in the path of operation and adapted to heat the road surface to a predetermined depth and to a predetermined degree to prepare the road surface to receive the operations thereon by the said scarifier and scraper, said oven being formed with an open lower section adjacent the road surface to permit the passage of heat therefrom to the road surface.

HARRY E. MONROE.

15

20

25

30

35

40

45

50

55

60

65

70

75

80

85

90

95

100

105

110

115

120

125

130

135

140

145

150