

March 10, 1931.

C. W. MAYER

1,795,660

STREET MARKING MACHINE

Filed Feb. 9, 1927

4 Sheets-Sheet 1

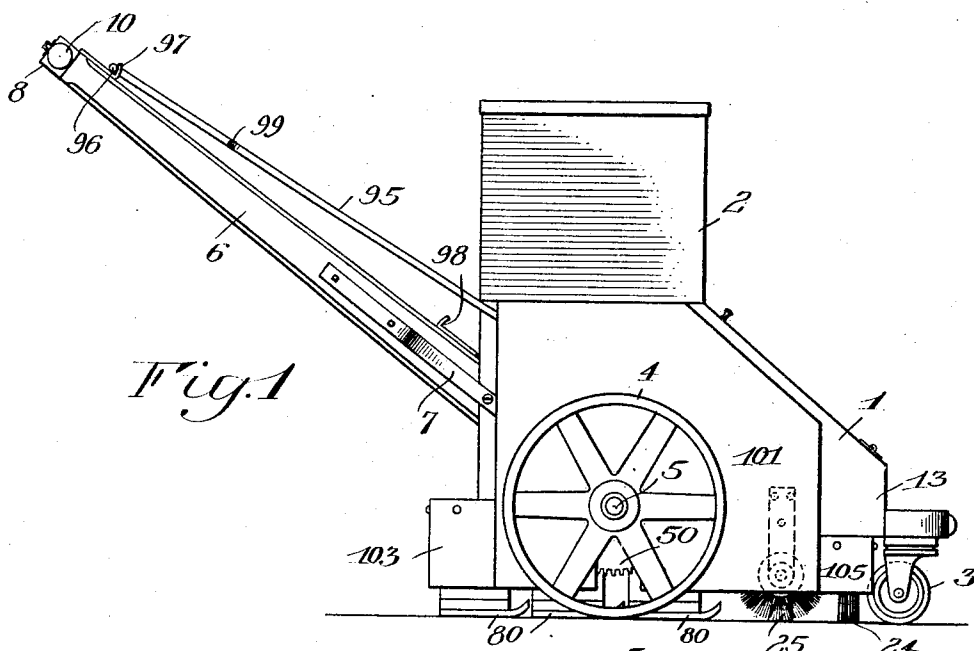


Fig. 1

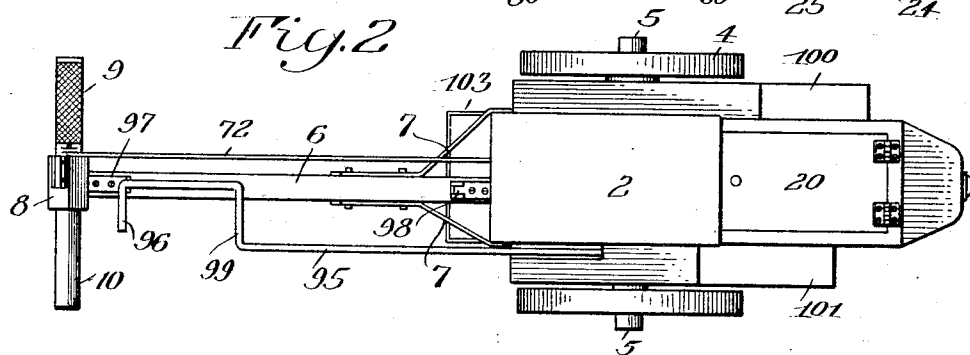


Fig. 2

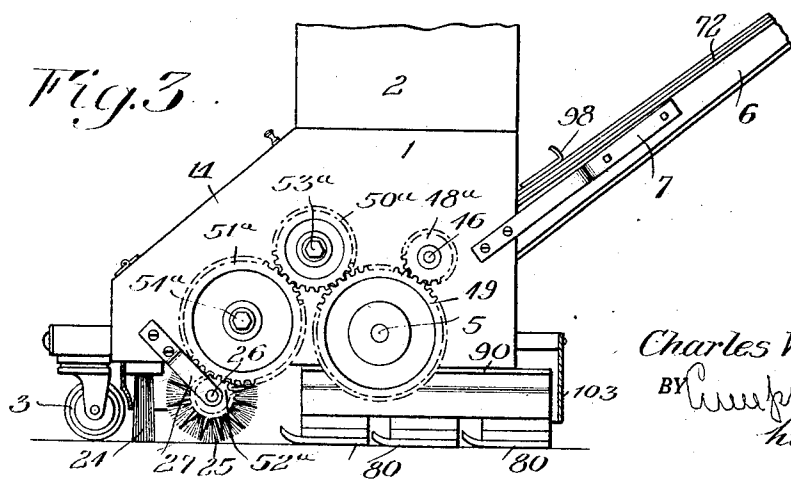


Fig. 3

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4 Sheets-Sheet 2

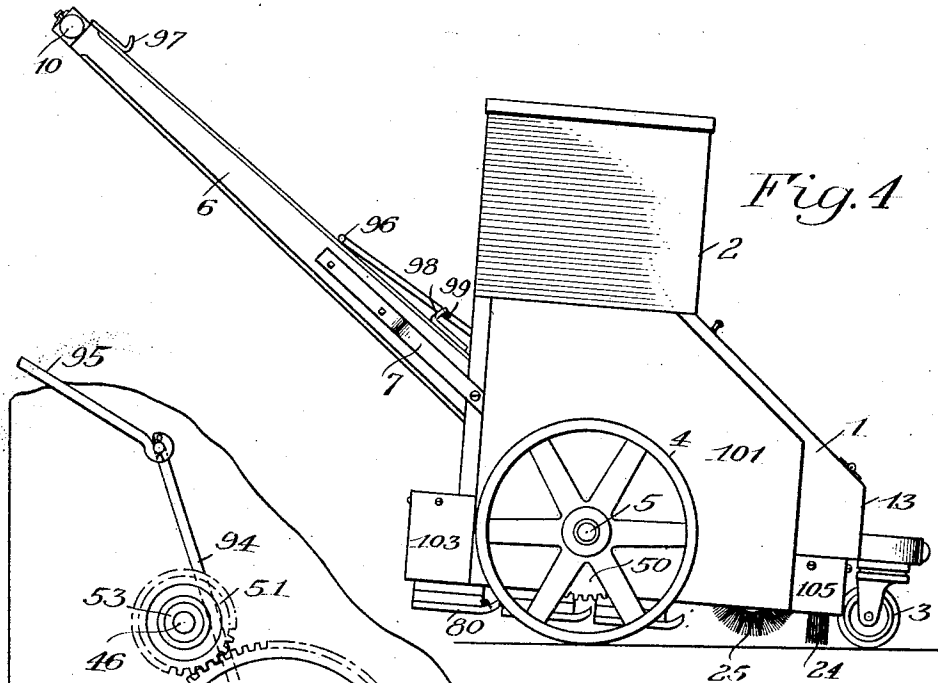


Fig. 4

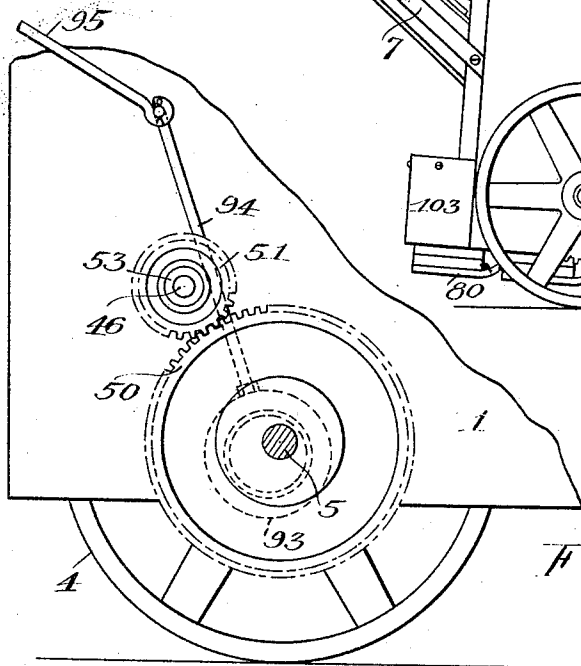


Fig. 5

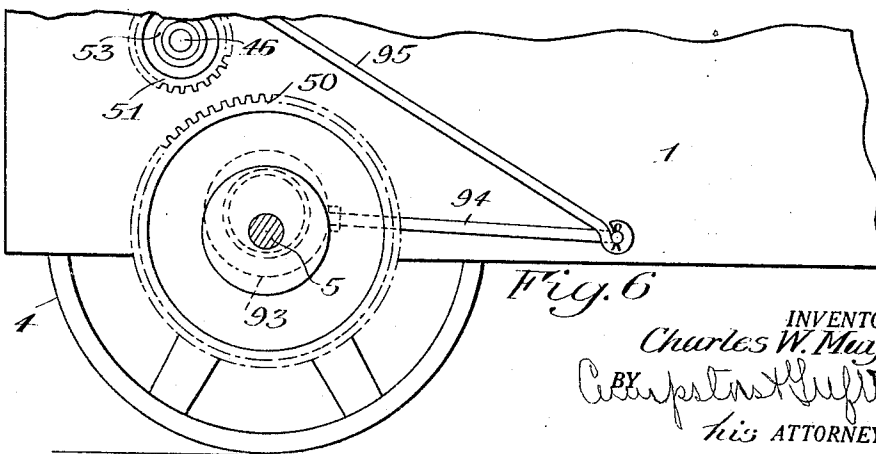


Fig. 6

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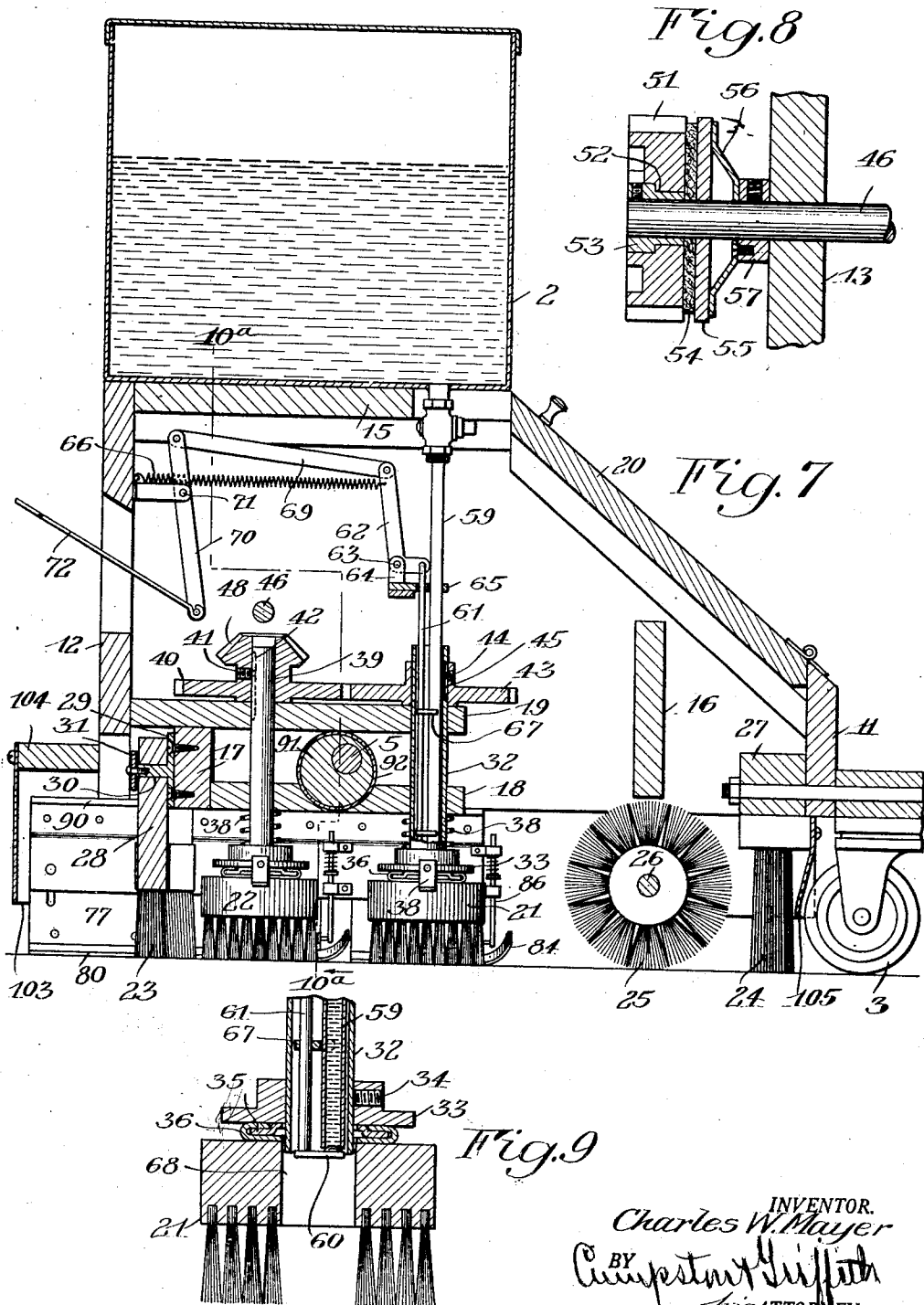
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STREET MARKING MACHINE

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4 Sheets-Sheet 3



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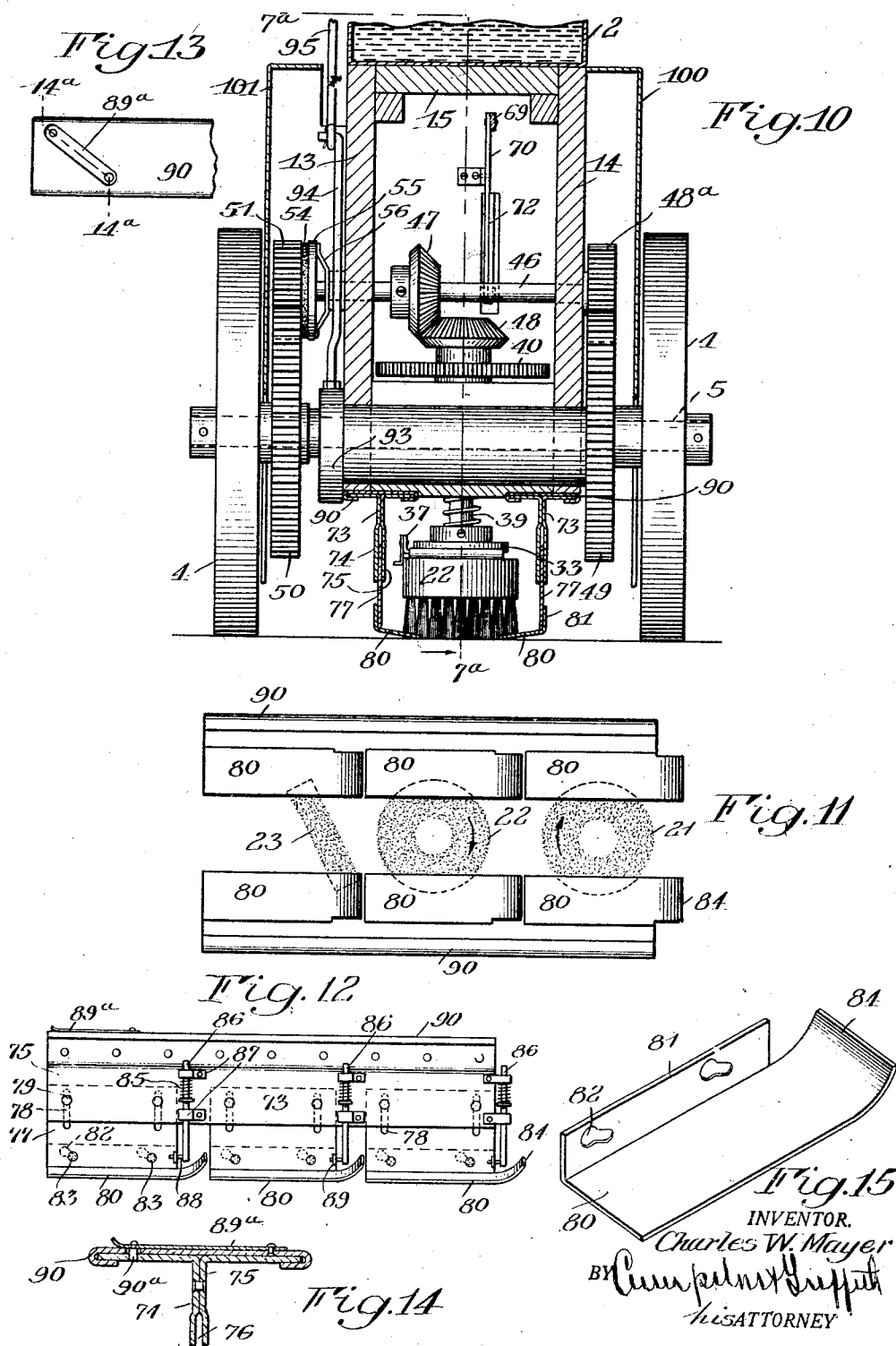
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STREET MARKING MACHINE

Filed Feb. 9, 1927

4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

CHARLES W. MAYER, OF ROCHESTER, NEW YORK

STREET-MARKING MACHINE

Application filed February 9, 1927. Serial No. 166,876.

My invention relates to marking machines and more particularly to machines for marking pavements or streets and highways to provide for the proper zoning of the same.

5 The invention has for its object to provide an improved machine of this class with particular reference to improvements relating to a more thorough working of the paint or marking material into the interstices of
10 the pavement, whereby to increase the distinctiveness of the mark as well as to prolong the life and usefulness of the same.

A further object of the invention is to provide improved means for defining the
15 marking area which is particularly constructed with a view to avoiding the formation of a mark having uneven or ragged edges.

Still another object of the invention is to
20 provide a marking machine of simple and durable construction which can be economically manufactured and operated and which will effectively accomplish the results desired.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

30 In the drawings:

Fig. 1 is a side elevation of a machine embodying the invention;

Fig. 2 is a top plan view of the same;

35 Fig. 3 is a part sectional elevation looking at the opposite side of the machine from that shown in Figure 1;

40 Fig. 4 is a side elevation similar to Figure 1 with the rear of the machine slightly elevated to move the marking devices out of contact with the pavement and to disconnect the operating means therefor;

45 Fig. 5 is a fragmentary side elevation on an enlarged scale showing the driving gear connection for the rotary marking brushes and the eccentric for elevating the rear of the frame;

50 Fig. 6 is a similar view with the eccentric moved to both elevate the frame and disconnect the driving gears for the rotary brushes;

Fig. 7 is an enlarged sectional elevation taken on line 7a—7a of Figure 10;

Fig. 8 is a detailed sectional elevation of a differential drive for the rotary brushes disposed between the main driving gears, 55 rigid on the axle;

Fig. 9 is an enlarged detailed vertical section through the front surfacing brush and a portion of the driving means therefor;

Fig. 10 is a transverse sectional elevation 60 taken on line 10a—10a of Figure 7;

Fig. 11 is a diagrammatic plan illustrating the relation of the surfacing brushes with respect to the devices for defining the marking 65 area;

Fig. 12 is a detailed side elevation of one of the devices for defining the area to be marked by the brushes;

Fig. 13 is a fragmentary top plan view of the device shown in Figure 12; 70

Fig. 14 is an enlarged sectional elevation taken on line 14a—14a of Figure 13, and

Fig. 15 is a detailed perspective view of one of the members for limiting the width of the mark produced by the brush. 75

Similar reference numerals throughout the several views indicate the same parts.

In the present embodiment of my invention I have shown a box like frame or housing 1 having a tank or reservoir 2 for carrying the marking fluid. The housing is supported by a front swiveled wheel 3 and two rear side wheels 4 on an axle 5. The frame is provided with a handle 6 suitably connected therewith and braced by the side bars 7, the handle carrying at its outer end an enlarged portion 8 upon one side of which is rotatably mounted a handle bar 9 and upon the other side of which is fixed a handle bar 10. 85

The frame or housing comprises the front and rear members 11 and 12, together with the side members 13 and 14, connected by a top transverse member 15 and also by vertically disposed transverse members 16 and 17 together with the lower horizontally disposed transverse members 18 and 19, the latter being supported by the transverse member 17, as shown in Figure 7. The housing is also provided with a door 20 at the front 90 95 100

thereof, which affords access to the mechanism within the housing.

The machine is provided with front and rear markers or surfacing brushes 21 and 22 each mounted to rotate about a vertical axis and in opposite directions as indicated in Fig. 11.

By mounting the brushes in this manner with the bristles vertically disposed and rotating them in opposite directions under pressure I effect a more complete and satisfactory application of the paint to the surface of the pavement than is possible with the present methods of applying the marking fluid. By rotating the vertically disposed bristles in opposite directions the paint is worked into the interstices of the pavement to afford a coating which will wear longer and better than in cases where the paint is simply smeared on with a single stroke of a brush.

A finishing brush 23 is adapted to afford a smooth surface to the paint applied by the brushes 21 and 22 and is mounted in rear of the brush 22. A cleaning brush 24 is provided at the front of the machine for loosening foreign matter adhering to the pavement which is removed or cleared from the path of the surfacing brushes by a rotary brush 25 carried on a shaft 26 having its opposite ends journaled in suitable bearing members 27, secured to the sides of the frame as indicated in Fig. 3. The front brush 24 is suitably connected with a cross frame member 27 and the finishing brush 23 is suitably connected with a member 28 supported by a bracket 29 secured to the cross frame member 17 as shown in Figure 7. The bracket is provided with a rearwardly extending portion 30 projecting through the brush holding member 28 and having a latch 31 pivoted thereon for retaining the member 28 upon the bracket.

The rotary surfacing brush 21 is carried on the lower end of a vertically disposed hollow shaft 32 having a collar 33 secured thereto, preferably by means of a set screw 34. The collar 33 is provided on its bottom face with a plate 35, the opposite edges of which are depressed and spaced from the collar as shown in Fig. 9. Secured to the top surface of the brush 21 is a plate member 36 having its longitudinal edges bent into parallel and spaced relation with the body of the plate and slidably disposed upon the edges of the plate 35 to permit the brush to be readily withdrawn when desired. One end of the plate member is preferably turned up as indicated at 37 in Fig. 10 to form a support for a latch 38 pivotally mounted thereon and adapted to extend downwardly into engagement with the brush to prevent accidental displacement of the same. The brushes 21 and 22 are yieldably held in engagement with the surface over which the machine travels during the marking operations by means of springs 38 interposed between the collars 33 of the

brushes and the cross member 18 of the frame.

The parts connecting the rotary brush 22 with its driving shaft 39 are similar to those already described in connection with the mounting of the brush 21 on the shaft 32.

The vertically disposed shaft 39, like the shaft 32 is suitably journaled in the transverse frame members 18 and 19 and is provided with a gear 40 secured upon the shaft by a set screw 41, the inner end of which is disposed in a longitudinal groove 42 of the shaft to permit vertical movement of the latter with respect to the frame. The gear 40 is adapted to mesh with a gear 43 on the shaft 32 which is also mounted for vertical movement upon the frame, the gear 43 being connected with the shaft by a set screw 44 engaging in a vertical slot 45 of the shaft to permit movement of the latter.

Rotation of the shaft 39 is effected by a shaft 46 having a gear 47 thereon meshing with a similar gear 48 preferably formed integral with the gear 40 of the shaft 39, as shown in Fig. 7. The shaft 46 is suitably journaled in the side walls 13 and 14 of the housing and is provided at one end with a gear 48a meshing with a main driving gear 49 on the axle 5 at one side of the housing, as shown in Figure 10. A similar gear 50 is mounted upon the axle at the opposite side of the housing and is adapted to mesh with a gear 51 which is loosely mounted upon a sleeve or bearing member 52 secured to the shaft 46 as shown in Fig. 8 and provided with a retaining flange 53 for said gear. The gear 51 is free to rotate relative to the shaft 46 and the driving connection for the gear 51 is preferably in the form of a disk 54 on a plate 55 which is yieldably held in engagement with the disk and which is held in contact with the gear by means of a spring 56 secured to a collar 57 rigidly mounted upon the shaft 46 and engaging the outer face of the frame 13 as indicated in Fig. 8. This construction forms a yieldable driving connection between the main driving gears 49 and 50, thus permitting either of the ground wheels of the machine to travel faster than the other as is required when the machine is turning a corner or moving in a curved path, the release of the driving device under such conditions being automatic.

The horizontally disposed brush 25 is adapted to be driven by the gear 49 through a pinion 50a and a gear 51a meshing with a pinion 52a on the shaft 26 carrying the brush 25 as shown in Fig. 3, the gears 50a and 51a being supported by stub shafts 53a and 54a, respectively, which are suitably connected with the side frame member 14 in any desired manner.

The marking fluid which preferably constitutes a suitable paint, is supplied to the front surfacing brush 21 through the hollow shaft 32 by means of a conduit 59 extend-

ing downwardly from the tank through the shaft, the lower end of the conduit being normally closed by valve 60 on a rod 61, the upper end of which is connected with a bell crank lever 62, pivoted at 63 on a bracket 64 supported by a member 65 extending from and rigidly connected with the conduit. The valve is normally held closed by a spring 66 connected with the bell crank lever 62 as shown in Fig. 7. The rod 61 is guided within the hollow shaft 32 by the upper and lower members 67 which are also suitably connected with and supported by the conduit 59. Operation of the valve 60 to regulate the flow of the marking fluid into the center of the brush through the recessed portion 68 is effected by a link 69, a lever 70 pivoted at 71 and an operating rod 72 extended rearwardly through the wall 12 of the housing and connected with the handle bar 8 as shown in Fig. 2.

The means for regulating and defining the area to be coated by the rotary markers 21 and 22 is clearly shown in Fig. 10 and comprises a pair of T-shaped holders 73 constructed as shown in Fig. 14 by riveting together the angle bars 74 and 75 which are spaced apart at 76 to receive the vertically movable plates 77, having slots 78 formed therein through which extend the retaining pins 79 as shown in Fig. 12. Removably connected with the plates 77 are the ground or street engaging members 80 for defining the width of the mark, which are provided with upstanding flanges 81 having front and rear key-hole slots 82 for receiving the pins or studs 83 upon the plates 77, this construction permitting the members 80 to be readily inserted upon and removed from the supporting plate members 77 when desired. The members 80 which engage the pavement under the edges of the brushes to avoid producing a line with a ragged edge are preferably turned upwardly at their front ends, as indicated at 84, to facilitate their passage over the surface of the pavement. The members 80 are yieldably urged into engagement with the surface to be marked by the springs 85 on the rods 86 which are guided in brackets 87 on the holders 73. The lower ends of the rods 86 are provided with projecting studs 88 extending through lugs 89 on the plates 77, thus permitting the springs to operate in urging the members 80 into engagement with the pavement.

The holders 73 are removably supported by suitable members 90 secured to the bottom of the cross frame member 18 and having ways for receiving the holders and locking means therefor, each in the form of a spring 89a and a detent 90a as shown in Figs. 13 and 14.

The members 80 are preferably extended slightly under the edges of the brushes 21, 22 and 23 and are also preferably inclined with

respect thereto as shown in Fig. 10 in order to reduce the frictional resistance offered by the pavement and also to permit the marking fluid thrown upon said members by the rotating brushes to more readily return thereto by reason of the inclination shown.

By extending the members 80 under the edges of the brushes and keeping them firmly pressed into engagement with the pavement a more perfect marking is effected, since the distance between said members is less than the width of the brush, the usual ragged edges of the mark produced by the irregularity of movement of the brush is avoided. Furthermore, by rotating the brushes in opposite directions about their vertical axes they produce a better distribution of the marking material and more thoroughly effect its application to the surface of the pavement than has heretofore been accomplished with the machines provided for this purpose.

In order to permit the machine to be slightly elevated when not in use and to disconnect the driving gears for the rotary markers, as indicated in Figures 4 and 9, I have provided upon the shaft 5 an eccentric 91 including a wearing sleeve 92, the eccentric being disposed between the transverse frame members 18 and 19 having its opposite ends journaled within the side frame members 13 and 14 as shown in Figure 10. At one end of the eccentric is provided a collar 93 from which is extended an operating arm 94, at the outer end of which is loosely connected a rod 95 extending rearwardly above the handle 6 and occupying the position shown in Figures 1 and 2 when the brushes are in engagement with the surface to be marked. The rod 95 is provided with a handle 96 held by a bracket or retaining member 97 when the eccentric is in the position shown in Figure 5. A similar bracket 98 is adapted to engage the offset portion 99 of the rod when it is desired to hold the rear of the machine elevated as shown in Figure 4.

Covers or guards 100 and 101 are provided for the gearing disposed exteriorly of the housing 1 as shown in Figures 2 and 10. A guard 103 including a supporting frame member 104 is provided at the rear of the machine for protecting the outwardly projecting ends of the mechanism for defining the area to be marked, as shown in Figure 7. A guard 105 is also provided for the front brush 24 as shown in Figures 1 and 7.

I claim as my invention:

1. In a marking machine, the combination of a frame and an axle having wheels for supporting the same, of a surfacing brush operatively connected with one of the wheels, a supply source for the marking material, means for conducting the material from the supply source to the brush, an eccentric upon the axle and means for rotating the eccen-

tric to effect the raising of the frame when not in use.

2. In a marking machine, the combination with a frame and wheels for supporting the same, of a surfacing brush, a hollow shaft 5 journalled upon the frame and operatively connected with one of the wheels thereof, means connecting the brush with the shaft, a supply tank for the marking fluid, a conduit 10 extending from the tank through the shaft and adapted to discharge the marking fluid interiorly of the brush, a valve seated upon the bottom extremity of the conduit for 15 regulating the discharge of the fluid into the brush, a rod extending through the shaft forming a support for and connected with the valve, and means operatively connected with the rod for adjusting the valve to the desired position.

3. In a marking machine, the combination of a frame and an axle provided with wheels for supporting the same, free to rotate thereon, a gear connected with each wheel, a marking brush rotatably mounted upon the frame, 25 a shaft journalled upon the frame and operatively connected with said brush, a second shaft journalled upon the frame and having driving connection with the first mentioned shaft, a pair of gears disposed 30 upon the second mentioned shaft, one being mounted for movement relative thereto and the other rigidly connected therewith, said last mentioned gears being driven by the gears connected with the wheels, means forming 35 a yieldable driving connection between said second shaft and said relatively movable gear, and means for supplying a marking fluid to the brush.

4. In a surface marking machine, the combination with a frame and wheels for supporting the same, of a rotary brush, a vertical shaft for driving the brush operatively 40 connected with one of the wheels and arranged to be disconnected therefrom upon raising the frame, means for supplying a marking fluid to the brush, and means including an eccentric for raising the frame upon the wheels.

5. In a surface marking machine, the combination of a frame and an axle provided with wheels free to rotate thereon, an eccentric mounted upon the axle and forming a support for the frame, a pair of gears journalled upon the axle and each connected with 50 one of the wheels, a marking brush rotatably mounted upon the frame, a shaft operatively connected with the brush and having gears meshing with the gears of the axle, means for supplying a marking fluid to the 60 brush, and means for moving the eccentric to elevate the frame and to move the gears of the shaft out of mesh with the gears of the axle.

6. In a marking machine, the combination with a wheeled frame and a fluid tank thereon, of a marking brush mounted for rota-

tion upon the frame and operatively connected with one of the ground wheels, yieldably mounted members adapted to extend under the opposite sides of the brush to define the limits of the mark and upon which 70 the brush travels during operation, means yieldably holding the brush in contact with said members, and means communicating with the tank and adapted to direct the marking fluid to a point between said members. 75

7. In a marking machine, the combination with a wheeled frame and a fluid holding tank thereon, of a marking brush rotatably mounted on the frame in contact with the surface to be marked and operatively connected with one of the ground wheels, a pair of guides connected with the frame on opposite sides of the brush, mark defining members 80 mounted for free vertical movement upon the guides and having their lower extremities extended under the opposite edges of the brush to reduce its limits of operation, said brush rotating in engagement with the upper surfaces of said guides during operation and means communicating with the tank 90 and adapted to direct the marking fluid to a point between said members in a position to be acted upon by the brush.

8. In a marking machine, the combination with a wheeled frame and a fluid holding tank 95 thereon, of a rotary marking member, guides disposed at opposite sides of the marking member, plates mounted for vertical movement upon the guides, means yieldably urging the plates toward the surface over which 100 the machine is adapted to travel and members engaging said surface beneath the marking member and removably connected with said plates and adapted to define the area to be marked, the marking member rotating upon 105 the upper surface of said defining members during operation.

9. In a machine for marking pavements, the combination of a frame, supporting means for the frame including a pair of wheels 110 and journals upon which the wheels are free to rotate, a rotary brush for engagement with the pavement, a shaft operatively connected with the brush, a gear connected with each of the wheels for rotation thereby, a pair of 115 gears upon said shaft, one being fixed and the other mounted for rotation thereon each being arranged for operation by one of the first mentioned gears and a drive arranged to normally couple said shaft with the gear adapted 120 to rotate thereon, said drive being self releasable upon a variation in the speed of one wheel relative to that of the other.

10. In a machine for marking pavements, the combination of a frame, supporting means 125 for the frame including a pair of wheels and journals upon which the wheels are free to rotate, a rotary brush for engagement with the pavement, a shaft operatively connected with the brush, a gear connected with each of 130

the wheels for rotation thereby, a pair of gears upon said shaft, one being fixed and the other mounted for rotation thereon each being arranged for operation by one of the first mentioned gears, a drive arranged to normally couple said shaft with the gear adapted to rotate thereon, said drive being self releasable upon a variation in the speed of one wheel relative to that of the other, and means supported by said journals adjustable to shift the frame relative thereto, whereby to move said shaft and the gears thereon to inoperative position with respect to the gears connected to the wheels.

11. In a machine for marking pavements, the combination of a frame, supporting means for the frame including a pair of wheels journaled thereon one of which is free to rotate on its journal independent of the rotation of the other, a pair of intermeshing gears one of which is connected with one of the wheels for rotation thereby, a rotary brush operatively connected with the other gear for engagement with the pavement and means for shifting the frame relative to the wheels to move one gear out of mesh with the other.

12. In a machine for marking pavements, the combination of a wheeled frame and a fluid holding tank thereon, a vertically disposed shaft journaled upon the frame, means operatively connecting said shaft with one of the wheels, a member supported on the shaft adjacent the lower end thereof and provided with horizontally disposed guides, a brush for engaging the pavement supported by the guides for detachment by movement horizontally and transversely of the axis of the shaft and means for delivering the fluid from the tank to the brush.

13. In a marking machine of the class described, the combination of a frame, supporting means for the frame including a pair of wheels and journals upon which the wheels are free to rotate, a brush rotatably mounted upon the frame for operation upon the surface to be marked, a shaft operatively connected with the brush and driving connections between each wheel and said shaft one of said driving connections being rendered ineffective under variation in the speed of the wheels.

14. In a marking machine of the class described, the combination of a frame, supporting means for the frame including a pair of wheels and journals upon which the wheels are free to rotate, a brush rotatably mounted upon the frame about a vertical axis for applying the marking material upon the surface to be marked, a shaft operatively connected with the brush for driving the latter, surface defining members connected with the frame, said members extending under opposite edges of the rotary brush and upon which the brush rotates during operation, driving connections between each wheel and said

shaft one of said driving connections being rendered ineffective under a variation in the speed of the wheels; and means for supplying marking material to the surface to be marked.

15. In a marking machine of the class described, the combination of a frame, supporting means for the frame including a pair of wheels and journals upon which the wheels are free to rotate, separate brushes rotatably mounted upon the frame each about a vertical axis, driving means for said brushes including a shaft, driving connections between each wheel and said shaft, one of said connections including a friction driven element rendered ineffective under a variation in the speed of the wheels, a device on the frame having a surface defining portion projecting under one of the brushes and upon which said brush is arranged to rotate, and means for applying marking material to the surface to be marked.

16. In a marking machine, a frame, wheels for supporting the frame, a rotary surfacing brush, means operatively connecting the brush with one of the wheels, a container upon the frame for the marking material, means for controlling the discharge of the material from the container, a device connected with the frame having a surface defining portion projecting beneath the brush and upon which portion said brush travels during rotation, and means yieldably urging the brush into engagement with said surface defining portion.

17. In a marking machine, a wheel supported frame, a surfacing brush rotatably mounted upon the frame, driving means for the brush, a container for the marking material supported by the frame, means for controlling the discharge of the material from the container and a device connected with the frame having a surface defining element projecting beneath the brush and upon which a portion of the bottom surface of the brush travels during rotation.

18. In a marking machine, a frame, supporting means for the frame comprising a plurality of wheels one having a journal supported by the frame and upon which said wheel is free to rotate, a driving element rigidly connected with the last mentioned wheel, a surfacing brush rotatable upon the frame, means operatively connecting said driving element with said brush, a container for the marking material, means for controlling the discharge of the material from the container and surface defining elements connected with the frame and projecting beneath the brush, a portion of the bottom surface of which travels upon said defining elements during rotation of the brush.

19. In a marking machine, a wheel supported frame, a rotary surfacing brush journaled upon the frame, means for rotating the

brush, means for supplying marking material to the surface operated upon by the brush and surface defining devices connected with the frame comprising spaced plates having inwardly extending portions projecting beneath the opposite edges of the brush and inclined to the horizontal, the brush overlapping and arranged to travel upon the inner edges of said portions during the surfacing operations.

20. In a marking machine, a wheel supported frame, a vertically disposed hollow shaft journaled upon the frame, a surfacing brush secured upon the lower end of the shaft and arranged to be driven by said shaft, a supply tank for the marking material, a conduit leading from the tank downwardly within the hollow shaft arranged to discharge the marking material in the path of the brush, a vertically movable rod extending downwardly within the shaft at one side of the conduit, a closing member for the lower end of the conduit connected with the rod and arranged to be moved downwardly thereby to open the conduit, operating means for the rod and driving means for the shaft.

21. In a marking machine, a wheel supported frame, a vertically disposed hollow shaft journaled upon the frame, a member fixed upon the lower end of said shaft having guides thereon, a surfacing brush slidably mounted upon the guides for detachment by a movement transversely of the axis of the shaft, a supply tank for the marking material, a discharge pipe for the material leading from the tank into said hollow shaft, means for controlling the flow of the material through the pipe, surface defining elements projecting beneath opposite edges of the brush the latter overlapping said elements and arranged to travel thereon during operation, and driving means for said shaft.

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