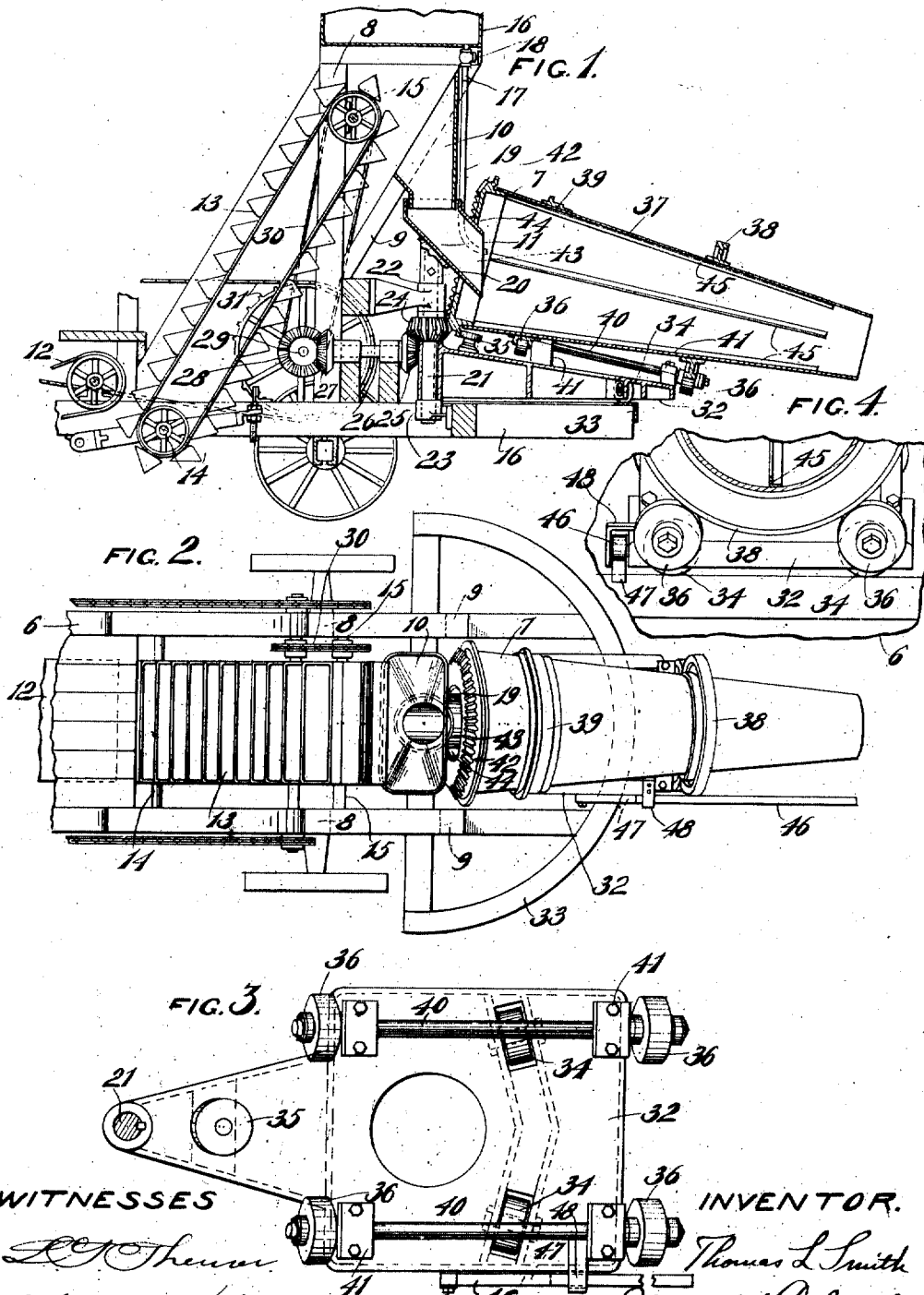


T. L. SMITH.
MIXING MACHINE.

APPLICATION FILED FEB. 9, 1910.

1,000,851.

Patented Aug. 15, 1911



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS L. SMITH, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE T. L. SMITH COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

MIXING-MACHINE.

1,000,851.

Specification of Letters Patent. Patented Aug. 15, 1911.

Original application filed November 17, 1905, Serial No. 287,773. Divided and this application filed February 9, 1910. Serial No. 542,901.

To all whom it may concern:

Be it known that I, THOMAS L. SMITH, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Mixing-Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention relates to improvements in mixing machines and more particularly to that type for mixing concrete for use in surfacing streets and also for mixing various other materials in a dry or wet state.

15 One of the objects of this invention is to provide a mixing machine which is adapted to thoroughly mix the material deposited therein, and is also capable of being swung in the arc of a circle to deposit the mixed material onto the surface of a street at any point desired within the range of the machine.

A further object of this invention is to provide a mixing machine which is adapted 25 to form part of a complete organized apparatus for mixing concrete, mortar and the like of such construction that all the necessary parts to an apparatus of this character are compactly arranged upon a truck 30 which may be readily moved from one location to another while in operation.

With the above, and other objects in view, the invention consists of the mixing machine and its parts and combinations, and all 35 equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views: Figure 1 is a longitudinal central sectional view of the 40 mixing machine forming parts of the complete organized apparatus, the endless conveyer being shown in full line; Fig. 2 is a plan view thereof with the water tank removed; Fig. 3 is a plan view of the mixing 45 receptacle support or carriage; and Fig. 4 is a front elevation of a fragment of the mixing receptacle and its support, a part of the receptacle being in section.

Referring to the drawing, the numeral 6 50 indicates a portion of a wheeled truck upon which the mixing machine 7 is mounted when it is desired that the machine shall be of the portable type. The wheeled truck is provided with uprights 8 and inclined beams 55 9 and to the inclined beams is connected a

spout 10 the lower end of which enters a revoluble discharge section 11 thereof. An endless belt 12 extending to a point of material supply (not shown) is adapted to feed material to an inclined endless bucket 60 conveyer 13 mounted on shafts 14 and 15 which extend transversely across the truck frame and the upper portions of the uprights 8 respectively. The upper end of the bucket conveyer is positioned above the inlet 65 opening of the spout so that the buckets thereof will discharge the material into said spout.

The uprights 8 and the inclined beams 9 in connection with a suitable frame serve to 70 support a water tank 16 having a discharge pipe 17 leading from the bottom thereof. The discharge of water from this pipe is regulated by means of a valve 18. To the lower end of this pipe a flexible tube 19 is 75 connected which leads directly into the mixing receptacle hereinafter to be referred to.

The revoluble discharge section 11 of the spout has a hub 20 depending from its under side which is mounted on and bolted 80 to a vertical rock shaft 21. The rock shaft is journaled in bearings 22 and 23 connected to the uprights and to the truck frame respectively.

A double bevel pinion 24 is loosely 85 mounted on the vertical shaft 21 immediately below the bearing 22 and the lower bevel of the double bevel is in mesh with a driving bevel gear 25 mounted fast on the short horizontal shaft 26 journaled in bearings 90 on the truck frame. Another bevel wheel 27 is positioned on the opposite end of the short shaft 26 which meshes with a bevel 28 mounted on a transverse shaft 29 and a sprocket chain 30 extends from a 95 sprocket wheel on this shaft to a sprocket wheel mounted on the conveyer shaft 15. The shaft 29 is driven by a sprocket wheel and chain connection 31 from a source of power not shown. 100

A mixing receptacle supporting turntable or carriage 32 is keyed to and mounted on the vertical rock shaft 21 and is adapted to ride on the semicircular track or rail 33 105 formed of angle iron and connected to the truck frame. The turn table is provided with antifriction rollers 34 which ride on the track to reduce friction. The upper surface of the turntable is inclined downwardly, outwardly, from the vertical shaft 110

21 and is provided with receptacle supporting rollers 35 and 36 which support a tapering conical mixing receptacle 37, the taper being toward its outer end. The mixing receptacle is also inclined outwardly and downwardly from its inner larger end to its smaller outer end. The mixing receptacle is provided with an annular bearing or rail 38 and an annular flanged bearing or rail 39 which are positioned to ride on the rollers 36 with the flange of the bearing 39 overlapping the peripheries of the upper rollers 36. The rollers 36 are mounted in pairs on parallel shafts 40 having bearings 41 on the turn table 32.

The inner larger end of the mixing receptacle is provided with a flanged beveled gear 42 which is in mesh with the upper half of the double bevel gear 24 and is adapted to be rotated thereby. The flange of the bevel gear 42 bears on the horizontally positioned roller 35 to prevent, in connection with the flanged bearing 39 and the rollers 36, the mixing receptacle from moving endwise, outwardly. The gear 42 partly closes the larger end of the receptacle and the angular extension 43 of the revoluble discharge section 11 of the spout and the flexible tube 19 extend into the receptacle through the opening 44 of this gear. The mixing receptacle is provided with longitudinal mixing blades 45 extending the greater portion of the length of the receptacle, which act to effectually turn the material over and over, in addition to the rolling motion imparted to said material by the rotation of said receptacle, and thereby increase the mixing efficiency of the receptacle.

The mixing receptacle turn table is adapted to be swung in the arc of a circle to discharge the material from the receptacle over a wide area of street or other surface by means of an arm 46. The arm is pivotally connected to one side of the turn table and is provided with a depending lug 47 positioned to bear and bind against the periphery of the semicircular track when the arm is in its lowermost position to prevent accidental swinging of the turn table. A guide 48 confines the arm 46 in position against the side of the turntable and provides for a limited movement vertically, of said arm to disengage the lug from the turn table.

The operation of the mixing machine is as follows: Assuming that the machine is in operation materials placed on the endless belt 12 will drop off the end of said belt into the buckets of the endless conveyer 13 and be carried upwardly thereby and dropped into the spout. The materials then pass into the lower revoluble discharge section thereof and are discharged therefrom into the mixing receptacle, where the said materials are subjected to the mixing operation,

and by reason of the outward incline of the receptacle are discharged from the outer open end thereof. The proper proportion of water is fed to the receptacle to be mixed with the materials by means of the flexible water tube 19. During the time the mixed materials are discharged from the mixing receptacle, the turn-table and the mixing receptacle mounted thereon are swung from side to side by the arm to evenly distribute the mixed materials on the surface being covered. As the mixing receptacle steadily is swung from side to side, the whole machine is moved away from the covered surface so that the entire area of the surface being covered and within the range of the machine will be evenly surfaced with the mixed materials without the necessity of manually spreading the material. As the turn-table is keyed to the same shaft the revoluble discharge section of the spout is fastened to the said discharge section will move with the turn table and the mixing receptacle and the discharge of materials from the spout to the receptacle will not be interfered with, and also as the turn-table is mounted on the same shaft as the double bevel gear which turns the mixing receptacle, the mixing receptacle will continue to turn while it is being swung in the arc of a circle.

From the foregoing description, it will be seen that a mixing machine is provided which is very simple in construction and operation and is well adapted to perform the function desired.

This case constitutes a division of my application for Letters Patent for improvements in mixing machines, filed Nov. 17, 1905, Serial No. 287,773.

What I claim as my invention is:

1. A mixing machine, comprising a mixing receptacle provided with charging and discharging openings and pivotally connected to a support whereby said receptacle is adapted to swing horizontally in the arc of a circle while mixing and discharging material, and means for rotating the receptacle to mix the material fed therein and to discharge the mixed material therefrom in a continuous stream.

2. A mixing machine, comprising a turn-table pivotally mounted on a support, a mixing receptacle provided with charging and discharging openings and rotatably mounted on the turn-table and adapted and constructed to be swung in the arc of a circle with the turn-table while rotating, and means for rotating the receptacle to mix the materials fed therein and to discharge the mixed material therefrom in a continuous stream while the turn-table and the receptacle are being swung in the arc of a circle.

3. A mixing machine, comprising a support having a vertical shaft journaled there-

to, a turn-table mounted on the shaft and turning therewith, a mixing receptacle rotatably mounted on the turn-table and provided with charging and discharging openings, a spout mounted on the vertical shaft and turning therewith for charging the receptacle, and a gear loosely mounted on the shaft for rotating the receptacle while the turn-table and the receptacle are being swung in the arc of a circle.

4. In a mixing machine, the combination of a mixing receptacle provided with a charging opening and with a discharge opening, means for rotatably supporting the receptacle, a pivot for the supporting means located at or near the inner end thereof, to provide for the swinging of the outer end of said supporting means and the receptacle carried thereby in the arc of a circle to thereby discharge the mixed materials over a given area, and means for rotating the receptacle continuously during the time the receptacle is being moved in the arc of a circle, or while not being so moved, the rotation of the receptacle causing a feeding outwardly of the materials toward and to the discharge end of the receptacle, and a discharge of the mixed materials directly from the discharge end of the receptacle and onto the surface to be covered with the mixed materials.

5. In a mixing machine, the combination of a mixing-receptacle provided with a charging opening and with a discharge opening, means for rotatably supporting the receptacle, a pivot for the supporting means located at or near the inner end thereof to provide for the swinging of the outer end of said supporting means and the receptacle carried thereby in the arc of a circle, to thereby discharge the mixed materials over a given area, means for rotating the receptacle continuously during the time the receptacle is being moved in the arc of a circle, or while not being so moved, the rotation of the receptacle causing a feeding outwardly of the materials toward and to the discharge end of the receptacle, and a discharge of the mixed materials directly from the discharge end of the receptacle and onto the surface to be covered with the mixed materials, and means for feeding the materials to be mixed through the charging opening of the receptacle continuously during the rotation of the receptacle, and either while the receptacle is being swung in the arc of a circle, or while not being so swung.

6. In a mixing machine, the combination of a mixing receptacle, means for feeding the materials to be mixed into the receptacle, means for discharging the mixed materials from said receptacle, a carriage upon which the receptacle is supported, means for swinging said carriage laterally and the receptacle supported thereon therewith, so

as to cause the discharge end of the receptacle to move in the arc of a circle laterally, and means cooperating with the outer end of the carriage and constructed to detachably lock said outer end of the carriage at any point of the movement of its outer end in the arc of a circle, and of the corresponding movement of the receptacle carried thereby.

7. In a mixing machine, the combination of a mixing receptacle, means for feeding the materials to be mixed into the receptacle, means for discharging the mixed materials therefrom, a carriage supporting the mixing receptacle, means for moving said carriage and the receptacle supported thereon so as to cause the discharge end of the receptacle to be moved laterally, a roller carried by the carriage, a rail on which the roller moves, said rail extending in a plane transversely of the outer end of the carriage, and means for detachably locking the carriage to the rail at any point of adjustment of the carriage.

8. In a mixing machine, the combination of a mixing receptacle, means for feeding the materials to be mixed into the receptacle, means for discharging the mixed materials from said receptacle, a carriage supporting the receptacle and pivoted at one end so as to permit the opposite end to be swung in the arc of a circle and thereby cause the discharge end of the receptacle to be swung in the arc of a circle, a roller carried by the carriage, a curved rail on which the roller moves, said rail extending in a plane transversely of the outer end of the carriage, and means for detachably locking the carriage to the rail at any point of adjustment of the carriage.

9. In a mixing machine, the combination of a mixing receptacle having means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, a carriage supporting the receptacle, said carriage pivoted at one end so as to permit its opposite end to be swung in an arc of a circle and thereby cause the discharge end of the receptacle to be swung in the arc of a circle, a roller carried by the carriage, a curved rail on which the roller rides, said rail provided with a depending flange, and a pivoted uplifting arm provided with a depending lug, said lug, when the arm is lowered, adapted to engage against the depending flange of the rail.

10. In a mixing machine, the combination of a rotatable mixing receptacle provided with means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, rails around said receptacle, a carriage for supporting the receptacle, means for moving said carriage and the receptacle supported thereby so as to cause the discharge end of the receptacle

to be moved laterally, and rollers carried by the carriage and adapted to bear against the rails of the receptacle.

11. In a mixing machine, the combination of a rotatable receptacle provided with means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, rails around said receptacle, a carriage for supporting the receptacle, means for moving said carriage and the receptacle supported thereby so as to cause the discharge end of the receptacle to be moved laterally, rollers carried by the carriage and mounted on a horizontal axis and bearing against the rails, and a roller carried by the carriage and mounted upon a vertical axis and bearing against an annular flange extending around the receptacle.

12. In a mixing machine, the combination of a rotatable mixing receptacle provided with means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, rails around said receptacle, a carriage for supporting the receptacle, means for moving said carriage and the receptacle supported thereby so as to cause the discharge end of the receptacle to be moved laterally, rollers carried by the carriage and adapted to bear against the rails of the receptacle, a rail supported below the carriage, and a roller carried by the carriage and adapted to bear upon said rail.

13. In a mixing machine, the combination of a mixing receptacle having a charging opening at one end and a discharge opening at its opposite end, means for moving the discharge end of the receptacle laterally, a spout entering the charging end of the receptacle, means adjacent to the charging end of the receptacle for causing said spout to move with the receptacle, means for feeding the materials to be mixed into the spout, means for regulating the feed of said materials into the spout, means for mixing the materials in the receptacle, means for discharging the mixed materials from the receptacle, a water pipe leading to and adapted to discharge into the receptacle, and means for regulating the flow of water through said pipe.

14. In a mixing machine, the combination of a mixing receptacle having a charging opening at one end and a discharge opening at its opposite end, means for swinging the receptacle as on a pivot at its charging end so that its discharge end will describe the arc of a circle, a spout entering the charging end of the receptacle, means for causing said spout to swing on a pivot with the pivotal movement of the charging end of the receptacle, means for feeding the ma-

terials to be mixed into the spout while said receptacle is being rotated and also swung in the arc of a circle, and means for discharging the mixed materials from the receptacle.

15. In a mixing machine, the combination of a mixing receptacle having means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, and also provided at one end and directly thereon with annularly arranged teeth, a carriage supporting the receptacle, a vertical rock-shaft to which one end of the carriage is rigidly connected so that when the carriage is turned the rock-shaft is turned therewith, bearings on which the rock-shaft rotates, a toothed wheel supported loosely around the shaft and meshing with the teeth of the receptacle, and means for rotating said wheel.

16. In a mixing machine, the combination of a mixing receptacle having means for charging the same with the materials to be mixed and for discharging the mixed materials therefrom, and also provided at one end and directly thereon with annularly arranged beveled teeth, a carriage supporting the receptacle, a vertical rock-shaft to which one end of the carriage is rigidly connected so that when the carriage is turned the rock-shaft is turned therewith, bearings on which the rock-shaft rotates, a double beveled pinion supported loosely around the shaft, the upper teeth thereof meshing with the beveled teeth of the receptacle, a rotatable shaft, and a beveled pinion mounted thereon and meshing with the lower teeth of the double beveled pinion.

17. In a mixing machine, the combination of a mixing receptacle having a charging opening at one end and a discharge opening at its opposite end, and also provided at its charging end and directly thereon with annularly arranged teeth, a carriage supporting the receptacle, a vertical rock-shaft to which one end of the carriage is rigidly connected, so that when the carriage is turned the rock-shaft is turned therewith, bearings on which the rock-shaft rotates, a toothed wheel supported loosely around the shaft and meshing with the teeth of the receptacle, and a spout emptying through the charging opening of the receptacle, and provided with a depending hub rigidly fixed to the rock-shaft.

In testimony whereof, I affix my signature, in presence of two witnesses.

THOMAS L. SMITH.

Witnesses:

C. H. KEENEY,
ANNA F. SCHMIDTRAUER.