

W. S. PLUMMER.

MIXING MACHINE.

APPLICATION FILED OCT. 26, 1907.

906,282.

Patented Dec. 8, 1908.

2 SHEETS—SHEET 1.

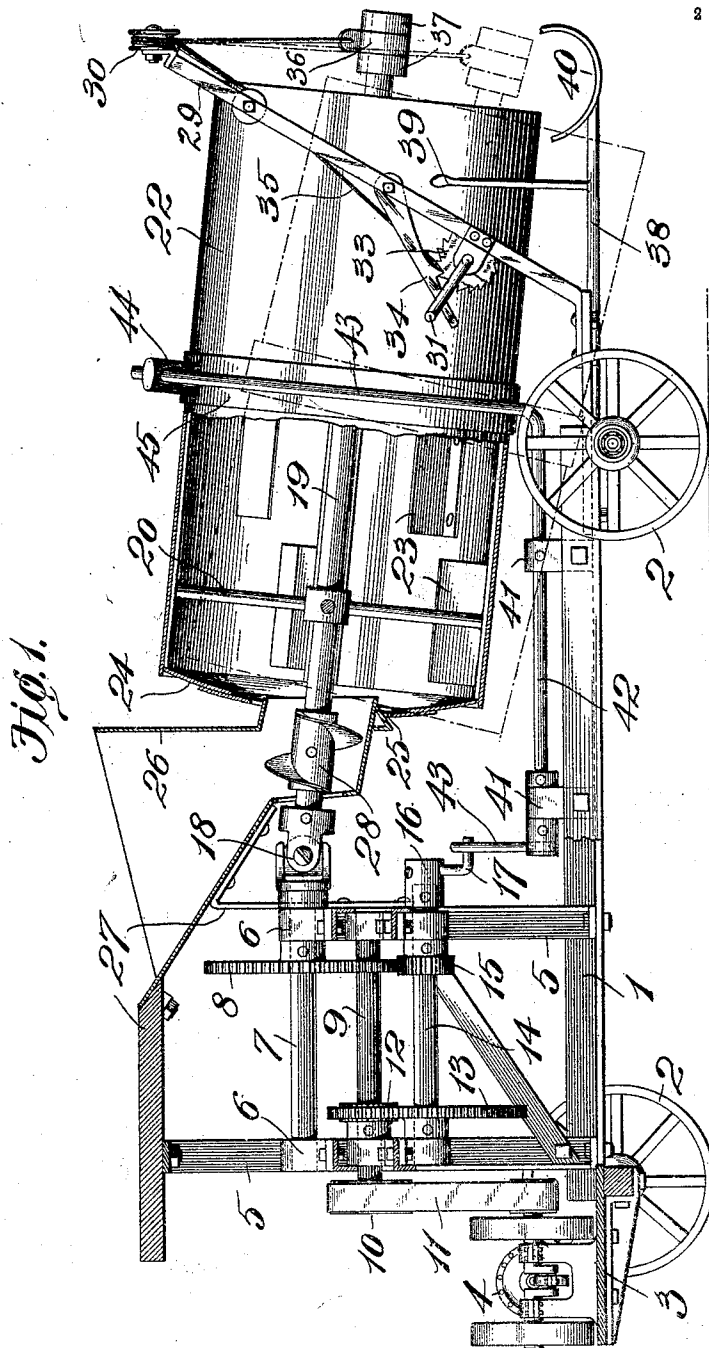


Fig. 1.

Witnesses:

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By *Niglow Lougan* ATT'Y.

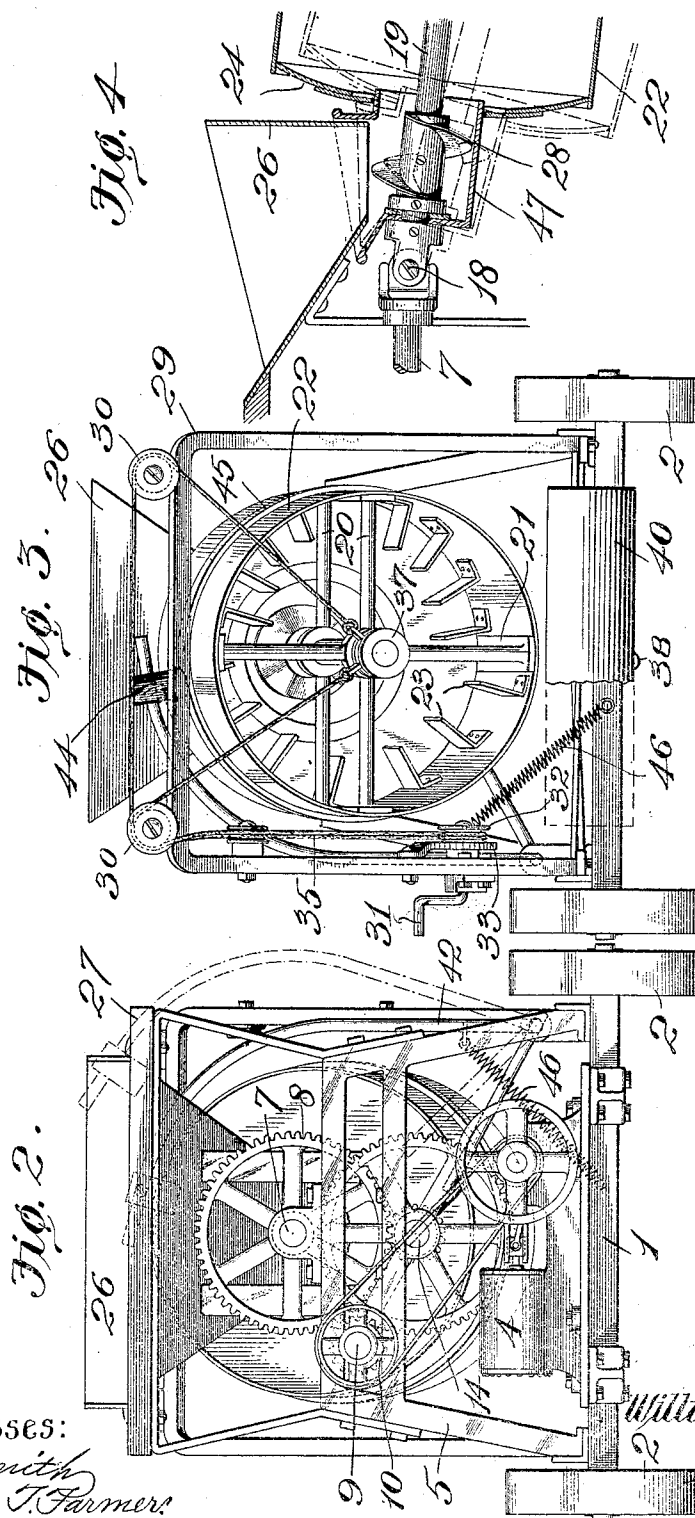
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WILLIAM S. PLUMMER, OF ST. LOUIS, MISSOURI.

MIXING-MACHINE.

No. 906,282.

Specification of Letters Patent.

Patented Dec. 8, 1908.

Application filed October 26, 1907. Serial No. 399,251.

To all whom it may concern:

Be it known that I, WILLIAM S. PLUMMER, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates generally to mixing machines, and more particularly to a machine for mixing sand and cement as used in concrete work, my object being to construct a simple, inexpensive machine which is portable in order that it may be readily transferred from one point to another, and which machine will thoroughly mix the material either fast or slow, depending on the position of the mixing cylinder, which is adjustable.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of my improved mixing machine, with parts thereof shown in vertical section; Fig. 2 is a front elevation of the machine; Fig. 3 is a rear elevation of the machine; Fig. 4 is a vertical section of the forward end of the mixing cylinder, and showing a modified form of hopper which delivers the material to the mixing cylinder.

Referring by numerals to the accompanying drawings:—1 designates the body of the machine, which is mounted on traction wheels 2, and arranged at the forward end of said body is a platform 3, which supports an engine or motor 4, of sufficient size to operate the mixing cylinder.

Fixed on the forward end of the frame 1 is a pair of upright frames 5, on the upper ends of which are fixed a pair of journal boxes 6, and arranged for rotation therein is a shaft 7, on which is fixed a gear wheel 8.

Journalled in suitable bearings formed on the frames 5, below and to one side of the shaft 7, is a shaft 9, on the forward end of which is fixed a pulley 10, which receives a belt 11 driven by the engine or motor 4; and fixed on the shaft 9 is a pinion 12, which meshes with a large gear wheel 13 fixed on a shaft 14, which latter is arranged for rotation in suitable bearings on the frames 5, immediately below the bearings 6; and fixed on said shaft 14 is a pinion 15, with which the gear wheel 8 meshes.

Fixed on the rear end of the shaft 14 is a collar 16, and carried thereby is an arm 17, which is for the purpose of actuating the hammer hereinafter described.

The rear end of the shaft 7 is connected by a knuckle or universal joint 18 to the rear end of a shaft 19; and fixed on this shaft is a series of arms or spokes, such as 20, the outer ends of which are united with plates 21, which are secured in any suitable manner to the inner face of the mixing cylinder or drum 22, the same being constructed of heavy sheet metal, or other suitable material, having an open rear end, and provided on its interior with inwardly projecting plates or flanges 23.

The forward end of this mixing cylinder is closed by a head plate 24, in the center of which is formed a circular opening 25, into which discharges the lower end of a hopper 26, the upper portion of which is supported by brackets 27 fixed on the frames 5; and fixed on the shaft 19, within the lower end of the hopper 26, is a short spiral conveyer 28, which acts as a feeder for forcing the material from the hopper into the mixing cylinder.

Fixed to the rear end of the frame 1 and projecting upwardly therefrom is an arch frame 29, on the upper end of which is fixed a pair of grooved wheels 30; and arranged for rotation on one side of this frame is a crank shaft 31, carrying a drum 32 and the ratchet wheel 33, the teeth of which latter are engaged by a pawl 34.

Fixed to and arranged to wind upon the drum 32 is a pair of cables 35, which pass upward over the grooved wheels 30 and extend from thence downward, and their lower ends being secured to a collar 36, which is freely mounted on the rear end of the shaft 19 between a pair of fixed collars 37.

Mounted in suitable bearings on the under side of the frame 1 is a rearwardly projecting rock shaft 38, which is provided with an operating handle 39; and fixed to the rear end of the shaft 38 is a transversely disposed spout 40, which receives the material as it discharges from the rear end of the mixing cylinder, and by means of which spout said material is discharged into receptacles on either side of the machine.

Mounted in bearings 41 fixed on the frame 1 is a rock shaft 42, the forward end of

which is provided with a laterally projecting arm 43 which lies in the path of travel of the arm 17. The rear end of this rock shaft is bent upward and curved over the side and upper portion of the cylinder 22, and adjustably positioned upon said curved end, is a hammer head 44, of wood or analogous material, which strikes against a reinforcing band 45 fixed on the cylinder 22.

A retractile coil spring 46 is fixed to the upwardly bent rear end of the shaft 42, and also to the frame 1, which spring is for the purpose of causing the hammer to forcibly engage against the band 45 when the arm 17 leaves the arm 43.

In the modified form of the hopper seen in Fig. 4, the spout portion 47 is constructed independent of the upper portion of said hopper, and said spout portion being loosely mounted on the shaft 19 and extending through the opening in the head plate 24; and thus said spout portion 47 moves vertically with the forward end of the cylinder as the same is raised and lowered in adjustment; and the upper end of this spout portion is of sufficient size to accommodate the lower end of the fixed portion of the hopper.

The operation of the mixing machine is as follows: The engine or motor 4 is started and the rotary motion imparted to the shaft 9 is in turn imparted to the shafts 7 and 14. As the shaft 7 is driven, the shaft 19 and mixing cylinder 22 carried thereby will be rotated, and the sand and cement, or other products to be mixed being delivered to the hopper 26, are discharged into the forward end of the cylinder by the spiral conveyer 28. During the rotation of the cylinder 22, the material lodges on the plates or flanges 23 and is carried along thereby for a portion of the rotation of the cylinder, and thus thoroughly mixed and commingled. As the rear end of the cylinder 22 is lower than the forward end, the product being mixed slowly gravitates to said rear end, and discharges therefrom into the spout 40; and, by tilting the latter, the mixed product is discharged into a suitable receptacle on either side of the machine. The rear end of the mixing cylinder is raised and lowered, and the inclination of the entire cylinder varied or adjusted by a proper manipulation of the crank 31; and it will be readily understood that the speed of the product being mixed through the mixing cylinder depends entirely upon the inclination of said cylinder. As the shaft 14 rotates, the arm 17 successively engages the upper end of the arm 43, thus rocking the shaft 42 and causing the hammer 44 to intermittently strike upon the band 44, which action loosens and knocks off any material which may adhere to the inner surface of the cylinder.

A mixing machine of my improved construction can be readily transported from

one place to another, can be operated with a minimum amount of power, and the product being mixed can be caused to travel through the mixing cylinder either slow or fast according to the inclination of the cylinder, which latter is readily adjustable, and the mixed product is readily delivered into wheelbarrows or the like on either side of the machine by means of the transverse spout.

The spiral conveyer located in the lower end of the hopper provides for a regular feed of the unmixed product to the forward end of the mixing cylinder, and by rotating the entire cylinder and locating the plates or flanges on the interior thereof, a perfect mixture of the product is insured.

I claim:—

1. A mixing machine comprising a frame, an inclined cylinder arranged for rotation on the frame, a shaft passing longitudinally through the center of the cylinder, a bearing loosely mounted on the lower end of the shaft, means connected to the bearing for raising the same to vary the inclination of the cylinder, a hopper fixed to the frame and discharging into the upper end of the cylinder, a spiral conveyer fixed on the shaft in the discharge end of the hopper, a rock shaft longitudinally disposed beneath the cylinder, means whereby said shaft is rocked, and a spout fixed to the rock shaft and transversely disposed below the lower end of the cylinder.

2. A mixing machine comprising a frame, an inclined cylinder arranged for rotation on the frame, a shaft passing longitudinally through the center of the cylinder, a bearing loosely mounted on the lower end of the shaft, means connected to the bearing for raising the same to vary the inclination of the cylinder, a hopper fixed to the frame and discharging into the upper end of the cylinder, a spiral conveyer fixed to the shaft in the discharge end of the hopper, a hammer arranged on the frame and adapted to strike against the surface of the cylinder, and means whereby said hammer is intermittently actuated while the cylinder is being rotated.

3. A mixing machine comprising a portable frame, a driving shaft journaled therein, a driven shaft, a knuckle joint connecting the adjacent ends of the shafts, a cylinder fixed on the driven shaft, a bearing loosely arranged on the lower end of the driven shaft, a frame carried by the portable frame and extending over the lower end of the cylinder, and means arranged on said frame and connected to the bearing on the end of the shaft for elevating the same to change the inclination of the cylinder.

4. A mixing machine comprising a portable frame, a driving shaft journaled therein, a driven shaft, a knuckle joint connecting

- the adjacent ends of the shafts, a cylinder fixed on the driven shaft, a bearing loosely arranged on the lower end of the driven shaft, a frame carried by the portable frame and extending over the lower end of the cylinder, means arranged on said frame and connected to the bearing on the end of the shaft for elevating the same to change the inclination of the cylinder, a hopper fixed on the portable frame, the discharge end of which extends into the upper end of the cylinder, and a spiral conveyer fixed on the driven shaft within the discharge end of the hopper.
5. A mixing machine comprising a portable frame, a driving shaft journaled therein, a driven shaft, a knuckle joint connecting the adjacent ends of the shafts, a cylinder fixed on the driven shaft, a bearing loosely arranged on the lower end of the driven shaft, a frame carried by the portable frame and extending over the lower end of the cylinder, means arranged on said frame and connected to the bearing on the end of the shaft for elevating the same to change the inclination of the cylinder, a hopper fixed on the portable frame, the discharge end of which extends into the upper end of the cylinder, a spiral conveyer fixed on the driven shaft within the discharge end of the hopper, and a hammer arranged to intermittently strike upon the surface of the cylinder during its rotation.
- In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.
- WILLIAM S. PLUMMER.
- Witnesses:
M. P. SMITH,
E. L. WALLACE.