J. MÜLLER.

CONCRETE MIXING MACHINE.

APPLICATION FILED APR. 18, 1907.

973,543.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

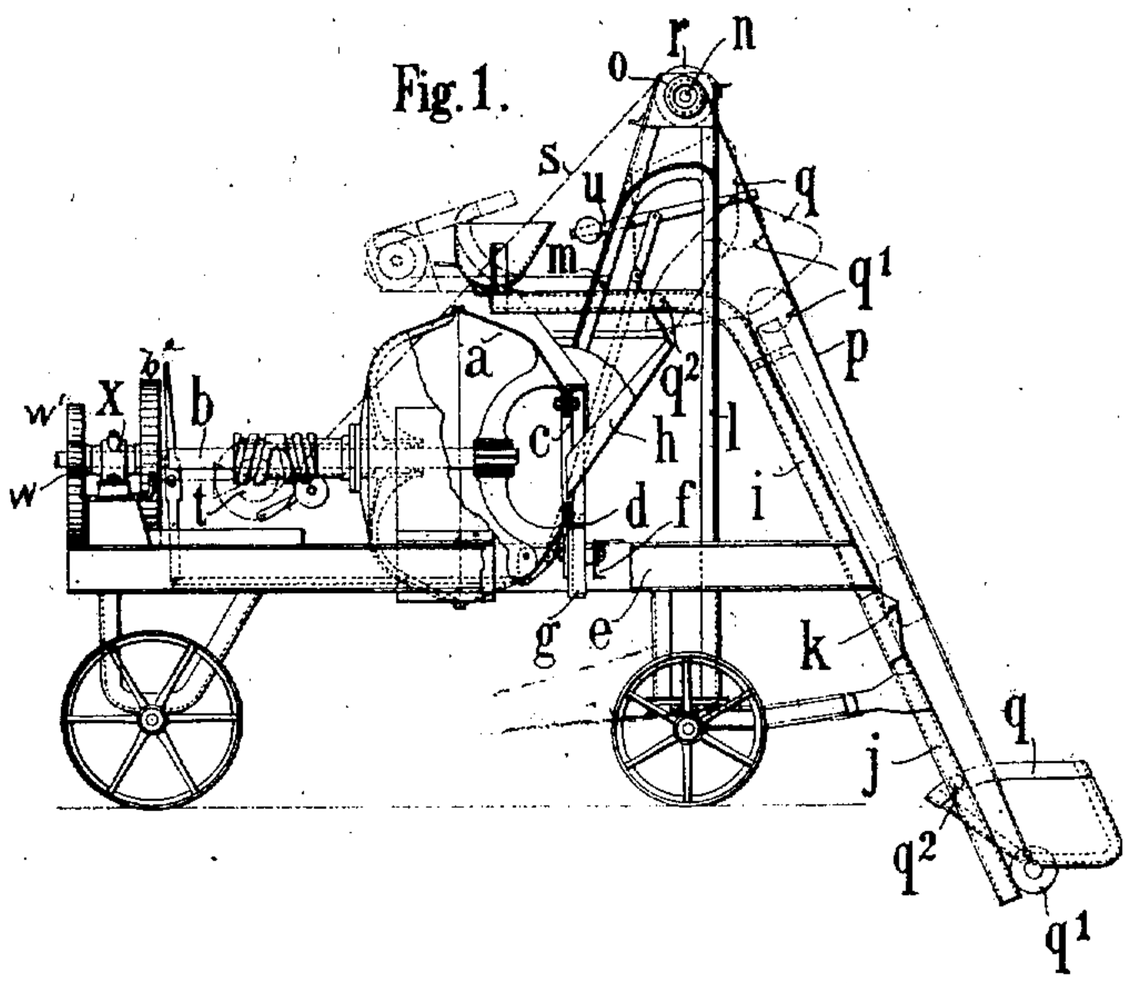

Fig. 2.

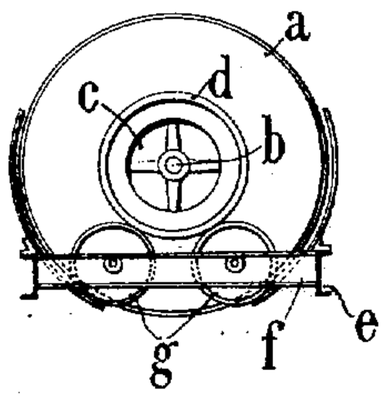

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Fig. 3

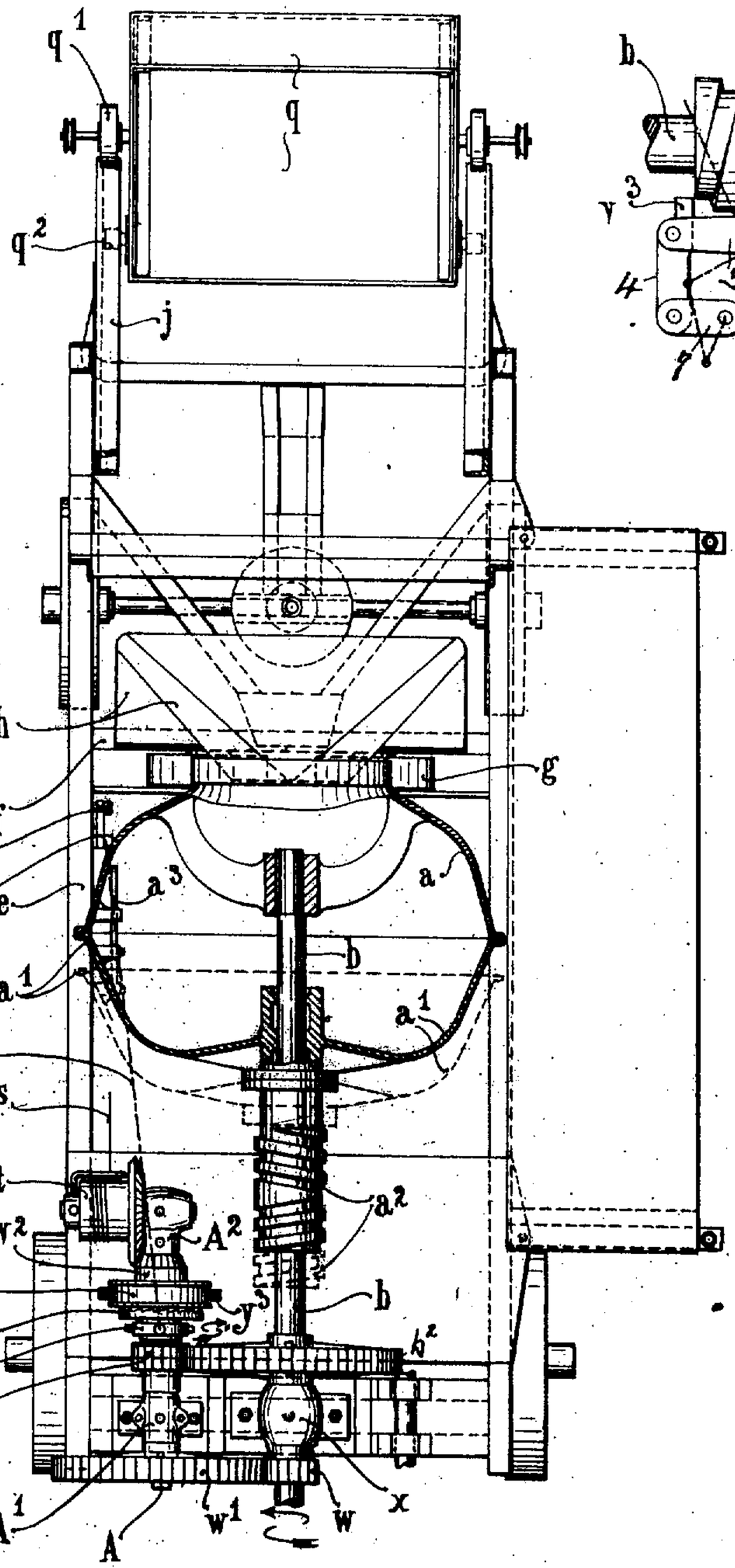
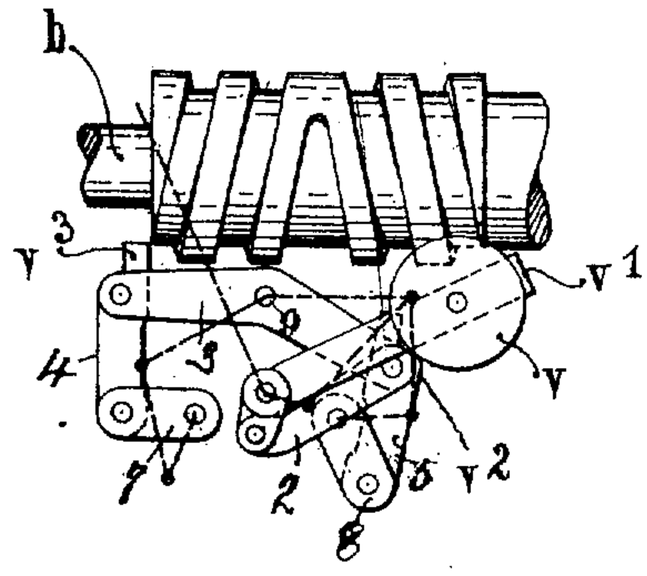


Fig. 4



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UNITED STATES PATENT OFFICE.

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CONCRETE-MIXING MACHINE.

973,543. Specification of Letters Patent. Patented Oct. 25, 1910.

Application filed April 18, 1907. Serial No. 368,895.

To all whom it may concern:

Be it known that I, JEAN MÜLLER, a citizen of Switzerland, residing at Lachen-Vonwyl, near St. Gallen, Switzerland, have invented new and useful Improvements in Concrete-Mixing Machines, of which the following is a specification.

This invention relates to improvements in that type of concrete mixing machines in which the mixing drum is made in two parts, one of which is slidable and the driving shaft extends through the drum. In practice it has been found that it is inconvenient and difficult to charge this type of concrete mixing machine, the charge inlet being obstructed and not easily accessible. Concrete mixing machines are also known with drums running on pulleys and with or without driving shaft extending through the drum. In this type of machine the drum being in one part the material to be mixed is obliged to travel through the whole of it hence the drum cannot be divided in the middle for discharging, which renders the machine very troublesome to attend. There are also concrete mixing machines in which the elevator rails upon which the truck runs can be folded but not the frame which carries the hoisting pulleys so that for transporting the machine the said frame must first be removed.

The object of this invention is to obviate the said defects. To this end in the first place I employ a drum formed in two parts one of which is slidable on the driving shaft. One end of this driving shaft is mounted in a bearing and the other end has secured thereto the non-slidable drum part mounted on pulleys, into which it only partly extends so that the inlet is always perfectly free from obstruction. This arrangement permits a rapid charging and discharging of the drum without any difficulty whatever. In the second place I construct the frame of the elevator carrying the hoisting pulleys and the truck rails so as to be capable of being thrown back or folded to facilitate transport. I attain these objects by the mechanism illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is a side elevation partly in section of a concrete mixing machine constructed in accordance with my invention. Fig. 2 is an end view of the mixing drum as seen from the right. Fig. 3 is a plan, and Fig. 4 a detail on an enlarged scale.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention and referring to the figures generally, the concrete mixing drum a, a' is formed in two parts and arranged on the shaft b. The latter is at one end mounted in the bearing X and at the other end has secured thereto the drum half a. The drum half a' has a boss a^2 at its closed or left side which has a right and a left hand screw thread. This thread is rigidly connected with the drum half a' which is rotated by the drum half a and moves the drum half a' when one of the tongues is brought in gear with it. By moving the lever v' placed under the influence of a weight v, into the position shown in dotted lines in Fig. 4, a tongue v^2 connected therewith can be brought in gear with the said right hand thread and by moving the lever v' in the opposite direction, see full lines, the tongue v^3 in gear with the left hand screw thread. These tongues are controlled by the lever v' in the following manner: The fulcrums 9 of the lever system and the shaft of the lever v' are turnably connected to a part of the frame of the machine. The lever 1 is rigidly connected to the shaft of the lever v' and has its other end loosely connected by a link 2 to the bolt 5 one end of which forms the tongue v^2 and the other end of which is loosely connected to the lever 8. The bolt 5 is also loosely connected to the bolt 4 by means of a two armed lever 3, the one end of the latter bolt forming the tongue v^3 and the other end of the same being attached to the lever 7. Upon the shaft b outside the bearing X a spur pinion w is mounted loosely turnable, driven by any suitable motive power and in gear with a spur wheel w' secured upon the shaft A. The latter is mounted at one end in the bearing A′ and at the other end in a bearing A^2. Upon the shaft A is also secured a spur pinion b' which imparts the rotary motion received from w and w' to a spur wheel b^2 secured upon the shaft b which causes the drum half a secured upon the latter to be rotated. By means of a number of bolts a^3 on the inside of the drum half a' projecting into the drum half a and abutting against abutment pieces therein, rotary motion is trans-

mitted from the drum half a to the drum half a'. By setting the lever v' into the position shown in full lines in Fig. 4 (the shaft b rotating in the direction shown by the arrow) the drum half a' is longitudinally moved to the right until it bears against the other drum half a. By moving the lever v' into the position shown in dotted lines the drum half a' will be displaced to the left and thus the drum a, a' opened in the middle. The fixed drum half has a charge inlet c which is perfectly free from obstruction owing to the driving shaft not extending completely but only partly through the drum.

To the fixed section at the said inlet is secured a rim d supported by two rollers g mounted upon a cross piece f secured to the vehicle frame e and the shaft b being thereby supported at this end. Into the said charge inlet projects the feed trough h which is secured to the two elevator rails. The latter are secured to the vehicle frame e of the machine in an inclined position and are each made of U iron with flange facing each other and in two parts i and j hinged together at k, the end of each upper part i being bent horizontally.

j serves for the downward extension of the upper part i and is capable of being raised and folded upon i.

The vehicle frame e is furnished with a hoist frame l the upper part of which is secured to the elevator rails and the lower part to the said vehicle frame. The portion of the said hoist frame projecting above the elevator rails is hinged at m and can be lowered backward. In the upper end of the hoist frame l is mounted a shaft n to each end of which is secured a rope pulley o adapted to wind up and unwind the ropes p secured to the truck q. To the shaft n is also secured a pulley r connected by means of a rope s with the drum t of a windlass (not shown) whereby the rope s can be wound onto the pulley r and off the drum t and vice versa. This causes the rope pulleys o to turn and the truck q to be either raised or lowered. The said truck at its bottom and top is respectively provided with the wheels q' and q^2, the former being situated above the top flange and the latter engaging between the flanges of the elevator rails. When raising the truck q, the wheels q' run upon the top flange of the elevator rails while the wheels q^2 running between the flanges guide the truck.

The windlass has a clutch y', y^2 employed upon the shaft A, the clutch half y' being formed to serve as a brake pulley and the clutch half y^2 with a bevel wheel in gear with a bevel wheel secured upon the rope drum. The clutch half y is connected with a disengaging lever u' and the latter by means of two rods u^2, u^3 with the lever u. In the top or tilted position of the truck q one of the wheels q' contacts with the lever u which causes the same together with the rods u^2, u^3 and the lever u' to be so moved that the clutch on the shaft A and the windlass connected therewith will be thrown automatically out of gear.

In order to prevent the truck q from moving back the two brake jaws y^3 are pressed against the brake pulley y'.

In the drawing the full lines show the truck q in its lowest position ready for filling. To convey its contents through the trough h into the mixing drum a, the filled truck q is raised into the position shown in dotted lines in which one of the wheels q' contacts with the lever u connected with the hoist gear so as to stop the same automatically. The truck q takes up this position owing to the lower part thereof being drawn upward and the wheels q^2 being prevented from rising by the horizontal part of the elevator rails, so that the truck q tilts and empties its contents, after which it is lowered for being filled again.

After the material has been sufficiently mixed it is discharged from the drum downward by displacing the slidable part thereof.

The truck q can be raised, the rail part j folded upward and the upper portion of the hoist lowered backward into the position shown in long and short dotted lines which facilitates the transport of such concrete mixing machines by rail without having to take it to pieces.

The machine may be driven by any suitable motor.

I claim:

1. In a mixing apparatus, a driving shaft, a rotary mixing chamber thereon comprising two parts, one of which has a central charge opening and is rigidly and the other slidably secured to the said shaft and one end of which shaft extends through the said slidably secured part and the other terminates inside the rigidly secured part a distance away from the said charge opening, a bearing for supporting the said shaft outside the mixing chamber, means other than the said shaft for supporting the said rigidly fixed chamber part and mechanism for moving the said slidable part into and out of engagement with the said rigidly secured part, all combined substantially as and for the purpose set forth.

2. In a mixing apparatus, a driving shaft, a rotary mixing chamber thereon comprising two parts, one of which has a central charge opening and is rigidly and the other slidably secured to the said shaft, one end of the said shaft extending through the said slidably secured part and the other terminating inside the said rigidly secured part a distance away from the said charge opening, a bearing for supporting the said

shaft outside the said mixing chamber, means for supporting the said rigidly secured part comprising a rim thereon and rollers upon which the said rim runs and mechanism for moving the said slidable part into and out of engagement with the said rigidly secured part, all combined substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEAN MÜLLER.

Witnesses:
CARL LAUDER,
MARY FALCONER.