

W. CLARK.
CEMENT MIXER.

APPLICATION FILED AUG. 8, 1903.

NO MODEL.

Fig. 1.

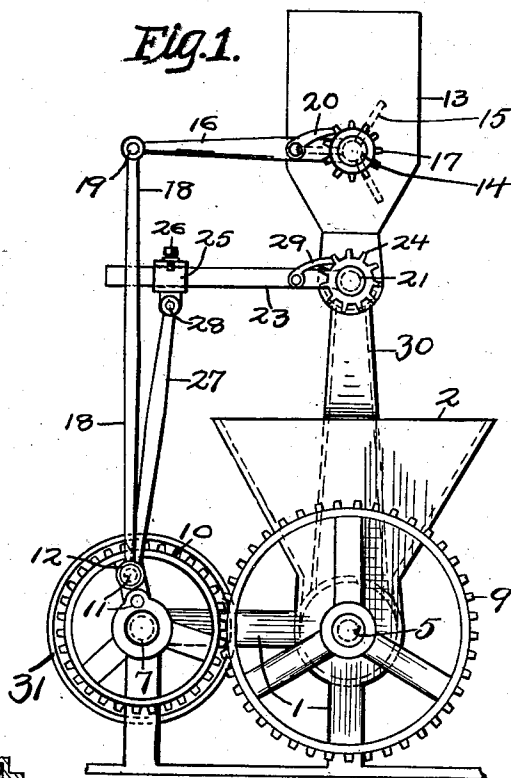
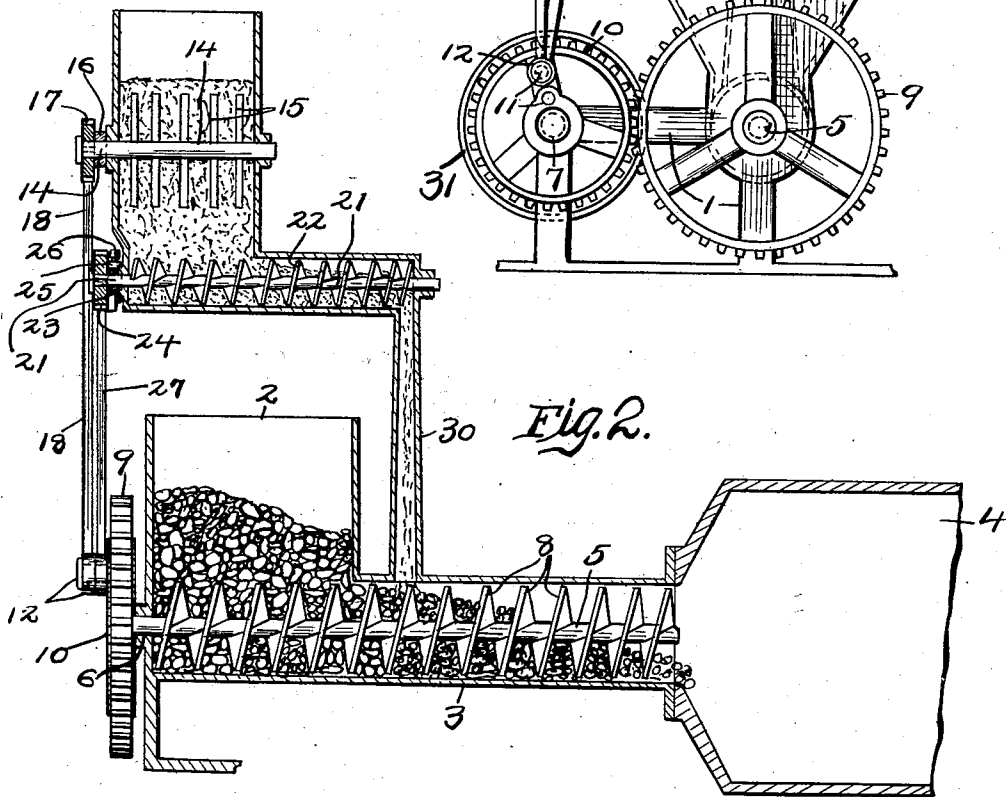


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM CLARK, OF CALEDONIA, NEW YORK.

CEMENT-MIXER.

SPECIFICATION forming part of Letters Patent No. 742,591, dated October 27, 1903.

Application filed August 8, 1903. Serial No. 168,792. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLARK, a citizen of the United States of America, residing at Caledonia, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Cement-Mixers; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in cement-mixers.

The object of this invention is to provide a machine capable of being adjusted to feed the gypsum to the clinker in any proportion desired and which after it has been adjusted so as to feed the gypsum in the desired proportion will continue to feed it in the same proportion regardless of the speed at which the machine is operated.

My invention therefore consists in the features of construction and combination of parts, as illustrated in the drawings, herein-after set forth in the specification and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of a machine embodying my invention. Fig. 2 is a section on line 2-2, Fig. 1.

Again referring to the drawings, 1 represents a framework, which supports a receptacle or hopper 2, in which the clinker is placed. A conduit 3 is arranged between the clinker-hopper 2 and the receiving-chamber of the mill 4. A shaft 5 extends through the lower portion of the clinker-hopper and through the conduit 3 and is mounted in a suitable bearing 6. On the shaft 5 is arranged a screw conveyer 8. The shaft 5 extends out beyond the side of the clinker-hopper 2, and on the end thereof is keyed a gear-wheel 9. On the frame 1 is journaled a shaft 7, and on this shaft is keyed a gear-wheel 10, arranged to mesh with the gear-wheel 9. In the body of the gear-wheel 10 are formed holes 11, which extend radially from the center thereof. A crank-pin 12 is arranged to fit into any one of these holes and will have a greater or less throw, depending on the hole in which it is placed.

Above the clinker-hopper is mounted the gypsum-hopper 13, which is provided with a spout 30, opening into the conveyer 3. In the

hopper 13 is arranged a shaft 14, which projects beyond the side of the said hopper. On the end of the shaft 14 is journaled or fulcrumed a lever-arm 16, and on said shaft, beyond said arm 16, is keyed a spur-wheel 17. A pitman 18 is secured by a pin 19 to the free end of the arm 16 and to the gear-wheel 10 by the crank-pin 12. On the shaft 14 are arranged blades 15, so as to form an agitator. A pawl 20 is mounted on the arm 16 and is arranged to engage with the teeth of the spur-wheel 17, so that when the arm 16 is moved up and down by the pitman 18 the pawl will engage with a tooth on the spur-wheel 17, and thereby actuate the agitator.

In the lower part of the gypsum-hopper 13 is mounted a shaft 21, on which is arranged a screw conveyer 22. On the end of this shaft 21, on the outside of the hopper, is journaled or fulcrumed a lever-arm 23, and on the end of the said shaft 21, beyond the said arm 23, is keyed a spur-wheel 24. On the free end of the arm 23 is slidably mounted a block 25, which is provided with a set-screw 26, so that it can be locked in any desired position on the said arm 23. A pitman 27 is secured to the said block 25 by a pin 28 and to the gear-wheel 10 by the crank-pin 12. A pawl 29 is mounted on the arm 23, so as to engage with the teeth of the spur-wheel 24.

The general operation of the machine is as follows: The gear-wheels 9 and 10 are so proportioned that when the arm 23 is approximately horizontal the pitman will form a right angle therewith, and the conveyer in the bottom of the gypsum-tank will feed the right amount of gypsum of the average quality for the amount of clinker which is being conveyed by the conveyer in the bottom of the clinker-hopper to the mill. If the feed of the two materials is not correct, a further adjustment can be secured by moving the crank-pin 12 either nearer to or away from the center of the gear-wheel 10. However, it happens that the gypsum will vary in quality, and therefore more or less may be required with the same amount of clinker. Then if the gypsum is of poorer quality the block 25 will be moved in toward the fulcrumed end of the arm 23, thereby causing the arm to describe a larger arc for the same throw of the crank on the gear-wheel 10, and the pawl therefore will carry the tooth with which it is in engagement

through a correspondingly greater arc of a circle and the shaft of the conveyer will be revolved more rapidly and a greater proportion of gypsum will be fed to the clinker, for the movement of the conveyer in the clinker-hopper will remain the same. Again, if on testing the cement it is found that it sets too quickly and it is therefore necessary to reduce the proportion of gypsum the block 25 is moved out on the arm 23, and the pawl 10 on the arm 23 will then move through a smaller arc of a circle and will consequently carry the tooth with which it is in engagement through a lesser arc of a circle, and it will therefore be necessary for the pawl to engage with a greater number of teeth in order to cause a complete revolution of the conveyer-shaft, and as the pawl can engage with a tooth only at each throw of the crank-pin the conveyer in the bottom of the gypsum-tank will move more slowly, although the speed of the gear-wheel which actuates the pitman remains constant. After the proper adjustment has been secured the feed of the gypsum in proportion to the feed of the clinker will remain constant, for if the clinker-conveyer is driven more rapidly the arm 23 will move up and down more rapidly, thereby driving the conveyer in the bottom of the gypsum-tank at a greater speed, which will be exactly in proportion to the increase in the speed of the conveyer in the clinker-hopper, and the same is true if the speed of the clinker-conveyer is reduced it will cause a proportional decrease of speed in the conveyer in the bottom of the gypsum-hopper.

What I claim is—

1. In a cement-mixer, a clinker-hopper, a conveyer arranged in said clinker-hopper, a gypsum-hopper, a conveyer arranged in said gypsum-hopper, a lever fulcrumed on the conveyer-shaft of the gypsum-hopper, a spur-wheel keyed on said conveyer-shaft of said gypsum-hopper, a pawl mounted on said lever so as to engage with the teeth of the said spur-wheel, and a pitman secured at one end to said lever so as to be capable of being adjusted at a greater or less distance from said pawl and with its other end operatively connected with the conveyer-shaft in the clinker-hopper, so that the rotation of the conveyer-shaft in said clinker-hopper will cause a reciprocating movement of said pitman, for the purpose set forth.
2. In a cement-mixer, a clinker-hopper, a conveyer arranged in said clinker-hopper, a gypsum-hopper, a conveyer arranged in said gypsum-hopper, a lever fulcrumed on the conveyer-shaft of said gypsum-hopper, a spur-wheel keyed on the conveyer-shaft, a pawl mounted on said lever and arranged to engage with the teeth of said spur-wheel, a block slidably mounted on said lever, means for locking said block on said lever, a pitman secured at one end to said block and with its other end operatively connected with the conveyer-shaft in the clinker-hopper so that the

rotation of the conveyer-shaft in the clinker-hopper will cause a reciprocating movement of said pitman, substantially as described and for the purpose set forth.

3. In a cement-mixer, a clinker-hopper, a conveyer arranged in said clinker-hopper, a gypsum-hopper, a conveyer arranged in said gypsum-hopper, a lever fulcrumed on the conveyer-shaft of said gypsum-hopper, a spur-wheel keyed on said conveyer-shaft, a pawl mounted on said lever and arranged to engage with the teeth on said spur-wheel, a block slidably mounted on said lever, means for locking said block on said lever, a crank-wheel, a pitman secured at one end to said block, and at its other end to said crank-wheel and means for connecting said crank-wheel with the conveyer-shaft in the clinker-hopper so that the rotation of said conveyer-shaft will actuate said crank-wheel.

4. In a cement-mixer, a clinker-hopper, a conveyer arranged in said clinker-hopper, a gypsum-hopper, a conveyer arranged in said gypsum-hopper, a lever fulcrumed on the conveyer-shaft of said gypsum-hopper, a spur-wheel keyed on the conveyer-shaft of said gypsum-hopper, a pawl mounted on said lever and arranged to engage with the teeth of said spur-wheel, a block slidably mounted on said lever, means for locking said block on said lever, an agitator arranged in said gypsum-hopper, a lever fulcrumed on the agitator-shaft, a spur-wheel keyed on said agitator-shaft, a pawl mounted on said lever and arranged to engage with the teeth on said spur-wheel on said agitator-shaft, a crank-wheel, means for connecting said crank-wheel with the conveyer-shaft in the bottom of the clinker-hopper and means for connecting the said crank-wheel with both of the said levers, substantially as described and for the purpose set forth.

5. In a cement-mixer, a clinker-hopper, a conveyer arranged in said clinker-hopper, a gear-wheel keyed on the end of the conveyer-shaft in said clinker-hopper, a gear-wheel arranged to mesh with said first-mentioned gear-wheel, a crank-pin adjustably secured in said last-mentioned gear-wheel, a gypsum-hopper, a conveyer arranged in said gypsum-hopper, a lever fulcrumed on the conveyer-shaft of said gypsum-hopper, a spur-wheel keyed on the conveyer-shaft of said gypsum-hopper, a pawl mounted on said lever and arranged to engage with the teeth of said spur-wheel, a block slidably mounted on said lever, means for locking said block on said lever, and a pitman forming an operative connection between said block and the said crank-pin, substantially as described and for the purpose set forth.

In testimony whereof I sign the foregoing specification in the presence of two witnesses.

WILLIAM CLARK.

Witnesses:

VICTOR C. LYNCH,
G. M. HAYES.