No. 894,749. PATENTED JULY 28, 1908.

A. VON SILLER.

APPARATUS FOR MIXING CONCRETE.

APPLICATION FILED JULY 31, 1907.

2 SHEETS—SHEET 1

Fig. 1.

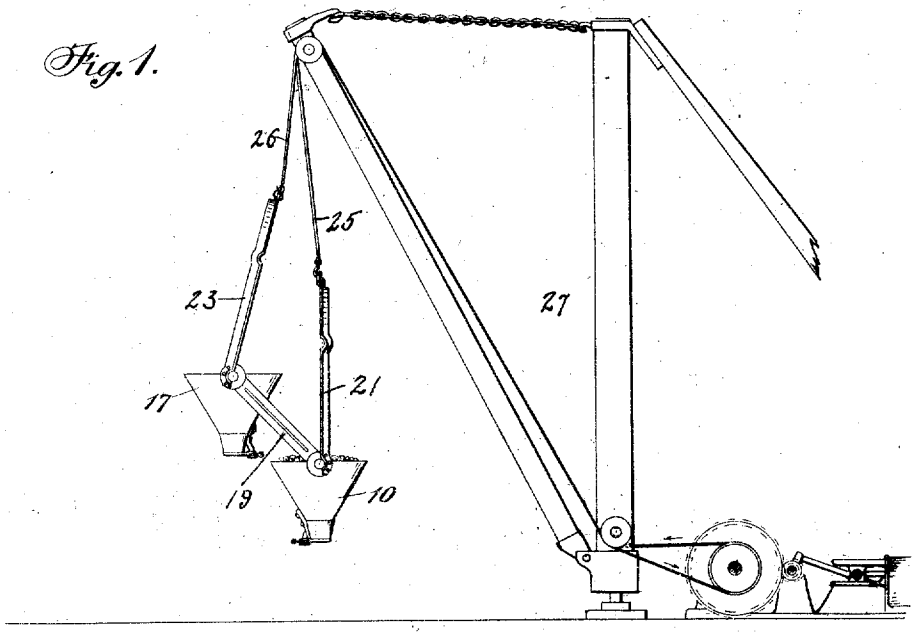


Fig. 2.

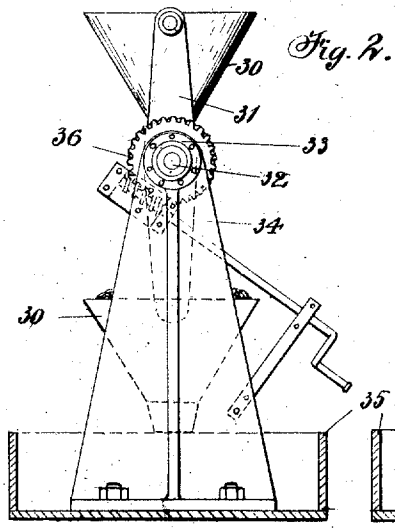
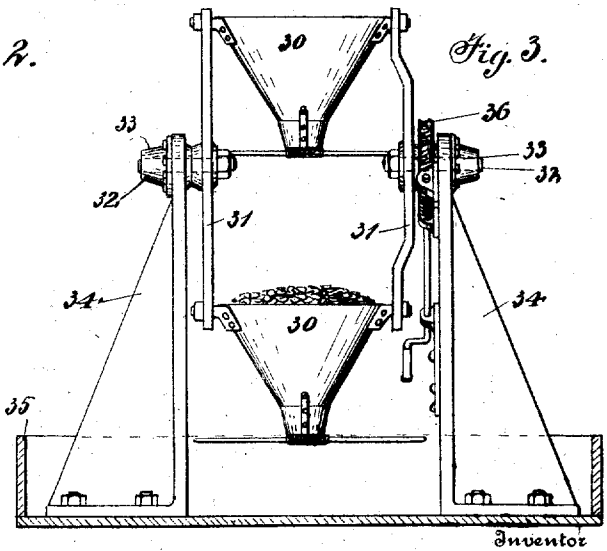


Fig. 3.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 4

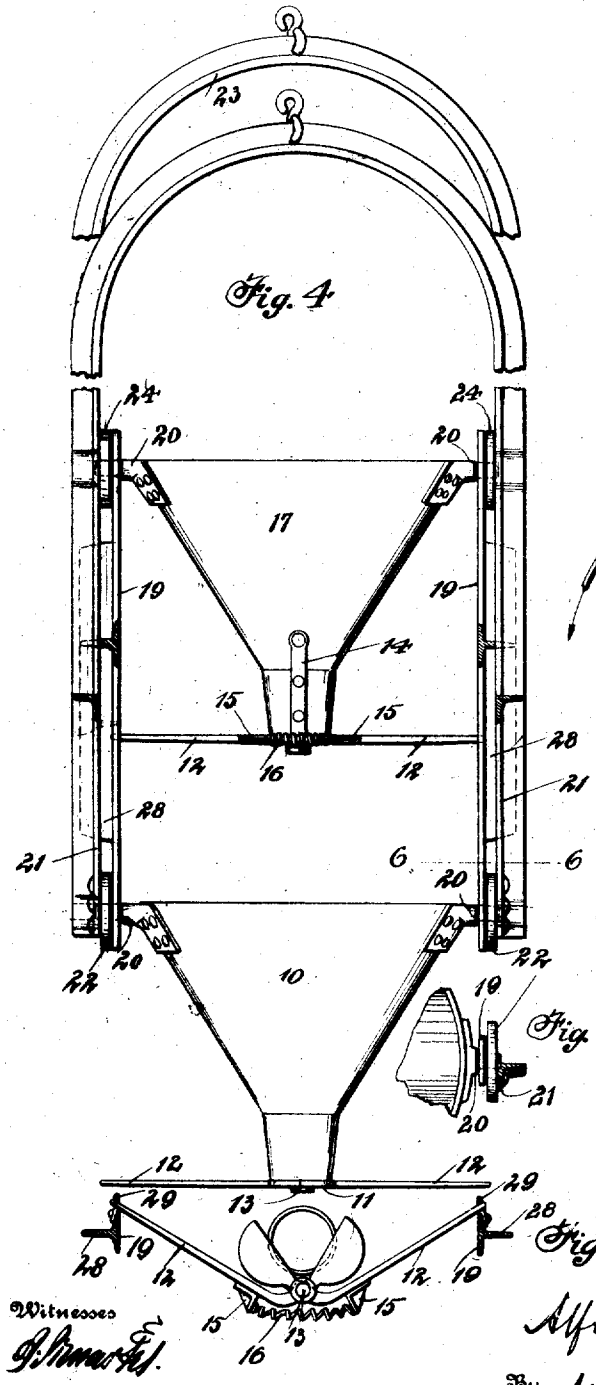


Fig. 5.

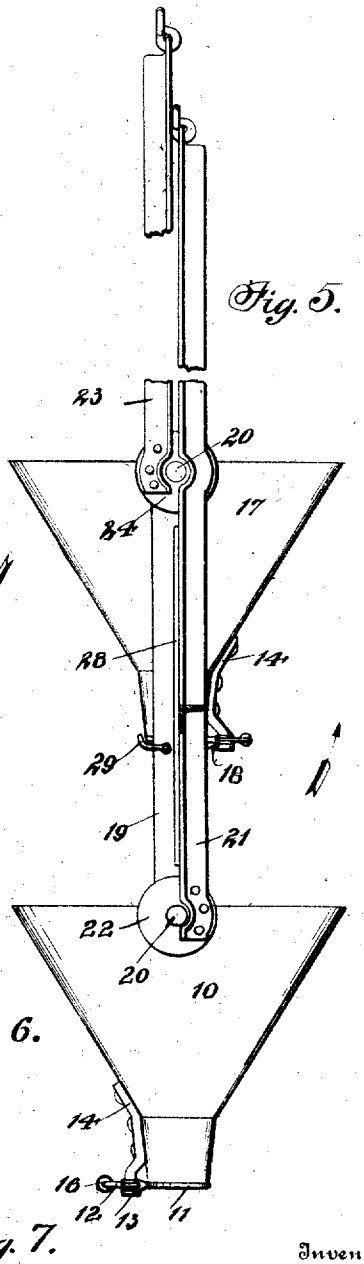


Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MIXING CONCRETE.

No. 894,749. Specification of Letters Patent. Patented July 28, 1908.

Application filed July 31, 1907. Serial No. 386,326.

To all whom it may concern:

Be it known that I, ALFRED VON SILLER, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Apparatus for Mixing Concrete, of which the following is a specification.

This invention relates to that type of concrete making apparatus known as gravity mixers, and has for its object an apparatus of this kind embodying certain novel features of construction, to be hereinafter described and claimed.

Gravity-mixers require a structure of considerable height in order that the necessary number of drops may be had, and the present invention is designed to overcome the objections to such structures, among which may be mentioned their great cost as well as their immobility.

In carrying out my invention I employ two hoppers which are mounted in such a manner that the material to be mixed is dumped alternately from one into the other. The material is placed in one of the hoppers which is then raised and when directly above the other hopper, the material is automatically dumped thereinto. The latter hopper is then raised and at the same time the first mentioned hopper takes its place at the bottom, whereupon the mixture is dumped thereinto. This transfer of the material from the upper to the lower hopper is continued until a thorough and perfect mixture is had, the distance between the hoppers being such that the material will have sufficient drop to effectually and expeditiously accomplish this result.

In the accompanying drawing Figure 1 is an elevation of the invention. Figs. 2 and 3 are front and side elevations respectively, of a modification. Fig. 4 is a front elevation of the apparatus shown in Fig. 1 drawn on an enlarged scale. Fig. 5 is a side elevation thereof. Fig. 6 is a section on the line 6—6 of Fig. 4. Fig. 7 is a bottom plan view showing the closure for the hoppers and the means for automatically opening the same.

In the drawings, 10 denotes a hopper having at the bottom a discharge spout provided with a closure comprising a pair of horizontally swinging doors 11 arranged below the mouth of the spout. The doors are connected to operating levers 12 which are crossed and pivotally connected as indicated at 13 to a bracket 14 secured to the outside of the hopper. To the levers 12 are fastened brackets 15 which are connected by a spring 16 the purpose of which is to hold the doors normally closed. Two hoppers constructed as herein described are employed, the other hopper being indicated by the reference number 17. This hopper also has a closure 18 constructed in the same manner as the one for the other hopper.

The hoppers are spaced apart a suitable distance and connected by links 19. At the top of the hoppers, on opposite sides thereof, are trunnions 20 which fit loosely in openings in the ends of the links whereby the latter are connected to the hoppers.

The hopper 10 is suspended in a bail 21 the branches of which are secured at their ends to disks 22 mounted on the trunnions 20. The hopper 17 is also suspended in a bail 23 the branches of which are secured to disks 24 mounted on the trunnions 20 of said hopper. The bails 21 and 23 are attached to the cables 25 and 26 respectively, of a hoisting apparatus. In the drawings a derrick 27 is shown, but any other suitable hoisting apparatus may be employed.

The spacing links 19 are T-irons with their ribs 28 outwardly presented, and adjacent the disks 22, the ribs of said T-irons are cut away so that the disks may be placed close to the remaining portions of the T-irons. The bails 21 and 23 are angle-irons arranged so that one of the flanges thereof extends parallel to the ribs 28 and in contact therewith when the hoppers are in superposed position.

In use, the material to be mixed is placed in the hopper 10 which is shown at the bottom in the drawings. The cable 25 is then wound up and the cable 26 is paid out which elevates the hopper 10 and lowers the hopper 17. The commencement of this movement of the hoppers is illustrated in Fig. 1. The links 19 hold the hoppers spaced apart and their ribs 28 also serve as a stop to the swing of the hoppers. When the hopper 10 arrives at a position directly above the hopper 17 the flange of the bail 23 engages the ribs 28 of the links 19 which stops the swing of the hoppers. At the same time the doors 11 of the hopper automatically open and the material falls by gravity into the hopper 17. When the upper hopper is emptied, the relative position of the hoppers is reversed by lowering the upper hopper and elevating the lower hopper.

This again elevates the material and it is dumped into the lower hopper as before. The second swing of the hoppers is in a direction opposite to that of the first swing by reason of the fact that the flange of the bail 23 cannot pass the ribs 28 of the links 19. The hoppers do not make a complete revolution, but oscillate in a radius of 180 degrees. The transfer of the material from one hopper into the other is continued until the material is sufficiently mixed.

The opening and closing of the door is automatic. The operation is as follows: The levers 12 project outwardly sufficiently so that they can strike the edge of the links 19. This occurs when the hoppers are in superposed position. The levers of the upper hopper door only strike the links as stated, and the parts are so designed that the levers swing the doors fully open when the hoppers are directly opposite each other vertically. When the upper hopper descends, the levers engage fingers 29 projecting from the links whereby the levers are swung in the direction to close the doors, which movement is assisted and insured by the spring 16.

By the apparatus herein described concrete can be economically and expeditiously manufactured. The hoisting apparatus which is employed to dump the finished concrete in the desired places, can be used to mix the material and the expense of a cumbersome and costly supporting frame is saved. The concrete can be manufactured close to the place where it is to be used, and the entire apparatus can be readily moved from one place to another with the derrick. The cost of the apparatus is small and no specially constructed hoisting apparatus is necessary.

A modified form of mixing apparatus is shown in Figs. 2 and 3. This apparatus comprises a pair of hoppers 30 connected and spaced apart by links 31 as in the first instance. The links have trunnions 32 which are mounted in bearings 33 on standards 34 which may be supported on a wagon-bed 35 whereby a portable apparatus is had. The operation is as before a worm-gear 36 or other suitable means being provided for swinging the hoppers. This form of apparatus is intended to be used where only a small quantity of concrete is required, and where a wheeled apparatus is desirable.

Other modes of applying the principle of my invention may be employed instead of the ones herein described, without departing from the spirit of the invention, and I do not wish to limit myself to the exact construction and arrangement herein described.

I claim:

1. In a concrete mixer, the combination of spaced receptacles, means for reversing the relative vertical positions thereof, and means associated with said receptacles for automatically discharging the contents of the upper receptacle into the lower receptacle.

2. In a concrete mixer, the combination of hoppers, spacing links pivotally connected to the hoppers for spacing the same apart, means for raising each hopper over the other in alternation, to reverse their relative vertical positions, and means for allowing the contents of the upper hopper to discharge into the lower one.

3. In a concrete mixer, the combination of a vertically turning frame, receptacles pivotally carried at opposite ends of said frame, means for turning said frame to reverse the relative vertical positions of the receptacles, and means associated with said receptacles for discharging the contents of the upper one into the lower one.

4. In a concrete mixer, the combination of a plurality of receptacles, means for varying the relative elevations thereof to place one above another in succession, and means associated with said receptacles for successively discharging the contents of an upper receptacle into a lower receptacle.

5. A concrete mixer, consisting of a frame comprised of links, buckets hung between the opposite ends of said links, means connected to said links for alternately swinging one of said receptacles above the other, and means connected with said receptacles for allowing the discharge of material from one receptacle to the other.

6. In a concrete mixer, the combination of spaced receptacles having discharge openings and closing devices therefor, means for alternately moving each receptacle to position over the other, and means for actuating the closing means when one receptacle is over the other to dump the contents of the upper receptacle into the lower receptacle.

7. In a concrete mixer, the combination of spaced receptacles having discharge openings and closing devices therefor, means for alternately moving each receptacle to position over the other, and means for automatically actuating the closing means when one receptacle is over the other to dump the contents of the upper receptacle into the lower receptacle.

8. In a concrete mixer, in combination, a pair of hoppers, rigid spacing links between the hoppers for holding the same apart, a hoisting device connected to each hopper and arranged to lift each hopper above the other, in alternation, and means for allowing the discharge of material from the upper hopper to the lower hopper.

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

ALFRED VON SILLER.

Witnesses:
M. A. SCHMIDT,
MARGARET R. WILSON.