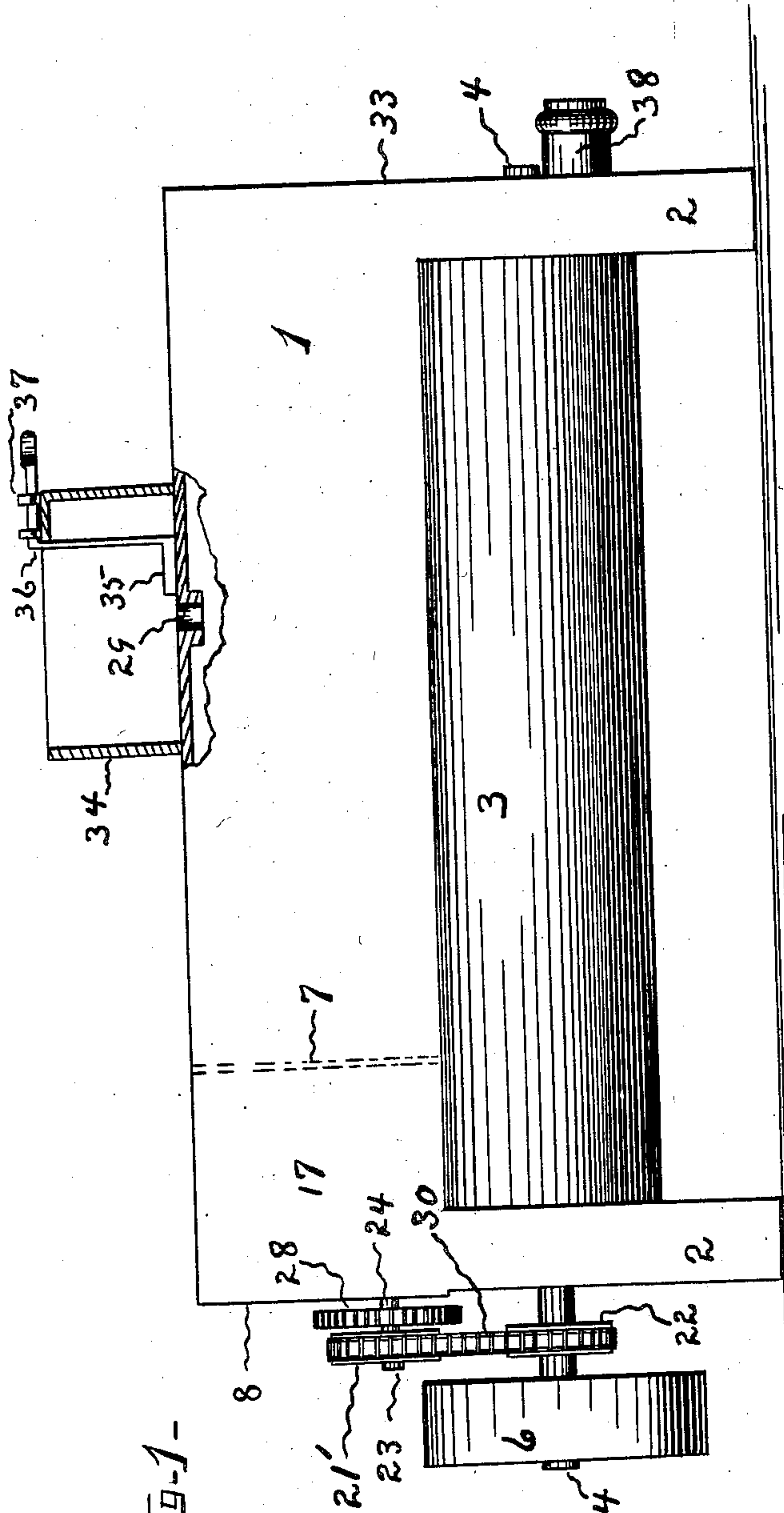


No. 877,918.

F. J. EMAL.
CEMENT MIXING MACHINE.
APPLICATION FILED SEPT. 7, 1907.

PATENTED FEB. 4, 1908.

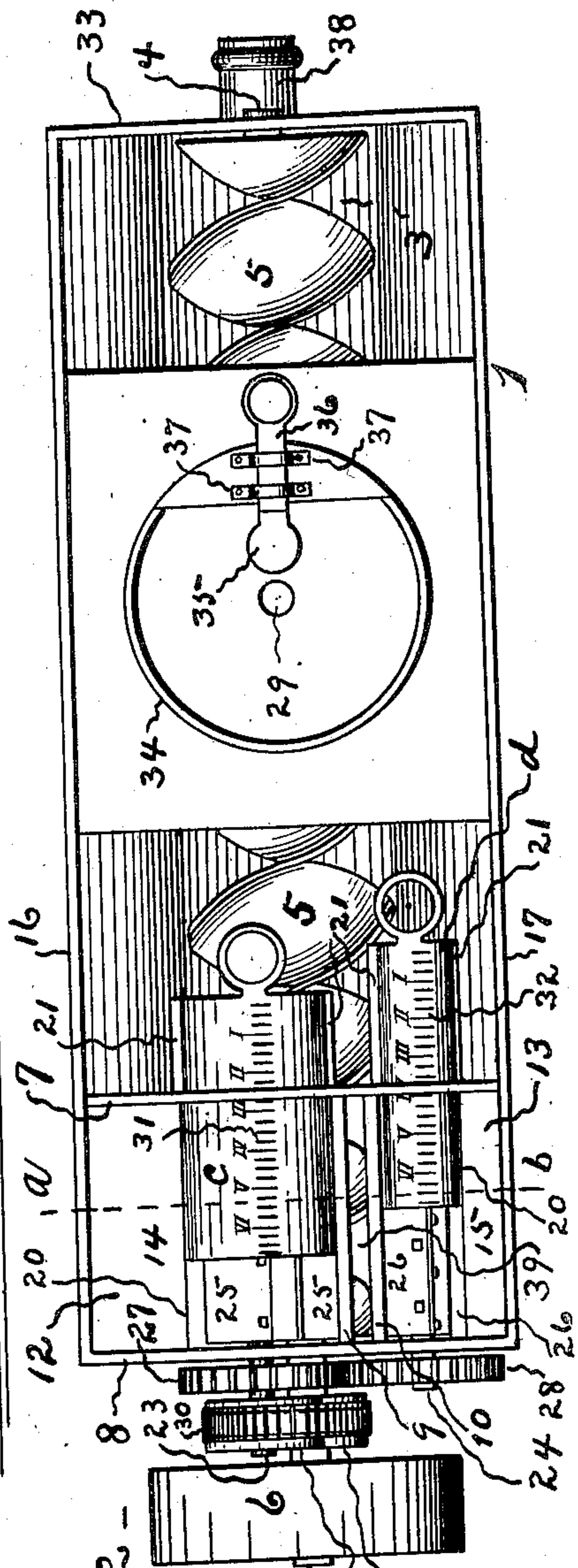
2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

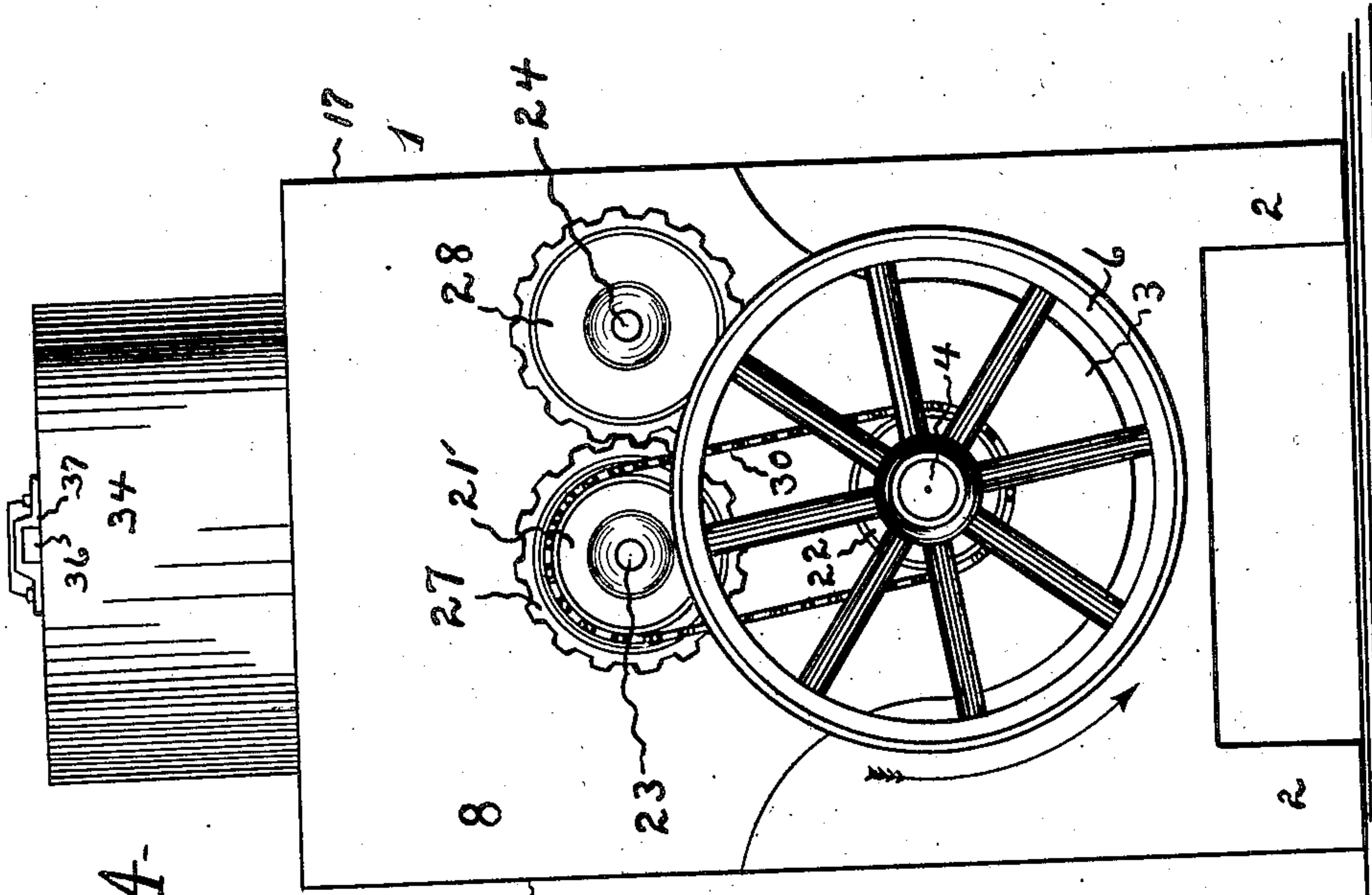
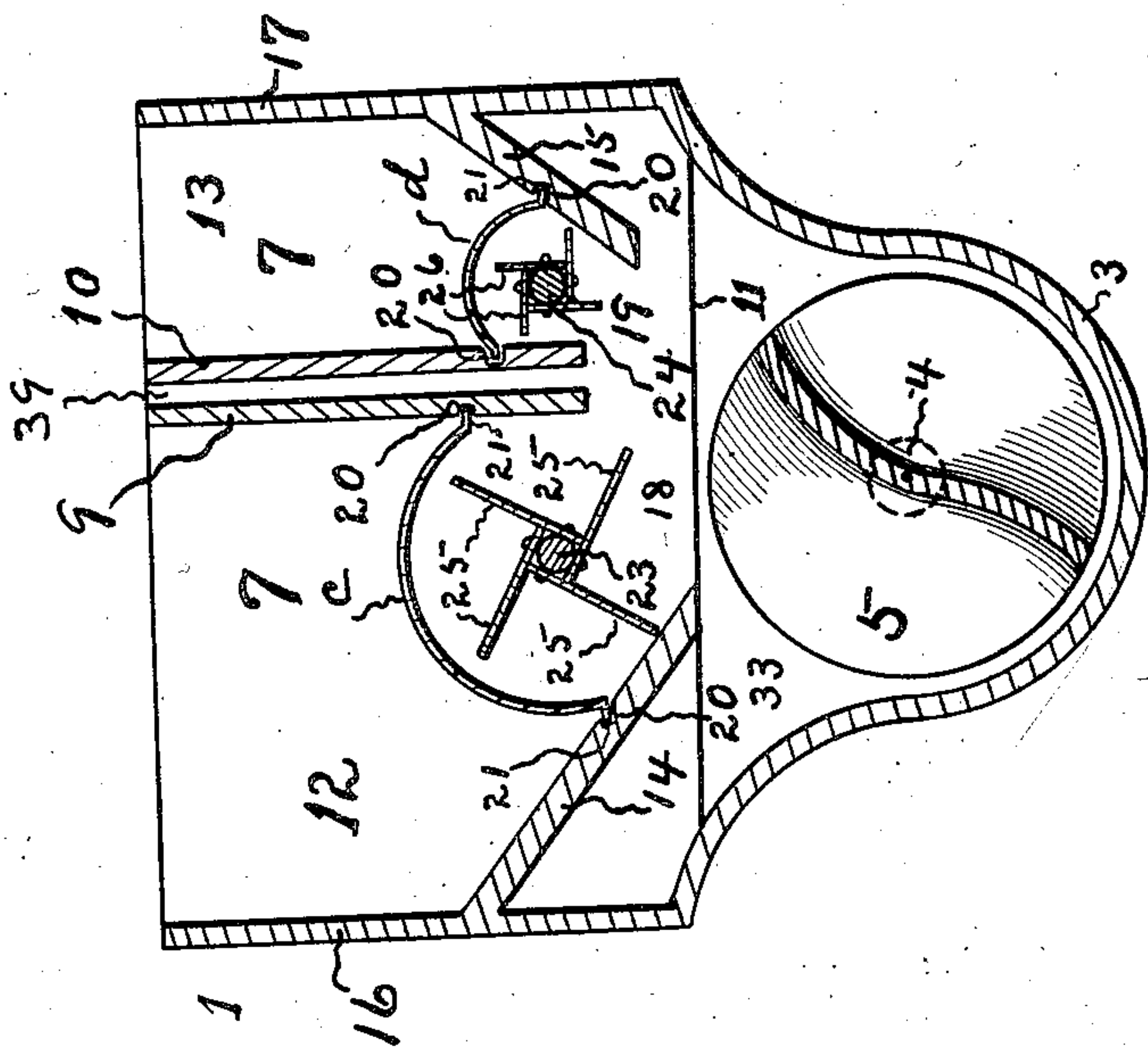


FIG-4-

FIG-3-



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UNITED STATES PATENT OFFICE.

FRANKLIN J. EMAL, OF PICKRELL, NEBRASKA.

CEMENT-MIXING MACHINE.

No. 877,918.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed September 7, 1907. Serial No. 391,786.

To all whom it may concern:

Be it known that FRANKLIN J. EMAL, a citizen of the United States, residing at Pickrell, in the county of Gage and State of Nebraska, has invented certain new and useful Improvements in Cement-Mixing Machines, of which the following is a specification.

This invention relates to improvements in cement mixing machines adapted for use in combining cement, sand or other granulated or powdered material with water or liquids for building purposes, and includes means for forcing the feeding of the dry materials, and for transmitting to the mixing devices said material in graduated or measured quantities; the invention has reference also to the production of a machine of few parts, of economical construction, but which will be effective for the purposes designed.

With these and other objects in view the invention presents a new combination and arrangement of parts as described herein, pointed out by the claims, and illustrated by the drawings, wherein,—

Figure 1 is a vertical, side view of the invention, partly broken away. Fig. 2 is a plan view of the invention. Fig. 3 is a transverse, sectional view through the feeding boxes, as on line *a b* of Fig. 2; and Fig. 4 is a vertical, end view of the invention.

Referring now to the drawings for a more particular description, the numeral 1 indicates a rectangularly formed box or receptacle, for convenience of description called the machine-body, and is supported upon legs 2, and is preferably provided with a downwardly curved bottom 3.

I provide the shaft 4 having a mounting in each end wall of the receptacle at points centrally of the curved bottom 3, and upon this shaft is securely mounted the worm 5. The rear end of shaft 4 is extended to project outside of the receptacle, and upon this extension is mounted pulley 6. As thus described the worm is disposed longitudinally of and within the receptacle, adjacent the inner wall of the curved bottom 3, and is adapted to have a rotary movement from rotation of shaft 4, pulley 6 receiving actuation from any suitable exterior source of power.

I provide the vertical partition 7, secured transversely between the side walls of the machine-body, adjacent end 8, and between partition 7 and end wall 8 of the machine I

provide vertical partitions 9 and 10 which are disposed closely adjacent each other and parallel with the sides of the machine-body. The lower end 11 of partition 7 is best shown in Fig. 3, and it terminates above the worm; and the lower end of partitions 9 and 10 terminate above end 11 of partition 7. As thus constructed chambers or feeding-boxes 12 and 13 are formed, and partitions 9 and 10 are disposed so that one of the chambers is larger than the other.

I provide shelves 14 and 15 which extend downwardly-divergent from side walls 16 and 17, respectively, of the machine-body and terminate adjacent the lower end of partitions 9 and 10 to provide exit-ports 18 and 19. I provide slides *c* and *d*, preferably having convexed outer surfaces extending longitudinally of the machine-body, and each having side-edges 21 adapted to have a slidable seating in slots 20 formed in shelf 14 and partition 9 and in shelf 15 and partition 10.

It is intended by the foregoing construction to provide a lesser chamber 13 for containing cement and a larger chamber 12 for holding sand, and, by reference to Fig. 2 it will be seen that when the slides are closed, sand and cement would be contained in their respective chambers and would not pass downward; but if the slides are drawn so that a part of the chambers are uncovered, the material can then pass downward upon the worm, the amount which passes depending, of course, upon the distance the slides are drawn.

In order that the supply of material in chambers 12 and 13 may be forced downward upon the worm, and that the feeding may be measured and constant and regular, I employ shafts 23 and 24 in connection with other devices now to be explained.

Shafts 23 and 24 are disposed parallel with sides 16 and 17 and have mountings for one of their ends in partition 7, their opposite ends being mounted in end 8 of the machine-body; and I provide leaves or blades 25 secured upon shaft 23 which extend outwardly therefrom and terminate at a distance from this shaft so that each of said blades will pass closely adjacent to shelf 14 and partition 9, when the shaft is rotated; and upon shaft 24 are secured leaves or blades 26 of lesser width than those upon shaft 23, and these blades extend outwardly

from this shaft, and during the revoluble movement of said shaft blades 26 pass closely adjacent to shelf 15 and to partition 10. The blades 25 and 26 extend along the shafts 23 and 24, respectively, substantially the lengths of said chambers 12 and 13.

Shafts 23 and 24 may be called feeding-shafts, and are extended outwardly to project beyond the end 8 of the machine, and I mount upon said shafts, respectively, gear-wheels 27 and 28 each having, preferably, the same number of cogs. Upon shaft 23 and outwardly from gear-wheel 27 is secured sprocket-wheel 21', and upon shaft 4 is mounted sprocket-wheel 22, the latter being connected with wheel 21' by chain 30, and it will be understood that when pulley 6 is rotated in the direction indicated by the arrow in Fig. 4, shafts 23 and 24 will thereby be rotated in opposite directions, and blades 25 and 26 will thereby be moved upward to pass, respectively, partitions 9 and 10, and will be moved downward to pass, respectively, shelves 14 and 15.

By the construction described it is intended that sand and cement contained, respectively, within chambers 12 and 13, will be forced or thrown in directions toward each other as they respectively pass openings 18 and 19, thereby more readily becoming mixed. The proportionate amounts which pass, of each ingredient, depend of course, upon the width of blades 25 and 26, the rotation of shafts 23 and 24 being equal.

I provide visible indexes 31 and 32, respectively upon slides *a* and *b* and the indexes register with partition 7; the supply of material is thereby under control of the operator so that any proportion may be supplied of ingredients for the mixture, by withdrawing the slides or either of them any desired distance.

From the description it will be noted that the mixture is conveyed by movement of the worm, in a direction toward end 33 of the machine. A water tank 34 is secured upon the machine, and has an opening 29 communicating with the interior of the machine, and the supply of water may be conveniently controlled by means of the closure or slide 35, the slide having an angular stem 36 passing upward and out of the tank and slidable in straps 37, the latter being secured upon the top of the tank. Any convenient exit port may be provided for the outward passage of the material after becoming mixed, as pipe-opening 38.

It will be noted that an opening is formed between partitions 9 and 10 (Figs. 2, 3.); this opening extends the entire length of the feeding boxes, and is useful for permitting an in-

spection by the operator, of the mixing process during the movement of the machine.

The outward curvature of slides *c* and *d* conform to the circular space occupied by blades 25 and 26 during the revoluble movement of these blades; by reason of their curved form they offer a greater resistance to the weight of material which ordinarily rests upon them, and sheet-metal may be used in their construction. The machine as described is not expensive in construction, comparatively speaking, and is reliable in operation for rapid work in thoroughly mixing the ingredients in any desired proportions.

What I claim as my invention is,—

1. In a mixing machine, the combination of a containing receptacle having the transversely-disposed partition therein, a longitudinally disposed worm within the containing receptacle, the adjacently-disposed plates connected with said partition to form an opening therebetween and to form feeding-chambers upon planes above said longitudinally-disposed worm, said feeding-chambers being provided with exit ports; a shaft within each feeding-chamber disposed parallel with said longitudinally-disposed worm and having lengthwise-extending blades thereon; a slidable closure traversing each feeding-chamber above the plane of each of said shafts; means to cause a revoluble movement of said longitudinally-disposed worm, and means to cause a revoluble movement of said shafts within the feeding-chambers.

2. In a mixing machine, the combination of a containing receptacle having the transversely-disposed partition therein, a longitudinally-disposed worm within the containing receptacle, the adjacently disposed plates connected with said partition to form an opening therebetween and to form feeding-chambers upon planes above said longitudinally-disposed worm, said feeding-chambers being provided with exit ports; a shaft within each feeding-chamber disposed parallel with said longitudinally-disposed worm and having lengthwise-extending blades thereon; an outwardly-curved slidable closure having an index thereon registering with said partition and traversing each feeding-chamber above the plane of each of said shafts; means to cause a revoluble movement of said longitudinally-disposed worm, and means to cause a revoluble movement of said shafts within the feeding-chambers.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANKLIN J. EMAL.

Witnesses:

FRED O. BUSBOON,
E. W. WILLIAMS.