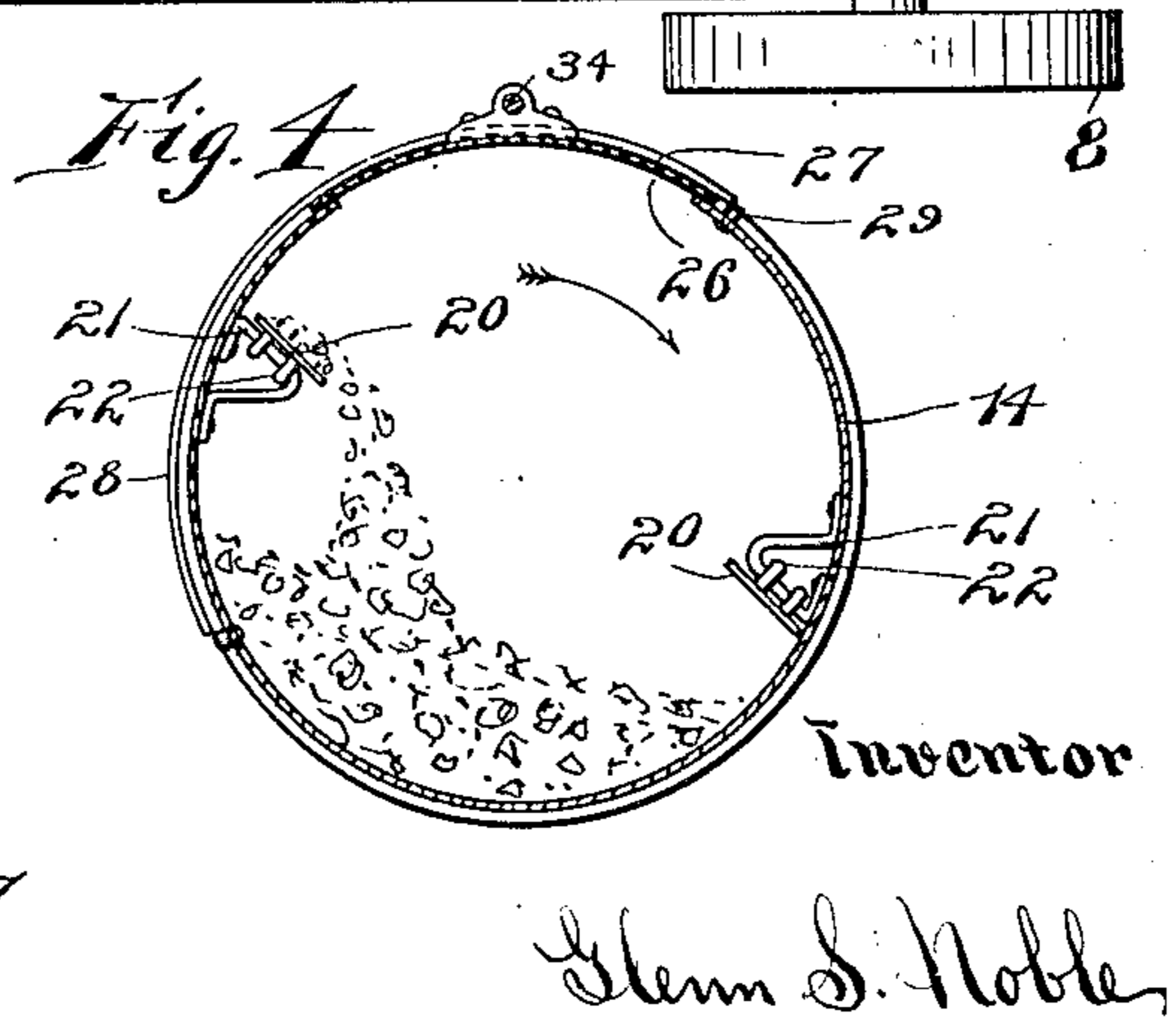
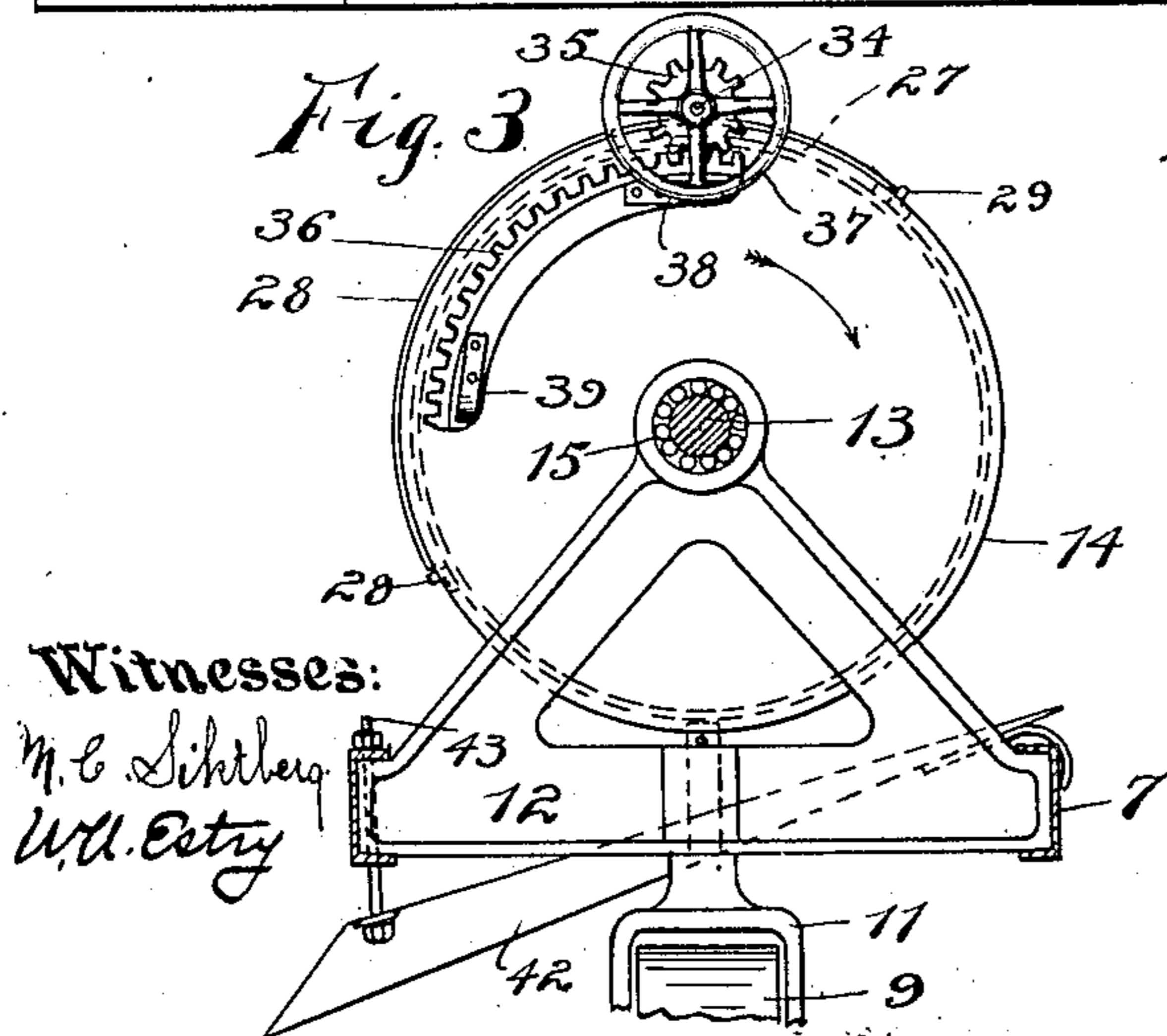
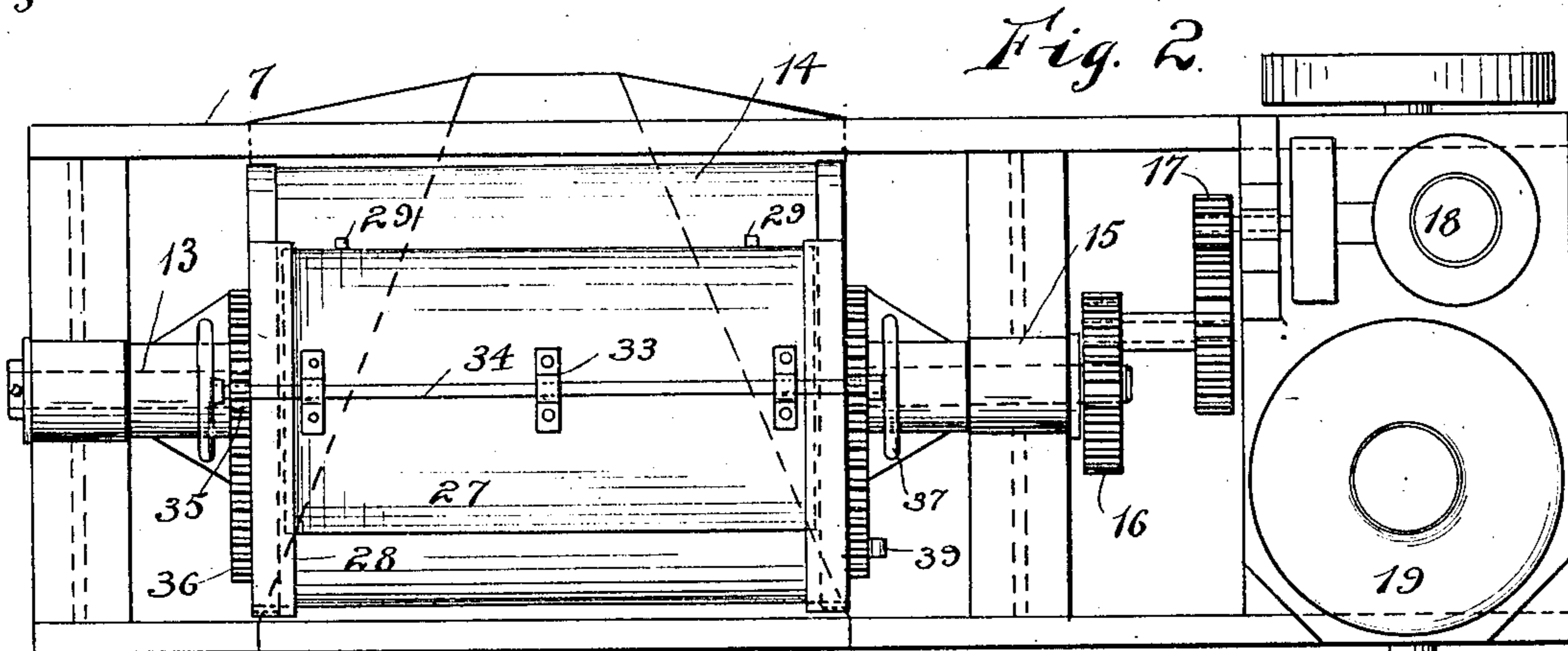
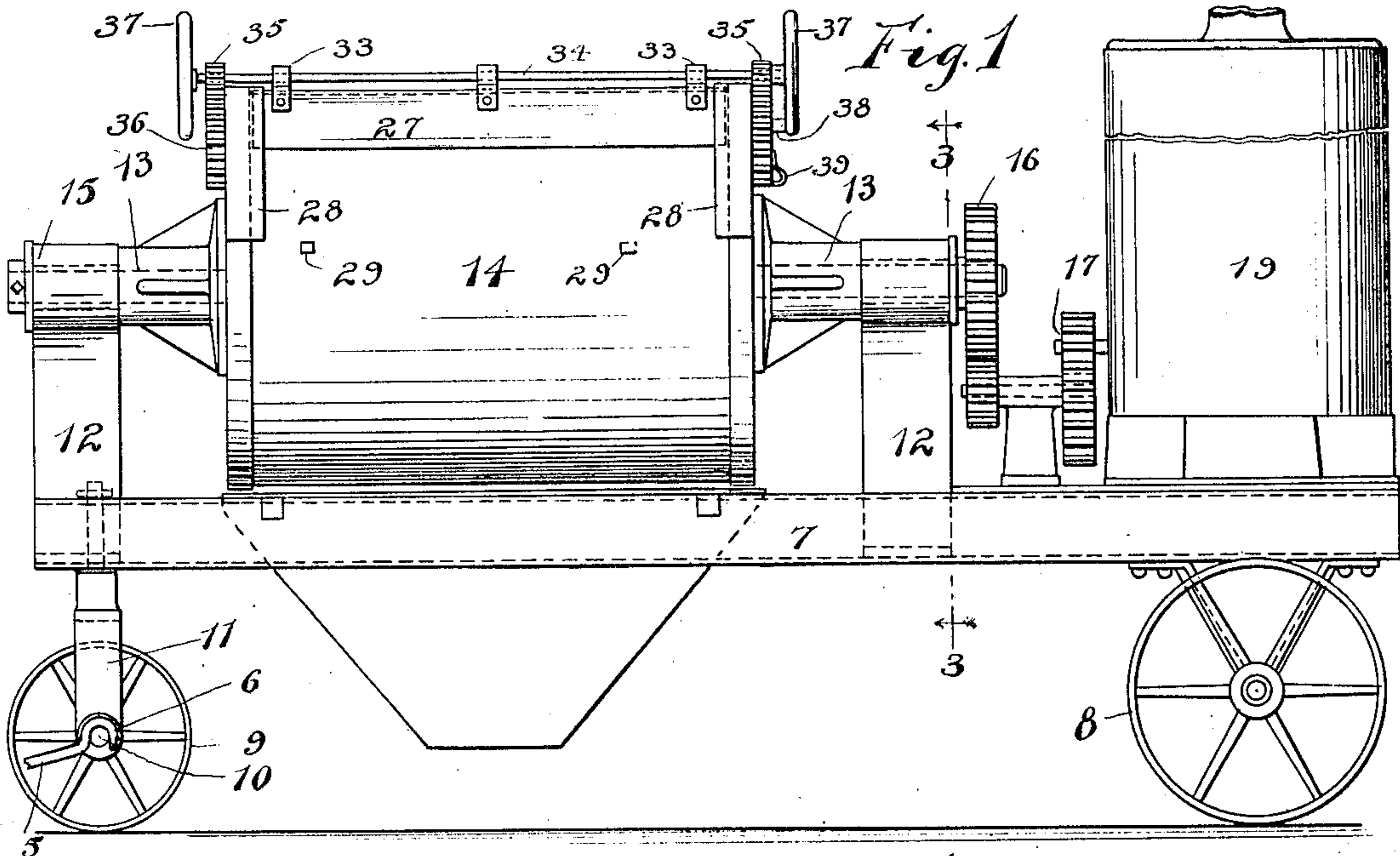


944,102.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.



944,102.

G. S. NOBLE.
CONCRETE MIXER.
APPLICATION FILED MAY 9, 1904.

Patented Dec. 21, 1909.
2 SHEETS—SHEET 2.

Fig. 5

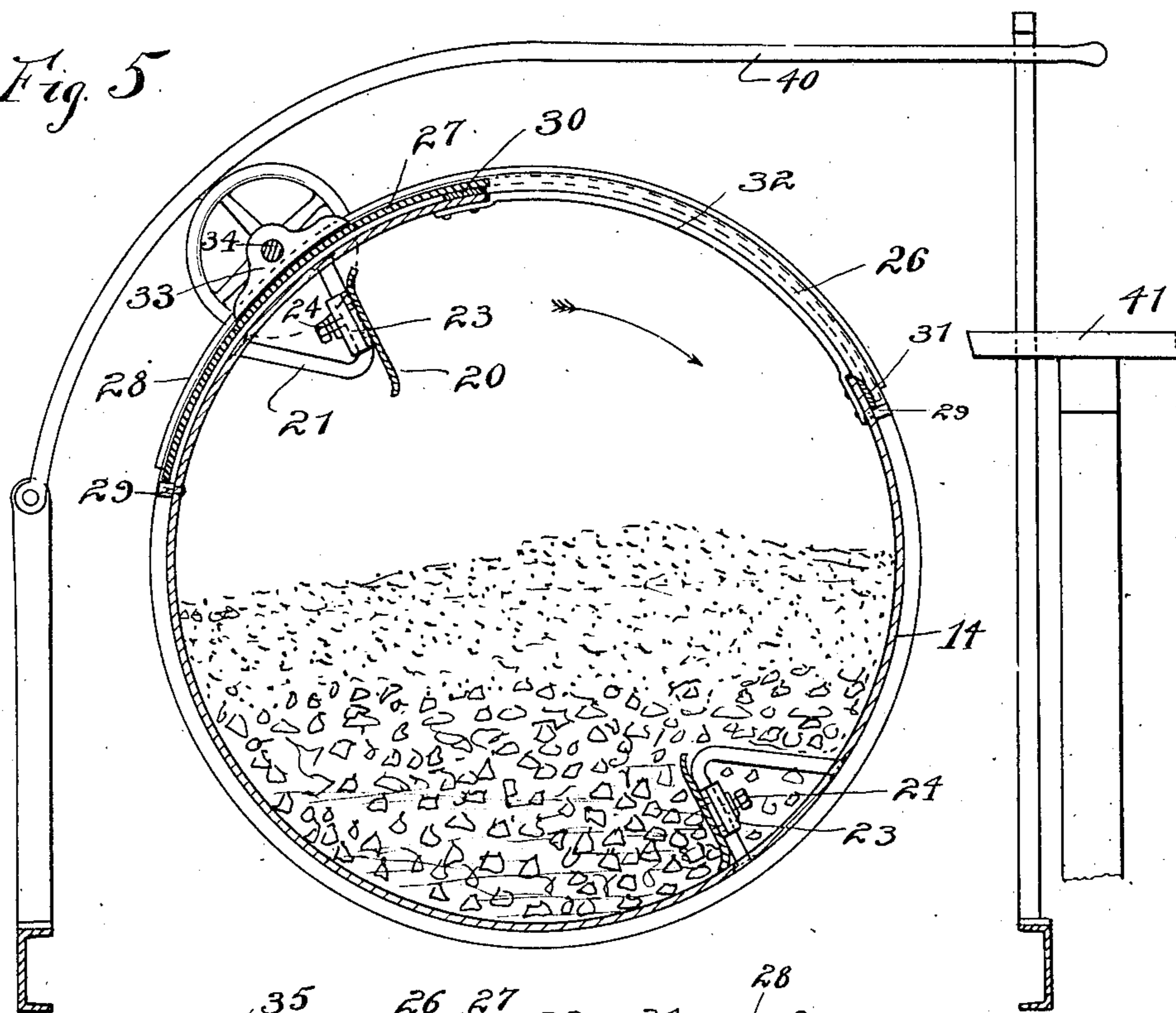
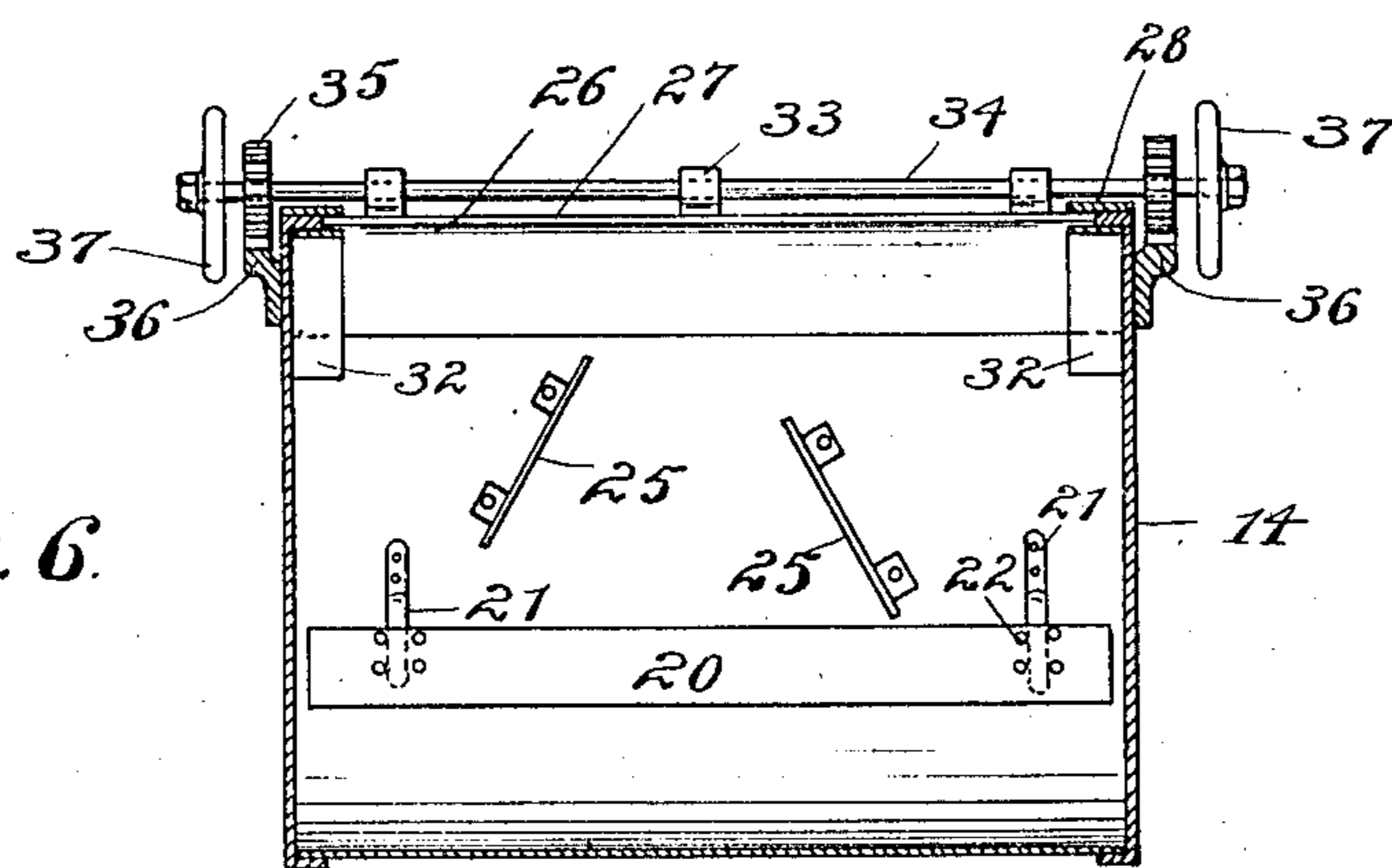


Fig. 6



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CONCRETE-MIXER.

944,102.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed May 9, 1904. Serial No. 207,021.

To all whom it may concern:

Be it known that I, GLENN S. NOBLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a specification.

This invention relates more particularly to malaxators or mixing machines designed for mixing concrete or the like.

While it is not the intention to limit the use of this invention to mixing concrete, for convenience in description, it will be considered with regard to such use.

The objects of this invention are to provide a mixing machine which will be extremely simple in construction and consequently durable in operation; which will be readily fed and discharged; which will thoroughly mix the desired ingredients; and which will not be liable to clog, although the interior is readily accessible for cleaning in the event of any tendency of the material to gather on the interior of the drum.

It consists in the combination of a suitable drum with internal mixing devices, a slidable door, means for operating said door and means for turning said drum, and such other features and details of construction as will appear hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying this invention, shown with a steam engine and boiler mounted with a mixing apparatus. Fig. 2 is a top plan view of the same. Fig. 3 is a sectional view taken on the line 3, 3 of Fig. 1. Fig. 4 is a cross sectional view through the drum showing the door closed. Fig. 5 is a cross sectional view of the drum showing the door open in position for filling and with the material in the drum. Fig. 6 is a longitudinal sectional view through the drum.

The frame 7 is mounted on a pair of rear wheels 8 and a pivoted front wheel 9. The axle 10 for the front wheel is mounted in a suitable bracket 11 and extends sufficiently to engage with a tongue 5 provided with hooks 6 which fit over said axle. The upper end of the bracket 11 engages with one of the brackets 12, which form a part of the frame and extend upward to support the trunnions 13 of the drum 14. The bearings 15 in the brackets 12 are preferably provided with rollers as shown in Fig. 3. The drum 14 may be driven in any desired man-

ner and as shown, one of the trunnions is extended to receive a gear 16 which meshes with a train of gears ending with the pinion 17 on the shaft of the engine 18. The object of these gears is to reduce the speed of the drum to the desired number of revolutions. The engine 18 is supplied with steam from the boiler 19 which for convenience, is mounted therewith on the truck carrying the machine.

Within the drum 14 are one or more mixing plates or blades 20 which extend substantially the full length of the drum and are of any desired width in proportion of the diameter of the drum. These plates are slidably supported on brackets 21, secured to the inner periphery of the drum, by means of U bolts or the like 22 as shown in Fig. 4, or by means of bearings 23 as shown in Fig. 5. The supporting arms of the brackets 21 are set so that the blades 20 will be either radial to the drum or nearly so. The action of these sliding or reciprocating plates will be readily understood from Figs. 4, 5 and 6. With the drum rotating in the direction of the arrows, the material will be gathered by the descending plate which lies against the side of the drum and a certain portion will be carried up until it is discharged from the plate and simultaneously the plate will slide down on its brackets a limited distance whereby all the material will be forcibly discharged therefrom and the danger of the cement or concrete gathering along the line of contact of the plate with the drum, or on the plate, will be obviated. As the drum continues to rotate the plate will again fall to its original position in engagement with the drum. In some instances it may be desired to secure the mixing plates in adjusted position and prevent their sliding on the brackets. This may be accomplished as shown in Fig. 5 by means of set screws 24 in the bearings 23.

Ordinarily with drums of comparatively small size there will be no necessity for longitudinal mixing devices which will throw the material from one end of the drum to the other. However, I have shown two of such deflectors 25 in Fig. 6, which will be adapted to throw the material lengthwise of the drum. The material is introduced into the drum through a longitudinal opening 26 which reaches substantially the full length of the drum and is closed by means of a sliding door 27. The construction and

operation of this door and means for opening and closing the same are considered as being distinctly unique and as forming an important feature of this invention. The door 27 slides between the outer surface of the drum 14 and guide strips 28 and is stopped at either limit of its throw by means of lugs or the like 29 on the drum 14. While the door will operate with more or less satisfaction when it is made to fit loosely between the drum and the guide strips, I prefer to place a clearance strip 30 along the rear side of the opening 26 between the drum and the door. This strip will also act as a scraper to scrape any material clinging to the inner side of the door back into the drum. A corresponding strip 31 is also provided along the forward edge of the opening 26 in order to receive the end of the door 27 when it is closed to make tight connection between the door and the drum. This strip is preferably beveled as shown.

Inner guide strips 32 formed integrally with, or secured to the drum 14, hold the door outward as it passes over the opening 26. The door 27 is provided with two or more bearings 33 which are secured thereto and receive a shaft 34 extending out at either end a short distance beyond the heads of the drum. Pinions 35 are secured to the shaft 34 and engage with curved racks 36 secured to the heads of the drum 14. When the shaft 34 is rotated, the pinions being in engagement with the racks will force the door either open or shut and will cause both ends of said door to travel evenly and prevent any binding or sticking. In order to turn the shaft 34, it is provided at either end with hand wheels or the like 37, which may be secured thereon in any desired manner. The pinions being of comparatively smaller diameter in proportion to the hand wheels will give a considerable leverage whereby the door may be forced through any material sticking within its pathway. In order to hold the door in closed or open position, spring catches 38 and 39 are provided on the head of the drum so that one of the hand wheels will engage with said springs when the door is opened or closed. These springs simply curve outward and frictionally engage with the inner surface of the hand wheel. While other devices would readily suggest themselves for serving the same purpose, these are found to be exceedingly serviceable in practice.

In order to open the door, it is only necessary to give one of the hand wheels a slight pull or turn at the proper time to release it from the spring 38, when the weight of the door will throw it to open position. On account of this, the operator is enabled to open the door to discharge the drum, while the drum is running at full speed. As the door falls to the open position, the hand

wheel engages with the spring 39 which locks the door open. While I have found this arrangement sufficient for the successful operation of the mixer, a lever 40 may be pivoted to any convenient portion of the frame and swung down to engage with one of the wheels 37 in order to turn the same substantially as shown in Fig. 5. In this case, the drum being rotated in the direction shown by the arrow, the hand wheel 37 must be turned in the opposite direction in order to open the door. This is accomplished by pressing down the lever 40, which engages frictionally with the periphery of the wheel 37, and as the wheel passes along under the lever 40, it will be rotated backwardly and therefore will open the door. The material is fed into the machine in any convenient manner as from wheelbarrows run up on a platform 41. It is discharged onto a chute or hopper 42 which rests at one side on the frame 7 and is adjustably supported on the opposite side by means of bolts or the like 43.

Having thus described my invention which I do not wish to limit to any of the exact details of construction or methods of operation, it being particularly noted that other means may be used for driving the drum, what I claim and desire to secure by Letters Patent is:—

1. In a concrete mixer, the combination of revoluble drum formed of imperforate material, and having a longitudinal opening therein, a curved door for said opening also formed of imperforate material, and a scraper strip along one edge of said opening over which the door is adapted to slide and which will scrape off material from the inner surface of said door.

2. In a concrete mixer, the combination of a drum having longitudinal opening in the side thereof, a curved slidable door for said opening, said drum and door being formed of imperforate material, a scraper strip along one side of said opening over which the door is adapted to slide, a means for sliding said door so that both ends will be given a positive uniform movement.

3. In a machine of the character set forth, the combination of a revoluble drum provided with a longitudinal opening, a curved slidable door for said opening, guides for said door, bearings on said door, a rod engaging with said bearings, pinions on said rod, racks secured to the end of said drum with which said pinions engage, and means for turning said rod.

4. In a machine of the character set forth, the combination of a revoluble drum provided with a longitudinal opening of substantially the same length as said drum, a slidable door for said opening, guides for said door, a shaft revolubly secured to said door, pinions on said shaft, racks secured

to the ends of said frame with which said pinions engage, means for turning said shaft and means for holding said door in opened or closed positions respectively.

5 5. In a concrete mixer, the combination of a revoluble drum provided with a longitudinal opening of substantially the same length as said drum, a slidable door for said opening, guides for said door, a shaft
10 revolvably secured to said door, pinions on said shaft, curved racks secured to the ends of said drum and meshing with said pinions, hand wheels on said shaft and catches on said drum for holding the door in open
15 or closed positions respectively.

6. In a malaxator, the combination of a revoluble drum provided with closed ends and with a longitudinal opening therein, trunnions and bearings for supporting said
20 drum, a slidable door for said opening, means for holding said door as it is slid, a shaft revolvably secured to said door, pinions on said shaft, racks on said drum engaging with said pinions hand wheels on

said shaft and springs on said drum adapted to engage with said hand wheels when the door is in open or closed position.

7. The combination of a revoluble drum provided with an opening in the periphery thereof, a slidable door, a shaft secured to
30 said door, gears on said shaft, gear racks on said drum with which said gears engage, and means for turning said shaft while the drum is rotating.

8. In an apparatus of the character set forth, the combination of a revoluble drum, blade supporting members arranged substantially radially in said drum, and a blade
35 slidably mounted on said members.

9. The combination of a revoluble mixing drum or the like, radially reciprocating mixing blades for carrying up and turning over material in said drum, and longitudinal
40 deflectors in said drum.

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Witnesses:

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