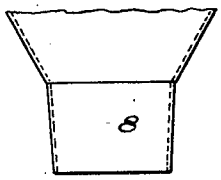
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MIXING APPARATUS

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Fig. 1.



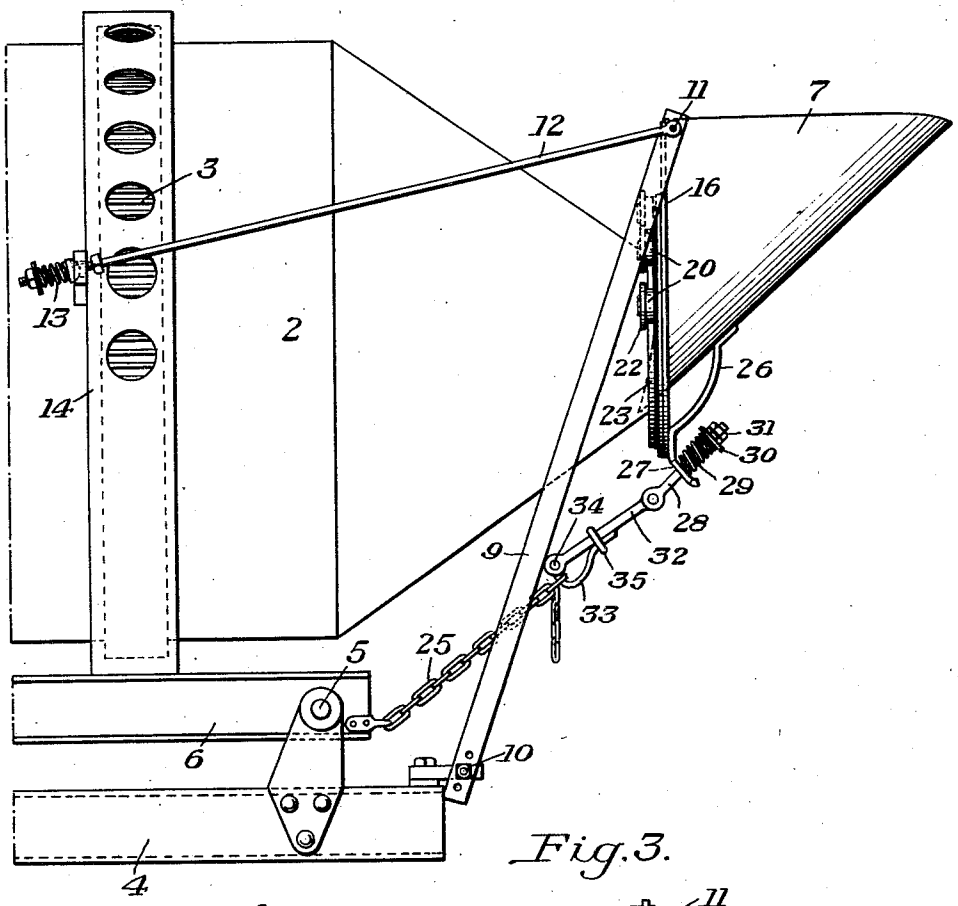
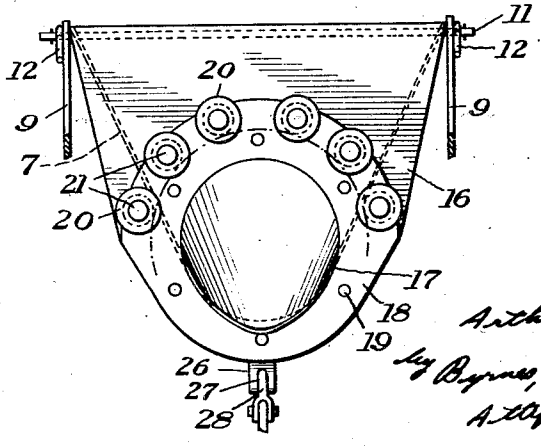


Fig. 3.



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Fig. 2.

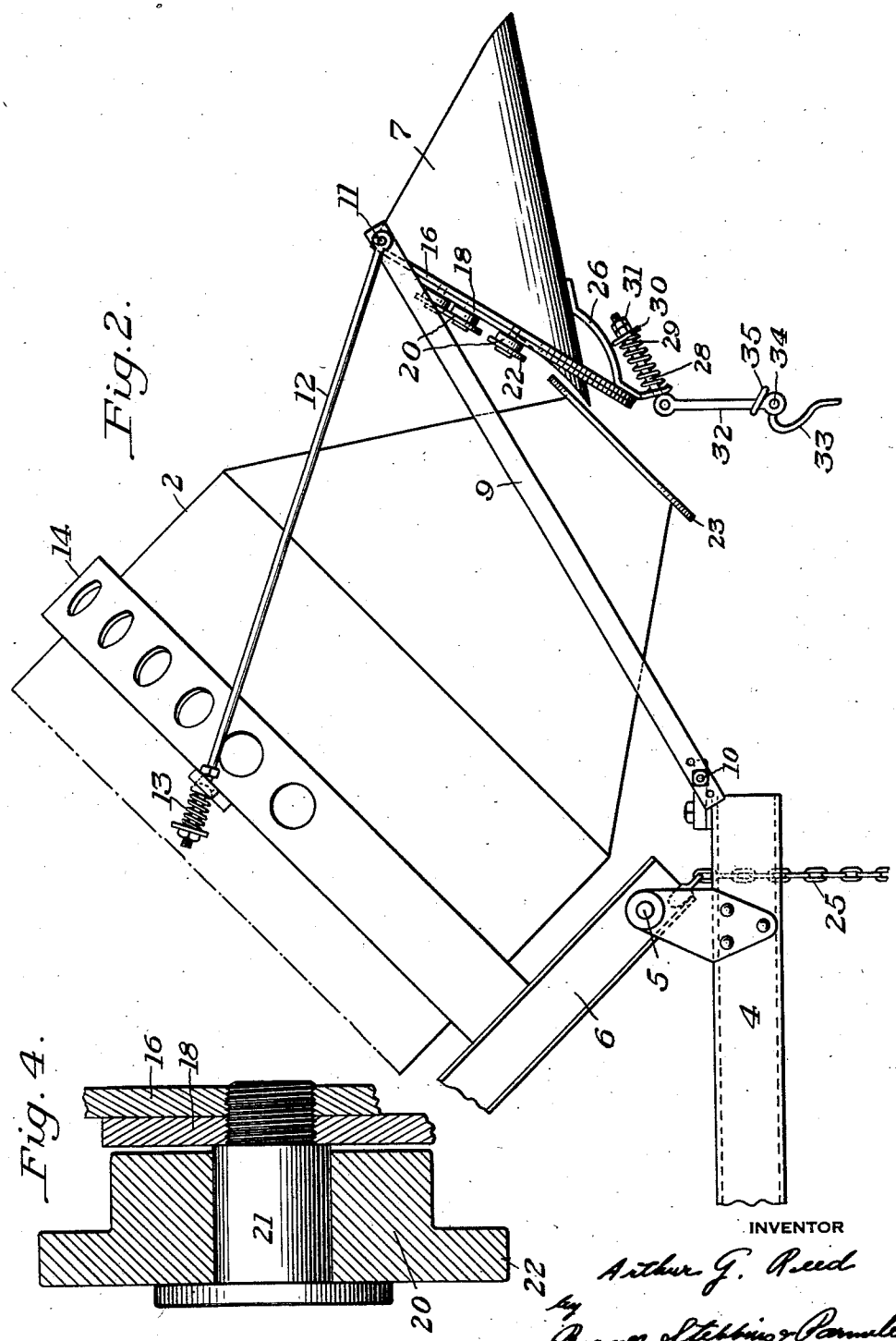


Fig. 4.

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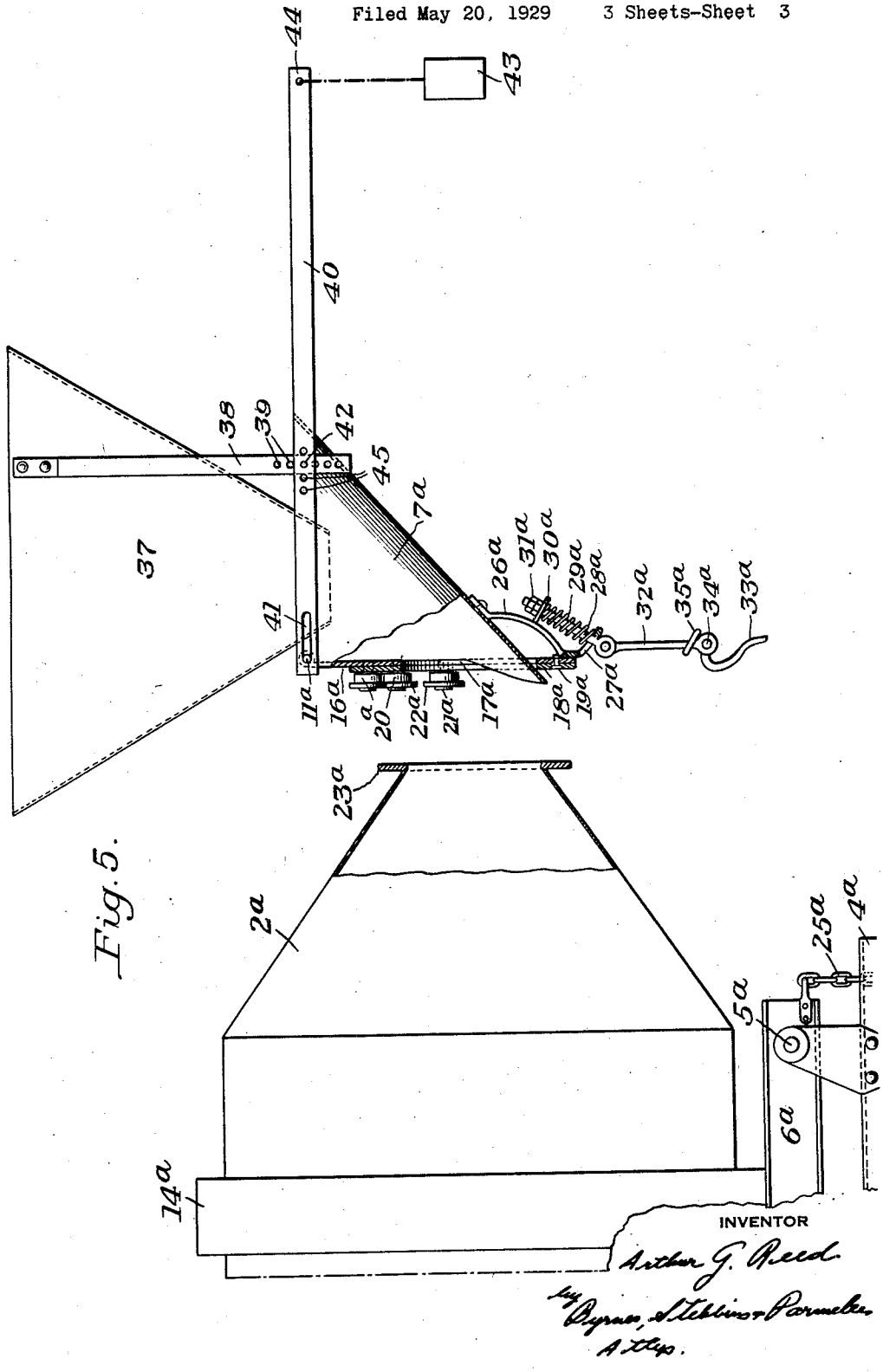


Fig. 5.

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1,848,223

UNITED STATES PATENT OFFICE

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MIXING APPARATUS

Application filed May 20, 1929. Serial No. 364,344.

This invention relates generally to mixers of the type generally used for mixing concrete, and more particularly to a charging boot for such mixers by means of which the mixer can be charged and discharged while it is rotating.

Concrete mixers are now mounted on vehicles so as to allow the mixer to be operated while en route from the place where the mixer was charged to the place where the concrete is to be used. The batch is introduced into the mixer at one place, generally at the plant of a builder's supply company, while the mixer is rotating. The mixer ordinarily is rotated by power derived from the same source as the power which moves the vehicle. The rotation of the mixer is contained during charging of the materials and while the vehicle is en route to the place where the concrete is to be used. It also is rotated during discharge of the concrete.

In accordance with my invention, I provide a charging boot for such mixing apparatus which speeds up the charging of the mixer. The boot is connected to the mixer in such a manner that the mixer may be rotated during charging of the material to the mixer. In this way the charging time is not wasted. I preferably provide a roller connection between the boot and mixer so that the boot may be connected to and disconnected from the mixer while it is rotating.

In the acompanying drawings which illustrate two present preferred embodiments of my invention:

Figure 1 is a partial side elevation of the mixer and boot in charging position;

Figure 2 is a similar view of the apparatus while in discharging position;

Figure 3 is an end elevation of the charging boot;

Figure 4 is a detail view of the roller and associated parts for connecting the boot and mixer; and

Figure 5 is a partial side elevation of a modified form of the invention.

Referring to Figures 1 to 4, there is shown an ordinary type of cylindrical mixing drum 2. The mixer is rotated through a gear 3, and other gearing (not shown) in accordance with common practice. The mixer is mounted on a supporting member 4 of a vehicle (not shown) and is tilted about its pivot 5 for discharging its contents by any desired means.

The mixer 2 is provided with a charging boot 7 which is supplied from a supply hopper 8 mounted thereabove. The boot 7 is pivotally suported by arms 9 which are pivotally connected at their lower ends to a part of the vehicle as indicated at 10. The upper ends of the arms 9 are pivotally mounted to a rod 11 extending across the front of the boot. The boot is also supported by links 12, each of which is pivotally connected at one end to the rod 11. The opposite end of each link 12 is resiliently connected by a spring 13 to the housing 14 for the gear 3.

The front face of the boot 7 has a plate 16 which is provided with a circular opening 17. A collar 18 is connected to the plate 16 by bolts 19. Rollers 20 are secured to the collar 18 and plate 16 by screws 21 as indicated in detail in Figure 4. The rollers 20 are loosely mounted on the screws 21. As indicated in Figure 3 these rollers are arranged semi-circumferentially and have flanges 22 which cooperate with a flange 23 on the mixer to connect the mixer 2 and boot 7 together.

The boot and mixer are locked together through a chain 25 secured to a support 6 for the mixer, and a clamping member secured to the charging boot 7. The clamping member comprises a bracket 26 indicated in Figures 1 and 2 which has its lower end bent and provided with an opening 27. A link 28 extends through the opening 27 and is resiliently held in place by a spring 29, washer 30 and nut 31.

The lower end of the link 28 is pivotally

connected to a link 32 which has a clamp 33 pivoted thereto at 34. The boot and mixer are locked together by inserting the clamp 33 in a link of the chain 25, rotating the clamp 33 to the position indicated in Figure 1 and securing it in such position by means of the ring 35.

When it is desired to dump the material from the mixer 2, the mixer is tilted to discharging position, which position is indicated in Figure 2. The tilting of the mixer moves the arms 9 and links 12 as indicated to disconnect the charging boot 7 from the mixer. The rotatable rollers 20 allow the parts to be disconnected while the mixer is rotating. Before discharging the material from the mixer it is, of course, necessary to disconnect the chain 25 from the clamp 33.

In the form of the invention shown in Figure 5, parts corresponding to those previously described are indicated by the same reference numerals with the letter "a" affixed thereto. In this form of the invention the charging boot 7^a is not mounted on the truck but is separately mounted and is supplied from a supply hopper 37, while the lower end of the boot is inside the opening. The hopper 37 is supported by any desired means. It has two arms 38 extending downwardly therefrom, which arms are provided with a series of holes 39. The charging boot 7^a is supported by horizontal arms 40, each of which is connected at one end to a rod 11^a extending across the front of the boot. The ends of the arms 40 are slotted as indicated at 41 to receive the rods 11^a.

The arms 40 are supported from the arms 38 at a point 42 intermediate the ends of the arms 40. Counterweights 43 are connected to the right hand ends 44 of each of the arms 40 to aid in moving the boot 7^a about its pivot 42. Each of the arms 40 has several holes 45 which cooperate with the holes 39 in arms 38, and pivot pins inserted in the holes, for adjusting the charging boot horizontally or vertically with respect to the supply hopper 37.

When it is desired to charge material into the mixer 2^a the right hand ends 44 of the arms 40 are lowered. This causes the arms 40 to pivot at 42 and to raise the front end of the charging boot which has the rollers 20^a connected thereto. The mixer is then moved toward the charging boot, and the boot is then lowered by raising the right hand ends 44 of the arms 40. This causes the rollers 20^a to contact with and connect the flange 23^a of the mixer with the charging boot 7^a. The boot and mixer are then locked as previously described and the material is charged into the mixer while the mixer is rotated.

After the mixer has been charged it is disconnected from the boot by lowering the ends 44 of the arms 40 without stopping rotation of the mixer.

It will be seen that the charging boot acts also as a gate to prevent accidental discharge of the mixer contents, and is in effect a gate hopper.

I have illustrated and described two present preferred embodiments of my invention. It is to be understood, however, that the invention may be otherwise modified within the scope of the following claims.

I claim:—

1. A charging device for rotatable mixers, comprising a charging boot, a hopper for supplying material to the boot, the boot being pivotally supported from the hopper, and means for moving the boot about its pivot for connecting it to and disconnecting it from the mixer.

2. A charging device for rotatable mixers, comprising a charging boot, a hopper for supplying material to the boot, the boot being pivotally supported from the hopper, means for moving the boot about its pivot, and a roller connection between the boot and mixer whereby the mixer and boot may be connected and disconnected while the mixer is rotated.

3. A charging device for rotatable mixers, comprising a charging boot, a hopper for supplying material to the boot, the boot being pivotally and adjustably supported from the hopper, flanged rollers mounted on the boot for cooperation with a flange on the mixer, means for moving the boot about its pivot to establish connection between the rollers and flange, and means for locking the boot and mixer together.

4. A charging device for rotatable mixers, comprising a pivotally mounted charging boot, and a plurality of flanged rollers carried thereby and adapted to cooperate with a flange on a mixer to connect the mixer and boot but allow relative rotation therebetween.

5. A charging device for rotatable mixers, comprising a pivotally mounted charging boot provided with a plurality of circumferentially arranged flanged rollers, said rollers being adapted to fit over an outwardly extending flange on a mixer in order to connect the mixer and boot but allow relative rotation therebetween.

6. A charging device for rotatable mixers, comprising a charging boot pivotally mounted adjacent one end of a frame, said frame being pivotally mounted intermediate its ends, the pivoted hopper and frame being arranged so that when the end of the frame adjacent the mixer is raised it raises the hopper, whereby the mixer may be brought into position and the hopper and adjacent end of the frame may be lowered to connect the mixer and hopper while the mixer is rotating.

7. A charging device for rotatable mixers, comprising a charging boot pivotally mount-

ed adjacent one end of a frame, said frame being pivotally mounted intermediate its ends, a plurality of circumferentially arranged flanged rollers on the boot, said rollers being adapted to fit over an outwardly extending flange on a mixer, the pivoted hopper and frame being arranged so that when the end of the frame adjacent the mixer is raised it raises the hopper, whereby the mixer may be brought into position and the hopper and adjacent end of the frame may be lowered to connect the mixer and hopper while the mixer is rotating.

In testimony whereof I have hereunto set my hand.

ARTHUR G. REED.