March 5, 1935. A. E. MASON 1,992,959

MIXING DRUM GATE

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FIG. 1.

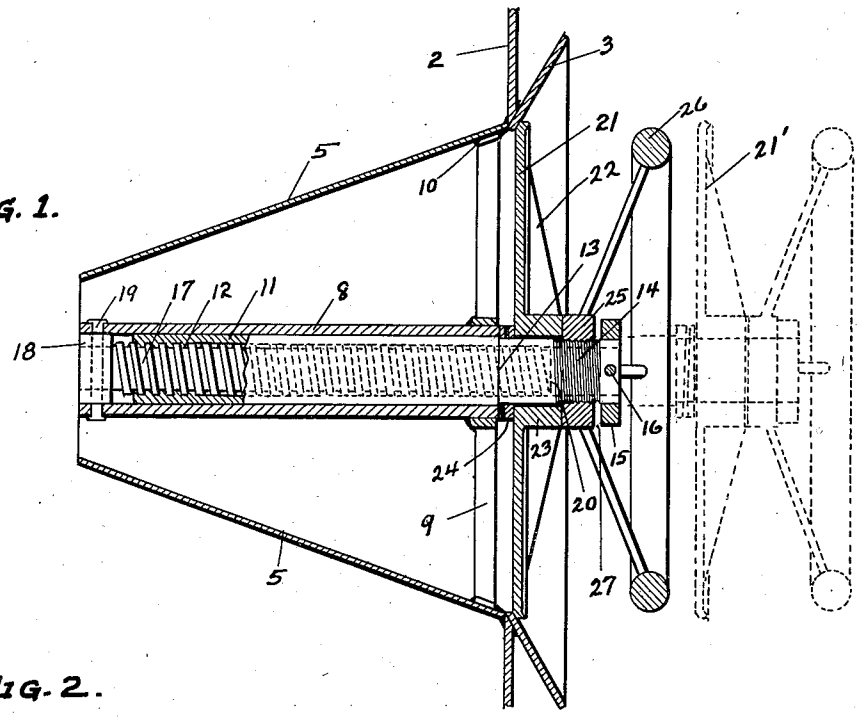
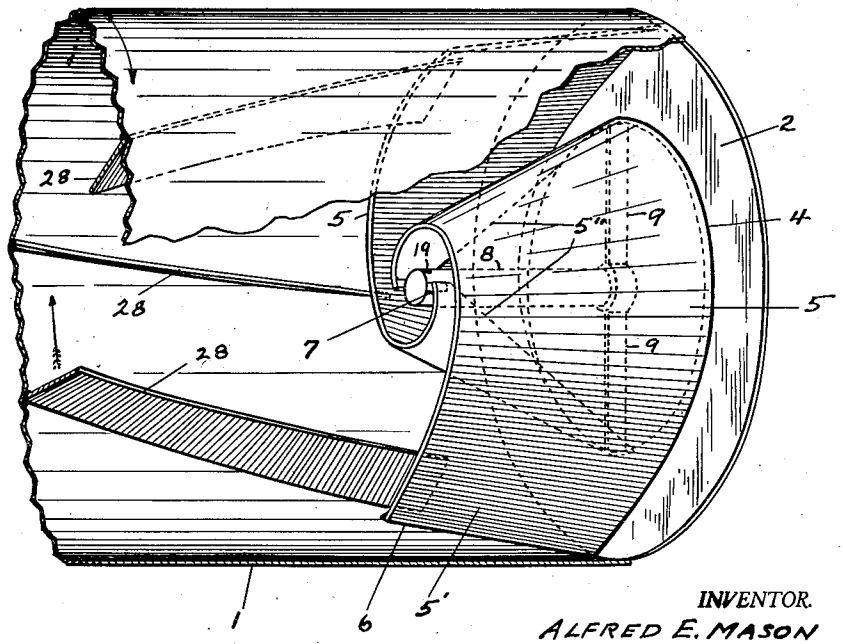


FIG. 2.



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MIXING DRUM GATE

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7 Claims. (Cl. 220—47)

This invention relates to cylindrical concrete mixers, particularly of the type in which the drum revolves, and the objects of the invention are to provide an improved discharge closure at one end of the drum, as well as cooperating mixing and discharge blades within the drum so that the load of mixed concrete may be discharged without tilting the drum.

In the drawing accompanying this specification Fig. 1 is a vertical cross section of my discharge closure together with portion of the discharge blades and end wall of a concrete mixer drum.

Fig. 2 is a perspective view of a portion of a cylindrical concrete drum with a portion of the front wall broken away to show the internal arrangement of the mixer and discharge blades.

The drum may be any of a variety of forms as used in concrete mixers, for illustrative purposes being here shown as a horizontal cylinder revolvable cylinder 1 of which the discharge end is designated 2 having an axially arranged circular discharge opening fitting with an angularly and outwardly extending annular flange 3 to guide discharging material from bespattering the outer end of the drum.

Positioned within the drum and secured to the head or end wall 2 of the same as by welding along the edge 4 are spirally curved and relatively wide blades 5 which together form funnel-like walls seated with the large end against the head 2 of the drum. The outer ends 5′ of these blades are welded or otherwise secured to the wall of the cylinder 1 as by welding along the line 6, while the opposite ends 5″ of the blades are curled inwardly and slanted relatively close together, the extreme outer corners of the inner ends of the blades are secured at 7 to an axially disposed tubular member 8 which is thereby held in position, while the other end of the tubular member is held centrally by means of a steel spider 9 preferably welded in place and at the outer ends of its arms at 10 to blades 5.

Within this tubular member 8 is a tubular sleeve 11 threaded in its interior with a coarse pitch thread 12 but without thread on its exterior as it is freely slidable and revolvable within member 8.

This sleeve extends beyond the spider and end of member 8 to project a distance from the drum and is of somewhat reduced outside diameter from the shoulder 13 and exteriorly threaded with a relatively fine thread at 14, while at the extreme outer end of the sleeve is a collar 15 secured in place by a pin 16.

Within the sleeve 11 and engaging its thread 12 is a threaded bar 17 centrallized at its inner end by a collar 18 and held in place by a pin 19 passing through member 8. This threaded bar 17 terminates forwardly at 20.

The door or closure of the mixing cylinder is a round disk 21 ribbed as at 22 and provided with a hub 23 loosely supported on the reduced outer end of sleeve 11 and resiliently forced outward thereon by a short but heavy spiral spring 24, while threadedly mounted on the finely threaded portion 14 of the sleeve is a hub 25 of a handwheel 26, the arrangement being such that when the handwheel is screwed to the left on sleeve 1 (as seen in Fig. 1) to force closure disk 21 to close the opening in the drum or cylinder 1 by seating at its outer margin against annular flange 3 there will be a space at 27 between the outer end of the handwheel hub 25 and the collar 15.

With this arrangement, and assuming it is desired to open the closure plate from the position shown in Fig. 1, the handwheel is screwed to the right in this figure and will merely release or "crack" the opening of the closure by the action of spring 24 until the hub 25 engages collar 15 and after which the sleeve 11 will be revolved to quickly unscrew the same on its coarse thread 12 to thus carry the disk clear out to dotted position 21′ so that the contents of the drum 1 may be freely discharged.

Upon reverse screwing of the handweel the closure disk is first carried along with a rapid motion on sleeve 11 by reason of the coarse thread 12 until it seats against flange 3 and after which the resistance transfers the load to fine thread 14 so that the handwheel may make a turn or two thereon to force disk 21 into closer contact with flange 3 while compressing spring 24 slightly and thus seal the closure under the power of the finer thread. The arrangement thus combines the quick travel of the coarse thread and the power of the fine thread in a very simple rugged structure.

The special curved blades 5 are so arranged that when the drum is revolved in direction of the arrow of Fig. 2 they scoop up the material to carry it inwardly toward the center of the drum and urge it over the widening funnel-like arrangement for ejection from the opening when the closure plate 21 is open.

Also within the drum are several plain spirally disposed blades 28 arranged to lift and screw the material generally toward the discharge end of the drum for picking up by blades 5.

From the above description it will be seen that a cylindrical drum may be quickly discharged of wet concrete or other material through a cen-

tral end opening without tilting the drum, that the special closure mounting cooperates with the discharge blades, and that the advantages explained are secured in a simple rugged construction.

I claim:—

1. A horizontally disposed revolvable drum provided with an axially arranged opening at one end, a tubular member within the drum extending axially inward from said opening, means supporting said member from the drum, an interiorly threaded sleeve slidable within said member and extending outward therefrom, a closure disk for said opening supported on the outer end of said sleeve, a threaded rod within said sleeve threadedly engaging the same and secured at its inner end to said tubular member, and means on the outer end of said sleeve outward of said disk adapted for the manual turning of the sleeve.

2. A horizontally disposed revolvable drum provided with an axially arranged opening at one end, a tubular member within the drum extending axially inward from said opening, means supporting said member from the drum, an interiorly threaded sleeve slidable within said member and extending outward therefrom, a closure disk for said opening supported on the outer end of said sleeve, a threaded rod within said sleeve threadedly engaging the same and secured at its inner end to said tubular member, a handwheel threaded on said sleeve at a point outward of said disk, a stop on the sleeve beyond said handwheel, and a spring on said sleeve resiliently forcing said disk toward said handwheel.

3. In a structure as specified in claim 2, the threads within the sleeve engaging said rod being coarse relative to the handwheel threads.

4. In a structure as specified in claim 2, said sleeve being of reduced diameter for supporting said disk, and said spring reacting between said disk and the shoulder formed by the reduced diameter of the sleeve.

5. A mixer drum provided with an end opening, a seat around said opening, a closure disk adapted to cover said opening and to engage said seat for sealing the opening, manually operated screw means arranged for moving said disk outwardly of the drum toward and away from the opening and into engagement with said seat when actuated for moving the disk toward the opening, secondary screw means arranged and adapted to force the disk tightly against said seat upon engagement of the disk and seat, said secondary screw means being arranged and adapted for application of greater power than the first mentioned screw means.

6. A mixer drum provided with an end opening, a seat around said opening, a closure disk adapted to cover said opening and to engage said seat for sealing the opening, a manually operated screw means arranged for moving said disk outwardly of the drum into and out of engagement with said seat, secondary screw means arranged and adapted to force the disk tightly against said seat upon engagement of the disk and seat, said secondary screw means being of a finer pitch than the first mentioned screw means for application of greater power for seating the disk upon actuation thereof.

7. A mixer drum provided with an end opening, a seat around said opening, a closure disk adapted to cover said opening and to engage said seat for sealing the opening, means extending axially of the opening and disk and supporting the latter for movement to and from the seat, manually operated means for moving said disk in the directions stated, and means actuated by engagement of the disk and seat for increasing the power applied to the disk upon further actuation of said manually operated means in the manner for moving the disk toward said seat.

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