E. F. BOLTE.

CONCRETE MIXER.

APPLICATION FILED JULY 17, 1911.

1,041,005. **Patented Oct. 15, 1912.**

Fig. 1

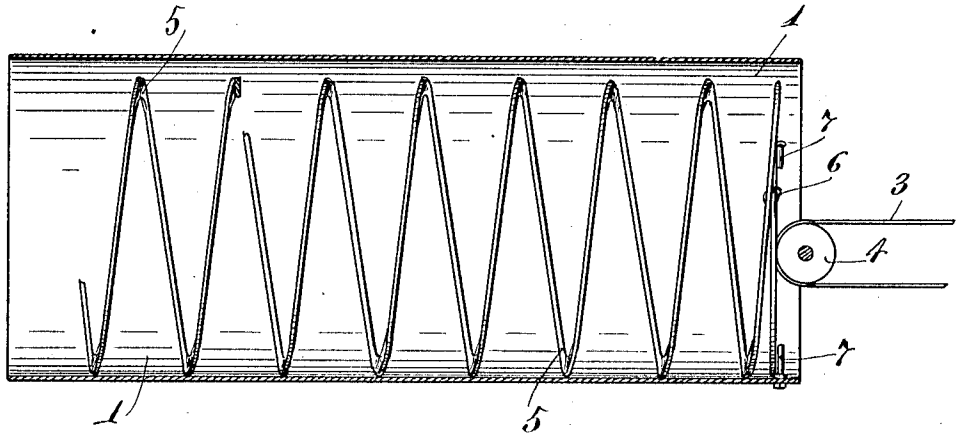
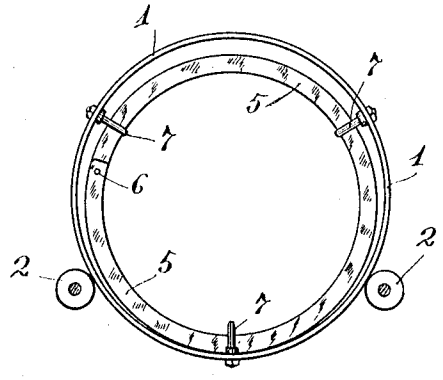


Fig. 2



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CONCRETE-MIXER.

1,041,005. Specification of Letters Patent. Patented Oct. 15, 1912.

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To all whom it may concern:

Be it known that I, EDWARD F. BOLTE, 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; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates particularly to concrete mixers and has for its object to provide improved means for feeding the material through a horizontal, or approximately horizontal, rotary mixing drum and for keeping the interior of the drum clean so that the material will not adhere thereto.

To such ends, generally stated, the invention consists of the novel devices and combinations of devices, hereinafter described and defined in the claims.

It has been found to be quite a problem in concrete mixers employing rotary drums, to prevent portions of the material from adhering to the interior of the drum. Very frequently, or quite generally, spiral blades have been secured to the interior of the drum to force the concrete to travel through an approximately horizontal drum, but usually these devices have been such that considerable downward pitch from the receiving toward the delivery end of the drum has been necessary to insure the proper feed of the material through the drum while it is being mixed, to-wit, while the cement, sand, gravel and water are being thoroughly commingled by the rotation of the drum. When the spiral blades have been secured to the interior of the drum, there has been an increased tendency for the material to harden on and adhere to these spiral blades, due to the fact that the blades are fixed and have no movement, in respect to the drum.

All of the above difficulties I have overcome, simply by the provision of a loose spiral located within and extended longitudinally of the drum. This spiral should be of considerably less diameter than the interior of the drum so that it will roll within the drum by maintaining contact always with the bottom of the drum. Some suitable means must be provided, preferably at the receiving end of the drum, to prevent the spiral from being forced out of the receiving end of the drum.

The invention is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view partly in vertical section and partly in elevation showing the loose spiral located within a horizontally disposed drum; and Fig. 2 is an end elevation of the parts shown in Fig. 1 showing also diametrical rollers supporting the drum for rotary movement.

The horizontal, or approximately horizontal rotary drum 1 may be rotated by any suitable means, not shown, and it may be mounted for rotary movements in any suitable bearings, such, for instance, as the rollers or small wheels 2 indicated in Fig. 2.

The sand, gravel, and cement may be delivered to the receiving end of the drum by any suitable means, for instance, by an endless belt 3 and guide pulley 4 diagrammatically indicated in Fig. 1.

The combined cleaning, feeding and mixing spiral 5 is preferably made of a flat metal bar bent into spiral form, as shown in the drawings, and having, preferably, its end, which is at the receiving end of the drum, secured to one of the turns of the coil by a rivet 6, so that an approximately flat surfaced end is provided on the coil at the receiving end of the drum. This flat end portion of the coil is adapted to thrust against abutment pins 7 which project radially inward from the shell of the drum at the receiving end thereof.

No means need be provided to prevent the spiral or coil from working out at the delivery end of the drum because, when the drum is rotated and the said spiral is rolled into contact with the commingled cement, gravel, and sand, the spiral will continuously crowd the said materials toward the delivery end of the drum and the re-action on the spiral will press the same toward the receiving end of the drum and against the abutment pins or stops 7. Under rotation of the spiral, the surface of the drum at the bottom of the drum is continuously scraped

by the spiral, and hence, is kept clean, or more properly stated, the concrete forming materials are kept in motion within the drum and are not permitted to lodge on any portion of the surface of the drum.

The spiral, as is evident, is rotated by frictional contact with the drum and, as it travels at a different speed than the drum (being smaller in diameter than the drum), develops a scraping motion and comes into contact with the entire inner surface of the drum. This, therefore, prevents the concrete forming materials from hardening and adhering to any portion of the interior of the drum.

The spiral itself is quite resilient so that there will be a continuous movement of the coils thereof and thereby, the concrete is prevented from maintaining contact therewith long enough to harden and adhere thereto. This combined feeding, cleaning and mixing spiral or coil may be applied at small cost because no riveting or similar provision is necessary to apply the same in operative position in the drum and, furthermore, a coil may be easily and quickly removed for complete cleaning whenever desired.

In actual practice, the efficiency of the device described has been thoroughly demonstrated.

What I claim is:

1. In a device of the kind described the combination with a rotary drum, of a spiral blade of less diameter than the interior of said drum, forming an open space extending the length of said drum above said blade, the latter being in said drum and resting directly on the bottom thereof and frictionally driven by said drum.

2. In a device of the kind described, the combination with a rotary drum, of a resilient spiral blade of less diameter than the interior of said drum, forming an open space extending the length of said drum above said blade, the latter being in said drum and resting directly on the bottom thereof and frictionally driven by said drum.

3. In a device of the kind described, the combination with an approximately horizontal cylindrical rotary drum, of a spiral blade of considerably less diameter than the interior of said drum, forming an open space extending the length of said drum above said blade, the latter being in said drum and resting directly on the bottom thereof, and frictionally driven from said drum.

4. In a device of the kind described, the combination with an approximately horizontal cylindrical rotary drum, of a spiral blade of considerably less diameter than the interior of said drum, forming an open space extending the length of said drum above said blade, the latter being in said drum and resting directly on the bottom thereof and frictionally driven from said drum, and an abutment at the receiving end of said drum against which said spiral reacts in the feeding action.

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

EDWARD F. BOLTE.

Witnesses:
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