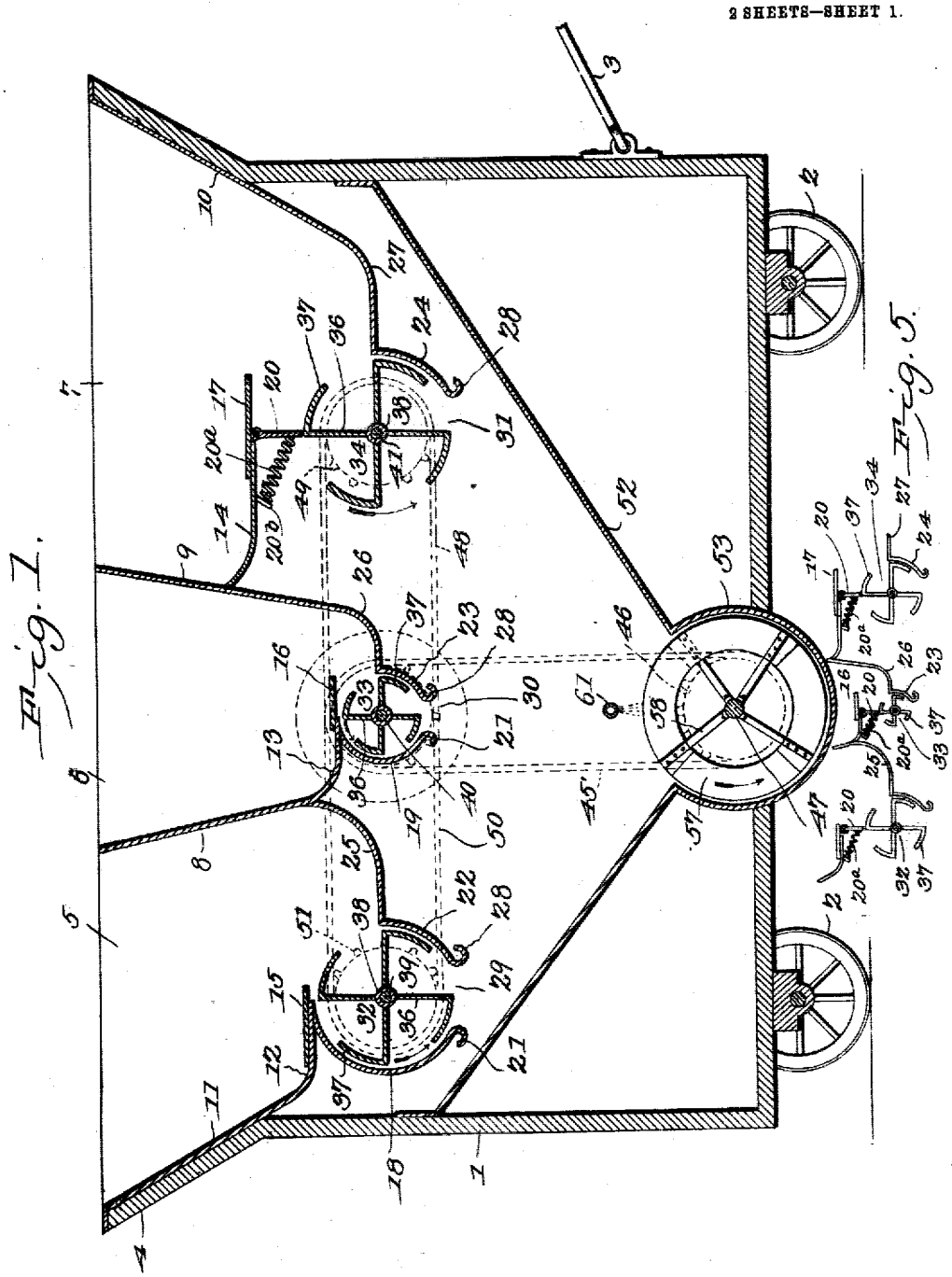
No. 796,591. PATENTED AUG. 8, 1905.

W. B. MARTIN.

CONCRETE MIXER.

APPLICATION FILED OCT. 13, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

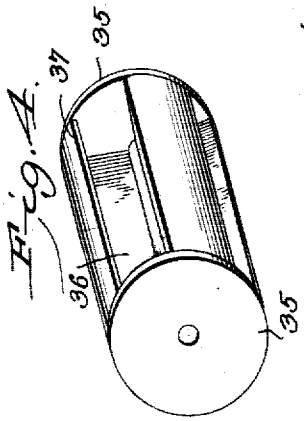


Fig. 3.

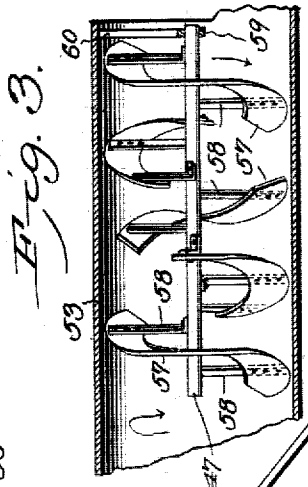


Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM B. MARTIN, OF BLOOMINGTON, ILLINOIS.

CONCRETE-MIXER.

No. 796,591. Specification of Letters Patent. Patented Aug. 8, 1905.

Application filed October 13, 1904. Serial No. 228,309.

To all whom it may concern:

Be it known that I, WILLIAM B. MARTIN, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented a new and useful Concrete-Mixer, of which the following is a specification.

This invention relates to concrete-mixers.

The object of the invention is to provide a simple and thoroughly efficient apparatus of the class described which will rapidly and accurately measure gravel, stones, cement, and sand in predetermined quantities and effect their thorough incorporation for use; furthermore, to provide an apparatus which shall be portable in character—that is to say, capable of being readily moved from point to point as necessary.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a concrete-mixer, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there are illustrated two forms of embodiment of the invention, each capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in longitudinal section through an apparatus constructed in accordance with the present invention. Fig. 2 is a view in end elevation partly in section. Fig. 3 is a sectional detail view through the discharge-spout. Fig. 4 is a perspective detail view of one of the material-measuring cups. Fig. 5 is a detail view exhibiting a slightly-modified form of the invention.

Referring to the drawings, 1 designates generally the casing of the apparatus, which, as shown in Figs. 1 and 2, is rectangular when viewed in plan and may be constructed of any suitable material adapted for the purpose. To render the apparatus portable, it is provided with wheels 2 and with a tongue or other suitable draft appliance 3. The upper portion of the casing is formed into a hopper 4, in which are arranged three compartments 5, 6, and 7, the compartment 6 being separated from the compartments 5 and 7 by partitions 8 and 9, forming one end wall of each of the compartments 5 and 7, the other end walls of which are formed by plates 10 and 11. The plate 11 and partitions 8 and 9 each have projecting from them a horizontally-disposed curved extension 12, 13, and 14, respectively, combined with which are ledges 15, 16, and 17, the function of which is to remove the strain from the measuring-cups and also to present a side feed, which will prevent the material from clogging the cups when in operation. The extensions 12 and 13 have projecting downward from them curved shields or throat-pieces 18 and 19, the lower ends of which are outturned or curved, as at 21, to prevent interference of the discharge of the material from the throats formed by the parts 18 and 19, and similar downwardly-curved extensions 22, 23, and 24, carried, respectively, by curved extensions 25, 26, and 27, projecting from the partitions 8 and 9 and the plate 10. The lower ends of the extensions 22, 23, and 24 are outcurved, as at 28, so that the throats 29, 30, and 31, formed between these extensions, will not tend to clog or retain any material which attempts to pass therethrough. The extension 14 is devoid of a throat-piece corresponding to 18 or 19, and in lieu thereof there is hinged at its outer end a check-plate 20, which is caused normally to occupy a vertical position by a spring 20^a, one end of which bears against the plate and the other end against an abutment 20^b, carried by the under side of the extension 14. The object of this check-plate is to prevent injury to the measuring-cups, presently to be described, in the compartment 7, where stones, gravel, or the like are fed, it being seen that in case of an excessive charge the check-plate will overcome the pressure of the spring 20^a, and thus allow the stone or the like to escape to the interior of the apparatus without doing damage, and it is for this reason that two throat-plates are not provided in this compartment.

The chambers formed by the parts 18 and 22, 19 and 23, 20 and 24 serve to house the measuring-cups 32, 33, and 34, each of which consists, as shown in Fig. 4, of two heads 35, connected in this instance by four partitions 36, the ends of which are bent at approximate right angles to the lengths of the partitions and on a curve corresponding to the walls of the chambers, the flanges 37, formed by the curved terminals in conjunction with

each adjacent partition 36, forming a measuring-cup, into which a predetermined quantity of material is fed and discharged on each rotation of the cup, the flanges constituting also cut-offs. The partitions 36 are secured to or are integral with hubs 38, through which pass shafts 39, 40, and 41, said shafts being suitably journaled in the sides of the casing and projecting at one end therefrom. The shaft 40, which is clearly shown in Fig. 2, constitutes the drive-shaft and carries three sprocket-wheels 42, 43, and 44, the shaft being driven in any suitable manner, as by a pulley 45, around which passes a belt leading to a suitable source of power not necessary to be shown. Around the sprocket-wheel 42 passes a sprocket-chain 45′, the lower bend of which engages a sprocket-wheel 46 on a shaft 47, presently to be described. The sprocket-wheel 43 carries a sprocket-chain 48, which passes around a sprocket-wheel 49 on the shaft 41, while the sprocket-wheel 44 carries a sprocket-chain 50, which passes around a sprocket-wheel 51 on the shaft 39. By this arrangement the sprocket-wheels and sprocket-chains and all the measuring-cups are driven in the same direction and from the same source of power, as is also the shaft 47.

Arranged longitudinally of the casing and extending from both ends thereof is a chute 52, which is connected with a discharge-spout 53, that extends outward beyond the casing and is provided at its free end with a lip 54, the spout being supported from the casing by a pair of brace-rods 55, only one of which is shown, arranged on each side of the spout, and by a brace-rod 56, secured to the spout near its outer end and to the upper portion of the casing. This spout may be circular in cross-section, as shown, or semicircular, as may be desired, and as the latter construction will be obvious illustration thereof is deemed unnecessary. Arranged within the discharge-spout is a worm or conveyer which constitutes one of the essential features of the present invention, inasmuch as it not only operates to remove the mixed material from the casing, but also thoroughly to mix the ingredients before discharge. This conveyer consists of segments or flights 57, each being approximately a half-circle and being twisted on a compound curve, the flights being disposed in break-joint relation to each other, so that when assembled they will, in effect, present a screw, but with spaces between the terminals of the adjacent flights, which will permit the terminals to present a means for cutting through the mass and of thoroughly mixing and in a measure disintegrating it. These flights are combined with the shaft 47 through the medium of arms 58, the outer ends of which are riveted to the flights and the inner ends of which are rigidly bolted to the shaft. The rear end of the shaft is journaled in suitable bearings in the side of the casing and, as before stated, is driven through the medium of the sprocket-chain 45′ and sprocket-wheel 46, and the outer end of the shaft is journaled in a box 59, carried by a three-legged spider 60, secured at or near the discharge end of the spout.

To supply the necessary water to the ingredients while being mixed, there is a pipe 61, which is supported near its outer end by a bracket 62, secured to the spout, and passes through a bearing or collar 63, secured to the side of the casing, and thence into the casing and substantially across its entire width, as shown in Fig. 2, the portion of the pipe within the casing being provided with suitable perforations to permit escape of water. The outer end of the pipe is provided with a nipple 64 to allow attachment thereto of a hose or other suitable water-feeding device.

The operation of the device is as follows: Sand, cement, gravel, or stone is supplied, respectively, to the compartments 5, 6, and 7 and falls upon the ledges 15, 16, and 17, it being understood that the material is fed into the compartments in such manner as to cause it first to lodge upon the ledges. The cups being rotated, each compartment thereof will remove from the mass a predetermined charge and discharge it down the chute into the inner portion of the discharge-spout, the cut-offs 37 preventing any accidental escape of material from the compartments to the chute until an additional cup is presented for another charge. As the materials from the three compartments pass to the discharge-spout they are sprayed with water from the pipe 61, and as they are moved forward by the conveyer they are thoroughly commingled, so that when discharged from the spout their treatment will be thorough. The rapidity of the operation of the total output of the device will of course be controlled by the rate of speed at which the cups and other rotative parts of the mechanism are driven.

As shown in Fig. 1, one of the compartments 7 is provided with a check-plate 20; but, if preferred, this may be combined with each of the compartments, as shown in Fig. 5, and still be within the scope of the invention.

It will be seen from the foregoing description that although the apparatus of this invention is exceedingly simple of construction it combines in a feasible and practical manner all the elements necessary for the production of a thoroughly-effective machine, and, further, owing to the simplicity of the construction of the parts and the manner in which they are assembled liability of breakage in use is reduced to a minimum and great facility of repairs is secured.

It will be noted that the cups are of different sizes, that for supplying gravel or stone to the chute being the largest, that for supplying sand the next largest, and that for

supplying cement the smallest, and the proportions between the cups herein shown will generally be that adopted in an organized apparatus; but it is to be understood that the different cups may be changed in their relative proportions to each other, if the same should be found necessary or desirable, without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. An apparatus of the class described comprising a casing divided into a plurality of compartments each provided with a shield constituting a throat-piece, rotative measuring devices arranged in the compartments adjacent to the shields and having their shafts arranged in the same plane, and ledges disposed above the measuring devices to cause a side feed of the material thereto.

2. In an apparatus of the class described, a casing divided into a plurality of compartments of different sizes, rotative measuring devices arranged in the compartments the shafts of which are arranged on the same plane, means for independently operating the devices, curved extensions arranged above the devices and carrying each a ledge, a chute arranged below the measuring devices, and a conveyer driven from the said devices and operating to mix and remove the material from the apparatus.

3. An apparatus of the class described comprising a casing divided into a plurality of compartments each provided with a shield constituting a throat-piece, rotative measuring devices arranged into compartments adjacent to the shield and having their shafts arranged in the same plane, ledges disposed above the measuring devices to cause a side feed of the material thereto, and spring-pressed check-plates coacting with the said devices.

4. In an apparatus of the class described, a casing supporting a plurality of different-sized rotative measuring devices, formed into cups each including a cut-off, a spring-pressed check-plate coöperating with the largest of the devices, a chute arranged below the measuring devices, a spout constituting a portion of the chute and projecting laterally from the casing, and a conveyer arranged within the spout and comprising a plurality of reversely-twisted segments, the terminals of which are arranged in break-joint order with relation to each other.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM B. MARTIN.

Witnesses:
WM. FLEMING,
ED. PEIRCE.