O. J. DUNHAM.

FEEDER FOR CONCRETE MIXERS.

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943,660.

Patented Dec. 21, 1909.

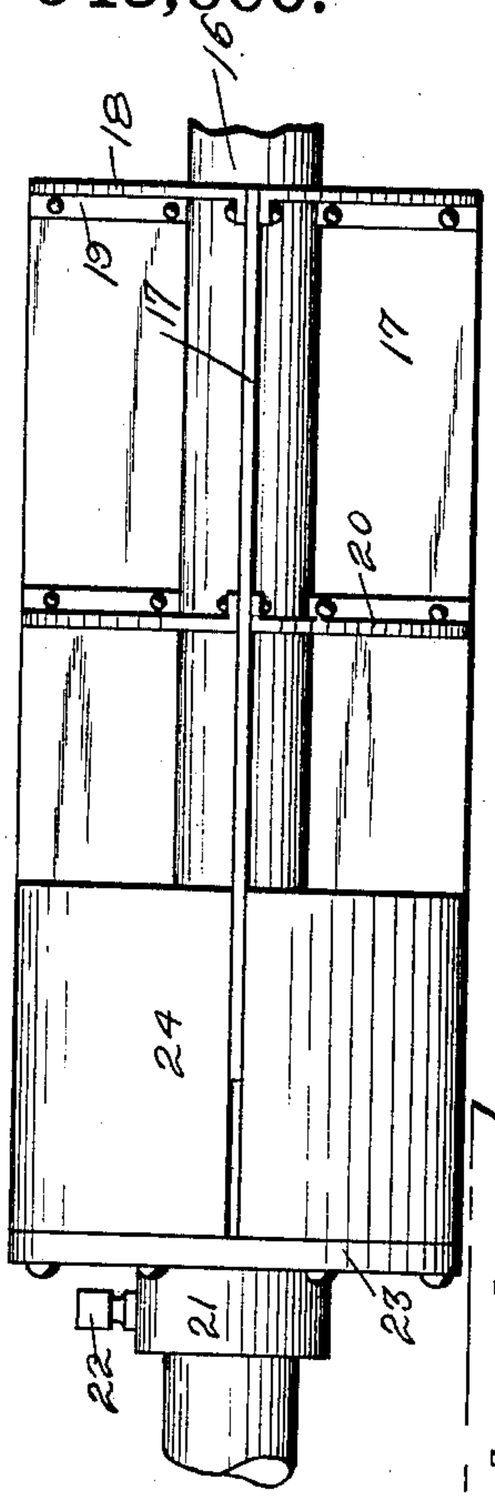

Fig. 3.

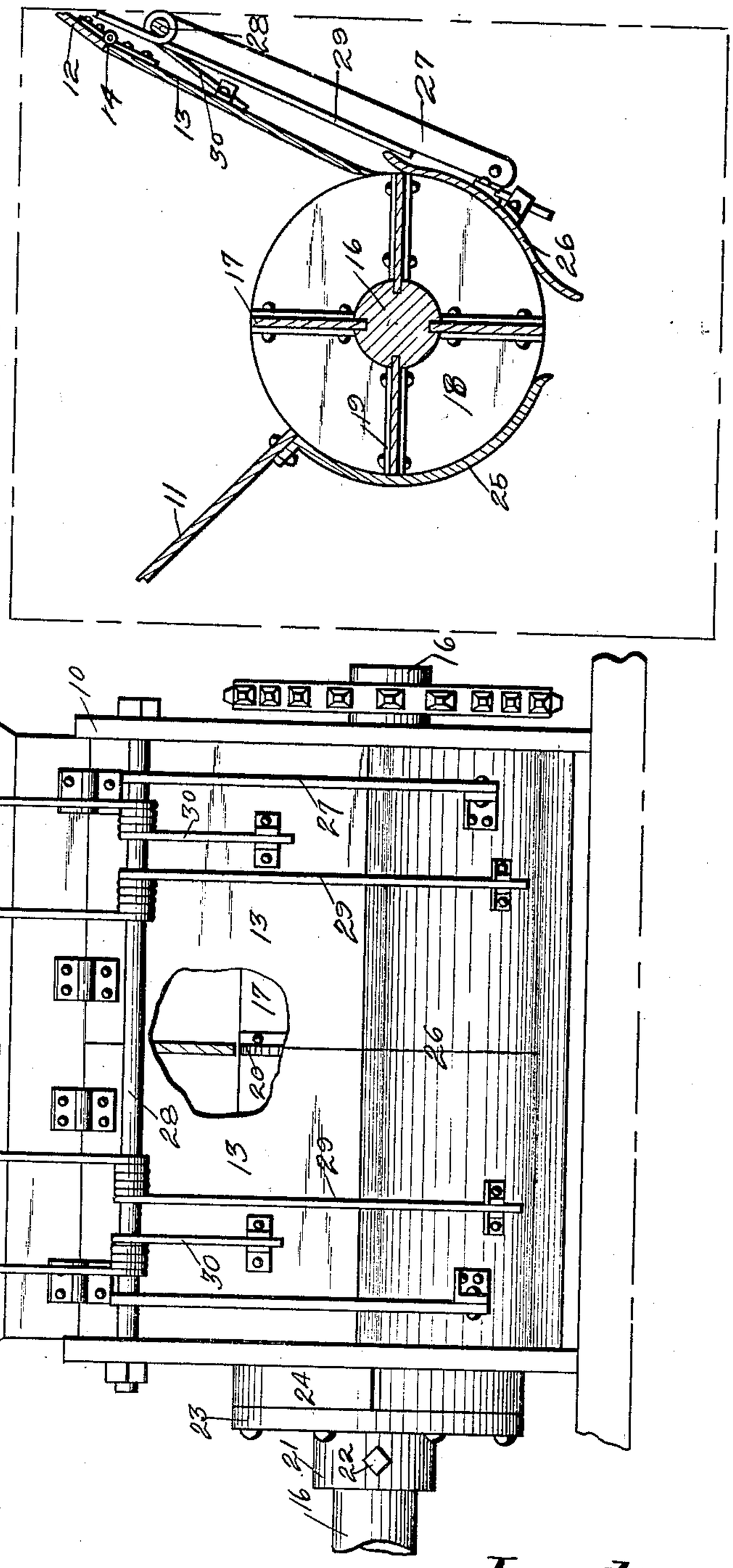

Fig. 2.

Fig. 1.

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OSCAR J. DUNHAM, OF AMES, IOWA.

FEEDER FOR CONCRETE-MIXERS.

943,660. Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed August 10, 1908. Serial No. 447,840.

To all whom it may concern:

Be it known that I, OSCAR J. DUNHAM, a citizen of the United States, residing at Ames, in the county of Story and State of Iowa, have invented a certain new and useful Feeder for Concrete-Mixers, of which the following is a specification.

The object of my invention is to provide a feeding device of simple, durable and inexpensive construction, especially designed for use in delivering, to a concrete mixer or the like, cement and a material such as gravel which materials are delivered in measured quantities exactly proportioned relative to each other, so that the concrete formed in the mixer will have exactly the desired proportions of the various ingredients.

A further object is to provide simple and inexpensive means whereby the device may be quickly and easily adjusted in order to change or vary the proportion of the cement relative to the other material such as gravel.

A further object is to provide improved means for scraping or leveling off the chambers in which the materials are measured, so that each chamber will be successively filled to the same level, and further in this connection to provide a yielding scraper or leveler so arranged that in the event that the material such as gravel contains large stones that cannot be scraped off said scraping or leveling device may yield to permit the passage of the large stone or other obstruction and immediately return to normal position.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of a device embodying my invention with parts broken away to show the internal construction. Fig. 2 shows a transverse, sectional view taken on a line near the center of the machine illustrated in Fig. 1. Fig. 3 shows a plan view of the shaft of the feeder with the measuring chambers thereon and the adjustable head for regulating the quantity of cement that may be contained in the cement receptacles.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the frame of the device. This frame is provided with a stationary inclined bottom piece 11 at one side and a stationary inclined bottom piece 12 at the other side, said bottom piece 12 being provided at its lower end with a hinged, inclined bottom piece 13 connected by the hinges 14.

A transverse partition 15 extends across the frame and the hinged bottom piece 13 is divided into two parts on a transverse line through said partition 15, so that the independent members of the hinged bottom piece 13 may swing independent of each other. The entire frame consisting of the ends and said inclined bottom pieces forms a hopper, and a quantity of cement may be placed in the hopper on one side of the partition and a quantity of material such as gravel may be placed in the hopper on the other side of the partition.

Below the hopper is a rotatable shaft 16 and fixed to the shaft are four radial walls 17, spaced apart at equal distances from each other. At one end of the walls 17 is a disk shaped end 18 preferably made up in sections and provided with flanges 19 which are connected by rivets to the walls 17, as clearly shown in Fig. 3. This end 18 may be made in one piece if desired.

At a point about mid-way between the ends of the walls 17 is a second disk shaped partition 20 similar to the partition 18. On the other end of the shaft 16 is an adjustable head comprising a hub 21 provided with a set-screw 22, seated in the hub and designed to engage the shaft for adjusting the position of the hub relative to the shaft. Connected with the hub is a disk 23 and fixed to the disk are four segmental blocks 24, their inner portions being designed to rest upon the shaft and their outer portions being substantially in line with the peripheries of the disks 18 and 20. These blocks 24 have the walls 17 admitted between them, so that the blocks fit against the walls and yet may be slidingly moved upon the shaft. Said blocks are of a length almost as great as that of the space between the partitions 18 and 20, for purposes hereinafter made clear.

Fixed to the lower edge of the bottom piece 11 is a segmental plate 25 shaped to fit against the outer edges of the walls 17 and

the disks 18 and 20 and the blocks 24. On the side of the shaft 16 opposite from the segmental plate 25 is a second segmental plate 26 with its upper and lower edges curved away from the shaft 16, as clearly shown in Fig. 2. This plate 26 is supported by means of two arms or hangers 27 pivoted to the bar 28 and extended downwardly and toward the shaft 16, and having the plate 26 pivotally supported at its lower end. This plate 26 is yieldingly held in a direction toward the shaft 16 by means of the springs 29 on the bar 28, and said plate 26 is divided into two parts at a point in line with the division line of the bottom members 13. I have also provided for yieldingly holding the bottom members 13 toward the disks 18 and 20 and the blocks 24 by means of the springs 30.

In practical use and assuming that the side of the hopper adjacent to the blocks 24 is filled with cement, and the other side of the hopper is filled with a concrete making material such, for instance, as gravel, and assuming further that the shaft 16 is rotated in a direction with its top moving toward the scraping and leveling bottom members 13, then, obviously, each time that the shaft is rotated one-fourth ($\frac{1}{4}$) of a revolution, one of the chambers between the walls 17 and the disks 18 and 20 will be filled and discharged into the concrete mixing machine which is arranged directly below the feeder. At the same time one of the chambers between the walls 17 and the partition 20 and the blocks 24 will also be filled and discharged into the mixer.

Assuming that it is desired to use one portion of cement to four portions of material such as gravel, then the blocks 24 are adjusted to position toward the partition 20 so that the space between the partition 20 and the blocks 24 is just one-fourth ($\frac{1}{4}$) of the space between the partitions 18 and 20. Thereupon the quantity of cement delivered into the mixer will be just one-fourth ($\frac{1}{4}$) that of the other material such as gravel.

By having the scraping and leveling bottom members 13 arranged on hinges and spring actuated, it is obvious that in case there are any large stones or other objects in the gravel, then the scraping and leveling bottom member 13 adjacent thereto will be temporarily moved outwardly to accommodate itself to said object, and then will spring back again, so that approximately the desired quantity of material will be delivered and so that the device itself will not be injured in any way by large stones or other objects passing through it, and by having the segmental plates 26 arranged as shown and independent of the bottom members 13, the material is prevented from flowing through in large quantities when either bottom member 13 or the segmental plate 26 is moved outwardly away from the measuring device by a large stone or other obstruction.

I claim as my invention.

1. In a device of the class described, the combination of a frame comprising a hopper, a rotatable shaft mounted in the frame, a number of walls arranged radially on the shaft, a stationary partition at one end of the shaft, a stationary partition between the ends of the shaft, and an adjustable head mounted on the end of the shaft opposite from the stationary partition and capable of movement toward and from the central partition, said parts being so arranged that the space between the two stationary partitions is in communication with the hopper, and also the space between the central partition and the movable one is in communication with the hopper so that by adjusting the movable partition the proportionate delivering capacity of the compartments on opposite sides of the central partition may be varied, a scraping and leveling bottom member for the hopper, and a spring for yieldingly holding it against the walls and partitions of the shaft.

2. In a device of the class described, the combination of a frame comprising a hopper, a rotatable shaft, a number of segmental compartments connected with the shaft, a disk shaped partition, and an adjustable head mounted on one end of the shaft, and capable of movement toward and from said disk shaped partition for regulating the length of the segmental compartments between the central partition and said head, and a yielding scraping and leveling bottom member for the hopper with its lower end in position in engagement with the outer portion of said segmental chambers, and a yielding segmental plate arranged to engage the outer portions of the chambers below said scraping and leveling bottom member.

3. In a device of the class described, the combination of a frame, a stationary inclined bottom member at one side of the frame, a segmental plate fixed to the lower edge thereof, a stationary inclined bottom member at the other side of the frame, a central partition in the hopper, two hinged bottom members connected to the lower edges of the last mentioned bottom member, springs for yieldingly holding them toward the longitudinal center of the hopper, two segmental plates, means for yieldingly holding them toward the longitudinal center of the hopper below said yielding bottom members, a rotatable shaft mounted within the hopper, a number of radial walls fixed thereto and spaced apart equidistant from each other, a disk shaped head at one end

thereof, a disk shaped partition between the ends of said valve and in line with the transverse partition in the hopper, and an adjustable head at the other end of the shaft comprising a hub, a set-screw in the hub to engage the shaft, a disk fixed to the hub, and a series of segmental blocks fixed to the disk and arranged between said radial walls, substantially as and for the purposes stated.

Des Moines, Iowa, August 6, 1908.

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Witnesses:
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