C. E. STEERE.

FEEDER FOR CAN FILLING MACHINES.

APPLICATION FILED JAN. 17, 1918.

1,343,417.

Patented June 15, 1920.

2 SHEETS—SHEET 1.

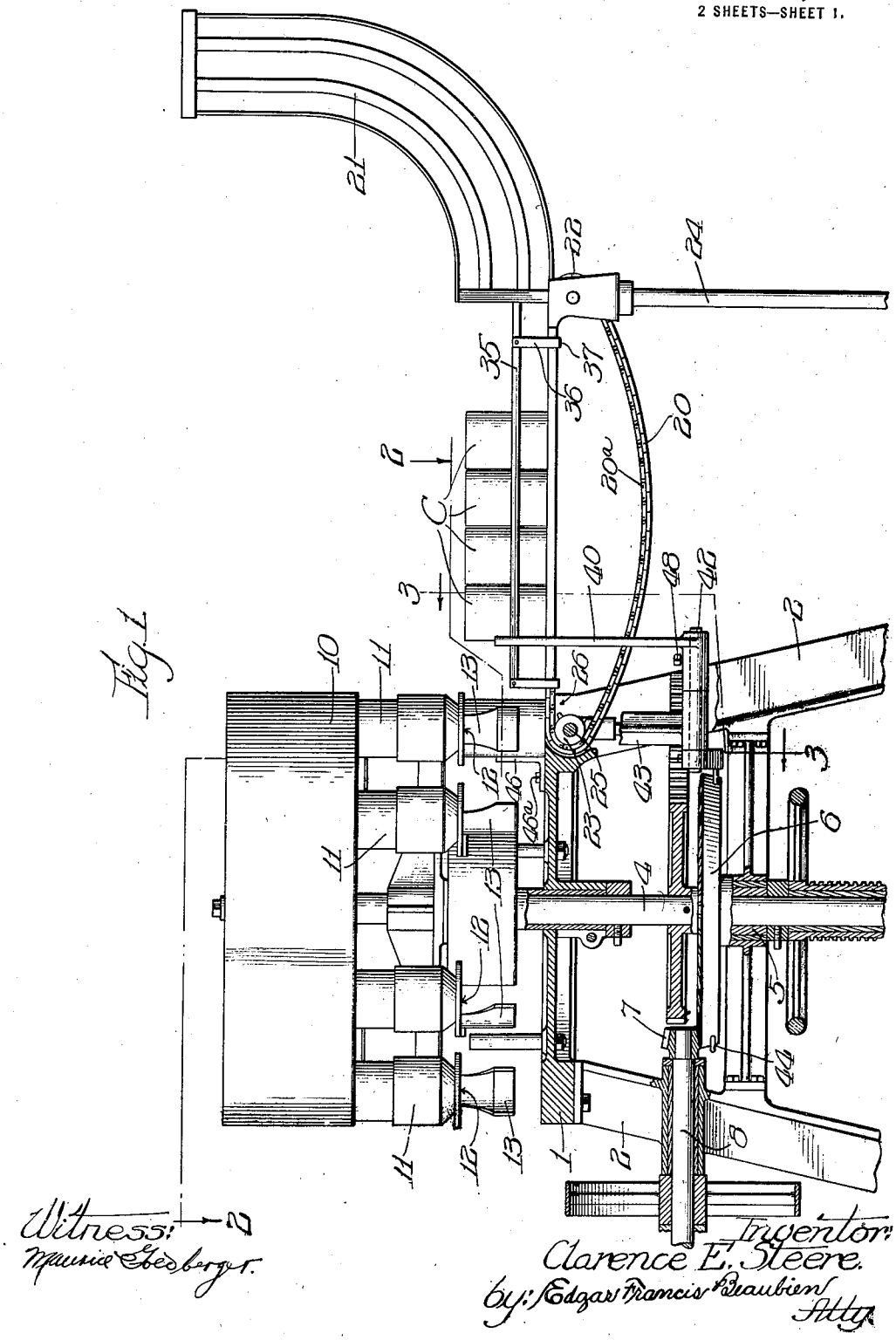


Fig. 1.

Witness:
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2 SHEETS—SHEET 2.

Fig. 2.

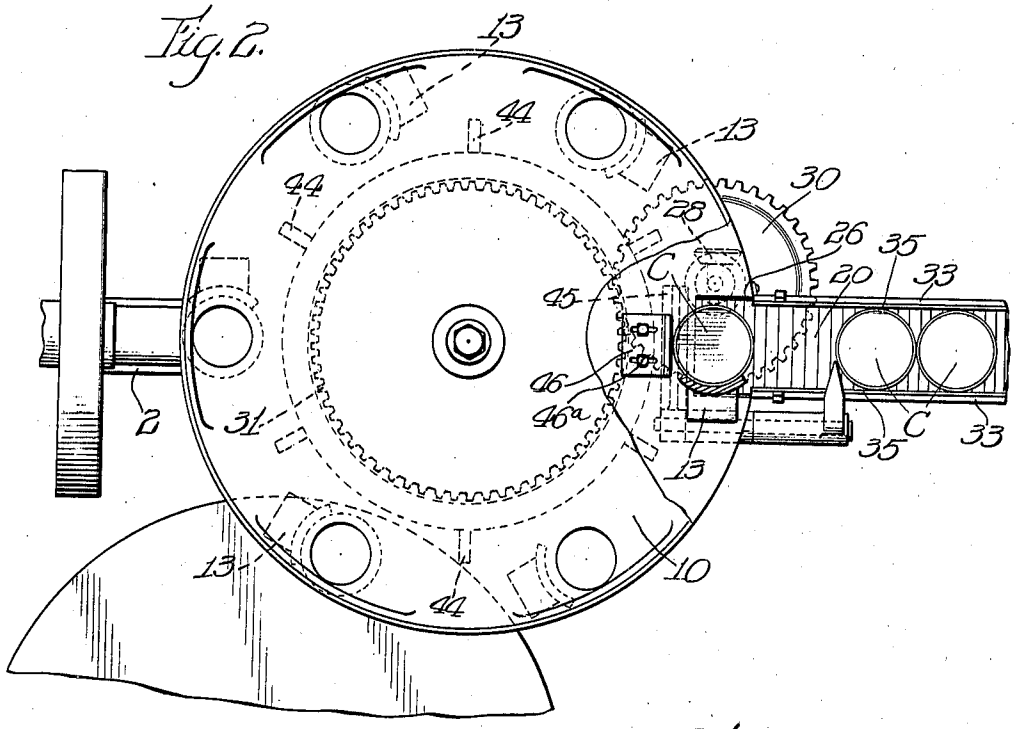
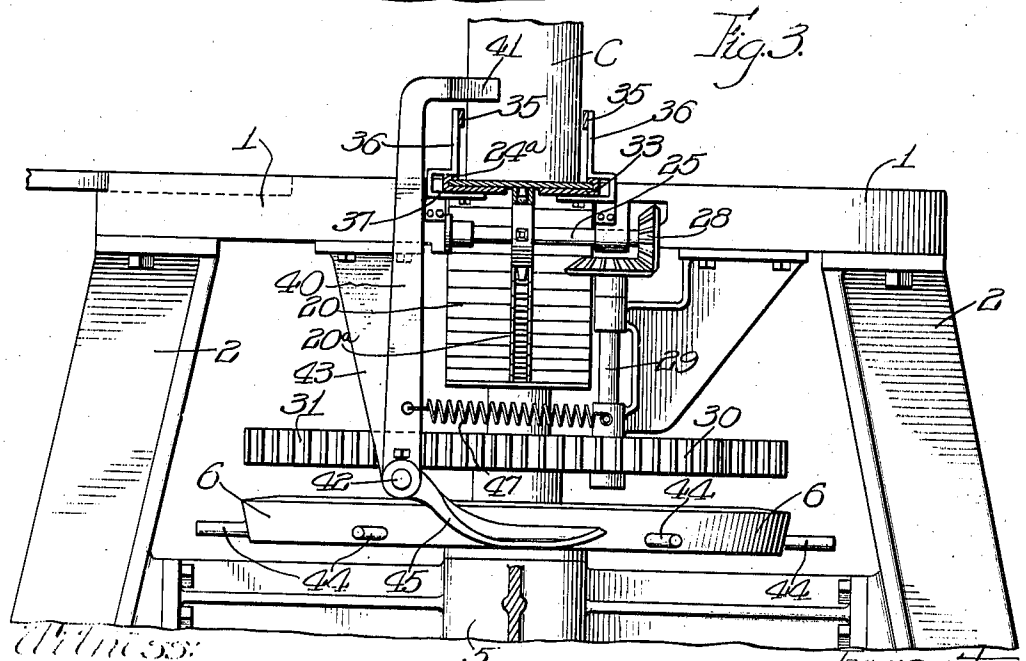


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLARENCE E. STEERE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO HENRY SCARBOROUGH, OF MILWAUKEE, WISCONSIN.

FEEDER FOR CAN-FILLING MACHINES.

1,343,417. Specification of Letters Patent. Patented June 15, 1920.

Application filed January 17, 1918. Serial No. 212,245.

To all whom it may concern:

Be it known that I, CLARENCE E. STEERE, a citizen of the United States of America, and resident of Milwaukee, Milwaukee county, Wisconsin, have invented a certain new and useful Improvement in Feeders for Can-Filling Machines, of which the following is a specification.

My invention relates to improvements in can-filling machines, and more particularly to an improved mechanism for regulating the feed of the cans to the machine.

My object is to provide an improved structure for this purpose which will be simple, durable and reliable in construction, and effective and efficient in operation.

Other objects of my invention will appear hereinafter.

My invention consists in the features of novelty exemplified by the construction, combination and arrangement of parts hereinafter described, shown in the accompanying drawings, and more particularly set forth in the appended claims.

Referring to the drawings—

Figure 1 is a view, partly in section and partly in elevation, of a can-filling machine embodying my invention.

Fig. 2 is a plan view, partly in section, on the line 2—2 of Fig. 1, of the structure shown in Fig. 1.

Fig. 3 is an enlarged section on the line 3—3 of Fig. 1.

In the drawings, I illustrate my invention in connection with a can-filling machine of the type constituting the subject-matter of my co-pending application Serial No. 141,537, filed January 10, 1917, but my invention is equally as applicable to machines of the type shown in my co-pending application Serial No. 160,471, filed April 7, 1917.

This machine is of the continuous rotary type to which the cans are fed successively and from which the cans leave successively after having been charged with measured quantities of material. In general, this machine involves a frame in the lower portion of which the driving mechanism and above which the can-filling mechanism is located. The frame has a flat top table 1 supported by a number of legs 2. The top of the table is circular and provides a can-supporting race or track around which the cans travel. The machine has a central upstanding shaft 4 which is supported in suitable bearings 5 in the frame and is driven by means of the horizontal crown gear 6, bevel pinion 7 and shaft 8, from any suitable source of power, the crown gear being fastened to the shaft. The shaft extends above the can-supporting surface of the frame and supports the measuring and filling mechanism. This mechanism embodies a cylindrical hopper 10 and a plurality of measuring devices 11 depending from the hopper. These measuring devices are in the form of small cylinders directly connected with the underside of the hopper and comprise telescoping sections, whereby the capacity of the chambers formed therein may be varied. Each measuring device has a pair of horizontally swinging gates movable into and out of the chamber in timed relation for controlling the movement of the material from the hopper to the measuring chamber, and from said chamber into the container or can to be filled. In the present machine, there are six of these measuring devices equally spaced apart and traveling in a circle above the can-supporting surface of the frame. The mouths 12 of these measuring devices, when the devices have been adjusted for a particular size can, travel in a fixed plane definitely spaced above the can-supporting surface. This space is slightly greater than the height of the particular size of cans C being filled so that the open top of the can will be directly in communication with the measuring devices. Each measuring device has a depending pusher 13 in the form of a curved blade arranged to properly position the can beneath the measuring device to receive the charge therefrom. These pushers engage the cans at the point where the cans are fed into the machine and slide the cans in the circular path upon the supporting surface at the same time holding the cans in filling position with relation to the corresponding devices.

The cans are fed successively to the machine by means of a can-moving or conveying device and a regulating mechanism associated therewith. In the present machine, this feeding mechanism is disposed substantially radially with respect to the circular path of travel of the cans. The conveying device involves an endless belt 20

disposed substantially horizontally and extending outwardly to a point where the empty cans may be supplied thereto. In this case the cans come to the conveyer from the source through a curved chute 21, although, if desired, the can may be indiscriminately placed directly upon the conveyer by an operator, and the chute dispensed with. The conveyer belt travels over suitable sprockets 22 and 23 at the ends thereof. The outer sprocket is mounted in a suitable post or standard 24, and the inner sprocket is mounted on a shaft 25 set within the frame top member so that the inner end of the conveyer overlies the path of travel of the cans. The sprocket is so mounted adjacent an opening 26 in the frame top member that the upper reach of the conveyer belt lies substantially flush with the can-supporting surface of the frame member. The inner sprocket shaft 25 is mounted in suitable bearings in the frame-member and has a bevel gear 28 at its end which meshes with a corresponding gear on a vertical shaft 29. This shaft carries a spur gear 30 at its lower end which is driven by a large gear 31 mounted directly on the central vertical shaft 4 of the filling machine. The ratio of this train of gears is such that the conveyer is driven at a greater speed than the moving measuring and filling devices. The conveyer belt is preferably made up of a plurality of transverse slats mounted upon an endless sprocket chain 20^a, thus providing a belt of sufficient width for the largest size can for which the machine is adapted. The upper reach of the conveyer belt forms the can-carrying portion and this is maintained in a substantially straight line by means of the guide plates 33 which extend along either side of the belt from the machine frame to the standard 24, and which is provided with grooved flanges 24^a for the edges of the conveyer belt. Along the sides of the conveyer are railings 35, which form a guideway for the cans. These are spaced apart sufficiently for the diameter of one can so that the cans will travel in single succession in the guideway. The uprights 36 for these railings are turned horizontally at 37 beneath the supporting plates 33, and are provided with a bolt and slot connection therewith for the purpose of permitting lateral adjustment of the guide rails for the different sizes of cans. The conveyer runs constantly and at a uniform speed proportional to the filling machine, and although the cans are relatively disconnected from the conveyer, the weight of the cans causes sufficient friction between the cans and the conveyer to carry them to the filling machine. I provide an arm 40, having a finger 41 at its end adapted to be reciprocated transversely into and out of the path of the cans on the conveyer in order to control the feeding of the cans. This arm is mounted on a rocker shaft 42 positioned beneath the conveyer and mounted in a suitable bearing 43 suspended from the frame of the machine. The shaft is disposed substantially horizontally and radially with respect to the crown gear 6 on the shaft 4. This gear has a plurality of pins or nubs 44 projecting therefrom and adapted to actuate an arm 45 on the inner end of the shaft 42. There are a number of these nubs corresponding to the number of measuring devices and they operate to rock the arm 45 and thereby swing the finger 41 outwardly from the path of the cans on the conveyer and release the end can from the row, whereupon the conveyer will carry said end can into the path of the measuring devices. In line with the conveyer is an upstanding stop member 46 which forms an abutment against which the conveyer carries the cans. This stop prevents the cans from being carried beyond proper position. It is mounted on the frame member and is adjustable by means of the bolt and slot connections 46^a. This mechanism is so timed that the end can will be released after the preceding end can has been moved out of the way by a measuring device and prior to the arrival of the succeeding measuring device at the feeding point. The release of the can is so arranged that the conveyer will have time to carry the can into position in advance of the measuring. During the periods between the releasing operation, the finger remains in the path of the cans on the conveyer and holds them against entering the machine. The conveyer, however, under these conditons simply slides beneath the cans. In the event that the cans have not been placed on the conveyer in abutting succession, any gaps between cans will be closed by the continuous movement of the conveyer. The finger arm is returned after each operation, and is yieldingly held in position by the spring 47 which is connected between the arm and frame. The controlling finger, at its end portion, is tapered to a comparatively sharp edge so that it will properly pass between the end and second cans, and, furthermore, will be adaptable to the different sizes of cans. It will be observed that this finger will hold the cans even though it should happen to engage the second can at any point on its circumference in front of a diametrical line passing through the finger, it will still hold the cans. The advantage of the spring as a return means for the finger causes the finger to yield and prevent damaging a can in the event that the finger should happen to strike squarely in the middle of the can. The finger is preferably made long enough to serve for the various sizes of cans, and the arm is

rotatably adjustable on its shaft as desired, it being secured on said shaft by means of the set screw 48.

What I claim as my invention is:

1. A feeding mechanism of the class described including a conveyer, means movable transversely of the path of the conveyer for carrying articles laterally from the conveyer, means synchronized in movement with said first named means for holding work articles against movement on the conveyer, and a stop engageable by articles on the conveyer to hold articles for engagement by said first named means, said stop being adjustable in the direction of movement of the conveyer.

2. A feeding mechanism of the class described including a stationary filling table, a plurality of spaced article carrying members movable continuously in an annular path and spaced above the table, a conveyer extending substantially radial with respect to the axis of movement of said members and having its discharge end disposed under the path of movement thereof, a member movable to and from a position engaging articles on the conveyer, means for moving said member in synchronism with movement of the article carrying members whereby to release successive articles for movement on the conveyer at timed intervals and a stop member disposed within the annular path of said work carrying members at the inner end of the conveyer to hold said released articles for engagement of the articles successively by the article carrying members.

3. A feeding mechanism of the class described including a plurality of spaced work carrying members movable continuously in an annular path, a conveyer extending substantially radial with respect to the axis of movement of said members and having its discharge end disposed under the path of movement thereof, a member movable to and from a position engaging articles on the conveyer, means for moving said member in synchronism with movement of the article carrying members whereby to release successive articles for movement on the conveyer at timed intervals for engagement of the articles successively by the work carrying members, and a stop member adjacent the discharge end of the conveyer adjustable in a direction longitudinal with respect to the conveyer.

4. A feeding mechanism of the class described including a plurality of work carrying members movable in an annular path, a conveyer extending in a direction substantially radial with respect to the axis of movement of said members and having its discharge end disposed under the path of said members, an annular series of trip pins rotated synchronously with said work carrying members in a plane parallel to the plane of rotation of said members, a shaft extended parallel to the conveyer, a rock arm on the shaft normally urged to project across the path of articles on the conveyer, and a second arm on the shaft engageable by the trip pin to rock said shaft and move the first named arm from the path of articles on the conveyer.

Signed by me at Chicago, Ills., this 12th day of June, 1917.

CLARENCE E. STEERE.