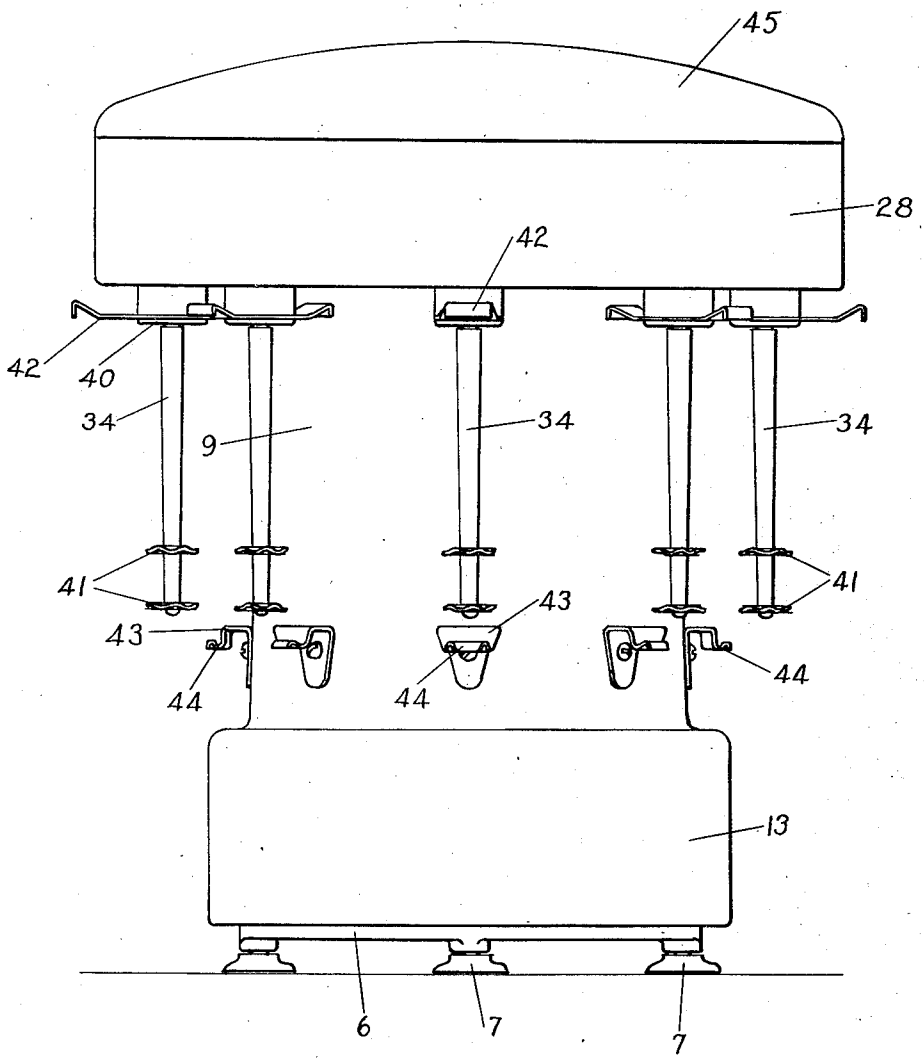
Sept. 12, 1939. E. S. PRINCE ET AL 2,172,593

MULTIPLE DRINK MIXING MACHINE

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FIG-1



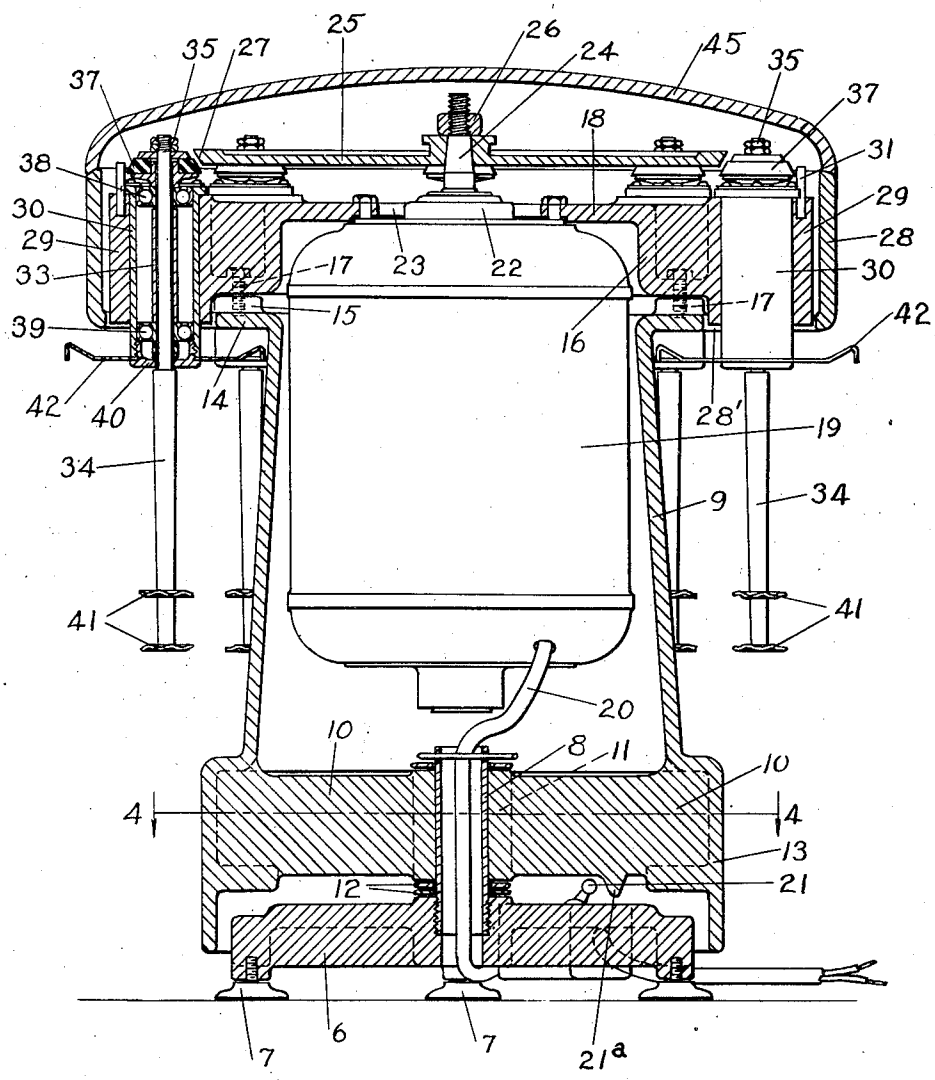
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MULTIPLE DRINK MIXING MACHINE

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FIG-2



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MULTIPLE DRINK MIXING MACHINE

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FIG-3

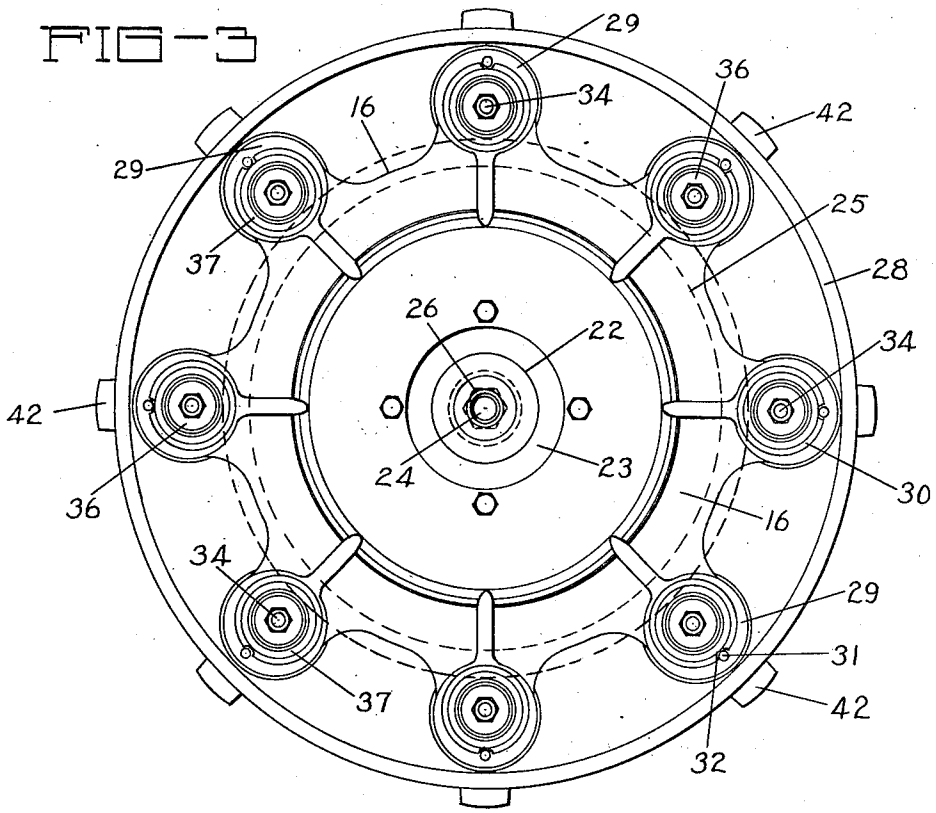
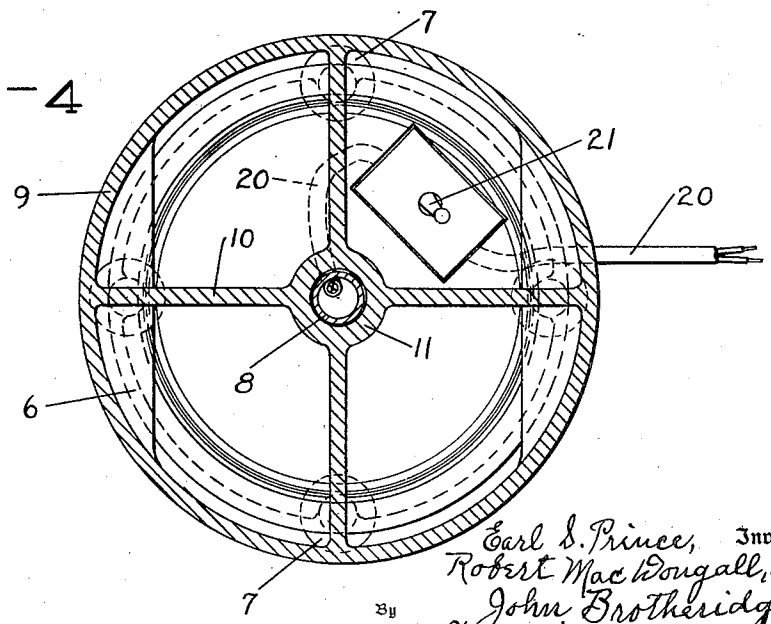


FIG-4



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Patented Sept. 12, 1939

2,172,593

UNITED STATES PATENT OFFICE

2,172,593

MULTIPLE DRINK MIXING MACHINE

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Application September 21, 1938, Serial No. 230,976

1 Claim. (Cl. 259—131)

Our invention has reference to a multiple drink mixing machine, and the chief purpose thereof is to provide a unitary structure, occupying a small amount of space, in which a plurality of mixing mechanisms can be operated at the same time, with a central motor from which all of the devices receive their movement.

Another purpose of the invention is to have the mixing spindles normally idle, with any one or other of said spindles rendered active by the placing in a position for mixing a receptacle containing the material to be mixed.

Another purpose of the invention is the provision of a drum, about which the mixing devices are arranged, and rotatable to bring any of said devices to a proper station for installing the container and its contents, or removing the same. It is also designed to use a motor of ample size and power, resulting in a uniform speed of the motor spindles regardless of load, and higher agitator speed under load than is practical with directly driven agitator spindles. This also results in a better drink produced in less time.

The machine possesses a perfect balance, with the same undisturbed by the fact that only a portion of the spindles are in operation. Any number of the spindles can be removed or held out of action without impairing the operation of the remainder of such devices. The agitator spindles are also constructed so as to be interchangeable, and may be removed and replaced in any of the positions which are provided therefor.

When the machine is to be used the motor is in constant operation, also a rotatable disk or gear, into contact with which the spindle pinions or disks are brought when it is desired to operate such spindles and the agitating devices thereon. This is brought about by the movement of the spindles, which is effected automatically by positioning a mixture container in the machine. By the removal of the container the connection is broken, and that particular spindle ceases to operate.

The machine is specially effective in mixing some special kinds of drink, such as malted milk concoctions, and if the containers are placed in the machine in succession, by the time the last one is positioned therein the first one will be ready to be removed from its station, and the operation will be continuous. The contact of the rotor with the spindle bearing is of such a type as to include shielded, self-oiling bearings, in which the necessity of oiling is practically eliminated.

The device is of compact form and of attractive appearance, and is an ornament to the place where it is in use.

The particular construction, arrangement, and operation of the parts of the invention will be more fully understood from the following specification, taken in connection with the accompanying drawings, in which:—

Fig. 1 shows the invention in side elevation.

Fig. 2 is a vertical medial section through the machine, with the motor shown in complete lines.

Fig. 3 is a top plan view of the invention, with some of the parts removed.

Fig. 4 is a cross-section on the line 4—4 of Fig. 2.

The reference number 6 indicates a base, or stand, provided with feet 7, preferably of rubber or other non-marring material. Centrally of the stand 6 is supported a hollow shaft 8, upon which is rotatably mounted a drum 9, by means of spokes 10 near the lower end thereof, and a hub 11 at the inner ends of the spokes. Between the hub and stand 6 is a pair of washers 12, with an anti-friction effect upon said parts. The drum has an enlarged skirt portion 13, which partially encloses the stand.

The drum 9 is slightly tapered upwardly, and is provided at its upper end with an annular flange 14, provided on its upper face with bosses 15, upon which is supported a circular frame 16, secured thereto by screws 17. From the central raised portion 18 of said frame is supported an electric motor 19, provided with a cord 20 extending through the shaft 8, and fitted with a switch and lever at 21, by means of which the current can be turned on or off.

At the initial movement of the drum 9, for positioning the first container in the machine, a lug 21a secured to one of the spokes 10 comes in contact with the switch lever 21, and starts the motor. At the end of the movement the lug comes in contact with a stop, not shown, and by reversing the rotary movement of the drum the lug is again brought into contact with the switch lever, again shutting off the motor. The motor is thereby only in operation when there is any work to be performed.

At the upper end of the motor, in an opening 22 in the frame 18, is a housing 23 for bearings for the upper end of the motor shaft 24, threaded at its upper end to receive a nut 26, by which a disk 25 is held in place on the end of said shaft. The edge of the disk is given a bevel at 27. While the motor is in movement the disk 25 is in constant rotation.

Supported at the outer edge of the flange 14 is a circular casing 28, and at intervals in said flange are openings 28' in which are positioned bearings 29, supported from the outer edge of the frame 16. Each of said bearings contains a cylinder 30, slidable vertically therein, and held from turning by pins 31 fixed in the bearings, and engaging grooves 32 in the cap-plates of the cylinders.

Centrally of each of the cylinders 30 is a tubular shaft 33, in which is held the upper reduced portion of a spindle 34, secured in place by a nut 35 on the upper threaded end thereof. Below said nut is a washer 36, and beneath said washer is fixed to the shaft 33 a bevel pinion 37, the edge of which is engageable with the track 27 of the rotor 25. In the upper end of the cylinder 30 is a ball-bearing unit 38, and in the lower end of the cylinder is a similar ball-bearing unit 39. Below the latter unit is a screw plug 40, closing the same.

Each of the spindles 34 is provided at its lower end with agitating devices 41, of the usual type. At the lower end of each of the cylinders 30 is a resilient contact plate 42, with ends adapted to receive the upper edge of a container, such as a mixing cup of the usual pattern. Each of the pinions 37 is normally out of contact with the rotor 25, but upon engaging one of the plates 42 with the edge of a mixing cup in the manner named, the cylinder 30 and spindle 34 are forced upwardly until the pinion is brought into engagement with the track on the rotor 25, causing the rotation of said pinion and the spindle with which it is connected. This movement continues until the parts are disengaged, which results from the release of the upward pressure of the cup.

To aid in supporting the containers during the mixing operation there are supported on the wall of the drum 9, in rear of each of the spindles 34, brackets 43, provided with curved rests 44 for the lower edges of the containers. The top of the machine is enclosed by a dome 45, supported on the casing 28.

The machine set forth herein is provided with eight of the mixing units, but the number can be increased or lessened as desired, within reasonable limits.

The operation of the machine will be obvious. The motor is first put in operation by throwing the switch 21. Following this one of the mixing devices, preferably the one at the front of the machine, is provided with a mixing cup and contents for mixing, the operation being started coincidently with the placing of the cup in position. The drum is then rotated until another spindle apparatus is in position for installing a cup thereon, and the operation is repeated. This is kept up until all of the stations are filled, with all of the mixing devices acting at the same time. The power of the motor is sufficient to more than carry the combined load, and the mixing of the drinks is quickly and effectively accomplished. After a sufficient length of time the container first installed is removed, and another one placed in its position.

The spring plates 42 serve the double purpose of holding the pinions 37 in contact with the rotor and exerting a pressure downwardly to prevent accidental release of a mixing cup from its support 43.

The drum 9 can be rotated by hand in either direction, and a stop can be provided for preventing more than one revolution thereof in either direction.

The invention is not limited to the exact means shown for making contact with the rotor, but other devices can be substituted therefor, differently positioned, and arranged for automatic starting of the mixing movement upon the insertion of a cup, and stopping thereof upon the cup being removed. Other changes can be made therein without departing from the spirit of the invention, as set forth and claimed herein.

What we claim, and desire to secure, is:

A multiple mixer of the type described comprising a stand, a body portion rotatably mounted thereon, a motor in the body portion, a driving disk on a vertical shaft driven by the motor, a series of mixer units arranged adjacent to and surrounding the drive disk, each mixer unit comprising a hollow vertically movable cylinder, slidably supported in the body portion, said cylinder provided with ball bearings at its ends, a spindle vertically rotatable on the bearings and provided on its depending portion with agitators, and at its top with a pinion normally spaced from the drive disk but engageable therewith upon upward movement of the cylinder, a resilient contact plate on the cylinder for engagement by a container to lift the cylinder, and means for releasably maintaining the container in operative engagement with the plate

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