Jan. 30, 1951 G. F. MASSEY 2,539,851

BABCOCK TEST MIXER

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Fig. 1.

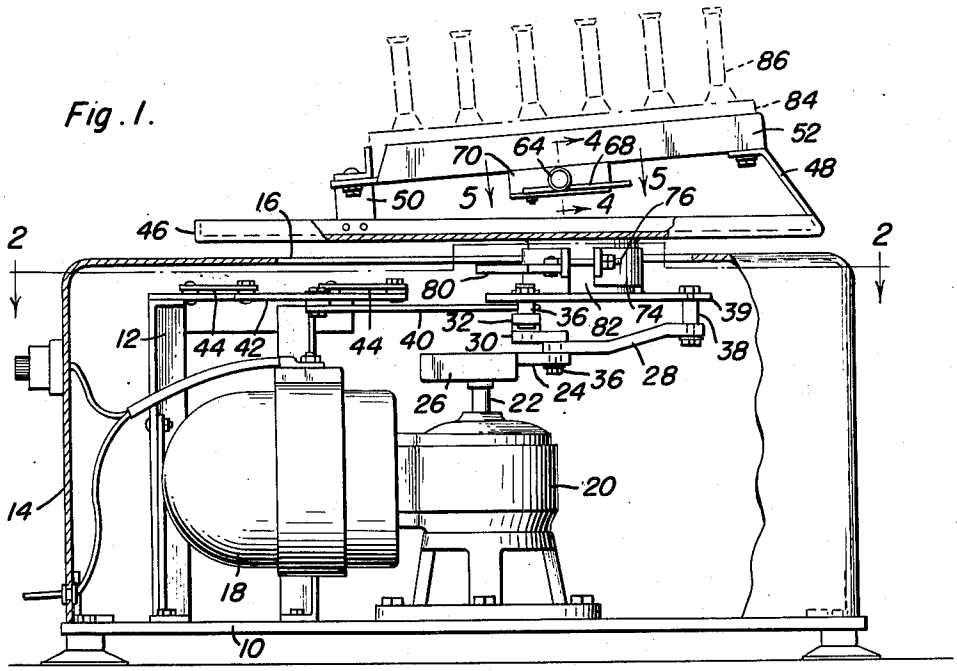
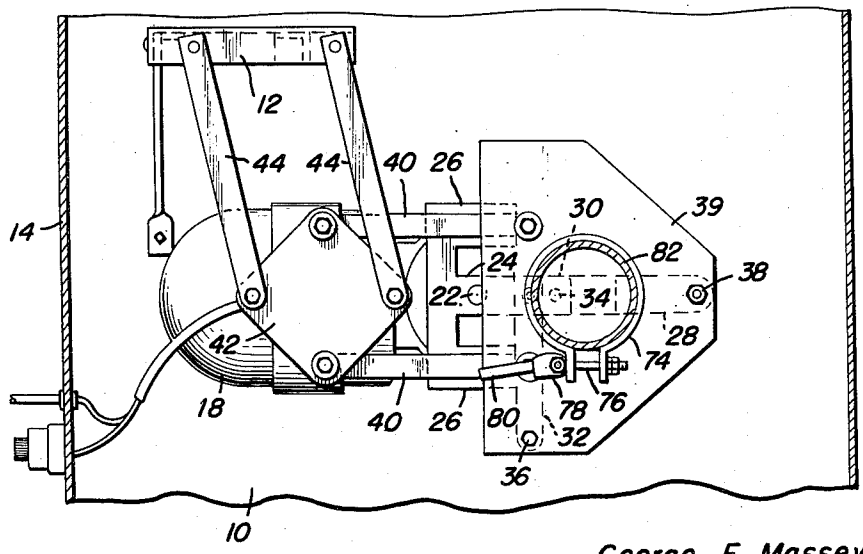


Fig. 2.



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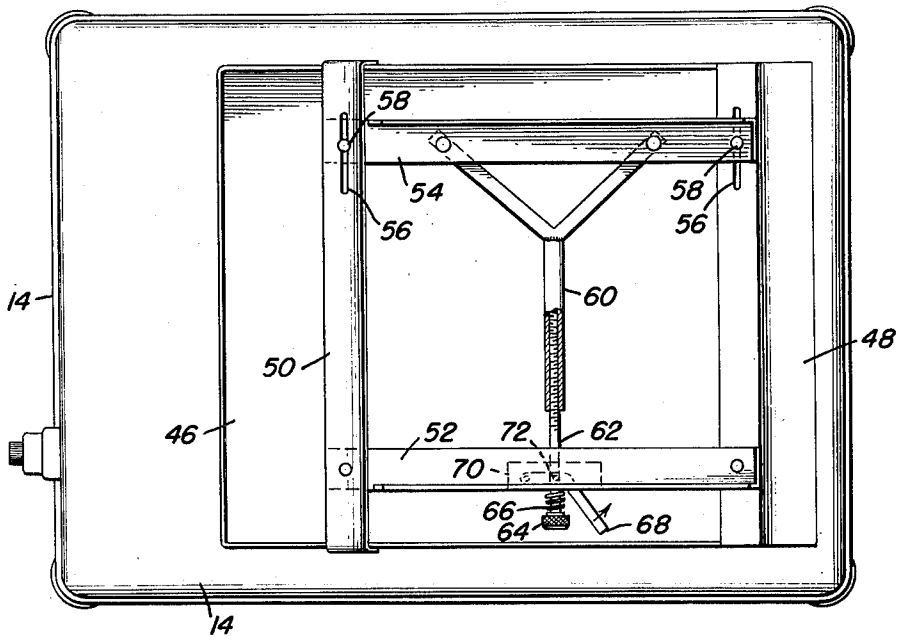
Attorneys

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Fig. 3.



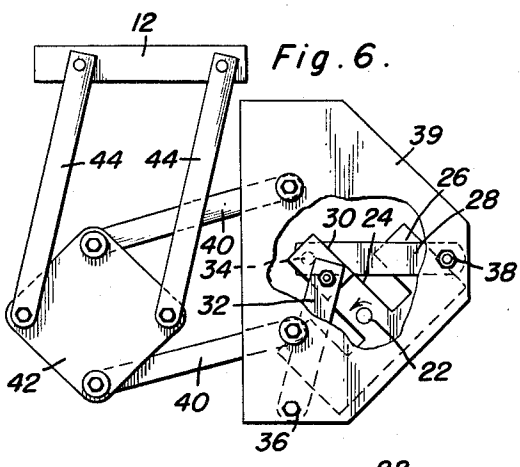
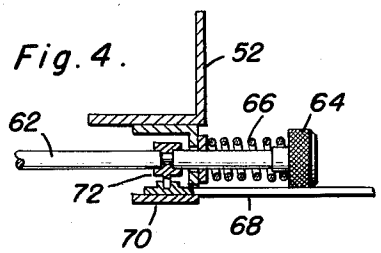


Fig. 6.

Fig. 4.



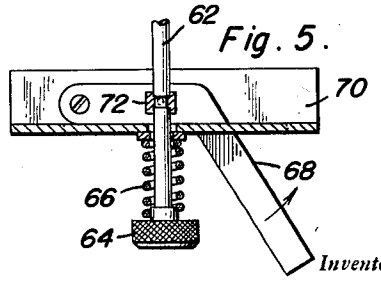
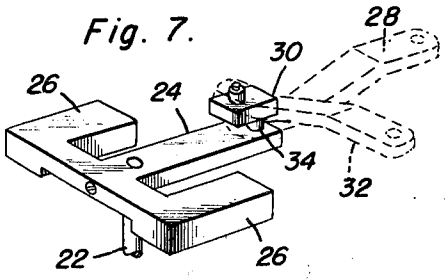


Fig. 5.

Fig. 7.



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BABCOCK TEST MIXER

George F. Massey, Fond du Lac, Wis.

Application April 26, 1949, Serial No. 89,654

3 Claims. (Cl. 259—54)

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This invention relates generally to a machine for agitating test bottles and the like, and the primary object of this invention is to provide a machine of this type which will receive test bottles and move these test bottles in an elliptical path, while the test bottles are maintained in a position inclined slightly to the vertical.

Another object of this invention is to provide a novel mechanical linkage particularly suitable for attaining a desirable elliptical movement of a member exemplified in this disclosure by a tray with test bottles therein.

Another object of this invention is to provide a machine of this type in which the loading and unloading of the test bottles in the machine is facilitated.

Still another very important object of this invention, is to provide a mechanical linkage between the members directly carrying the test bottles, and the crank rotated by an electric motor, whereby an elliptical movement of a desired character is achieved.

Yet, another object of this invention is to provide a machine which allows for the easy cleaning of those parts likely to require such cleaning most frequently.

The last object of the invention specifically is to provide a device of this character which is relatively inexpensive and practicable to manufacture, which is simple, safe and convenient to use, which is adaptable for a wide variety of uses, and which will give generally efficient and durable service.

With these objects definitely in view, this invention consists in the novel construction, arrangement and combination of parts and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, illustrated in the accompanying drawings which form a material part of this application, and which;

Figure 1 is a side elevational view of the assembled machine with a rack carrying test bottles therein, portions of the machine being broken away and the underlying portions being shown in vertical section and in elevation to amplify the disclosure of this invention;

Figure 2 is a horizontal sectional view taken substantially upon the plane of the line 2—2 in Figure 1, the figure being fragmentary in character;

Figure 3 is a top plan view of the machine with the rack and test bottles removed;

Figure 4 is a vertical sectional view of a portion

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of the structure used to clamp the above mentioned rack in the elliptically moving tray;

Figure 5 is a horizontal sectional view of a portion of the structure used to clamp the above mentioned rack in the elliptically moving tray;

Figure 6 is a slightly diagrammatic view, similar to Figure 2 and showing the elliptically travelling plate and parts directly connected therewith in second position;

Figure 7 is an enlarged three dimensional view of the crank and parts directly connected therewith.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in details, this invention includes a frame having a base plate 10, an upright 12, and a casing 14, the casing being considered as a portion of the frame, and it will be noted that the casing has an opening 16 in the top thereof. An electric motor is operatively connected with a reduction gear assembly 20, and the output shaft 22 thereof is connected to the crank 24. The crank 24 comprises a central arm of an E-shaped member in which the other arm 26 comprises balance weights. The crank 24 is directly pivoted to a pitman 28 and includes a returned crank portion 30. A second pitman 32 is pivoted at one end to the returned crank portion 30. The crank 24 and returned crank portion 30 are both rigidly secured to the pin 34 which pin 34 also functions as a pivot pin for the pitman 28. The outer ends 36 and 38 of the pitman 32 and the pitman 28 are respectively connected pivotally to an elliptically travelling plate 39 and the pitmans are of equal length. The plate 39 is prevented from rotating about its own vertical axis by a pair of parallel inflexible links 40 terminally pivoted to the plate and to an arcuately travelling member 42, which may also be of plate character as is indicated in the drawings, and a second pair of inflexible parallel links 44 terminally secured to the arcuately travelling plate 42 and to the standard or upright 12 of the frame.

The elliptically travelling plate 39 has secured thereto, as described hereinafter, a tray 46 having upstanding peripheral walls, one wall having an integral upwardly extending member 48, and the tray carries another member 50 intermediate the ends of the tray, these members 48 and 50 both being elongated and parallel to each other, and the member 50 being considerably lower than the more elevated member 48. An-

other elongated member, represented as an angle iron 52 is secured to and between the members 48 and 50, while a sliding member 54 is disposed parallel thereto and shiftably mounted on the member 48 by means of slots 56 in the members 48 and 50 and headed bolts or buttons 58, as will be clearly understood from an inspection of Figure 3. A bifurcated spanner bar 60 is secured to the member 54 and is made longitudinally extensible by a threaded member 62 which has an enlarged head 64, the member 62 being inserted through a suitably provided aperture in a channel member 70 carried on the under surface of the member 62. A spiral spring 66 is pressed between the journal member 70 and the head 64, being arranged co-axially with the member 62.

The above mentioned construction provides for the biasing of the member 54 toward the member 52, and a lever 68 is pivoted on the channel member 70 and provided with a fitting 72 having a pivotal connection with an intermediate portion of the lever 68, so that actuation of the lever in one direction will compress the spiral spring 66 and move the member 54 away from the member 52.

The structure already mentioned and used for removably securing the tray 46 on the elliptically travelling plate 39, will now be described in some greater detail. An upstanding collar 74 is secured to the upper surface of the plate 39 and this collar is split and at least one portion thereof is resilient. A spanner bar 76 and a cam 78 with a handle 80 thereon co-act with the split collar 74, as clearly indicated in Figures 1 and 2 to allow the clamping of a depending cylindrical member 82, on the under side of the tray 46, in place within the collar 74. The above described construction allows the easy securement of the tray 46 in place on the plate 39, and the tray can be removed easily to facilitate cleaning thereof. It is proposed to provide a rack 84, dimensionally adapted to fit between the members 52 and 54 of the tray, and this rack 84 carries test bottles 86, or the like. The specific details of the rack are not considered an important part of the application for patent.

The operation of the invention will be clearly understood from a consideration of the foregoing description of the mechanical details thereof, taken in connection with the drawings and the above recited objects of this invention. It may be mentioned, in recapitulation, that the electric motor 18 when energized will cause the crank 24 to rotate and the pitman 28 will move the plate 39 a greater distance in one direction than the pitman 32 moves the plate in a direction normal to the first mentioned direction. Therefore, the plate 39 will be forced to travel in an elliptical path while being prevented from rotating on its own vertical axis by the parallel links 40 and 44 and the arcuately moving member 42. Obviously the desired elliptical motion will be transmitted to the removable tray 46 and the parts carried thereby. A highly satisfactory mixing of the contents in the test bottles 86 can be achieved by this device.

In the laboratory procedure of testing milk, rack 84 containing test bottles is kept in a water bath before being placed in the machine for mixing. Rack 84 with the test bottles is placed in the machine directly from the water bath. Water that adheres to the bottles and the rack drains off.

Tray 46 with the upraised sides serves as a pan to catch this water and prevents it from draining onto the machine. In addition, since occasionally a test bottle breaks as the machine is in operation the tray 46 serving as a pan provides a safeguard to prevent the milk and acid from draining onto the machine and damaging the mechanism.

Minor variations from the embodiment disclosed herein may be resorted to without departing from the spirit of this invention. The scope of this invention should be determined only in accordance with the proper interpretation of the following claims.

Having described the invention, what is claimed as new is:

1. A machine comprising a frame, a motor in said frame, a crank means rotated by said motor, an elliptically travelling plate, a pair of pitmans having one pair of corresponding ends pivoted on said plate at points spaced apart in the plane of elliptical travel of the plate, the other ends of the pitmans being pivoted on said crank means at points unequally spaced from the axis of rotation of said crank means, an arcuately travelling member having a first pair of spaced parallel inflexible links connected to and between said plate and said member, a second pair of spaced parallel inflexible links connected to and between said member and said frame.

2. A machine comprising a frame, a motor in said frame, a crank means rotated by said motor, an elliptically travelling plate, a pair of pitmans having one pair of corresponding ends pivoted on said plate at points spaced apart in the plane of elliptical travel of the plate, the other ends of the pitmans being pivoted on said crank means at points unequally spaced from the axis of rotation of said crank means, an arcuately travelling member having a first pair of spaced parallel inflexible links connected to and between said plate and said member, a second pair of spaced parallel inflexible links connected to and between said member and said frame, said frame having an opening in the top, and a tray having a depending portion extending through said opening for connection to said plate.

3. A mechanical linkage for providing elliptical movement in a member, comprising a frame, a motor in said frame, crank means rotated by said motor, a member, a pair of pitmans having one pair of corresponding ends pivoted on said member at points spaced apart in the plane of elliptical travel of the member, the other ends of the pitmans being pivoted on the crank means at points unequally spaced from the axis of rotation of said crank means, an arcuately moving member having a first pair of spaced parallel inflexible links connected to and between said first mentioned member and said arcuately moving member and second pair of spaced parallel inflexible links connected to and between said arcuately moving member and said frame.

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