Oct. 31, 1933. A. L. MELUCCI 1,933,275

AUTOMATIC FEEDING TABLE

Filed Feb. 11, 1933

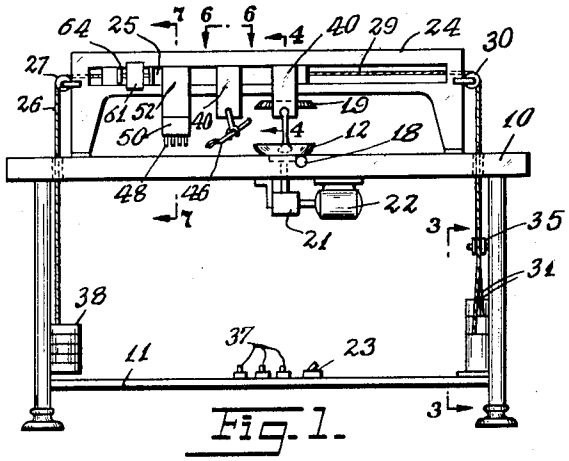


Fig. 1.

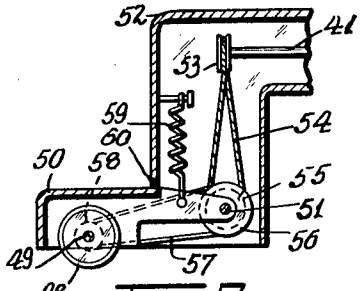


Fig. 7.

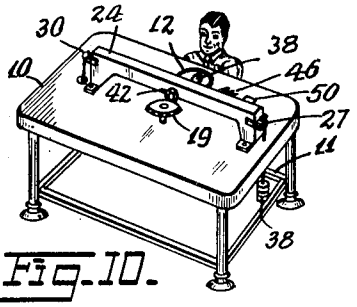


Fig. 10.

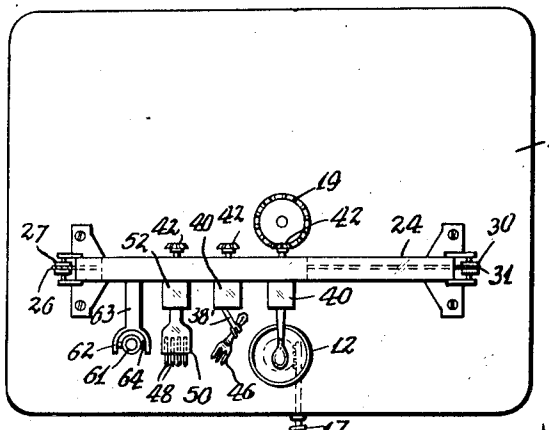


Fig. 2.

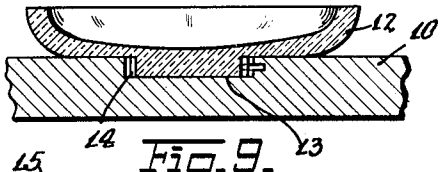


Fig. 9.

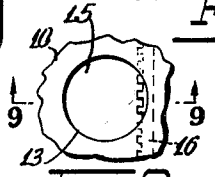


Fig. 8.

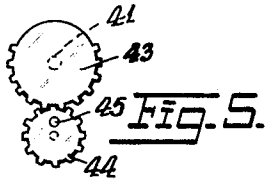


Fig. 5.

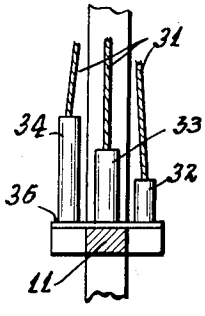


Fig. 3.

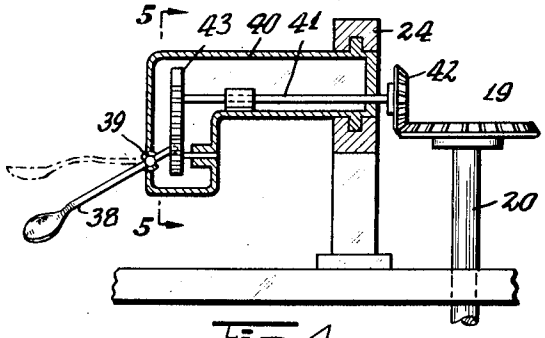


Fig. 4.

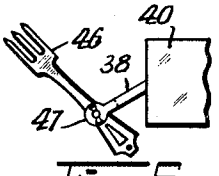


Fig. 6.

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AUTOMATIC FEEDING TABLE

Anthony L. Melucci, Brooklyn, N. Y.

Application February 11, 1933. Serial No. 656,379

7 Claims. (Cl. 45—26)

This invention relates to new and useful improvements in an automatic feeding table adapted to feed the armless.

The invention has for its main object the construction of a feeding table which is characterized by selective automatic feeding with a spoon, a fork and a knife arranged in a novel manner in conjunction with a mechanism adapted to hold a plate in various rotative positions.

Still further the invention contemplates the arrangement of a depressible plunger adapted to be depressed by one's chest and connected for rotating a plate or other dish upon the table so that the various implements such as the spoon, fork etc. may be used effectively.

Still further the invention proposes an arrangement whereby a source of power such as an electric motor is arranged stationary upon the table and is connected to be selectively connected for operating any one of the implements.

Still further an arrangement is proposed whereby the various implements mentioned are selectively disposed immediately above the plate of food and in such a position to automatically connect with said prime movement.

Still further the invention proposes the provision of means for moving a carriage carrying said implements into any one of the several positions controlled by a plurality of depressible buttons arranged in a row upon the base of the table in a maner so as to be operable selectively by one's foot.

Still further the invention proposes the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:—

Fig. 1 is a side elevational view of a feeding table constructed according to this invention.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is a fragmentary vertical sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary enlarged sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary elevational view looking in the direction of the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary plan view looking in the direction of the line 6—6 of Fig. 1.

Fig. 7 is a fragmentary sectional view taken on the line 7—7 of Fig. 1.

Fig. 8 is a fragmentary plan view of a portion of the table which is adapted to receive the feeding plate.

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 8.

Fig. 10 is a perspective view of the feeding table.

The automatic feeding table according to this invention comprises a table 10 of any design and construction which is provided with some base structure such as a transverse board 11. A plate 12 is adapted to be placed upon the table at the center of one of the sides so that a person seated adjacent this side may eat food from the plate as hereinafter fully described. The plate 12 is formed with a bottom circular portion 13 having peripheral teeth 14 and adapted to be engaged into a circular recess 15 formed upon the top of the table. A rack bar 16 is slidably mounted through the edge of the table and is so arranged that its teeth mesh with the teeth 14. The rack bar 16 is normally urged outwards by a spring 17 arranged upon it and acting between the edge of the table and a head 18 on the extremity of the rack bar. A person seated by the table may lean forward so that the chest depresses the rack bar 16 and so turn the plate 12 to any desired amount necessary for proper action of the spoon, fork and knife as hereinafter fully described.

A horizontal bevel gear 19 is located a slight distance above the top of the table and is fixed upon a vertical shaft 20 extending through the table. This vertical shaft connects with a speed reduction gear 21 connected with an electric motor 22 attached upon the bottom of the table. A switch 23 is shown mounted upon the base board 11 and is electrically connected for operating the motor 22 and itself is operable by the foot of a person seated at a table. The electric circuit between the switch 23 and the motor 22 is not shown nor described since it will readily be understood by any electrician and forms no part of the invention.

A frame 24 is mounted upon the table and extends substantially across the entire width of the table at the side where the armless person is seated. A carriage 25 is slidably mounted upon the frame 24. A leg controlled means is provided for moving the carriage to various positions upon the frame and comprises a cable 26 attached upon one side of the carriage and extended over a pulley 27 mounted upon the frame

24, and further extending through the table and carrying a plurality of counterweights 28 adapted to normally urge the carriage into one extreme position. Another cable 29 is attached to the other side of the carriage 25 and extends over a pulley 30 mounted upon the frame 24 and terminates in a plurality of branch cables 31 each selectively connected with different solenoids 32, 33 and 34.

These solenoids have different length of strokes so that when, for example, solenoid 32 is operated one of the branches 31 is drawn a certain distance for drawing a cable 29 a corresponding distance and moving the carriage the same distance. Similarly the operation of the solenoid 33 causes the carriage 35 to be moved a different distance and finally the operation of the solenoid 34 moves the carriage still another distance. The various branch cables 31 are extended over an idler pulley 35 mounted upon one of the legs of the table. The solenoids 32, 33 and 34 are mounted upon a small platform 36 supported on the base board 11. A line of switches 37 are mounted upon the base board 11 and are adapted for operation by one's foot. There is a switch 37 for each of the solenoids arranged in circuits for selectively controlling the operation of the solenoids. These circuits are not shown nor described since they will be readily understood by any electrician and form no part of the invention.

A substantially horizontal feeding spoon 38 for automatic operation in relation to the plate 12 is mounted with a ball and socket joint 39 upon the carriage 25. More particularly the ball and socket joint 39 is arranged on an extending casing portion 40 of the carriage. A shaft 41 extends through the casing 40 and at one end is provided with a bevel gear 42 adapted in a certain position of the carriage 25 to mesh with the bevel gear 19. The other end of the shaft 41 carries a gear 43 which has some of its teeth missing as clearly shown in Fig. 5. The gear 43 meshes with the gear 44 rotatively mounted in the casing 40 and the inner end of the spoon 39 connects at the point 45 eccentrically with the gear 44. The gear 43 is larger than the gear 44 and has just a sufficient number of teeth so as to rotate the gear 44 one complete revolution upon itself rotating one revolution. The normal inoperative position of the spoon 38 is upon the horizontal central line of the ball and socket joint 39. During operation of the device the travel of the spoon 38 will be through 360 degrees so that it stops for a short period of time on the same initial position but it should be noticed that the spoon will fill up with the liquid within the plate 12 during its motion.

A feeding fork 46 is mounted upon the arm 38' projecting from another casing projection 40. The arm 38' is very similar to the spoon 38 except of course for its individual construction. Its mounting is identical, that is, it is provided with a ball and socket joint and is connected with mechanism within the casing identical to the mechanism used for causing the spoon 38 to operate. The free end of the arm 38 is formed with a clamp portion 47 by which the fork 46 is clamped into position. The details of the other operating mechanism of the fork will not be given here since they will readily be understood, but particular attention is called to Fig. 2 wherein it should be noticed that a bevel gear identical to the bevel gear 42 previously described is adapted to be engaged with the horizontal gear 19 to cause operation of the fork mechanism in a certain position of the carriage 25.

Disc cutting knives 48 are also mounted upon the carriage 25 and more particularly upon the shaft 49 mounted within a casing 50 pivotally supported on a shaft 51 upon a supplementary casing 52 projecting from the carriage 25. The supplementary casing 52 supports the shaft 41 which is provided at one end with the bevel gear 42 adapted in a certain position of the carriage to mesh with the gear 19 and at the other end supports a pulley wheel 53 connected by a belt 54 with a pulley 55 upon the shaft 51. Another pulley wheel 56 is also fixed upon the shaft 51 and connects with a belt 57 engaged with a pulley 58 mounted upon the shaft 49. A spring 59 acts between the supplementary casing 52 and the casing 51 so as to normally hold the casing 50 in a raised position. This raised position is limited by the fact that the upper side of the casing 50 abutts against the lower edge of the casing 52 at the point 60.

A glass supporting cup 61 is also mounted upon the carriage 25 and more particularly is provided with a pair of trunnions 62 mounted upon a vertical casing 63 projecting from the carriage 25. Springs 64 are mounted upon the trunnion 62 and act so as to normally hold the glass receiving tumbler 61 in a vertical position.

The operation of the device is as follows:—The waiter sets the plate 12 upon the table before the person so that the teeth 14 engage within the recess 13 in a manner to mesh with the rack 16. Assume that the contents of the plate is a liquid. In this particular case the carriage 25 is already in the correct position as clearly shown in Fig. 1 so that it is merely necessary for the person to throw the switch 23 to cause operation of the motor 22 for feeding the liquid. Rotations from the motor 22 are transmitted to rotate the bevel gear 19 and then to rotate the gear 42. Rotations from the gear 42 are transmitted to cause periodical rotation of the gear 44 and consequently periodical motion of the spoon 38 around in a circle. The spoon 38 always maintains the horizontal position and upon each complete rotation in the circle fills up with the liquid. The spoon pauses at a certain position which gives the person an opportunity to remove its contents.

Assume that the next course is a solid food. The waiter removes the plate 12 and replaces a similar plate containing the solid food. The person dining then closes one of the switches 37 to actuate the solenoid 33 so as to move the carriage 25 into a position in which the knives 48 are directly over the plate. Then with the chin the person bears down upon the casing 50 so as to cause the knives to extend into the plate and cut the food. Rotation from the gear 19 will be transmitted to the gear 42, the shaft 41, the pulley 53 and so on to the knives 48 which rotate to accomplish the cutting. If the knives cannot reach some of the solid food within the plate the person presses with the chest against the plunger 16 and so rotates the plate into a posiion in which the knives can reach the food.

Next another one of the switches 38 is closed for energizing the solenoid 32 and the first switch released for deenergizing the solenoid 33. The counterweights 23 move the carriage back into a position in which the bevel 46 is in condition for operation in conjunction with the plate. Now rotations from the gear 19 are transmitted to the gear 42 of the fork mechanism and then through the various mechanism within the casing 40 which

mechanism is identical to that illustrated in Fig. 4 and finally to the arm 38' which is caused to move around periodically in a circle with the fork and lifts up a piece of solid food. When the fork pauses in its motion the food must be removed by the mouth. If the fork cannot reach some of the food within the plate the person bears with the chest against the plunger 16 to cause the plate to rotate and in this manner the range of operation of the fork will be increased.

The waiter also places a glass of water within the holder 61 and the person may have a drink by closing the switch 37 which will energize the solenoid 34 and will move the carriage 25 into a position which will move the glass holder 21 directly in front of the person. The person may drink and the glass may be satisfactorily tilted by reason of the springs 64 and the trunnion 62.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, which I claim as new, and desire to secure by United States Letters Patent is:

1. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage.

2. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, said means for holding the plate in various rotative positions comprising teeth upon said depressible plunger and engageable with teeth formed upon the base of said plate, said base being rotatably mounted in a circular recess formed in the top of the table.

3. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate, and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, said means for rotating said horizontal bevel gear comprising an electric motor mounted beneath said table, a gear reduction system connected with said electric motor and also connected with said horizontal bevel gear.

4. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork

mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, said leg control means for moving the carriage into the various positions comprising a counterweight connected upon one end of the carriage for urging the carriage in one direction, a cable connected upon the other end of the carriage and connecting with a plurality of branch cables, solenoids with various sized strokes connected with said branch cables and selectively operable.

5. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, the means for periodically rotating said vertical gears one complete revolution includes a driven gear with certain teeth missing and having sufficient teeth so as to transmit motion to cause rotation of the vertical gears through 360 degrees only.

6. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, said disc cutting knives being mounted within a casing pivotally mounted upon a supplementary casing projecting from said carriage, resilient means urging said casing into a horizontal position abutting against said supplementary casing, said casing being depressible with the chin to move the cutting knives into the plate for cutting.

7. In a device of the class described, a table, a plate upon said table, means for holding said plate in various rotative positions operable by a pressible plunger movable with a person's chest, a horizontal bevel gear above said table, means for rotating said bevel gear mounted on said table, a frame on said table, a carriage slidable in said frame, leg control means for holding said carriage in various fixed positions, a substantially horizontal feeding spoon for automatic operation in association with said plate and mounted with a ball and socket structure on said carriage, a vertical gear eccentrically connected with the rear of said spoon, means for periodically rotating said vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in one position of the carriage for operation of the feeding spoon, a feeding fork mounted on a substantially horizontal arm mounted with a ball and socket structure upon said carriage, a vertical gear eccentrically connected with the rear of said substantially horizontal arm, means for periodically rotating said last mentioned vertical gear one revolution and including a bevel gear engageable for its operation with said horizontal bevel gear in a certain position of the carriage for operation of said feeding fork, disc cutting knives mounted upon said carriage, and means for operating said knives including a bevel gear engageable with said horizontal bevel gear in a third position of said carriage, and a glass holder mounted upon said carriage and adapted to tilt to various positions to facilitate drinking from a glass held thereby.

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