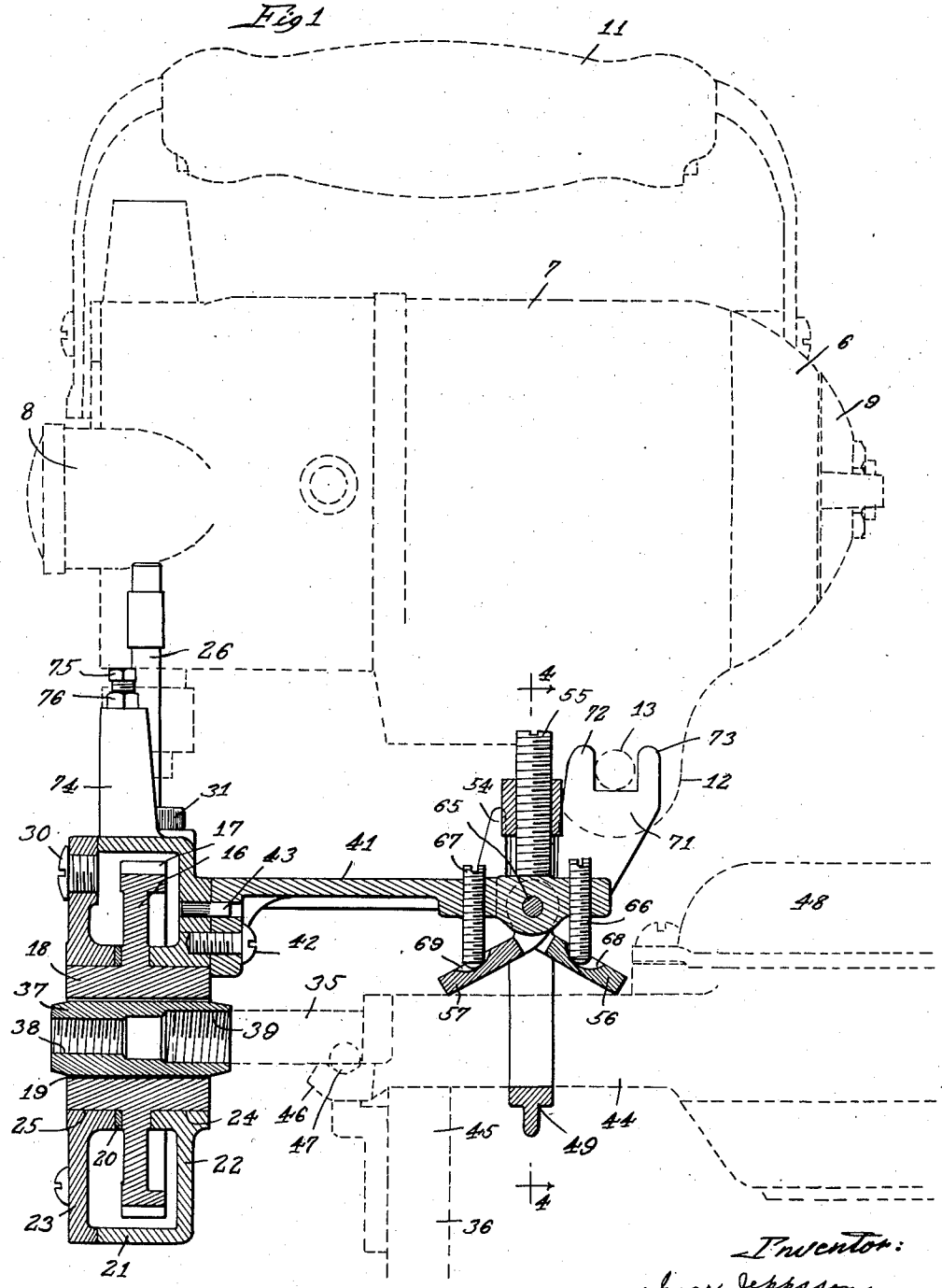
June 11, 1935. I. JEPPSSON 2,004,245

FREEZER POWER ATTACHMENT

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Fig 1



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FREEZER POWER ATTACHMENT

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Fig. 2

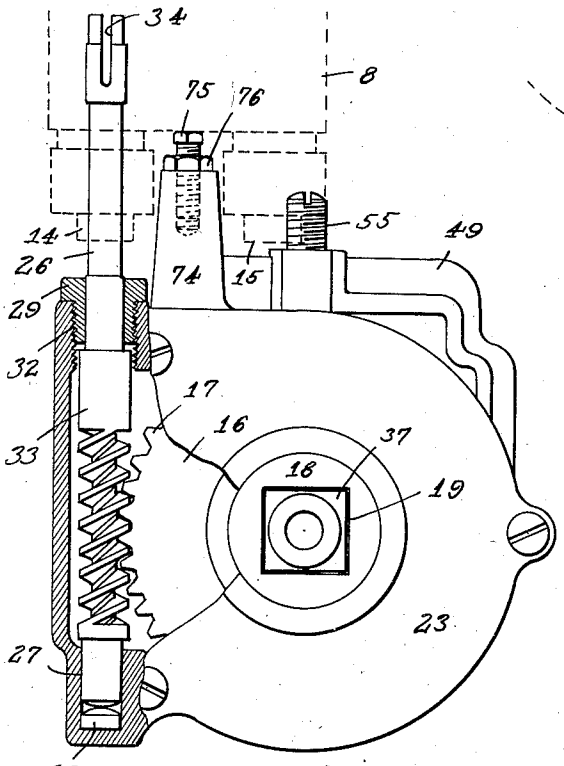


Fig. 4

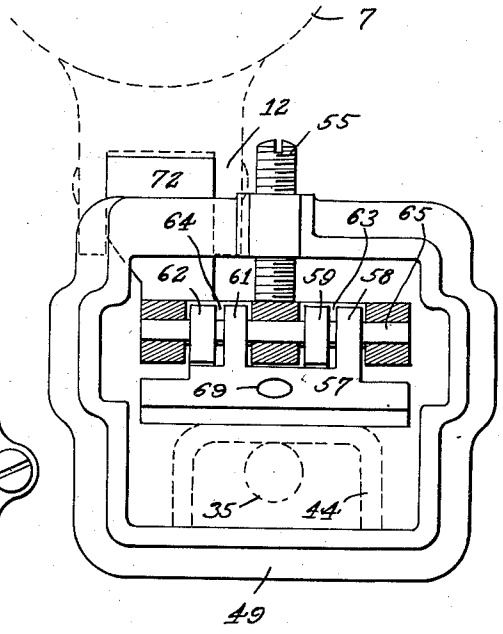
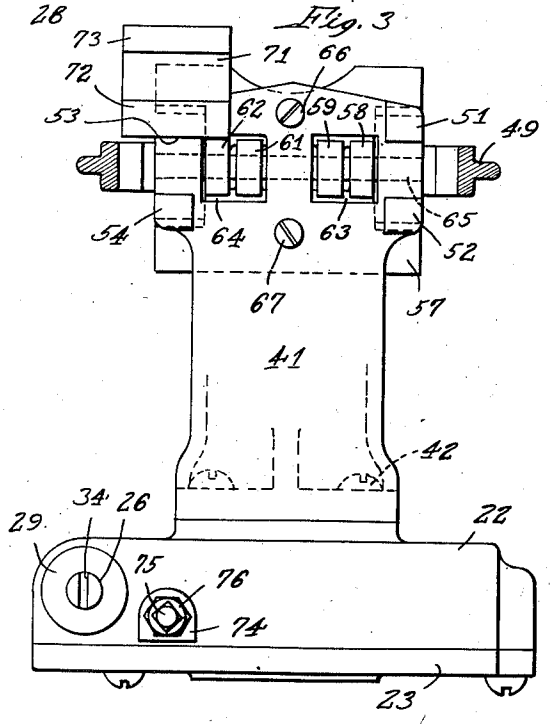


Fig. 3



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UNITED STATES PATENT OFFICE

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FREEZER POWER ATTACHMENT

Ivar Jeppsson, Chicago, Ill., assignor to Chicago Flexible Shaft Company, Chicago, Ill., a corporation of Illinois

Application September 13, 1933, Serial No. 689,203

16 Claims. (Cl. 74—16)

This invention relates to power attachments for driving household utensils by means of a portable motor unit and deals more particularly with power attachments for ice cream freezers.

The operation of making ice cream in the home occurs not infrequently and it has been a slow and laborious process requiring from twenty to thirty minutes of manual effort in turning the handle of a freezer. While power operated freezers are known, the use of a freezer in the home is normally not sufficiently frequent to warrant an investment in expensive motor mechanism devoted exclusively to this purpose.

An aim of this invention is to provide an attachment for conventional type freezers adapted to be driven from a portable motor unit commonly employed for performing other household tasks.

A further purpose of the invention is to provide a power attachment for freezers having means for convenient and, if desired, permanent attachment to the freezer.

Another object of the invention is to provide a power attachment having a driven gear arranged to receive the drive shaft of the freezer, and means for supporting the gear on a stationary part of the freezer and in alignment with the shaft.

I have also aimed to provide a power attachment having means for supporting the attachment on the freezer in alignment, and means for supporting a power unit on the attachment.

Another aim of the invention is to provide a driving attachment having means for supporting a power unit in quick detachable relation with the attachment.

A still further object of the invention is to provide means for supporting a portable motor unit on the freezer for ready removal, and means for establishing driving connection between the motor and the freezer.

I have also aimed to provide an attachment having improved means for supporting the same upon the freezer bracket whereby to accommodate the attachment to freezers of various sizes and kinds.

Other objects and attendant advantages will become apparent to those skilled in the art from the following description and the accompanying drawings, in which—

Figure 1 is a section longitudinally through the attachment showing the attachment supported upon the bracket of an ice cream freezer in driving relation with the shaft thereof and showing a portable motor unit supported on the attachment;

Fig. 2 is a front view of the attachment partly in section showing the worm drive for the reduction gear;

Fig. 3 is a top view of the attachment, and

Fig. 4 is a section on the line 4—4 of Figure 1.

The invention contemplates the provision of reduction gearing adapted to engage the driving shaft of a conventional ice cream freezer, means for supporting the gearing on a stationary part of the freezer such, for example, as the freezer bracket, and means for supporting a motor unit for the purpose of driving the gearing and thereby driving the freezer. The motor unit shown in dotted lines and designated generally by the numeral 6, as herein shown, is of the type commonly used as a part of mixing and beating devices. While the motor unit may take any number of specific forms, the one herein shown consists of a casing 7 having a gear box 8 at its forward end and a switch 9 at its rear end, a handle 11 extending from end to end of the motor. The casing has depending ears 12 on its lower side supporting a bearing pin 13. The gear casing 8 has a pair of vertical shafts 14 and 15, the shaft 14 in this instance cooperating with the power attachment to drive the freezer.

Referring now to Figure 1, a gear 16 has transverse teeth 17 on its periphery and has a wide hub 18 having a square axial opening 19. The gear is supported upon a casing designated generally by the numeral 21 consisting of a body portion 22 and a cap 23. The casing has a central opening defined by the bearing surfaces 24 and 25 on the body portion 22 and cap 23, respectively, the walls of the casing extending inwardly against the web of the gear 16 to provide the bearing surfaces 24 and 25 for the purpose of receiving the hub 18 of the gear to support the same for rotation in the housing. A fiber washer 20 may advantageously be provided between the flange of the cover 23 and the gear. An opening normally closed by a plug 30 serves to admit grease to the interior of the casing 21.

A vertical spindle 26 is supported in the housing 21, the lower end of the spindle having bearing support in a socket 27 and endwise support on a thrust bearing 28. Intermediate its ends, the spindle 26 passes through a bushing 29 which is knurled, as shown at 31, and threaded, as shown at 32, for reception in the walls of the casing 21 to lend lateral support to the spindle. The spindle carries a worm 33 positioned to mesh with the teeth 17 of the gear 16. The upper end

of the spindle 26 is arranged for reception in the vertical shaft 14 and is slotted, as shown at 34, for the purpose of establishing driving connection therewith.

It will be seen that rotation of the spindle 26 brings about rotation of the worm 33 and consequent rotation of the gear 16. In order to transmit rotation of the gear 16 to the driving shaft 35 of an ice cream freezer designated generally by the numeral 36, a bushing designated generally by the numeral 37 is threaded onto the end of the shaft 35 replacing the customary handle. This bushing is rectangular in cross-section, as shown in Fig. 2, and fits loosely into the axial opening 19 of the gear so as to compensate for slight irregularities in the shaft 35 and for any slight differences in alignment between the bushing and the gear. The bushing 37 may have threaded bores 38 and 39 of different diameters so as to permit the bushing to accommodate shafts of different diameters and different types of threads. This facilitates the adaptation of the attachment to different makes and styles of freezers.

An arm designated generally by the numeral 41 is secured to the rear side of the casing 21 by means of screws 42 and pins 43 and projects outward from the casing for the purpose of supporting the casing and the gears upon a stationary part of the freezer, in this instance the bracket 44 of the freezer. The bracket 44 lies across the top of the freezer tub and connects the walls 45 thereof. The end 46 of the bracket is ordinarily formed as shown in Figure 1, and receives a cross-pin 47 to support the bracket on the tub. The bracket conventionally carries a gear housing such as shown at 48 for the purpose of transmitting the motion of the shaft 35 to the freezer container and agitator.

The free end of the arm 41 carries means for affixing the arm to the bracket 44 of the freezer. This consists of a clamping member 49 of generally rectangular shape passing around the arm 41 and arranged to pass around the bracket 44, as best shown in Figure 1. The arm 44 has pairs of spaced ears 51—52 and 53—54 on opposite sides for the purpose of receiving the clamping member 49 and maintaining the same in position. The clamping member has a screw 55 on the upper side thereof arranged to pass through the clamping member and bear against the upper surface of the arm to draw the arm and the bracket firmly together.

In order to adjust the elevation of the gear 16 and to align the axial opening 19 thereof with the shaft 35, the lower surface of the arm 41 carries wings 56 and 57. The wings have upwardly extending journals 58, 59, 61, and 62 at their opposite ends extending into slots 63 and 64 in the arm 41 and pivotally supported upon a pin 65 extending across the slots. Screws 66 and 67 pass through the arm and bear at their lower ends against the wings 56 and 57, the wings being provided with recesses 68 and 69 for the reception of the ends of the screws. These screws serve to rotate the wings about the pin 65 and regulate the distance between the free edges of the wings and the arm 41. Thus, by adjustment of one of the screws 66 or 67 the angularity between the shaft 35 and the arm 41 may be adjusted so that the axis of the gear 16 may be brought into parallelism with the axis of the shaft 35. Likewise, by adjusting both the screw 66 and 67 the distance between the shaft 35 and the arm 41 may be adjusted, so that through these two adjustments the axial opening 19 of the gear may be brought into alignment with the shaft 35. The clamp 49, the wings 56 and 57, and the screws 66 and 67 are capable of such adjustment as to accommodate freezers having considerably different relative proportions of the parts so that the attachment may be conveniently secured to freezers of widely differing sizes and divergent designs. The end of the arm 41 carries an upwardly extending saddle member 71 having spaced ears 72 and 73 for the reception therebetween of the pin 13 on the motor 7. The saddle member 71 thus serves to support the rear end of the motor 7 on the power attachment. Likewise, the casing 21 carries an upwardly extending post 74 having a threaded opening at its top for the reception of a screw 75. A lock nut 76 is positioned on the screw 75 so that the screw may be firmly secured in any adjusted position. The head of the screw 75 is at such elevation as to bear against the lower side of the gear chamber 8 to support the front end of the motor 7 in driving position with respect to the spindle 26. The threaded screw 75 permits of adjustment of the position of the motor 7 about the pin 13, thereby aligning the motor with respect to the spindle 26.

In operation, the conventional handle is removed from the shaft 35 of the usual type of ice cream freezer and the bushing 37 is screwed onto the shaft, as shown in Figure 1. Thereafter, the clamp 49 is slipped over the bracket 44 of the freezer and the bushing 37 is slipped into the axial opening 19 of the gear. The screws 66 and 67 are then rotated until the arm 41 is brought into parallelism with the shaft 35 and the opening of the gear is aligned with the bushing 37 whereupon the screw 55 is tightened, drawing the wings 56 and 57 down against the bracket 44 and firmly securing the attachment to the bracket 44. When the ice and other contents of the freezer are in place, the motor 7 is set upon the attachment, the spindle 26 entering the opening in the vertical shaft 14 and the pin 13 entering the saddle member 71. When power is applied to the motor unit 7, the shaft 14 will be rotated, thereby rotating the spindle 26 which will drive the gear 16 through the worm 33. Rotation of the gear 16 brings about rotation of the shaft 35 through the bushing 37.

Attention is directed to the fact that through this attachment, the portable motor unit 7 is firmly supported on the bracket 44 of the freezer and positive driving connection is established therebetween. The motor unit is in nowise impaired by such use and, upon the conclusion of the freezing operation, may be lifted from the bracket assembly by grasping the handle 11 and lifting the motor upward, whereby the motor may be replaced in its conventional assembly and immediately placed into other service.

It will be noted that the gear 16 is carried entirely independent of the shaft 35 and is supported in alignment with the shaft, thereby providing a freely operating and quiet train of gears.

Another feature of the invention is the manner in which the casing 21 is supported on the bracket of the freezer. Through this arrangement the attachment is adaptable to any of a wide range of different freezers and is conveniently secured with the driving mechanism in alignment with the driving shaft of the freezer. The attachment is also such that, while it may be quickly removed from the freezer, yet it may be left on the freezer permanently and is rigidly supported thereon for such permanent use.

A still further feature of the invention is the

fact that the attachment carries within itself means for supporting a portable motor unit in alignment with the spindle **26** in such wise that the motor unit may be quickly and conveniently positioned on and removed from the attachment without the use of screws, bolts, or any other type of securing means.

Attention is also directed to the means for establishing driving connection between the gear **16** and the driving shaft of the freezer, whereby small irregularities in the shaft **35** are taken up in the driving connection. Furthermore, the connection is such that the manufacturer may supply a plurality of bushings, such as the bushing **37**, all of the same outward configuration but having different sized openings and differently threaded openings for the purpose of accommodating different sizes of shafts and different types of threads so that the attachment is adapted to different types of freezers.

I claim:

1. A power attachment for ice cream freezers having, in combination, a reduction gear provided with an axial opening for the reception of the driving shaft of said freezer, a spindle for driving said gear, means for carrying the gear and spindle on a stationary part of the freezer, and means for positioning said last mentioned means to align the axial opening with the driving shaft.

2. A power attachment for ice cream freezers provided with a bracket, comprising, in combination, a driving gear provided with an axial opening for the reception of the driving shaft of said freezer, a spindle for driving said gear, means for carrying the gear on the bracket of said freezer, and means for aligning the axial opening of said gear with the driving shaft of the freezer.

3. A power attachment for ice cream freezers having, in combination, a driving gear provided with a flanged hub and an axial opening for the reception of the driving shaft of said freezer, a casing for said gear having bearing support for said hub, a spindle in the casing for driving said gear, and means for supporting the casing on a stationary part of the freezer, said last named means being arranged to align said axial opening with the driving shaft on any of a plurality of different sized freezers.

4. A power attachment for driving an ice cream freezer from an independent portable power unit comprising, in combination, a gear having an axial opening for receiving and driving the shaft of a freezer, a spindle for driving said gear, means independent of the shaft for supporting the gear in alignment with said shaft, and saddle means on said last mentioned means arranged for the free seating of said power unit thereon for removably supporting said power unit in alignment with said spindle.

5. A power attachment for driving an ice cream freezer from a portable power unit comprising, in combination, a gear having an axial opening for receiving and driving the shaft of a freezer, a spindle for driving said gear, means for supporting the gear in alignment with said shaft, a saddle for removably supporting the power unit on the attachment, and means for aligning the power unit with the spindle.

6. A power attachment for driving an ice cream freezer from an independent portable power unit comprising, in combination, a gear having an axial opening for receiving and driving the shaft of a freezer, a spindle for driving said gear, means for supporting the gear in alignment with said shaft, a casing for supporting said gear and said spindle, an arm attached to said casing for supporting the same upon a stationary part of the freezer, means acting between the arm and the stationary part of the freezer for aligning the axial opening of said gear with said shaft, and quick detachable means carried on the arm and the casing for removably supporting said power unit in alignment with said spindle.

7. A power attachment for driving an ice cream freezer from a portable motor unit comprising a supporting arm, a gear carried on the arm having an axial opening for the reception of the drive shaft of said freezer, a driving element also carried by the arm for driving the gear, clamping means on the arm for securing the same to a stationary part of the freezer with said gear in axial alignment with the drive shaft, and saddle means on the arm for the reception of said motor unit to removably support the same in alignment with said driving element.

8. A power attachment for ice cream freezers having a transverse bracket carrying freezer operating gearing comprising a worm gear having a hub for the reception of the driving shaft of said freezer, a worm for driving said gear, a casing having means for supporting said gear and worm for rotation in operative relationship, and means for fixedly supporting the casing on the bracket of the freezer with said gear in alignment with said shaft, the attachment being rotatable with the bracket in opening and closing the freezer.

9. A power attachment for ice cream freezers of the type having a driving shaft and a bracket comprising a bushing adapted for attachment to the shaft of a freezer and having driving faces, a gear having an axial opening for the free reception of said bushing to drive the shaft, a driving spindle for driving the gear, a casing for enclosing the gear and spindle, an arm attached to the casing adapted to extend over the freezer for attachment to the freezer bracket for supporting the casing entirely on the freezer bracket with the opening in alignment with said bushing.

10. A power attachment for driving an ice cream freezer of the type having a driving shaft and a bracket, from a portable motor unit comprising a bushing adapted for attachment to the shaft of said freezer and having driving faces, a gear having an axial opening for the reception of said bushing to drive the shaft, a driving spindle for driving the gear, a casing for the gear and spindle, an arm attached to the casing, means for supporting the arm on the freezer bracket with the opening of said gear in alignment with said bushing, and means carried by the arm and the casing for supporting said portable motor unit in driving relationship to the spindle.

11. A power attachment for driving a freezer of the type having a driving shaft and a bracket, from a portable motor unit having, in combination, a gear unit for driving the shaft of the freezer, means for supporting the gear unit on the bracket of the freezer in alignment with said shaft, and quick detachable means for supporting said motor unit in alignment with said gear unit.

12. A power attachment for ice cream freezers of the type having a shaft and a bracket comprising, in combination, a reduction gear arranged to slip over the end of the freezer driving shaft for driving engagement therewith, means for clamping the gear permanently to the bracket of said freezer, and means for aligning the gear and the shaft whereby the shaft is driven from the gear without vibration or binding.

13. A power attachment for ice cream freezers of the type having a driving shaft and a bracket having, in combination, a gear for driving said shaft, an arm for supporting the gear on the freezer bracket, clamping means on said arm, and means cooperable with said clamping means to secure the arm to the bracket at any of a plurality of elevations and angularities to support the gear in alignment with the shaft.

14. A power attachment for ice cream freezers of the type having a bracket having, in combination, an arm for supporting the attachment on said bracket, abutment means carried on the arm and adjustable toward and away from the arm, and means acting between the arm and said bracket for drawing said abutment against the bracket to secure the attachment to the bracket.

15. A power attachment for ice cream freezers of the type having a bracket and a shaft having, in combination, an arm for supporting the attachment on said bracket, a pair of abutment wings pivotally supported on said arm and rotatable with respect thereto to bear against the bracket, means for independently locating said wings to determine the angular position of said arm, and means for clamping the wings against the bracket of the freezer to secure the attachment thereto and to bring the attachment into alignment with said shaft.

16. A power attachment for driving a freezer of the type having a driving shaft, from a portable motor unit having, in combination, a gear unit for driving the shaft of the freezer, means for supporting the gear unit on a stationary part of the freezer in driving relation with said shaft, and means complementally shaped to a part of said motor unit for free seating of said unit thereon to support said unit in driving relation with said gear unit, the motor unit being held therein solely under its own weight.

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