April 25, 1933. T. T. SHIELDS 1,905,654

POWER UNIT FOR SLICING MACHINES

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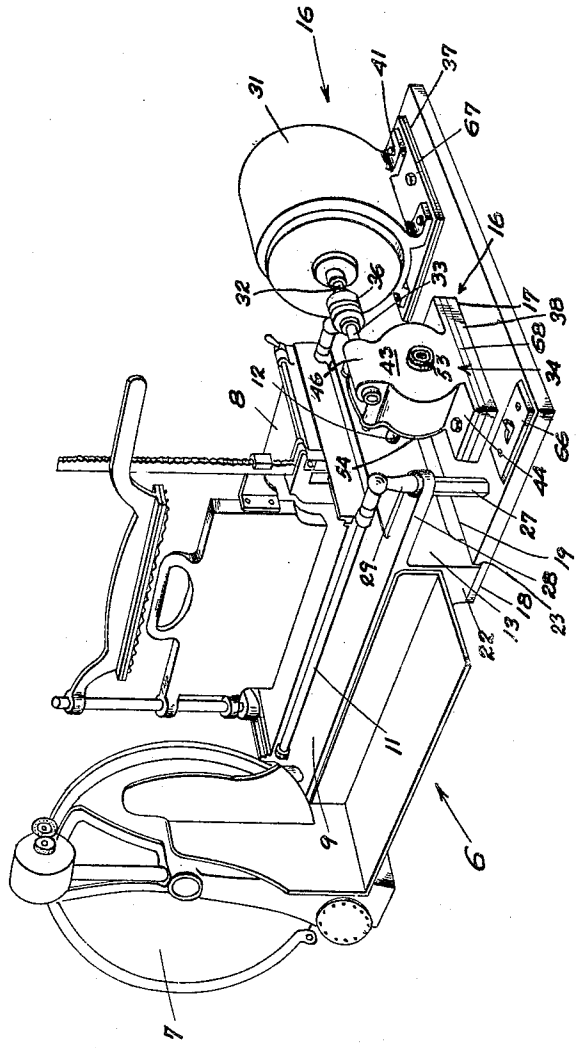


Fig. 1.

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Fig. 2.

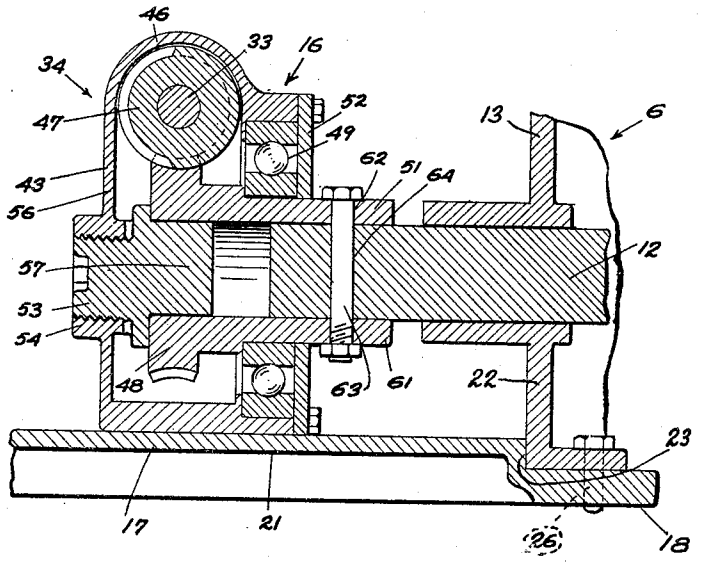
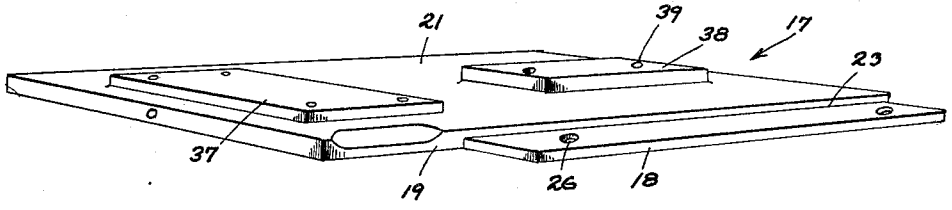


Fig. 3.



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UNITED STATES PATENT OFFICE

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POWER UNIT FOR SLICING MACHINES

Application filed October 30, 1929. Serial No. 403,643.

This invention relates to meat cutters, and more particularly to a power unit adaptable for use in conjunction with a meat-slicing machine.

An object of the invention is the provision of an auxiliary power unit designed to be mounted in the place of the hand wheel of a manually operable meat-slicing machine, and thus provide means for driving the meat-slicing machine by mechanical means.

A more detailed object is the provision of a power unit as described, which is adapted to be installed upon any one of several different types of slicing machine, so that a dealer will be enabled to supply practically the entire demand even though he carries in stock but a single type and size of power unit.

A further object is the provision of a power unit as described, which is of an exceedingly simple nature, and which is therefore, relatively inexpensive and one which is capable of being mounted in operative position upon a machine regardless of whether that machine has already been in use, or whether the machine is in process of manufacture.

A further object is the provision of a power unit having the above described characteristics, in which the means for mounting the unit in operative position upon a slicing machine are of such a simple nature that the mounting may be effected with maximum facility and with the necessity for only a very few tools.

The invention possesses other objects and advantageous features, some of which, with those enumerated, will be set forth in the following description of the invention's particular embodiment which is illustrated in the drawings accompanying and forming a part of the specification.

Referring to the drawings:

Figure 1 is a perspective view of a conventional meat-slicing machine having a power unit constructed in accordance with the principles of the present invention, installed in operative position thereupon.

Fig. 2 is a transverse, vertical sectional view through the speed reduction unit, portions of the figure being broken away to reduce its size.

Fig. 3 is a perspective view of a base plate upon which the operative parts of the power unit are mounted.

In terms of broad inclusion, the present invention contemplates the provision of means for mounting a prime mover, preferably an electric motor, upon a conventional meat-slicing machine, in the place of the hand wheel with which that machine is regularly equipped, thus making it possible for the owner of a manually operable slicing machine to convert the machine into a motor-driven machine at a minimum of expense.

Specifically describing the invention in the most practical embodiment thereof of which I am at present aware, it is herein shown and described as being operatively mounted in connection with a conventional meat-slicing machine indicated in its entirety at 6. The slicing machine 6 includes a rotary knife 7 and a carriage 8 mounted for reciprocation upon a frame 9, through the expedient of a pair of parallel guide rods 11. Rotation of the knife 7 and reciprocation of the carriage 8 are both effected by rotation of a drive shaft 12 which extends through and beyond the forward end 13 of the frame 9.

As conventionally equipped, the slicing machine 6 is provided with a wheel (not shown) rigidly mounted upon the forward end of the drive shaft 12, whereby the shaft 12 may be manually rotated. The power unit of the present invention is designed to supplant this hand wheel, so as to electrify the conventional manually operable slicing machine 6, i. e., to provide means for mechanically driving the shaft 12.

The power unit in its present modification, is indicated in its entirety at 16, and includes a base plate 17 provided with means for rigidly attaching the plate 17 to the frame 9 of the slicing machine 6. For this purpose a flange 18 is formed rigidly extending from one edge 19 of the plate 17. Whereas the flange 18 is disposed in a plane parallel to the upper face of the body 21 of the plate 17, the top of the flange 18

is somewhat lower than the upper face, as clearly shown upon Figs. 1 and 3. This permits the forward legs 22 of the frame 9 to rest upon the upper face of the flange 18 and abut the shoulder 23 which is between the body 21 and flange 18 of the base plate 17. It should be pointed out that the slicing machine 6 is conventionally provided with rubber cushions (not shown) on the bottom ends of the legs 22, these cushions being substantially the same thickness as the flange 18. This permits the flange 18 to be substituted for the cushions and still support the frame 9 in a horizontal plane when the machine is supported upon any suitable horizontal surface.

Preferably a pair of spaced holes 26 extend through the flange 18 to permit the insertion of screws or their equivalent through the holes 26 and into holes in the bottom ends of the legs 22. It should be pointed out that the holes in the bottom ends of the legs 22 are in some machines, the holes into which screws are threaded to hold the rubber feet in position, and in other machines, are employed merely for the purpose of securely fastening the slicing machine 6 within a crate for shipping purposes. Regardless however, of the use to which the holes in the bottom of the legs 22 are put, it is significant that the base plate 17 may be rigidly attached to the frame 9 in operative position without the necessity of drilling any additional holes, or otherwise altering any portion of the frame 9.

Additional rigidity is imparted to the base plate 17 through the expedient of a brace 27 interposed between an extension 28 of the frame 9 and the upper face of the base plate 17 at a point spaced from the shoulder 23. The extension 28 is conventionally provided upon several different types of slicing machines 6, as a support for the forward end of one of the guide rods 11. The extension 28 is formed preferably integral with the frame 9 extending forward from the front 13 in parallelism with the axis of the shaft 12; and the forward end of the associated guide rod 11 is made fast to the forward end of the extension 28 by means of a column 29, the lower end of which is threaded and extends through the forward end of the extension 28 to receive a nut. The upper end of the brace 27 is drilled and tapped to take the place of this nut so that it may be rigidly attached in operative position to the lower end of the extension 28, with utmost facility. Preferably the lower end of the brace 27 is threaded and extends through a suitable hole in the base plate 17, so as to rigidly mount the parts, as will be readily understood.

A relatively small electric motor 31 is rigidly mounted upon the base plate 17 adjacent one end thereof, and has its shaft 32 coupled to the shaft 33 of a speed reduction unit 34 by means of a preferably flexible coupling 36, so as to compensate for any slight misalignment of the motor 31 and speed reduction unit 34. Both the motor 31 and reduction unit 34 are mounted upon bosses 37 and 38 respectively, formed on the upper surface of the base plate 17, these bosses being drilled as at 39 to permit the insertion of cap screws 41 or their equivalent, whereby the motor 31 and reduction unit 34 may be rigidly mounted in proper alignment.

The speed reduction unit 34 comprises a casing 43 provided with flanges 44 through which the associated cap screws 41 extend and having a slightly enlarged portion 46 for the accommodation of a worm 47 to which the shaft 33 is rigidly attached as by a conventional key. With the worm 47, a worm wheel 48 is enmeshed, this worm wheel 48 being journalled within the casing 43 through the expedient of an anti-friction bearing 49 preferably of the self-aligning type. Preferably the worm wheel 48 is formed integral with a tubular shaft 51 which extends through a cover plate 52 with which the casing 43 is provided. A plug 53 is threaded through a boss 54 on the opposite face 56 of the casing 43, and is provided with a pin 57 adapted to be received within the inner end of the shaft 51 so as to provide a suitable support therefor.

Within the outer end 61 of the shaft 51, i. e., that end which extends through the cover plate 52, the forward end of the drive shaft 12 of the slicing machine 6, may be received. Aligned holes 62 are formed in the opposite sides of the outer end 61 of the shaft 51, to receive a pin 63 so that this pin 63 may be extended through the hole 64 which is conventionally formed in the shaft 12 as a portion of the means for securing the hand wheel thereto.

The motor 31 is adapted to be energized by suitable wiring (not shown) which preferably includes a switch 66 also mounted in the base plate 17, so as to be readily accessible.

In order to adapt the power unit 16 to a plurality of types of slicing machines 6, I have provided sets of spacers or shims 67 and 68 which may be interposed between the motor 31 and its boss 37, and between the reduction unit 34 and its boss 38, respectively. This permits variation of the effective height of both the motor 31 and speed reduction unit 34 from the upper face of the base plate 17; and the shims 67 and 68 have been designed to compensate for the differences in height of the shafts 12 of several different types of slicing machines 6.

It is believed that the manner of mounting the power unit 16 in operative position

upon a slicing machine 6, will be readily understood from the above description of its constituent parts. The proper shims 67 and 68 should first be selected to accommodate the particular type of slicing machine 6 upon which the installation is to be made. Then the motor 31 and power unit 68 should be mounted thereupon. The nut should then be removed from the lower end of the column 29, and the brace 27 substituted therefor. After removal of the hand wheel from the shaft 12, the power unit 16 may be placed in position upon the front 28 of the frame 9 of the slicing machine 6, with the forward end of the drive shaft 12 extending into the outer end 61 of the shaft 51. These parts should then be rotated to bring the hole 64 into alignment with the holes 62, whereupon the pin 63 may be inserted to rigidly couple the shafts 51 and 12 together. The nut should then be inserted onto the lower end of the brace 27 which extends through its associated hole in the base plate 17; and bolts or equivalent fastening means should be extended through the holes 26 in the flange 18, which, it will be found are in alignment with holes in the bottom ends of the legs 22.

It is to be understood that the details of the invention as herein disclosed, are subject to alteration within the spirit or scope of the appended claims.

I claim:

1. In combination, a slicing machine including a frame, a reciprocating member, a guide rod associated with said member, an extension from one end of the frame supporting an end of the guide rod, and a drive shaft operatively coupled to said reciprocating member and extending from said end of the frame, and a power unit comprising a base plate having a flange securable to said frame, a brace securable to said plate and said frame extension adjacent the outer end thereof, to rigidly retain the plate in parallelism with the frame, a motor and a speed reduction unit mounted on said plate, means coupling the reduction unit to the motor, and means coupling the drive shaft of the slicing machine to the reduction unit.

2. In combination, a slicing machine including a frame, a reciprocating member, a guide rod associated with said member, an extension from one end of the frame supporting an end of the guide rod, and a drive shaft operatively coupled to said reciprocating member and extending from said end of the frame, and a power unit comprising a base plate having a flange securable to said frame, a brace securable to said plate and said frame extension adjacent the outer end thereof, to rigidly retain the plate in parallelism with the frame, a motor and a speed reduction unit mounted on said plate, means for aligning said motor and reduction unit, and said reduction unit and drive shaft, means coupling the reduction unit to the motor, and means coupling the drive shaft of the slicing machine to the reduction unit.

3. A power unit for a manually operable machine having a drive shaft, comprising a base plate, a motor mounted thereon, a speed reduction unit mounted on said plate and coupled to said motor, said unit including a frame, a tubular shaft mounted in said frame and having one end projecting therefrom in axial alignment with the drive shaft, means for directly connecting the tubular shaft to the drive shaft to form a unitary shaft, a pin serving as an end bearing for the tubular shaft and having its outer end screw threaded in said frame on one side thereof, and a second bearing for the tubular shaft mounted on the opposite side of the frame.

4. A power unit for a manually operable machine having a drive shaft, comprising a base plate, a motor mounted thereon, a speed reduction unit mounted on said plate and coupled to said motor, including a frame, a tubular shaft mounted in said frame having its end projecting therefrom in axial alignment with the drive shaft, means for directly connecting the tubular shaft to the drive shaft to form a unitary shaft, a pin serving as an end bearing for said tubular shaft mounted at one side of said frame, and a second bearing for the tubular shaft mounted at the opposite side of said frame.

In testimony whereof I have signed my name to this specification.

THOMAS T. SHIELDS.