June 2, 1953 W. F. SPANG 2,640,334

SHAFT MOUNTING AND DRIVING ASSEMBLY

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Fig. 1.

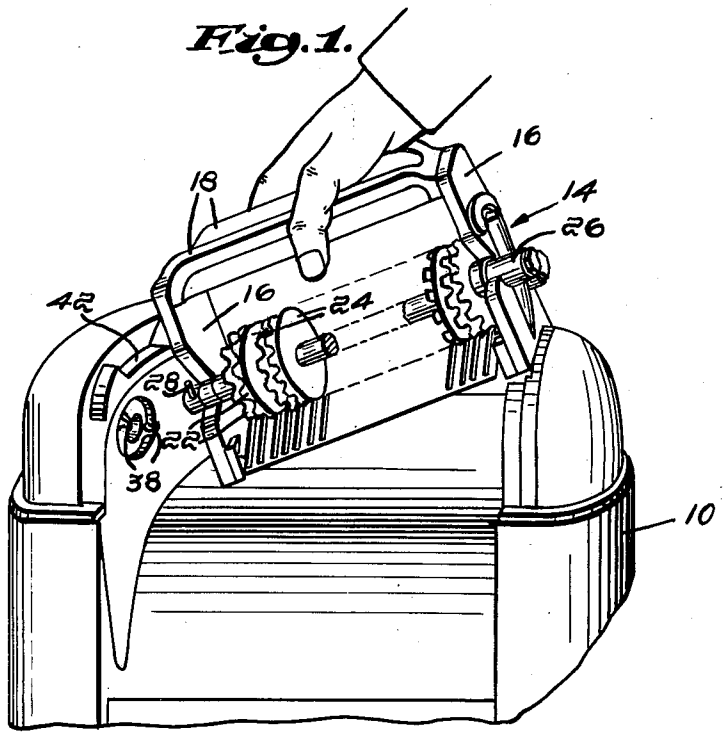


Fig. 2.

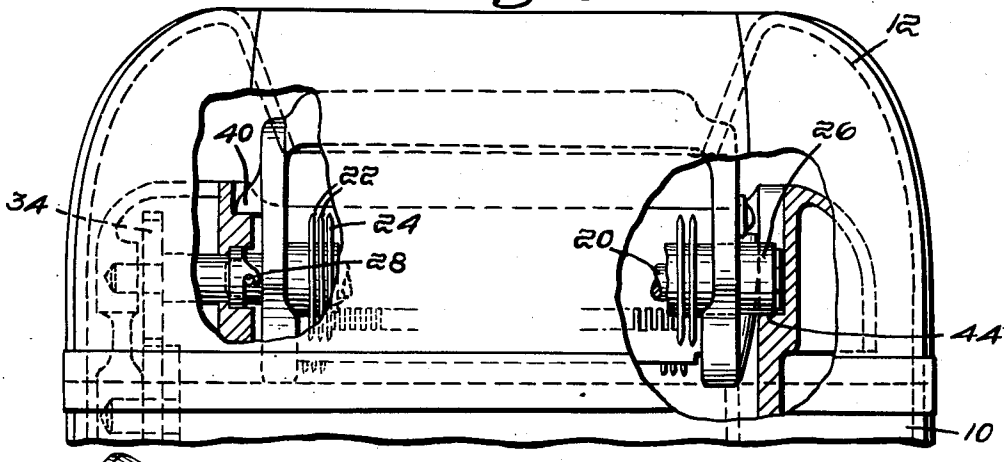
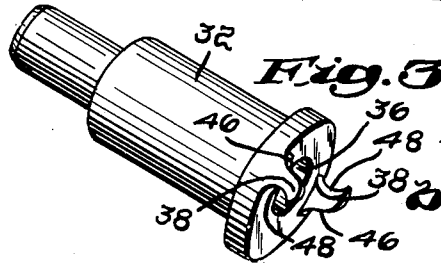


Fig. 3.



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Fig. 4.

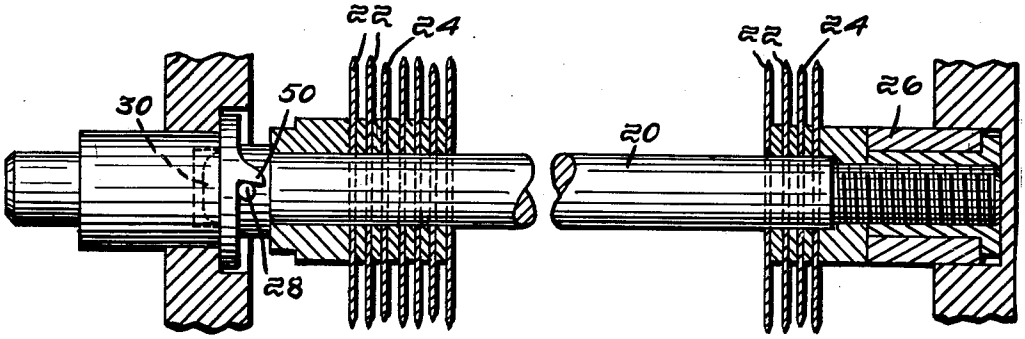


Fig. 5.

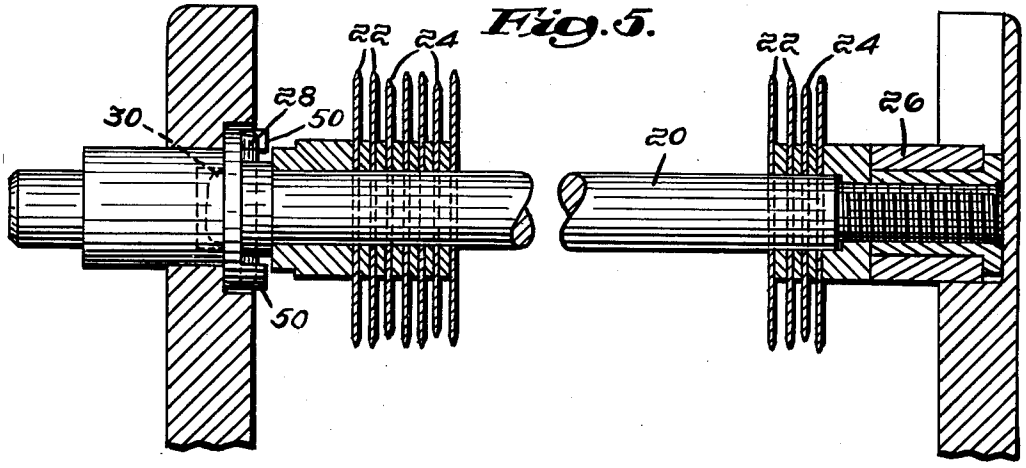


Fig. 6.

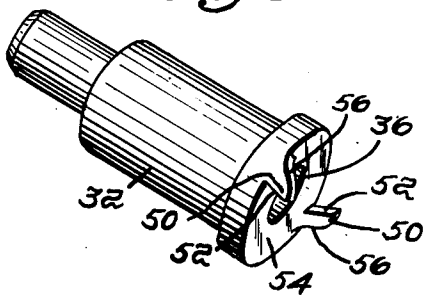
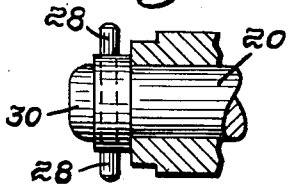


Fig. 7.



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SHAFT MOUNTING AND DRIVING ASSEMBLY

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3 Claims. (Cl. 64—1)

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This invention relates to a shaft mounting and driving assembly and more particularly to meat tendering machines employing one or more cylindrical gang cutters each including a shaft having a plurality of cutting disks mounted in spaced relation thereon and therealong. These gang cutters are removable from the machine and each is driven by a driving shaft having a socket in one end for engaging and supporting one end of the cutter shaft and provided with a pair of diametrically opposed lugs cooperating with a pair of pins on the cutter shaft for driving the latter. The driving lugs heretofore employed have been rounded to guide the pins into place when inserting the cutter into the machine, as shown in my Patent No. 2,605,497, dated August 5, 1952, and this construction has resulted in crowding the cutter axially away from the driving shaft and thereby causing excessive wear on the cutter bearings. The primary object of my invention herein resides in the production of driving lugs having pin contacting faces disposed to engage the pins in a manner eliminating this objection.

The pin contacting face of each driving lug is constructed to engage its pin beyond the side thereof facing the driving shaft and thereby rotatably drive the cutter without crowding it axially away from the driving shaft. Also the pin contacting face of each driving lug together with the driving shaft preferably forms a pocket for the pin and the contour of each such face is preferably such as to provide a driving connection in which the driving action of the lugs on the pins crowds the pins toward and into the pockets, thus holding the cutter secure axially and eliminating the objectionable crowding and wear heretofore present. The provision of an improved driving construction of this nature which eliminates the objections heretofore present comprises a further object of the invention.

These and other features of my invention will be more readily understood and appreciated from the following detailed description of preferred embodiments thereof, selected for purposes of illustration and shown in the accompanying drawings in which—

Fig. 1 is a fragmentary perspective view of a meat tendering machine embodying my invention and illustrating the placing of the cutter unit in the machine,

Fig. 2 is a fragmentary front elevation of the machine, partially broken away,

Fig. 3 is a perspective view of a cutter driving shaft,

Fig. 4 is a fragmentary sectional plan view of a cutter in operating position in the machine,

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Fig. 5 is a fragmentary sectional elevation thereof,

Fig. 6 is a perspective view of a modified form of cutter driving shaft, and

Fig. 7 is a fragmentary view of the driven end of the cutter shaft.

The machine shown in the drawings comprises a body 10 adapted to receive a cover 12. The top portion of the body is recessed to receive a meat cutting unit 14 including a basket carrying two cooperating gang cutters. The basket comprises two end plates 16 adapted to support the cutters and rigidly connected by a lifting handle embodying two spaced elements 18 disposed above and extending longitudinally of the cutters. The sole function of the basket is to serve as a carrier for lifting the cutters from the body 10.

Each cutter comprises a shaft 20 having disk-like knives 22 and 24 in spaced relation therealong. One end of each cutter is provided with a roller bushing 26 and two diametrically opposed driving pins 28 are carried by the other end inwardly of a reduced end portion 30. Each cutter is driven by a driving shaft 32 mounted in a gear box in the body 10 and driven by gearing 34. The inner end of each driving shaft is provided with a socket 36 for receiving the reduced end portion 30 of the cutter and two diametrically opposed lugs 38 integral with the driving shaft extend axially outwardly beyond the socket in position to engage the pins 30.

The cutters are placed in the machine in the manner illustrated in Fig. 1. A guide bar 40 on the inner basket plate 16 is placed in contact with a depressed abutment 42 on the gear box and as the basket is lowered to horizontal position the end portions 30 engage within the sockets 36 and the bushings 26 engage within and are supported by the upwardly open bearings 44. In such position the cutters are supported entirely by the driving shafts 32 and the bearings 44. The cutters are removable upwardly from the bearings 44 and outwardly from the sockets in the manner illustrated in Fig. 1.

The invention herein is primarily concerned with the driving lugs 38. Each pair of lugs is integral with its driving shaft and extend axially outward from the socket end thereof beyond the end face and respectively at opposite sides of the socket. It will be noted that the rear faces 46 of the lugs are inclined relative to said end face and this inclination causes engagement of the pins 28 therewith automatically to rotate the cutter to a position permitting insertion of the portion 30 into the socket 36. The front faces 48 of the lugs are disposed to engage about and

provide an interlocking and driving engagement with the pins **28** and the pin receiving pockets formed by the faces **48** are disposed to conform to the pins when the portion **30** is fully seated in the socket **36**, as illustrated in Fig. 2.

It will be apparent that the driving engagement of the lugs **38** with the pins **28** holds the cutter secure axially and causes no axial crowding of the cutter. The primary object of the invention is to provide a driving relation that will eliminate such crowding heretofore present as above described and it will be apparent that the driving faces of the lugs can be considerably modified and still perform this function.

In Figs. 4–7 I have illustrated a somewhat modified construction in which the lugs **50** have straight driving faces **52** which are preferably somewhat inclined to the axis of the driving shaft to form an acute angle of less than 90° with the end face **54** of the shaft, although it will be apparent that a straight face **52** right angular to the face **54** will engage the driving pin beyond the side facing the driving shaft and perform the driving function without causing axial crowding of the cutter. The faces **52** and **54** provide a pocket at their junction for receiving the driving pin as illustrated in Fig. 4. The rear faces **56** of these lugs are inclined in like manner as the rear faces **46** of the lugs **38**.

The end face **54** of the driving shaft **32** between the lugs **50** (Fig. 6) or **38** (Fig. 3) is in a common plane disposed radially of the cutter shaft. It will be apparent that such construction permits free and unobstructed insertion of the unit **18** to the position illustrated in Figs. 2, 4 and 5. If, upon insertion of the unit, the pins **28** engage the driving lugs the engagement will be with the inclined rear faces **46** or **56** and thereby automatically rotate the cutter shaft as the pins slide down the inclines to the end face **54**.

It will now be apparent that, whereas in the former construction the rounded driving lugs engage the driving pins on the sides facing the driving shaft and thereby crowd the cutters axially away from the driving shaft, in the improved construction herein disclosed the driving lugs engage the pins beyond the sides thereof facing the driving shaft and thereby rotatably drive the cutter without crowding it axially away from the driving shaft, thereby eliminating the wear and objections heretofore present. Furthermore, in the preferred form of the invention the lugs are constructed to provide pin receiving pockets serving to hold the cutter secure in a definite predetermined position axially.

Having thus disclosed my invention what I claim as new and desire to secure by Letters Patent is:

1. In combination, a frame embodying two spaced supports, a driving shaft rotatably mounted in one support with one end facing the other support and terminating in a face disposed in a plane right angular to the shaft axis, the shaft having an axially disposed socket in said one end open to said face, two lugs projecting outwardly from said face at opposite sides of said axis, an upwardly open bearing in said other support, a driven shaft rotatably supported at one end in said bearing and at its other end in said socket, two diametrically opposed pins extending radially outward from opposite sides of the driven shaft adjacent to said face, said lugs having front driving faces each forming an angle of not more than 90° with said face forwardly of the lug and providing therewith pockets for receiving the pins and engaging said driving faces therewith beyond the sides thereof facing the driving shaft whereby to rotatably drive the driven shaft without crowding it axially away from the driving shaft, the driven shaft being removable upwardly from said open bearing and outwardly from said socket.

2. The combination defined in claim 1 in which said lugs have rear faces inclined forwardly from said plane toward said front driving faces at the free ends of the lugs whereby pressure engagement of said pins against said rear faces in the direction of said plane will cause relative rotation of the two shafts as the pins ride down the inclined rear faces of the lugs.

3. The combination defined in claim 1 in which the driving face of each lug is a plane surface and said angle is less than 90°.

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