March 7, 1933. S. SCHIFF 1,900,258

LOCKING DEVICE FOR BAYONET SLOT CONSTRUCTIONS

Filed March 15, 1930

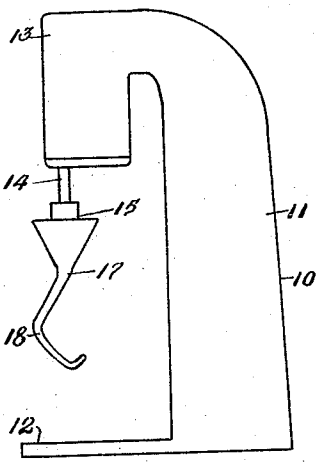


Fig. 3.

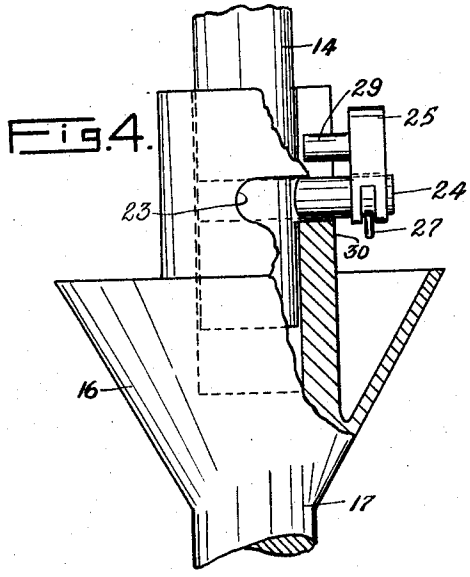


Fig. 4.

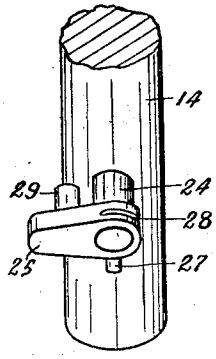


Fig. 1.

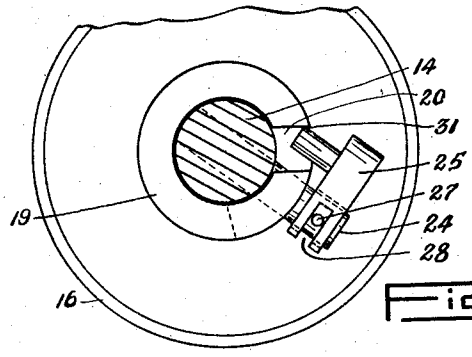


Fig. 5.

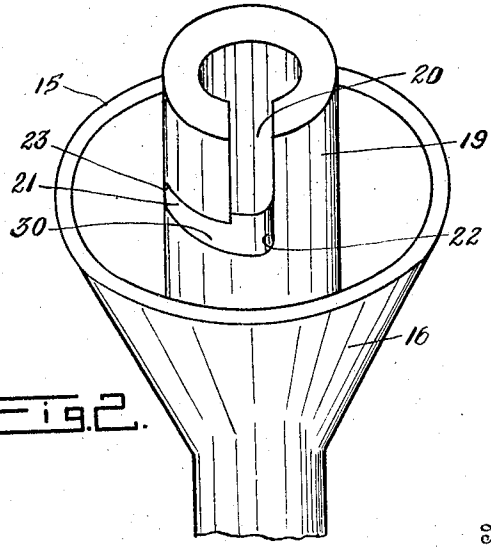


Fig. 2.

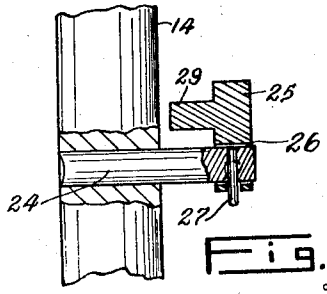


Fig. 6.

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UNITED STATES PATENT OFFICE

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LOCKING DEVICE FOR BAYONET SLOT CONSTRUCTIONS

Application filed March 15, 1930. Serial No. 436,136.

This invention relates to a bayonet slot construction with locking means associated therewith.

An object of the invention is to provide such a device in which the locking means are self-positioning and self-locking.

Another object is to provide such a construction in which the parts may be readily unlocked and disengaged from operative relationship.

Another object is the provision of means of the class described which are simple and inexpensive to manufacture.

These and other objects are attained by the means described herein and set forth in the accompanying drawing.

It is to be understood that the device of my invention concerns itself, with a variety of constructions in which a bayonet slot structure is utilized. Moreover, the constructions particularly contemplated are those in which the movable parts joined by a bayonet slot coupling are intended for temporary rather than permanent engagement so that a certain amount of play or back-lash between the parts can be expected. For the sake of presenting the invention in a definite relationship, the device is herein illustrated as associated with a dough-mixing machine such as that set forth in my co-pending application, Serial Number 320,914, filed November 21, 1928.

Fig. 1 is an isometric view of a section of a shaft having the locking means of the present invention attached thereto.

Fig. 2 is an isometric view of a removable shaft end adapted to be received upon the shaft shown in Fig. 1.

Fig. 3 is a side elevational view of a conventional dough-mixing machine with which the device of this invention might be associated.

Fig. 4 is an elevational view, partly in section and partly broken away, of a portion of a shaft having a removable member connected therewith, said parts being associated with the means of the present invention.

Fig. 5 is a top plan view of the elements shown in Fig. 4, with the parts in locked relationship.

Fig. 6 is a detail view showing the means of this invention partly in cross section and connected to a shaft.

The dough-mixing machine 10, as herein illustrated, comprises the standard 11 having a forwardly-projecting base 12 and an overhanging arm 13 adapted to house the actuating mechanism of a vertical agitator shaft 14. A removable connecting or sleeve member 15 having a shield 16, in the form of an inverted frustum, intermediate its length, is attached to the end of shaft 14. The lower portion 17 of member 15 is adapted to have an agitator 18 connected therewith. Agitator 18 is adapted to project and be rotated within a dough container suitably positioned upon base 12 beneath the arm 13.

The attachment of member 15 to the shaft 14 is effected by a bayonet slot construction comprising the means of this invention. The upper portion 19 of member 15 is tubular for the purpose of receiving the end of shaft 14. A vertical slot 20 in the wall of portion 19 communicates with the end of a horizontal slot 21 therein. The end portions 22 and 23 of the bayonet slot thus formed are preferably rounded. A laterally projecting arm 24 is secured to shaft 14 adjacent the end thereof, such as by embedding the arm within the shaft as indicated in Fig. 6. Arm 24 is adapted to enter the slots 20 and 21 and to abut end portion 23 whereby member 15 is driven by the agitator shaft 14.

Heretofore, no self-locking means have been provided for preventing driven member 15 from turning or being turned in a reverse direction to the movement of driving member 14. Such turning might take place, for example, at the moment of stopping operation of the mixer, and as a result of the forces of inertia, or of the adherent and resistant properties of the dough clinging to the agitator 18. The alignment of arm 24 with the vertical slot 20 resulted in the separation of member 15 from shaft 14.

To obviate this difficulty, a lug 25 is pivotally mounted at one of its ends, as at 26, upon the outer end of arm 24. A pin 27, projecting downwardly from the arm, extends through a slot 28 in the end of lug 25, and

serves both to retain the lug in position on the arm and also to limit its movement to half of its possible arcuate path about the arm, that is, as illustrated herein, from a horizontal position on one side of arm 24, up and over to a horizontal position on the opposite side. Adjacent the free end of lug 25, a lateral stud 29 projects toward the shaft 14.

The association of the above elements with member 15 is as follows: The end of shaft 14 is inserted into the upper portion 19 of member 15, and the latter is turned until arm 24 enters slot 20 said arm being of such length that lug 25 is in spaced relationship with the exterior face of portion 19. It should be noted that by means of pin 27 and slot 28, the free end of lug 25 is retained in proper position to follow the arm 24 into the bayonet slot without the necessity of manually adjusting the lug to this relationship.

Stud 29 is adapted to project into the bayonet slot and follows the arm 24 thereinto, causing lug 25 to assume a substantially parallel relationship with the retaining portion 21 of the bayonet slot and to turn toward the release portion or vertical solt 20 when the arm 24 has been positioned in the retaining portion 21, (see Fig. 5). A locking engagement has now been effected. The end of stud 29 rides upon the surface 30 of slot 21. When arm 24 is moved toward slot 20, stud 29 assumes an angular contact with end 22 of slot 21 as indicated at 31, Fig. 5, and prevents said arm from entering the release slot until the free end of lug 25 is given an upward start whereupon stud 29 moves upwardly into slot 20 and arm 24 is permitted to assume a releasable relationship with member 15.

It should be noted that the free end of lug 25, due to its solidity and to the added weight of stud 29, falls of its own weight when arm 24 has entered into slot 21, so that no action is required, beyond the initial insertion of arm 24 into the opening of the bayonet slot, to dispose the lug in its proper latched position.

The device of this invention may be used with drive shafts the free ends of which are disposed at various angles below and including the horizontal, so that the gravitational force operative upon lug 25 will not be such as to overcome the proper locking relationship of the parts.

What is claimed is:

1. The combination with a drive shaft having a free end, of a laterally-projecting arm on said shaft adjacent the free end thereof, a removable connecting member adapted to receive the free end of the shaft, the receiving portion of said member being provided with a bayonet slot comprising a retaining and a release portion, said slot being adapted to receive said laterally-projecting arm, and a lug mounted for limited pivotal movement upon the end of said arm and having a stud thereon projecting into the bayonet slot upon insertion of the arm into said slot, said lug being adapted to assume a position substantially parallel with the retaining portion of the bayonet slot whereby said stud, upon movement of the arm toward the release portion of the slot, contacts the wall of said release portion, preventing movement of the arm into alignment with the release portion of the slot.

2. The combination with a drive shaft having a free end, of a laterally-projecting arm on the shaft adjacent the free end thereof, a lug pivotally mounted at one of its ends upon the end of said laterally-projecting arm, a laterally-extending pin on said arm and projecting through a slot in said lug whereby to limit pivotal movement of the lug, a stud on the lug adjacent the free end thereof and extending toward the drive shaft, and a removable connecting member adapted to receive the end of the drive shaft and provided with a bayonet slot for receiving the arm on the drive shaft said slot comprising a retaining and a release portion, said lug being adapted, upon insertion of the arm in the bayonet slot, to assume a position substantially parallel with the retaining portion of the slot and in spaced relationship with the connecting member, said stud being adapted to project into the slot and to contact the wall of the release portion of the slot for preventing movement of said arm into alignment with the release portion of the slot.

3. The combination of a driving member having a free end, a driven member receivable upon the free end of said driving member and provided with a bayonet slot, an arm on said free end of the driving member and receivable in said slot, and a lug pivotally mounted upon the end of said arm and having a stud thereon adapted to enter said slot upon insertion of said arm therein for preventing movement of the positioned arm from the slot until said lug is pivotally moved.

4. The combination with a driving member having a free end, of a driven member receivable upon said free end and having a bayonet slot provided with a release portion, an arm on the free end of the driving member and insertable in said bayonet, and a lug pivotally mounted upon said arm and adapted, upon insertion of the arm into the slot, to contact the wall of the release portion of the slot for preventing separation of the driving and driven members until the lug is pivotally moved from said contacting position.

5. In combination a shaft, an arm extending from the shaft, a shaft receiving sleeve member having a bayonet slot therein for reception of the extending arm of the shaft, and self-positioning means on the arm for locking the shaft and sleeve member in engaged relationship.

6. In a dough mixer having an agitator shaft and an agitator, a connection between the shaft and agitator comprising the combination of a socket portion of said agitator having a bayonet slot, the agitator shaft adapted for entry into the socket portion, a pin on the shaft for entry into the bayonet slot, and a member attached to the pin for following the pin into the slot and for precluding withdrawal of the pin from the slot except subsequently to withdrawal of the last mentioned member from the slot.

7. In a bayonet catch the combination of a socket member having an angular slot, a member for insertion in the socket member, a pin on the last mentioned member for entry into the slot, and a locking member attached to the pin for following the pin into the slot and for lodging at the apex of the angular slot for retaining the pin in the slot.

8. In a bayonet catch the combination of a socket member having an angular slot, a member for insertion in the socket member, a pin on the last mentioned member for entry into the slot, and being loosely received therein, and a locking member attached to the pin for loosely following the pin into the slot and for loosely lodging at the apex of the angular slot for loosely retaining the pin in the slot.

In testimony whereof, I have hereunto subscribed my name this 13th day of March, 1930.

SIGMUND SCHIFF.