

F. P. HUYCK.
ADJUSTABLE SHAFT ENGAGING MEANS.
APPLICATION FILED NOV. 29, 1909.

972,787.

Patented Oct. 11, 1910.

Fig. 1.

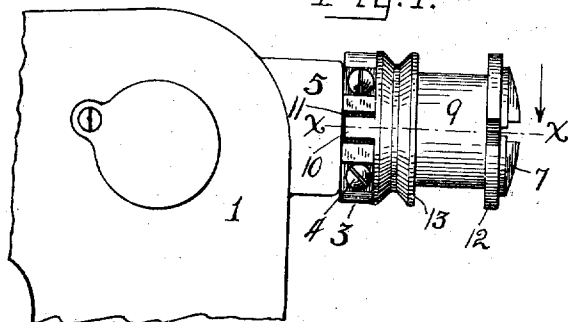


Fig. 2.

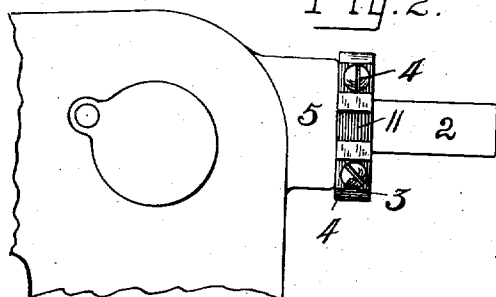


Fig. 3.

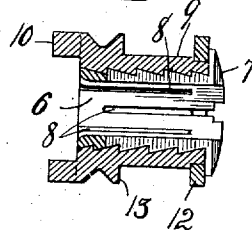


Fig. 4.

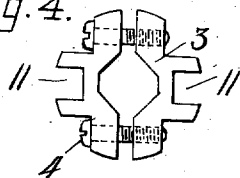


Fig. 5.

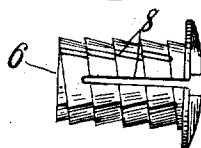


Fig. 6.

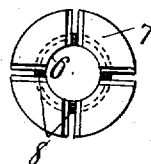
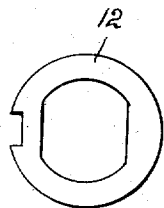


Fig. 7.



WITNESSES:

S. C. Walter
E. C. Thomas

INVENTOR.

Francis P. Huyck,
By Brown & Oliver,
His attys.

UNITED STATES PATENT OFFICE.

FRANCIS P. HUYCK, OF TOLEDO, OHIO.

ADJUSTABLE SHAFT-ENGAGING MEANS.

972,787.

Specification of Letters Patent.

Patented Oct. 11, 1910.

Original application filed June 7, 1907, Serial No. 377,710. Divided and this application filed November 29, 1909. Serial No. 530,377.

To all whom it may concern:

Be it known that I, FRANCIS P. HUYCK, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Adjustable Shaft-Engaging Means; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to means particularly adapted for operatively mounting the rotors of motors directly upon the shafts of any of the different sewing machines commonly used, regardless of the lengths of the short projecting ends of such shafts and the considerable variations in the diameters thereof. The invention, however, is not restricted to use in such connection as it is applicable for securing any rotatable member, such, for instance, as a pulley, balance-wheel, or the like, to its shaft.

The object of my invention is the provision of a simple and efficient device of this character, which, in addition to its adaptability for use on different lengths or diameters of shafts, as above stated, is inexpensive of manufacture, strong and durable in its construction, and capable of being easily and quickly applied to a shaft to lock a part thereto, or removed therefrom, without the use of tools, save a screw-driver, thus providing a practical and useful device of this class.

The importance of my invention when used for attaching motors to the shafts of sewing machines, for which purpose it was primarily adapted, will be readily appreciated by all persons who have had experience in such connection, as the shortness of the projecting ends of the shafts renders the securing of motors thereon by the use of keys, pins or the like impractical if not impossible. A further objection, which is present with all other means which have suggested themselves for securing a motor to a sewing machine shaft, is the liability of the motor to jar loose and drop from the shaft due to the constant vibration of the machine when running. This together with numer-

ous other objections which have presented themselves in the course of experimenting have made my present invention of extreme importance in connection with the motor driven sewing machine art.

The invention is fully described in the following specification and while in its broader aspect it is capable of embodiment in numerous forms, a preferred form of the same is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of a form of my invention attached to a sewing machine shaft. Fig. 2 is a similar view with the outer and inner compression sleeves removed from the shaft. Fig. 3 is a central longitudinal section of such sleeves in cooperating engagement. Fig. 4 is a side view of the anchor clamp. Figs. 5 and 6 are side and outer end view, respectively, of the compression sleeve, and Fig. 7 is a side view of the outer removable flange or ring of the outer sleeve.

This application is a division of an application filed June 7, 1907, and allotted Serial No. 377,710.

Referring to the drawings, 1 designates a part of a sewing machine head or arm and 2 the projecting end of the shaft thereof from which the usual hand-wheel has been removed. Upon this shaft is rigidly clamped a two part anchor-member or dog 3 by means of clamping screws 4. This anchor upon its inner side bears against or coacts with the bearing-boss 5 of the arm 1 of the machine and thus takes up and prevents longitudinal movement of the shaft, a feature which is of very great importance in the proper running of the machine.

Upon the projecting end of the shaft 2 is slipped a sleeve 6, which is externally threaded, as indicated, and is shown as having its outer end provided with a head 7, which is transversely recessed for the reception of a wrench or other turning member. The sleeve 6 is provided with a double series of longitudinal slots 8, one series of which extends from the outer to near the inner end of the sleeve while the other series extends from the inner to near the outer end thereof, with the slots of the two series alternating. The slotting of the sleeve in this manner enables it to have considerable radial resiliency to permit the sleeve to be uni-

formly compressed throughout its entire length to clasp, as closely as may be desired the shaft upon which the sleeve is placed.

An outer sleeve 9 incases or receives the
5 compression-sleeve 6 and is internally threaded to correspond with the external threads on the sleeve 6. The spiral ribs or threads upon the meeting surfaces of the sleeves 6—9 are oppositely beveled in trans-
10 verse section in such fashion that when, by the rotation of the inner sleeve,—the outer sleeve being immovable,—these beveled surfaces are brought powerfully together, and the resilient sleeve 6 is, by the
15 wedge-like action of the inclined planes compressed and caused to powerfully grip the shaft. It will, of course, be understood that during a turning of the sleeve 6 within the sleeve 9, the wedge-like or compressing
20 action will not occur until the relative longitudinal movements of such parts have been stopped by reason of the head 7 of the inner sleeve coming in contact with the outer end of the sleeve 9. The inner end of the sleeve
25 9 is intended to rest against the anchor or dog 3, and is provided with one or more projecting lugs or fingers 10, which are adapted to project within complemental notches or interengaging recesses 11 in the
30 anchor. The lugs 10 preferably have a loose fit within the notches 11 to facilitate an easy finding of the same, and while the coacting surfaces of such parts are shown in the present instance as being smooth, the
35 invention is not restricted in this respect as any suitable or convenient manner of interlocking the anchor and sleeve may be employed. It is evident that the anchor being securely clamped upon the shaft of the machine and the sleeve 9 being thus engaged
40 with the anchor, the shaft, anchor and sleeve must always rotate together, and also that the frictional resistance of the interlocking surfaces of the anchor and sleeve, when the latter is acting to drive the former,
45 will prevent relative end motion of the two parts even should the sleeve have a tendency to slip on the shaft, this being in itself an important feature.

50 12 designates a ring which is mounted on the outer end of the sleeve 9 to serve in conjunction with a peripheral shoulder 13 on such sleeve to hold a motor spider or other member thereon. The head of the compression sleeve 6 overlaps and holds the ring 12
55 against displacement.

The importance of the invention to the direct motor-drive sewing machine art will be further appreciated when it is considered
60 that a motor to be commercially practical for use on sewing machine shafts must be provided with a shaft securing means which is adapted to be mounted upon the short projecting ends of shafts and must be capable
65 of adjustment to fit and tightly grip

shafts of varying diameters, as shafts having varying diameters and different length projecting ends will be encountered in different makes of machines.

I wish it to be understood that my invention is not limited to any specific construction or arrangement of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. In an attaching device, the combination with the drive shaft, and the bearing part from which one end of such shaft projects, of an anchor detachably secured to the projected end of such shaft in abutment with the head to prevent relative endwise movements of the shaft and head, a member mounted on the shaft, said anchor and member having separable interlocking portions to cause them to revolve in unison, and means independent of the anchor for locking the member to the shaft.

2. The combination with a shaft, of a member mounted thereon, means internal of the member but independent of the shaft for clamping the member to the shaft, and anchor means detachably secured to the shaft at an end of said member and in loose interlocking engagement therewith to cooperate with said clamping means to prevent endwise and rotary movements of the member relative to the shaft.

3. The combination with a shaft, and a bearing part therefor, of an anchor carried by such shaft in abutment with such bearing part, a plurality of relatively movable members encircling the shaft and capable of cooperating to lock the outer member to the shaft, said anchor and one of said members having loose interlocking portions to cause them to rotate in unison and which cooperate with the member and locking means to prevent relative endwise movements of the anchor and member.

4. The combination with a shaft of a sleeve mounted on the shaft, a second sleeve disposed within the first sleeve, and slotted to adapt it to have uniform compression throughout its length, said two sleeves having surfaces which cooperate to effect a radial compression of the inner sleeve when the two sleeves are relatively moved, and a member secured to the shaft at an end of the outer sleeve and having interlocking engagement with such sleeve to cause the sleeve and member to rotate in unison and to assist in preventing relative endwise movements of said member and outer sleeve, said member also serving to prevent endwise movement of the shaft.

5. The combination with a shaft, and a bearing part therefor, of a member clamped to the shaft in abutment with the bearing

part, a sleeve mounted on the shaft, a compression sleeve disposed within the first sleeve, said two sleeves having surfaces which coöperate to effect a radial compression of the inner sleeve when the two sleeves are relatively rotated, said outer sleeve and member having complementary interlocking portions which cause the sleeves and member to rotate in unison and to assist in preventing relative endwise movements of said member and outer sleeve, substantially as described.

6. The combination with a shaft, and a bearing part therefor, of a two part anchor-member clamped to the shaft in abutment with the bearing part and having recesses

therein, a compression sleeve mounted on the shaft and having slots running from both ends thereof to near the opposite ends thereof, an external sleeve coöperating with the slotted sleeve to effect a compression thereof, said external sleeve having lugs projecting from one end and fitting freely into the recesses of the anchor-member, substantially as and for the purpose described.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS P. HUYCK.

Witnesses:

C. W. OWEN,
ANNA MARKS.