

Dec. 14, 1948.

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2,456,516

LOCKING AND ADJUSTING DEVICE

Filed Feb. 19, 1946

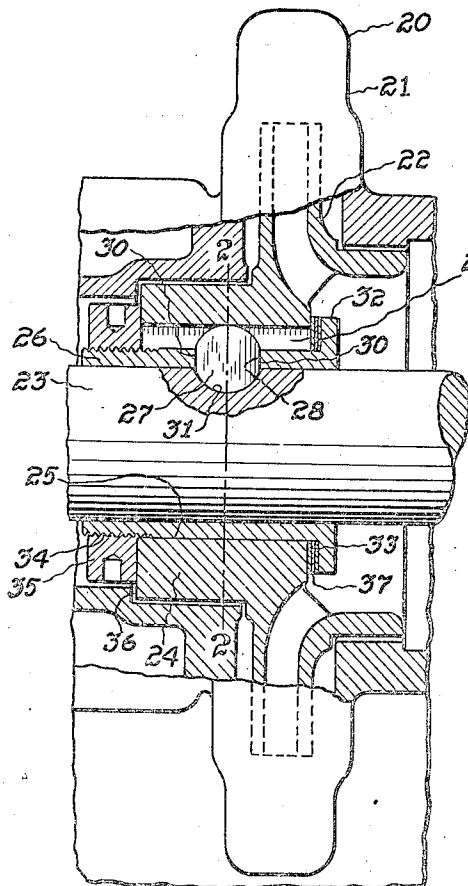


FIG. 1.

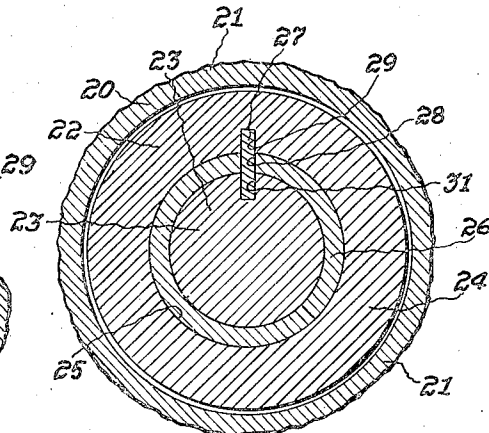


FIG. 2.

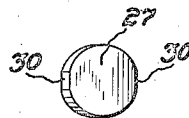


FIG. 4.

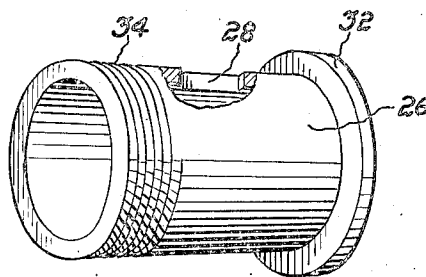


FIG. 3.

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UNITED STATES PATENT OFFICE

2,456,516

LOCKING AND ADJUSTING DEVICE

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Application February 19, 1946, Serial No. 648,699

2 Claims. (Cl. 287—52)

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This invention relates to centrifugal machines, as for example pumps, blowers, or the like, and more particularly to a device for locking an impeller to and adjusting it axially of a shaft.

One object of the invention is to facilitate the operation of placing an impeller in the correct assembled position on a shaft.

A further object is to enable an impeller to be conveniently adjusted axially of the shaft in order to assure the correct positioning of the impeller within the chamber containing it.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is a longitudinal elevation, partly broken away, of a portion of a centrifugal blower having the invention applied thereto,

Figure 2 is a transverse view taken through Figure 1 on the line 2—2, and

Figures 3 and 4 are perspective views of certain of the parts of the locking and adjusting device.

Referring more particularly to the drawings, 20 designates a portion of a centrifugal blower comprising a casing 21, an impeller 22 therein, and a shaft 23 for the impeller.

In accordance with the practice of the invention, means are provided for securing the impeller 22 in the assembled position upon the shaft and for conveniently adjusting the impeller axially of the shaft in order to position it correctly within the chamber containing it. To these ends the hub 24 of the impeller is provided with a bore 25 of somewhat larger diameter than the shaft for the accommodation of a tubular member or sleeve 26 that constitutes a holder for the impeller 22.

The sleeve 26 has a nice sliding fit in the bore 25 and on the shaft 23. It is secured to the latter by a key 27 embedded in the shaft 23 and extending through a hole or slot 28 in the sleeve 26 into a key-slot 29 extending along the inner surface of the hub 24.

The key is in the form of a disc and has diametrically opposed flattened sides 30 that engage the ends of the slot 28 to hold the sleeve securely against movement endwise of the shaft. One of the segmental portions thus defined by the flattened sides lies within the key-slot 29 and the other segmental portion extends into a key-slot 31 of the "Woodruff" type whereby the key itself is adequately held against movement relatively to the shaft.

On one end of the sleeve is an external flange

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32 to serve as an abutment for a seating surface 33 on the adjacent end of the hub 24. The opposite end of the sleeve 26 is provided with external threads 34 for cooperation with the threads of a nut 35 that bears against a seating surface 36 on the end of the hub to clamp the impeller against the flange 32, or as illustrated, against the end member of a group of liners 37 that may be interposed between the flange 32 and the seating surface 33 to position the impeller correctly upon the shaft.

In practice, whenever it is intended to assemble the holder and the impeller on the shaft, the sleeve 26 is first placed in position upon the shaft to bring the slot 28 into registry with the slot 31. Next, the key 27 is inserted into the slots, and the impeller is placed upon the sleeve 26 to effect engagement of its key-slot 29 with the portion of the key 27 protruding from the outer surface of the sleeve 26. The nut 35 is then manipulated to force the impeller hub against the flange 32 or against a liner if liners are required to assure the correct assembled position of the impeller.

In Figure 1 of the drawings, three liners are shown interposed between the impeller hub and the flange 32. It will, however, be readily understood that this number has been selected merely for illustrative purposes and will vary with the degree of adjustment of the impeller axially of the shaft as necessitated by any misalignments of casing surfaces or deformities that may be caused in the blower casing during the casting thereof.

I claim:

1. In a locking and adjusting device, a wheel having a key-slot therein, opposed seating surfaces on the wheel, a shaft for the wheel, a tubular holder interposed between the wheel and the shaft and having a hole extending therethrough, a key in the shaft to extend through the hole into the key-slot and having opposed sides to engage the wall of the hole for preventing axial movement in either direction of the holder with respect to the shaft, a shoulder on the tubular holder to serve as an abutment for one seating surface, and a nut threaded onto the tubular member to act against the other seating surface to hold the wheel against movement axially of the holder.

2. In a locking and adjusting device, a wheel having opposed seating surfaces and a key-slot, a shaft for the wheel, a tubular holder on the shaft in telescopic engagement with the wheel having a hole extending therethrough, a key having

opposed sides constituting seating surfaces to engage the wall of the hole for locking the holder against axial movement in either direction with respect to the shaft and to prevent rotary movement of the wheel with respect to the holder, a shoulder on the tubular holder opposed to one seating surface, a removable liner interposed between the shoulder and said one seating surface for adjusting the wheel axially of the shaft, and a nut on the tubular member acting against the other seating surface to clamp the liner between the shoulder and the said other seating surface.

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