Aug. 7, 1951 J. I. GARDNER 2,563,166

LOCKING MEANS FOR SHAFT KEYS

Filed July 3, 1947

Fig. 1.

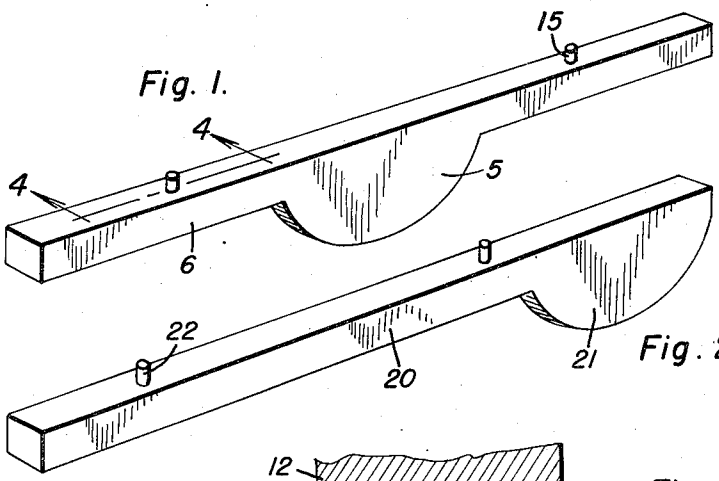
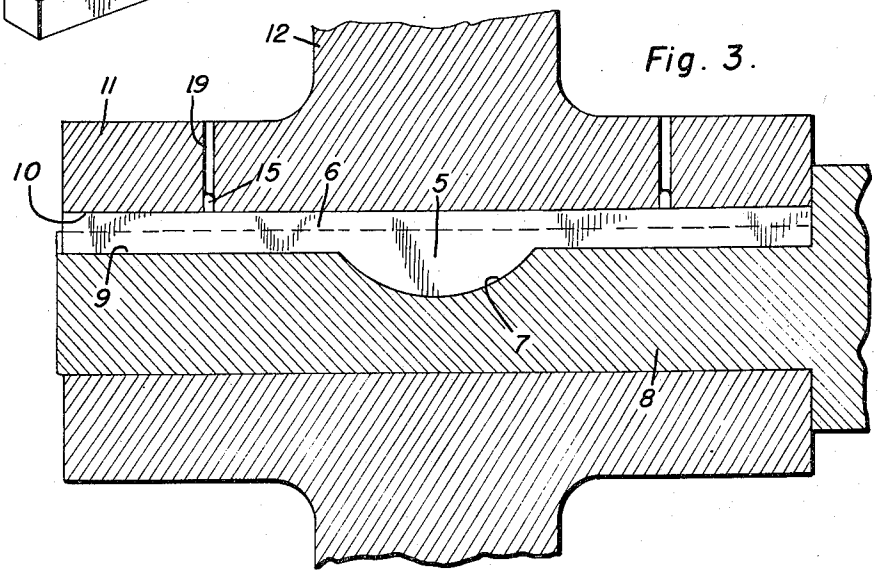


Fig. 2.

Fig. 3.



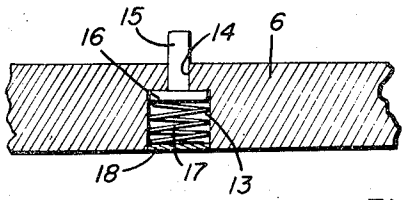


Fig. 4.

Fig. 5.

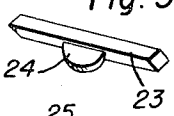
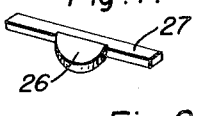


Fig. 7.



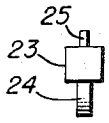


Fig. 6.

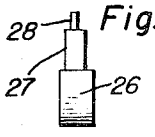


Fig. 8.

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LOCKING MEANS FOR SHAFT KEYS

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7 Claims. (Cl. 287—52.05)

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The present invention relates to new and useful improvements in keys for holding gears or other objects to shafts and the invention has for its primary object to provide means for locking the key against accidental removal from the keyway in the shaft.

A further object of the invention is to provide locking pins carried by the key and adapted for insertion in openings in the gear or other object fastened to the shaft.

Another object of the invention is to provide a self-locking pin for keys of this character and providing means whereby the locking pin may be released to remove the object from the shaft, when desired.

A still further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view illustrating one type of key with the locking pins shown thereon;

Figure 2 is a similar view of a modified key construction;

Figure 3 is a longitudinal sectional view showing the key in locking engagement with a wheel connected to a shaft;

Figure 4 is an enlarged fragmentary sectional view taken on a line 4—4 of Figure 1;

Figure 5 is a perspective view of a further modified type of key;

Figure 6 is an end elevational view thereof;

Figure 7 is a perspective view of still another key construction; and

Figure 8 is an end elevational view thereof.

Referring now to the drawing in detail and with particular reference to Figures 1, 3 and 4 of the drawing, I have illustrated a modified form of shaft key indicated at 5 and which is of circular segmental construction and having a bar 6 extending outwardly at each end of the key.

The key 5 is adapted to be seated in a key seat or groove 7 in a shaft 8 while the bars 6 are received partly in a longitudinally extending groove 9 in the shaft and partly in a longitudinally extending groove 10 in the hub 11 of a gear or the like 12.

The bar 6 is provided with one or more recesses

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13 formed in its edge provided with the key 5 and a bore 14 extends from the inner end of the recess to the opposite side of the bar and in which a locking pin 15 is slidably received. The inner end of the pin is formed with a flange or head positioned in the recess 13 and against which a coil spring 17 is held by a plug 18 suitably secured in the outer end of the recess. The spring projects the pin 15 outwardly from the side of the bar 6 opposite to the key 5.

The hub 11 of the gear or wheel 12 is provided with a radially extending opening 19 in which the pin 15 is received as shown in Figure 3 of the drawing, to lock the key 5 and bar 6 against longitudinal movement relative to the shaft 8 and thus secure the key against accidental displacement in its seat or groove 7.

The pins 15 also lock the gear 12 on the shaft 8 without requiring the use of nuts or other fastening devices.

When it is desired to remove the key 5 and bar 6 a pointed tool is inserted in the opening 19 to retract the pin 15 in the recess 13 whereby the hub 11 of the gear is free to slide off the shaft.

In Figure 2 a modified type of key is illustrated wherein a single bar 20 projects from one edge of the key 21, the bar having one or more of the spring-projected locking pins 22 positioned therein.

Figure 5 illustrates another modified type of key wherein the bar 23 is of a width greater than the width of the key 24 and the bar is also provided with the spring-projected locking pin 25.

Figures 7 and 8 illustrate a still further modified construction wherein the key 26 is of a width greater than the width of the bar 27 and is also provided with the spring-projected locking pin 28.

In view of the foregoing description taken in conjunction with the accompanying drawing it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a shaft key of the class described, locking means carried by the key holding the key in locking engagement with a shaft and an object mounted thereon, said means comprising a spring projected locking pin.

2. In a key of the class described, locking means carried by the key holding the key in locking engagement with a pair of elements mounted one upon the other, said means comprising a spring projected locking pin engaging one of said elements.

3. A shaft key comprising a circular segmental member, a bar extending from one end of the member in the plane thereof, and a spring projected locking pin carried by the bar.

4. A shaft key comprising a circular segmental member, a bar extending from one end of the member in the plane thereof, and a spring projected locking pin carried by the bar, at its edge opposite from the member.

5. The combination of a shaft and object mounted thereon, said object having a bore for receiving the shaft and an opening extending outwardly through the object from the bore, of a key extending longitudinally in the bore and connecting the object to the shaft, and locking means carried by the key and received in said opening.

6. The combination of a shaft and object mounted thereon, said object having a bore for receiving the shaft and an opening extending outwardly through the object from the bore, of a key extending longitudinally in the bore and connecting the object to the shaft, and locking means carried by the key and received in said opening, said locking means comprising a spring projected pin.

7. The combination of a shaft and object mounted thereon and having opposed longitudinal grooves, the groove of the shaft having a key seat and said object having an opening extending radially from its groove, of a key connecting the object to the shaft, and including a circular segmental portion engaged in said key seat, a bar extending from one end of the semicircular portion in the plane thereof and partly engaged in the grooves of the shaft and object, and a spring projected locking pin carried by the bar and engaged in said opening.

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