Jan. 18, 1949. C. M. FARRINGTON 2,459,221

COMBINED SHAFT KEY AND KEY EXTRACTOR

Filed Dec. 31, 1946

FIG. 1.

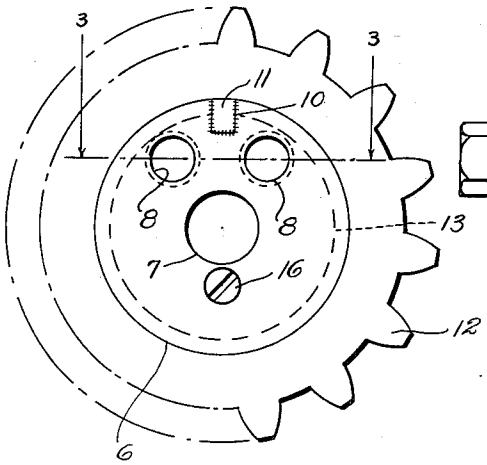
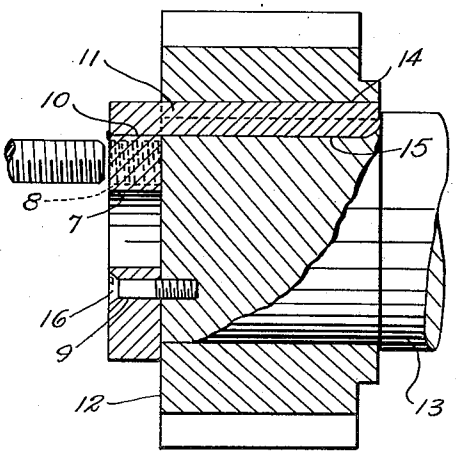


FIG. 2.



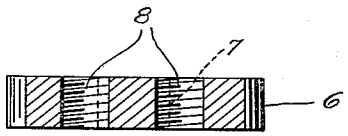


FIG. 3.

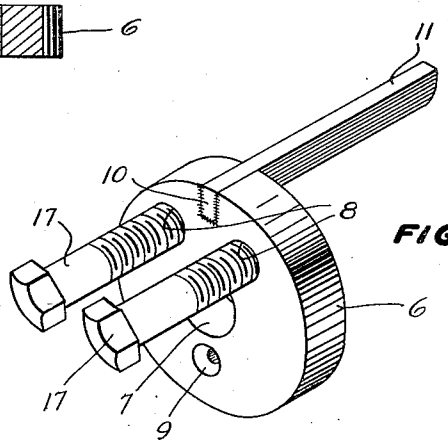


FIG. 4.

Inventor

CHARLOTTE M. FARRINGTON,

By McMorrow, Berman & Davidson

Attorneys

Patented Jan. 18, 1949 2,459,221

UNITED STATES PATENT OFFICE

2,459,221

COMBINED SHAFT KEY AND KEY EXTRACTOR

Charlotte M. Farrington, Flint, Mich.

Application December 31, 1946, Serial No. 719,434

3 Claims. (Cl. 287—52.05)

1

My invention relates to a combined shaft key and key extractor.

An important object of my invention is to provide a shaft or machinery key, designed to eliminate the usual difficulty encountered when such keys are removed from assembled machinery.

A further object of the invention is to provide a combined shaft key and key extractor, which is unitary, and adapted for use on machinery of various kinds and with shafts of various sizes.

A still further object of my invention is to provide a device of the above mentioned class, which is simple, durable, adaptable to many applications, and which is inexpensive to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is an end elevation of the combined shaft key and key extractor embodying my invention, and illustrating the same in use,

Figure 2 is a central vertical longitudinal section through the device in use, and showing extractor bolts in position for being applied to the device,

Figure 3 is a horizontal section taken on line 3—3 of Figure 1, parts omitted, and,

Figure 4 is a perspective view of the combined shaft key and key extractor with extractor bolts in position.

In the drawings, where for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 6 designates a flat circular disc or plate, having a large central opening 7, a pair of radially disposed laterally spaced screw threaded openings 8, and a small countersunk opening 9 arranged radially with respect to opening 7 and oppositely from the screw threaded openings, and spaced equidistantly between such openings. The disc or plate 6 has a rectangular groove or slot 10 formed in its periphery, and this slot is arranged equidistantly from and between the screw threaded openings 8. The screw threaded openings 8 are arranged upon opposite sides of the vertical center line of the disc 6, and are spaced equidistantly laterally from such center line. Rigidly secured within the groove or slot 10, by means of welding, or the like, is a rectangular shaft key 11. One end of this key 11 is arranged flush with the surface of the disc

2

6 having the countersunk opening 9, and the key 11 extends axially of the disc 6, see Figure 4. The top surface of the key 11, as viewed in Figure 4, is flush with the periphery of the circular disc 6. The device thus formed, when the key 11 is secured to the disc 6, is a unitary shaft key and key extractor.

In Figures 1 and 2, the device is illustrated in use for keying a gear 12 upon a shaft 13. The gear 12 has an internal axial rectangular keyway 14, and the shaft has a similar external keyway 15. The two keyways 14 and 15 are brought into registration, and the key 11 is inserted within them from the end of the shaft. The disc 6, adjacent to the end of the key 11 may be tapped with a hammer, or the like, to facilitate inserting the key into the keyways. When the key 11 has been fully inserted, and the disc 6 comes into engagement against the outer end of the shaft 13, a flat headed screw 16, or the like, is employed to secure the disc 6 to the shaft. The screw threaded opening formed in the end of the shaft 13, in which the screw 16 engages, is preferably provided at assembly. With the gear 12, or the like, thus assembled and keyed on to the shaft 13, there is no danger of the key working out in use.

When it is desired to remove the key 11, for disassembling the gear 12 from the shaft 13, extractor bolts 17 are employed. These bolts 17 engage within the screw threaded openings 8 of the disc 6, and their inner or forward ends are brought into engagement against the end of the shaft 13, when the bolts are screwed inwardly. As the bolts 17 are further tightened, the disc 6 is pulled outwardly away from the end of the shaft 13, and the key 11 is likewise pulled outwardly and extracted from within the keyways 14 and 15. Obviously, before the key 11 is thus extracted, the screw 16 must be removed. When the combined key and key extractor has been removed from the shaft, no obstruction remains to prevent the disassembling of the gear, or the like, therefrom. It should be mentioned that the position of the screw threaded openings 8 upon opposite sides of the key 11, and their position upwardly to bring them near the key 11 is important for facilitating the extracting of the key 11 from the keyways. As the bolts 17 are tightened upon opposite sides of the key 11 a substantially uniform axial pull upon the key is obtained. The opening 7 in the disc 6 is provided so that any end extension or hub, which might be formed on the end of the shaft employing this device will not interfere with the

arrangement of the disc 6 against the end of such shaft. The extension or hub carried by such a shaft, would pass into the opening 7, and consequently would not interfere with the assembling of the disc 6 and key 11. In use, as shown in Figures 1 and 2, the extractor bolts 17 are removed.

This device can be produced in various sizes for various applications. It can be used on heavy machinery, automotive equipment, and the like, or in small applications it may be used with the smallest of shafts and keyways.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. A combined shaft key and key extractor, comprising a flat disc having spaced screw threaded openings, a small opening and a rectangular opening disposed on a diametrical line equi-spaced from said threaded openings, said rectangular openings being arranged on the same side of the center of the disc as said threaded openings and said small opening being arranged on the opposite side of the center, and a rectangular key rigidly secured within the rectangular opening and extending axially of the disc.

2. A combined shaft key and key extractor for use in releasably locking a gear having a keyway to the end of a shaft having a registering keyway comprising, in combination, a key adapted to be inserted into said registering keyways to lock the gear to the shaft for rotation therewith, and a flat disk arranged in face adjacency to said end of the shaft and secured on the peripheral edge portion thereof to said key, said disk having a pair of spaced threaded openings arranged therein on the same side of center thereof as said key, said threaded openings extending through the disk to the end face of said shaft whereby upon threading a pair of bolts respectively into said threaded openings the bolts move into abutting engagement with the end of

the shaft and cause the disk to be moved axially away from the end of the shaft to remove the key therefrom upon further screwing the bolts into the disk.

3. A combined shaft key and key extractor for use in releasably locking a gear having an internal rectangular keyway to the end of a shaft having a registering external rectangular keyway comprising, in combination, a rectangular key adapted to be inserted in said registering keyways thereby to lock the gear for rotation with the shaft, a flat disc secured at the periphery thereof to one end of said key with the key extending axially of the disc whereby the disc is arranged in face adjacency to the face of the gear and to the end of the shaft when the key is inserted in said keyways, said disc having a small opening arranged therein in diametrically opposed relation with respect to said key, said opening being arranged in registered engagement with a threaded opening in the end of the shaft, a small screw inserted in said opening in the disc for threaded engagement with said threaded opening in the shaft thereby to secure the disc thereto and to retain the key in the keyways, a pair of laterally spaced threaded openings in the disc arranged on the same side of center thereof as the key and spaced equi-distant from the diametrical line extending between the key and said small opening in the disc, and a pair of bolts adapted to be threadedly received in said threaded openings respectively and screwed into abutting engagement with the end of the shaft whereby the key may be extracted from the keyways upon further tightening of the bolts after first removing said small screw.

CHARLOTTE M. FARRINGTON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
810,148	Hornby	Jan. 16, 1906
2,156,395	Klouman	May 2, 1939
2,381,697	Shepard	Aug. 7, 1945