J. F. THOMAS.

Fastening Wheels and Pulleys to Shafts.

No. 164,609. Patented June 15, 1875.

Fig. 1.

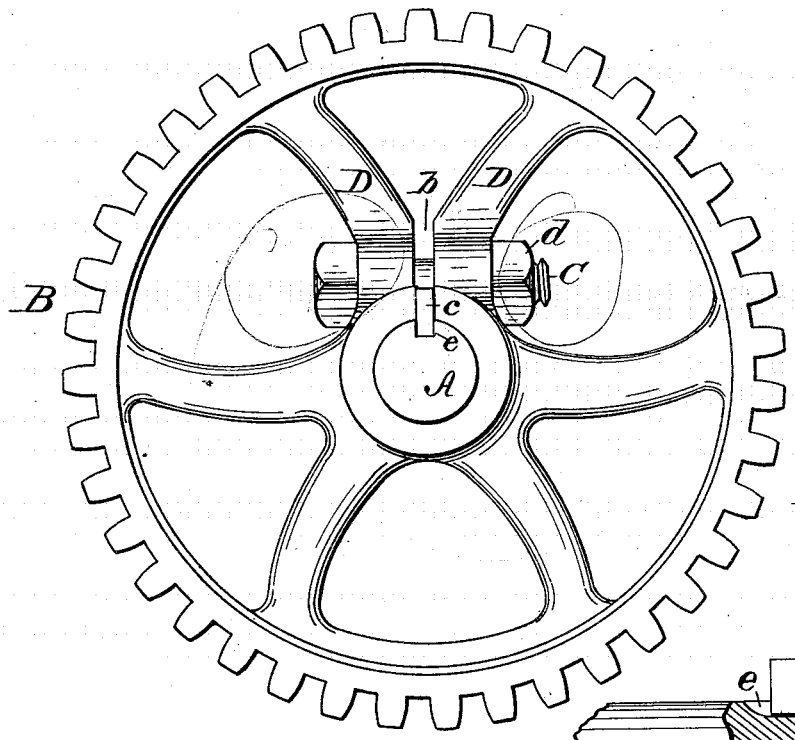


Fig. 3.

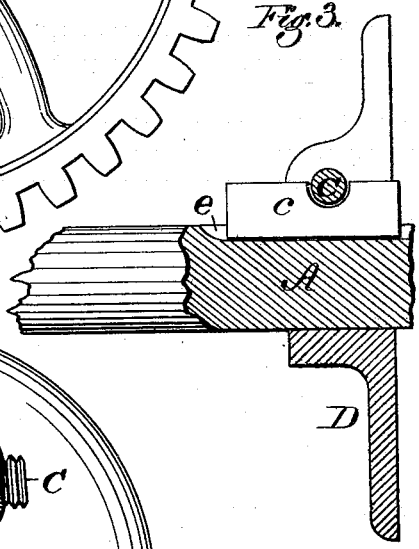
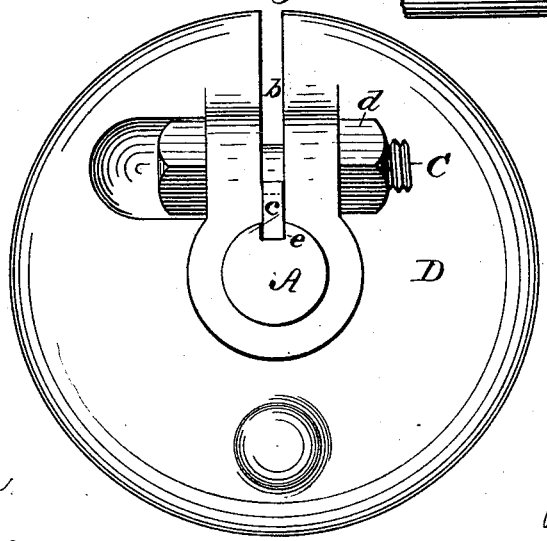


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN F. THOMAS, OF ILION, NEW YORK.

IMPROVEMENT IN FASTENING WHEELS AND PULLEYS TO SHAFTS.

Specification forming part of Letters Patent No. **164,609**, dated June 15, 1875; application filed May 22, 1875.

To all whom it may concern:

Be it known that I, JOHN F. THOMAS, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Method of Securing Pulleys, &c., on Shafts, of which the following is a specification:

My invention relates to the means or mode of securing gear-wheels, pulleys, clutches, and similar devices, upon their shafts; and the invention consists of a key held in a slit in the wheel or pulley, by means of a bolt inserted in such a manner as to make the hub hug the shaft tightly, and at the same time secure the key in its seat, as hereinafter more fully described.

Figure 1 is a side elevation of a pinion or gear-wheel secured upon its shaft by my improvement. Fig. 2 is a similar view of a clutch-plate secured by the same means, and Fig. 3 is a transverse vertical section of the same, on the line *x x* of Fig. 2.

In applying my improvement, I provide the shaft A with a key-seat or slot, *e*, cut in it in the usual manner, though preferably made narrower than is customary. The hub of the wheel or pulley is bored so as nearly to fit the shaft, and has a slit, *b*, cut from the bore laterally out through it between a pair of the arms or spokes of the wheel, as represented in Fig. 1. These arms D D are formed with projections or ears on them, through which holes are made to permit the insertion of a bolt, C. The slit *b* is made of a width corresponding to the thickness of the key, and the key is of such a width that it will extend out far enough to reach the bolt C, which latter will engage with a notch cut in the outer edge thereof, as shown in Fig. 3, the bolt thus preventing the key from moving endwise. The wheel B having the bolt C in place, as shown, has the key inserted, so its notch will come opposite the bolt when the wheel and key are slipped onto the shaft, with the key resting in the slot *c* of the shaft, after which the nut *d* is tightened up, drawing the arms D together more or less, thereby causing the hub to fit snugly on the shaft, and locking the key securely in place; or, as is obvious, the wheel may be first slipped on its shaft, especially where the key-slot *c* does not extend to the end of the shaft, the key be then set in place, and the bolt C be subsequently inserted and tightened up.

It is not necessary that the slit should be as wide as the key is thick all the way out, but only so far as the key reaches, the slit being narrower the rest of the way, if preferred, the only requisite being that there be space sufficient to permit the hub to be drawn together, so as to fit tight upon the shaft, and hold the key tight.

In all wheels, pulleys, and the like, which are made with arms or spokes, the latter will yield sufficiently for this purpose, while the rim is left unbroken or solid.

In the case of clutches or plates, or small gear-wheels which have no arms or spokes, but are made with a solid web or body, the slit must extend out to the periphery, as shown in Fig. 2.

In articles of this character, lugs or ears will be cast on one face to receive the bolt C, the same as above described, and as shown in the drawings.

By this method of securing wheels, pulleys, &c., upon their shafts, I avoid the necessity of driving the key, which, not unfrequently bursts the hub, if small, and causes the parts to become bruised or battered. It enables the wheel to be put on and taken off with ease and facility, by simply loosening a nut, and insures an accurate and solid bearing on the shaft on all sides, thereby causing the wheel to retain its position and remain true. The key is also held in its seat, and can neither work loose nor fall out.

By using a good quality of steel for the key, a comparatively thin one will answer.

I am aware that a shaft-coupling has been made in which the coupling piece or sleeve was cut through on one side, and tightened up by bolts, and also that the same has long been used as a means of tightening pitman-rods on the their journals in sewing-machines, &c., and, therefore, I do not claim that in and of itself; but

Having thus described my invention, what I claim is—

1. The herein-described method of securing

wheels, pulleys, &c., upon their shafts—that is to say, by means of a key held in a slit in the hub or disk, and a bolt arranged to draw the parts together, substantially as described.

2. The combination of the notched key, with the shaft A, and wheel or plate having a slit and a tightening-bolt, all constructed to operate substantially as and for the purpose set forth.

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