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COÖPERATING KEYS.

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1,137,256. Patented Apr. 27, 1915.

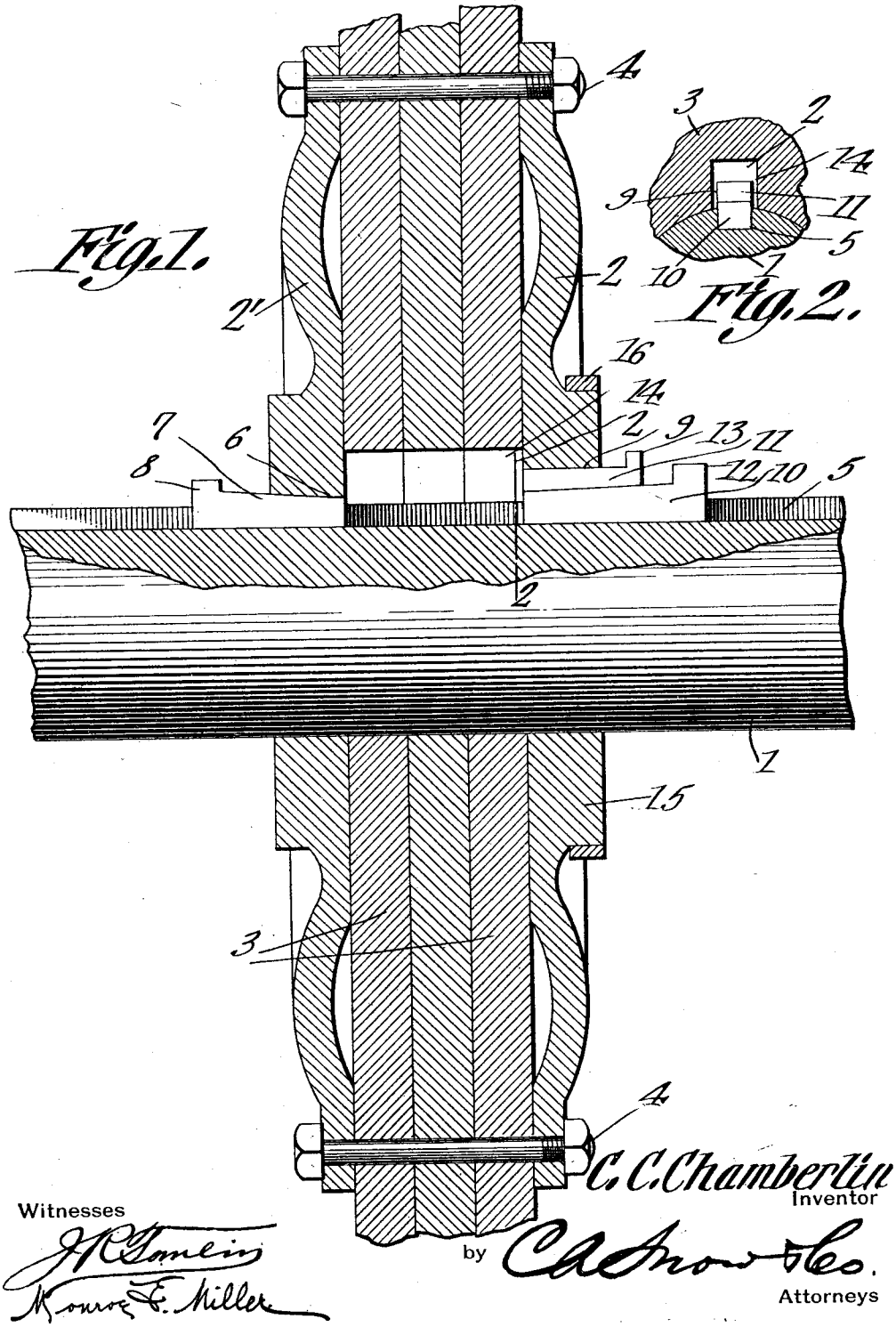


Fig. 1.

Fig. 2.

Witnesses

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COÖPERATING KEYS.

1,137,256. Specification of Letters Patent. Patented Apr. 27, 1915.

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To all whom it may concern:

Be it known that I, CHARLES C. CHAMBERLIN, a citizen of the United States, residing at Washington, in the county of Washington and State of Pennsylvania, have invented new and useful Coöperating Keys, of which the following is a specification.

The present invention appertains generally to keys for locking pulley wheels, fly wheels, cranks and the like, upon shafts, and aims to provide a novel and improved device of that character.

It is the object of the present invention to provide a locking device of the nature indicated embodying a primary or locking key and a secondary or relief key, the former being employed for locking a pulley wheel or the like upon the shaft, and the latter being adapted to liberate the primary or locking key when desired.

With the foregoing general objects outlined, and with other objects in view, which will be apparent as the nature of the invention is better understood, the present invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention has been illustrated in one of its preferred embodiments in the accompanying drawing, wherein:—

Figure 1 is a fragmental view of a shaft and pulley wheel mounted thereon illustrating the improved locking means applied thereto. Fig. 2 is a sectional detail taken on the line 2—2 of Fig. 1.

In the drawing, the numeral 1 designates an ordinary shaft, upon which is mounted a pulley wheel embodying the side plates 2 and 2′ between which are disposed wood or fiber boards 3, bolts 4 being passed through the side plates 2 and 2′, and the members 3, to clamp the members 3 between the side plates. It is to be understood, however, that the present invention may be employed for locking various parts upon shafts, such as pulley wheels, fly wheels, cranks and the like. The particular application of the invention to the pulley wheel illustrated and described hereinafter is therefore to be taken as typical. In carrying out the present invention, the shaft 1 is provided with the longitudinal key seat or groove 5, and the side plate 2′ is keyed upon the shaft 1 in the well known manner. Thus, the side plate 2′ is provided with a notch or keyway 6 into which a tapered key 7 is driven along the key seat 5, the key 7 having a driving lug 8 at its outer end.

Coming to the present improvements, which reside in the manner of locking the side plate 2 to the shaft 1, there are employed the following essentials: The side plate 2 is provided with a notch or keyway 9, the remote walls of the key seat 5 and keyway 9 being substantially parallel. The primary or locking key 10 is slidably disposed within the key seat 5, while the secondary or relief key 11 is seated within the keyway 9, the two keys having coöperating inclined faces. In other words, the primary key 10 is tapered inwardly, while the key 11 is tapered outwardly, the two keys therefore being reversely tapered.

The remote faces of the keys 10 and 11 are parallel so as to properly engage the remote walls of the key seat and keyway, and the adjacent faces of the keys extend diagonally from the outer ends of the keys toward the axis of the shaft. The key 10 not only fits within the seat 5 but extends partially into the keyway 9, while the key 11 is confined entirely within the outline of the keyway 9 and is spaced throughout its length from the key seat. The respective keys 10 and 11 are provided at their outer ends with the angular driving lugs 12 and 13, the primary and secondary keys being relatively long and short, it being preferable to have their inner ends flush, when the locking or primary key is driven home. The outer end of the main or locking key 10 projects beyond the secondary or relief key.

The members 3, or that member 3 adjoining the side plate 2, may be cut away, as at 14, to permit of the passage of the keys 10 and 11 slightly beyond the plate 2.

If desired, the hub or boss 15 of the side plate 2 may be reinforced by a band 16 to prevent the hub of the plate 2 from being ruptured or fractured by the expansive effort of the keys.

In keying the pulley wheel upon the shaft, it will be apparent the tapered key 7 may be readily driven home, to lock the side plate 2′ upon the shaft. The relief key 11 is then

inserted into the keyway 9 of the side plate 2 and the locking or primary key 10 is then slid along the key seat 5 underneath the relief key 11. After the key 11 has been properly positioned, the key 10 is driven forcibly inwardly so as to jamb the relief key 11 outwardly against the keyway 9 and to cause the key 10 to bind between the relief key and the key seat 5 within the mouth of the keyway 9. In this manner, the pulley will be securely keyed upon the shaft.

When it is desired to release the pulley, it is merely necessary to drive the relief key 11 inwardly, this being readily accomplished by striking the lug 13 with a hammer or other suitable implement. The relief key being driven inwardly will thereby loosen the locking key 10 and as a result, the locking key may be withdrawn, as well as the relief key. The side plate 2 will then be loosened from the shaft, and it is an easy matter to force the pulley off of the key 7.

With the primary and secondary keys 10 and 11 the member 2 may be readily locked upon the shaft, and may be readily loosened or released, without difficulty, or without injuring or breaking any of the parts.

Particular attention is directed to the fact that the outwardly-tapered key 11 is disengaged from the key seat 5, and that the largest end of the key 10 and the smallest end of the key 11 are exposed and provided with the driving portions 12 and 13, respectively, in order that the desired results may be attained in a satisfactory and practical manner.

Although the present invention is especially adapted for use in gas or oil well machinery, for locking wheels of the character illustrated upon shafts, it is to be understood that the present invention may be otherwise employed, as will be obvious to the artisan.

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

In combination, a shaft having a key seat, a member thereon having a complementary keyway, a tapered relief key disposed within the keyway and disposed wholly outside of the key seat, and a tapered main key disposed within the key seat, entering the keyway and resting against the relief key, one end of the main key projecting beyond the relief key and having an angularly extending driving portion, the corresponding end of the relief key having an angularly extending driving portion projecting beyond the aforesaid driving portion, and the adjacent faces of the two keys extending diagonally from the ends of the keys having said driving portions toward the axis of the shaft.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES C. CHAMBERLIN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."