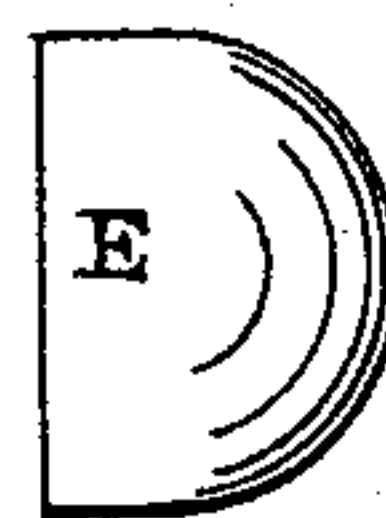
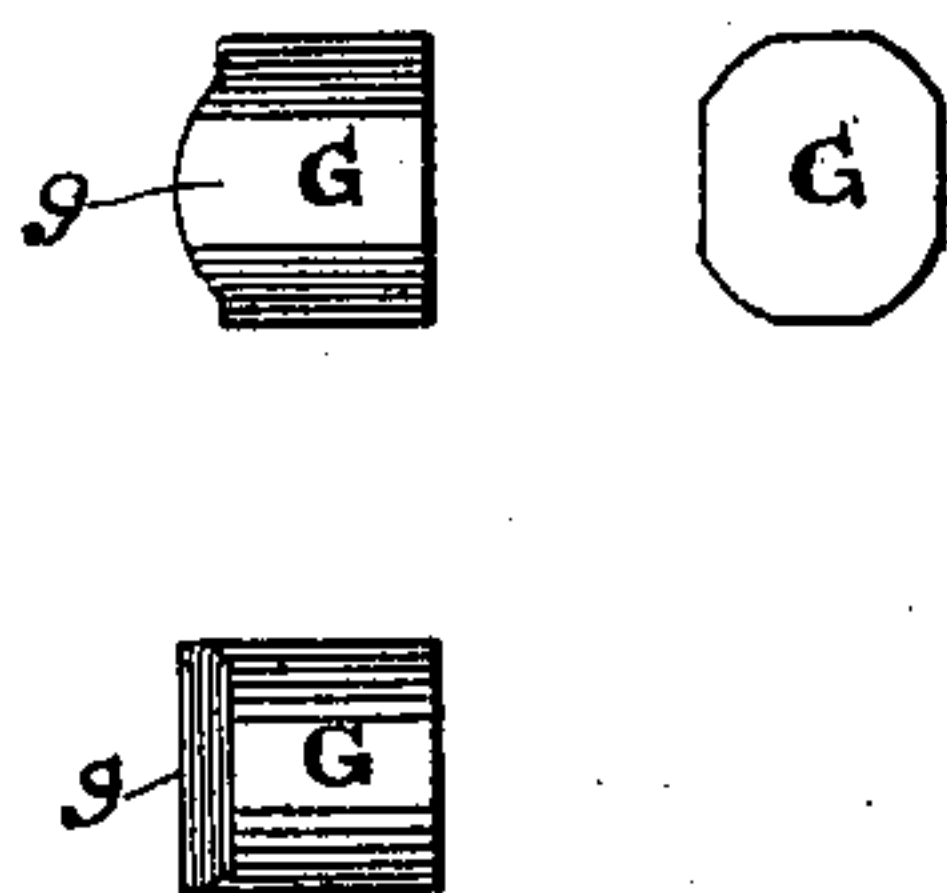
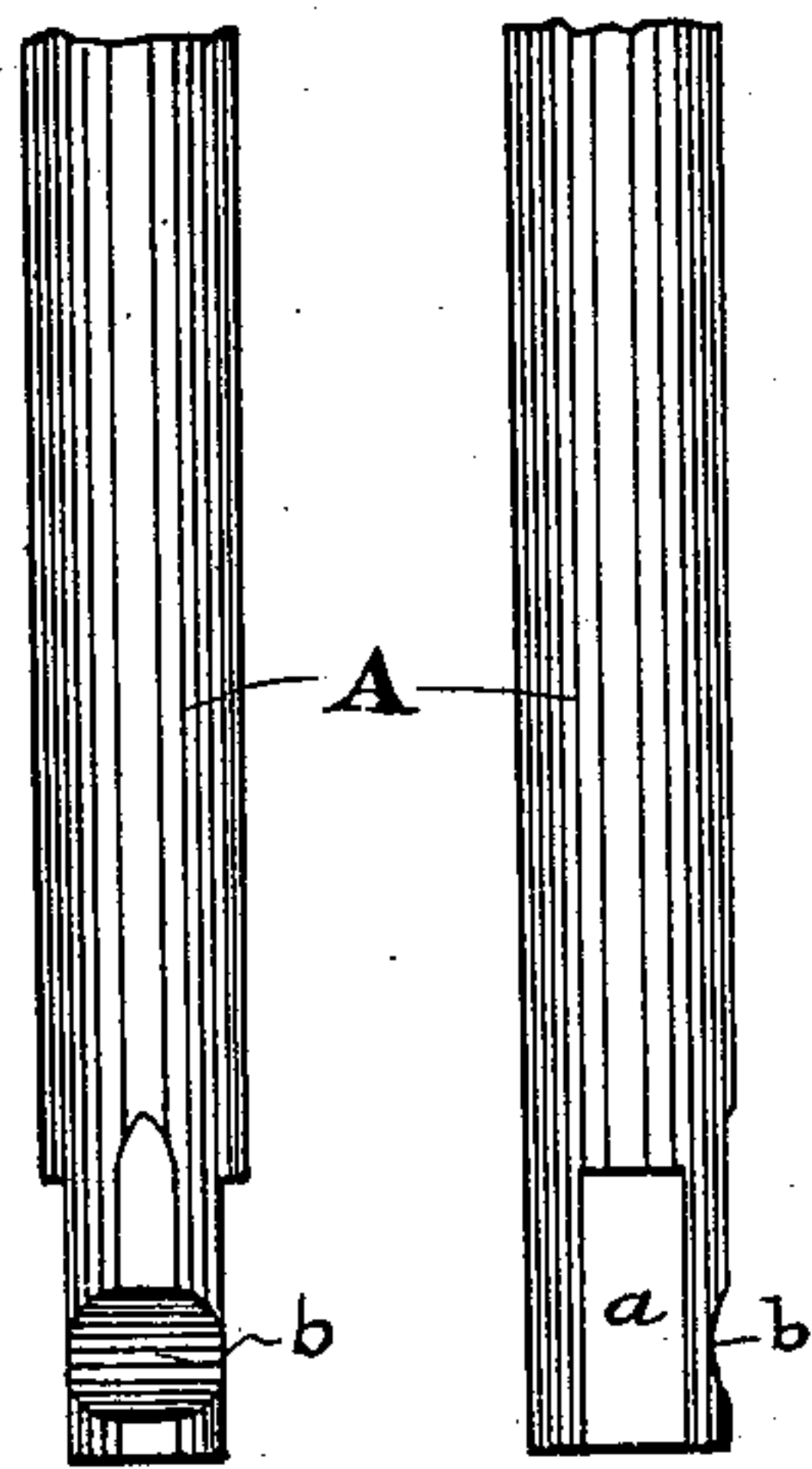
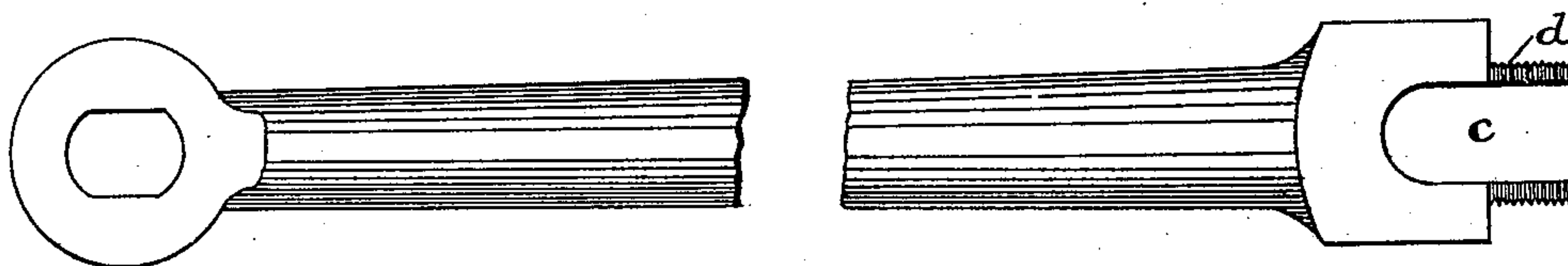
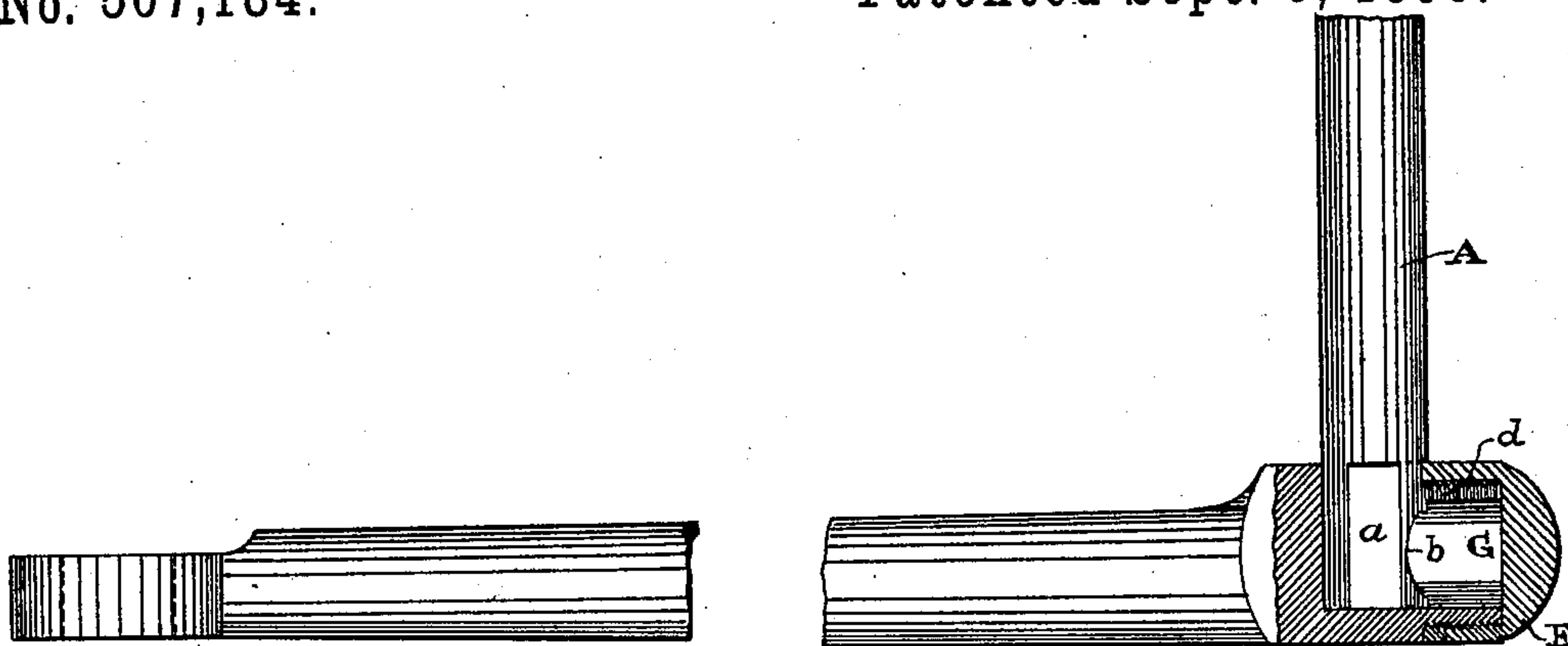


(No Model.)

W. H. WILLIAMS.
DETACHABLE CRANK.

No. 567,184.

Patented Sept. 8, 1896.



Witnesses
M. W. Caskey.
H. W. Middlemist

Inventor
William H. Williams,
by Wm L. Pierce,
his attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. WILLIAMS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
U. S. CYCLE IMPROVEMENT COMPANY, OF SAME PLACE.

DETACHABLE CRANK.

SPECIFICATION forming part of Letters Patent No. 567,184, dated September 8, 1896.

Application filed November 29, 1895. Serial No. 570,416. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WILLIAMS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Detachable Cranks, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a side elevation, partly in section, of the crank and crank-shaft. Fig. 2 is a plan of the crank. Fig. 3 is a plan and an edge view of the crank-shaft. Fig. 4 is a plan, side elevation, and rear elevation of key; and Fig. 5, an elevation of the locking cap-nut.

One of the most popular styles of bicycle cranks is perforated to receive the crank-shaft and is also perforated at right angles to said first perforation to receive a cotter-pin to lock said shaft in position. These perforations greatly weaken the crank and result in fractures thereof. Besides this the cotter-pin becomes wedged and is difficult to remove with reasonable speed.

The purpose of my invention is to overcome the above-recited difficulties and secure a connection between the crank-shaft and crank which shall not materially weaken the latter and also a connection which can be readily disconnected.

In the accompanying drawings, which make part of this application, A is the crank-shaft, with flattened sides *a a* at the end where it enters the crank. It is also dished at *b* to receive lower end of key. The end of the crank is cut out at *c* to receive shaft and key. Integral with the end of said crank is a flange *d*, threaded to receive cap-nut E. The key G is convex at its lower end *g* to fit concavity *b* in end of crank-shaft and with

flat edges to fit in recess *c* of crank. The parts are assembled by slipping crank-shaft into crank-recess, dropping in key G, and screwing down cap-nut. To separate the parts, it is only necessary to give a few back turns to the cap-nut without actually removing the nut. This is a decided advantage over hammering out a wedged cotter-pin. It should also be noted that the walls of the crank at recess *c* are not completely cut through in the direction of the greatest strain, as in the old-style crank, nor are there cross-perforations to weaken the crank at that point. No serious objection can be made on the ground that recess *c* is carried through to the end of the crank, as nut E will compensate for this.

Having described my invention, I claim—

1. In detachable cranks, the combination of a crank-shaft; a crank recessed longitudinally from one end inwardly to receive said shaft; a key adapted to fit in said recess outside of said shaft end; a threaded flange upon the end of said crank and a nut adapted to engage said flange and lock the parts in position.

2. In detachable cranks, the combination of a crank-shaft with flattened ends and a key-seat; a crank recessed longitudinally from one end inwardly; a key adapted to fit in said recess and in the key-seat in the shaft; a threaded partial collar at the recessed end of the crank and a cap-nut adapted to engage said collar and lock the parts in position.

In testimony whereof I have hereunto set my hand this 23d day of November, A. D. 1895.

WILLIAM H. WILLIAMS.

Witnesses:

WALTER SCOTT,
WM. L. PIERCE.