

No. 627,597.

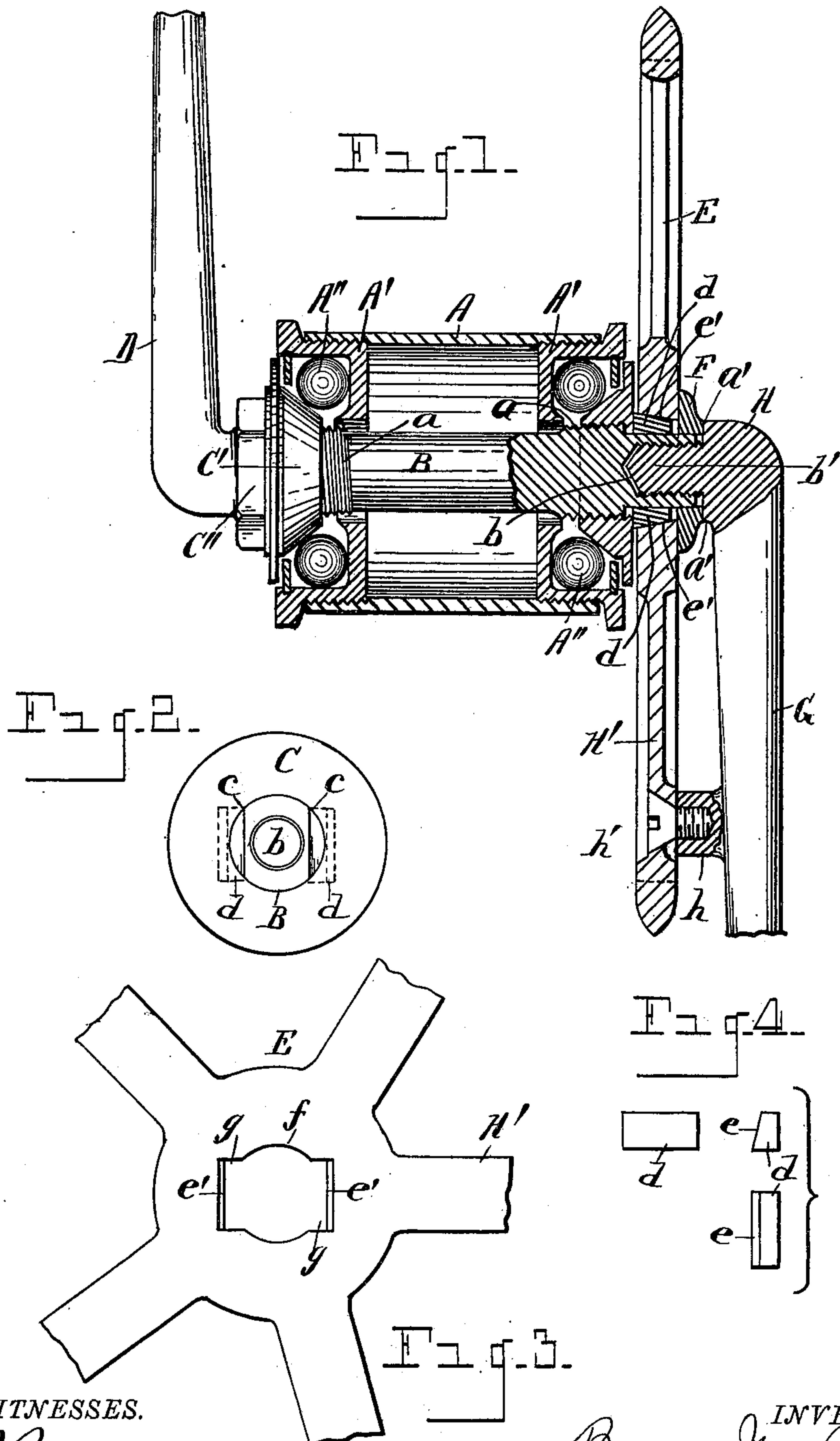
Patented June 27, 1899.

B. W. SCOTT.

MEANS FOR ATTACHING SPROCKET WHEELS TO CRANK SHAFTS.

(Application filed Aug. 26, 1898.)

(No Model.)



WITNESSES.

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# UNITED STATES PATENT OFFICE.

BURTON W. SCOTT, OF DETROIT, MICHIGAN.

## MEANS FOR ATTACHING SPROCKET-WHEELS TO CRANK-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 627,597, dated June 27, 1899.

Application filed August 26, 1898. Serial No. 689,573. (No model.)

*To all whom it may concern:*

Be it known that I, BURTON W. SCOTT, a citizen of Canada, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Means for Attaching Sprocket-Wheels to Crank-Shafts; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to means for attaching the sprocket-wheel to the crank-shaft of a bicycle; and it consists in the construction and arrangement of parts hereinafter more fully set forth.

The object of the invention is to provide simple and efficient means for securely attaching the sprocket-wheel to the crank-shaft in such manner as to enable said sprocket-wheel to be readily removed, the arrangement being such that the operation of securing the sprocket-wheel upon the shaft also locks one of the bearing-cones and secures the crank in place. This object is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view through the crank-hanger, bearing, and sprocket-wheel of a bicycle, the shaft and bearing-cones being in elevation and a portion of the crank and shaft being broken away. Fig. 2 is an elevation of the end of the shaft and cone, showing the milling on opposite sides of the shaft and by dotted lines the locking-wedges lying thereon. Fig. 3 is an elevation of the hub of the sprocket-wheel looking from the inner side, showing the beveled recesses in the bore which receive the locking-wedges. Fig. 4 is an elevation of said wedges, showing a side, end, and plan view thereof.

Referring to the letters of reference, A designates the barrel of an ordinary crank-hanger, in which are the ball-cases A', carrying the balls A".

B designates the crank-shaft, having the threaded end portions *a* for the reception of the bearing-cones C C'. The crank D in the construction shown is formed integral with

the shaft. The end of the shaft opposite from the crank D is provided with a threaded bore *b*. Adjacent to the cone C the shaft is milled on opposite sides, producing the parallel flat surfaces *c*, which stand in a plane at right angles to the crank D.

Two quadrangular keys *d*, having an outer beveled face *e*, are adapted to lie with their straight side against the milled faces *c* of the shaft and to bear against or rest upon the cone C.

The sprocket-wheel E is provided with a bore *f*, passing through the hub thereof, adapted to receive the shaft B, and with two opposed rectangular recesses *g*, leading from said bore, adapted to embrace the keys *d* and having a beveled face *e'*, the incline of which extends inward through the inner face of the hub of said wheel and is adapted to coincide with the beveled face of the keys *d*. The sprocket-wheel is adapted to be slipped over the end of the shaft, so that the recesses *g* in the hub thereof shall receive the keys *d*, the inclined face *e'* of the recesses in said sprocket-wheel engaging the inclined face *e* of said keys, so as to wedge the sprocket-wheel tightly upon the shaft and prevent its turning thereon.

F designates an annular washer, which is slipped over the outer end of the shaft B and bears against the outer face of the sprocket-wheel.

Formed upon the end of the crank G is an elbow H, which is provided with a threaded stem *b'*, extending at right angles to the crank and adapted to enter the threaded bore in the end of the shaft B to enable said crank to be screwed onto the end of said shaft. This operation of screwing the stem G into the end of the shaft forces the washer F, which is engaged by the shoulder *a'* of said crank, against the sprocket-wheel E, thereby crowding said wheel onto the beveled keys *d* and at the same time forcing said keys against the cone C, locking said cone upon the shaft by the same operation which locks the sprocket-wheel and tightens the crank G. The stem of the crank G is screwed into the shaft until the shoulder *a'* thereon bears forcibly against the washer F, when the boss *h* on said crank, in which is a threaded aperture, is brought to register with the screw *h'*, which passes



through the arm H' of the sprocket-wheel and is adapted to enter said boss, whereby said crank is securely locked from unscrewing.

To insure a proper alinement of the cranks, the recesses *g* are formed in the bore of the hub of the sprocket-wheel so as to register with the arm H' of said wheel, through which the locking-screw *h'* passes, so that the crank G when brought into position to receive the screw *h'* will always stand in alinement with the crank D.

To enable the crank G to be always brought into proper position to receive the screw *h'*, the cone C may be so adjusted on the threaded portion of the shaft as to allow the crank G when screwed tightly into place to stand in such position as to receive the screw *h'*.

After the sprocket-wheel has been properly locked upon the shaft the bearing may be adjusted through the medium of the cone C', which is free to be adjusted after the crank G is locked and which after adjustment may be locked by the jam-nut C''.

By means of the construction above set forth it will be seen that the sprocket-wheel, although firmly locked to the crank-shaft, is made readily removable therefrom by simply unscrewing the crank G, when the washer F and the sprocket-wheel E may be slipped from the shaft, enabling an easy exchange of sprocket-wheels, if desired, or the ready removal of the crank-shaft from the bearing by simply unscrewing the cone C therefrom. When setting up the bearing, said parts may

be quickly assembled and easily secured in place, as before described.

Having thus fully set forth this invention, what is claimed is—

1. The combination of a crank-shaft of a bicycle, said shaft having a flattened face, a beveled key adapted to lie with its straight side against the flat face of said shaft, a sprocket-wheel apertured to receive the shaft and having a recess which receives said beveled key, and a crank secured upon the projecting end of said shaft and bearing forcibly against the outer face of the sprocket-wheel.

2. The combination with the crank-shaft of a bicycle having a flattened face and a threaded bore in the end thereof, a cone threaded upon said shaft, a beveled key lying against the flat face of the shaft and bearing upon said cone, a sprocket-wheel apertured to receive the shaft and having a recess in which said beveled key is adapted to lie, a washer fitting on the outer end of the shaft and lying against the face of the sprocket-wheel, a crank adapted to be screwed into the threaded bore of the shaft and to bear forcibly against said washer, and means for locking said crank.

In testimony whereof I sign this specification in the presence of two witnesses.

BURTON W. SCOTT.

Witnesses:

E. S. WHEELER,  
M. A. MARTIN.