

No. 827,023.

PATENTED JULY 24, 1906.

H. A. KNOENER.

MEANS FOR ATTACHING GEARS TO SHAFTS.

APPLICATION FILED SEPT. 16, 1905.

Fig. 1.

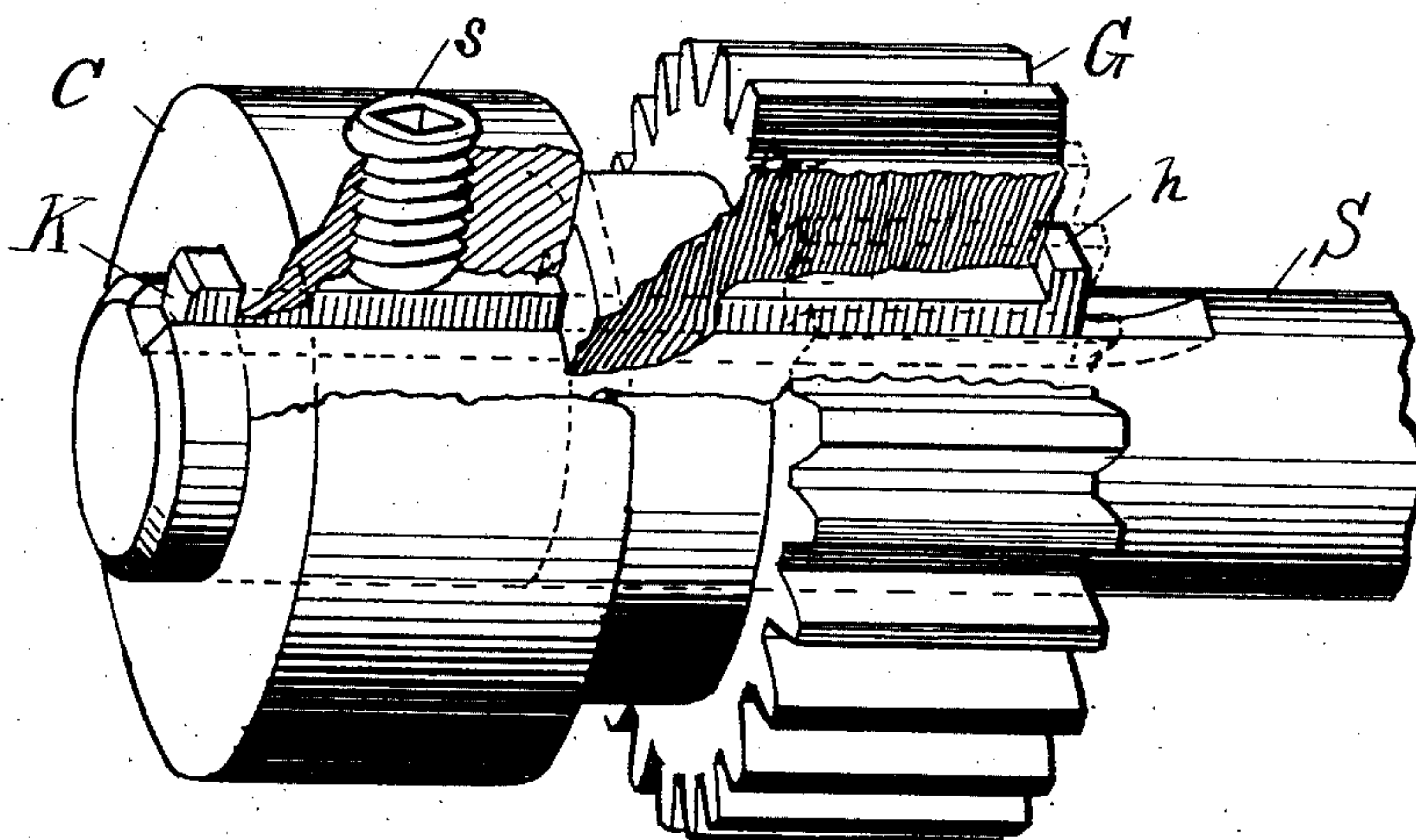
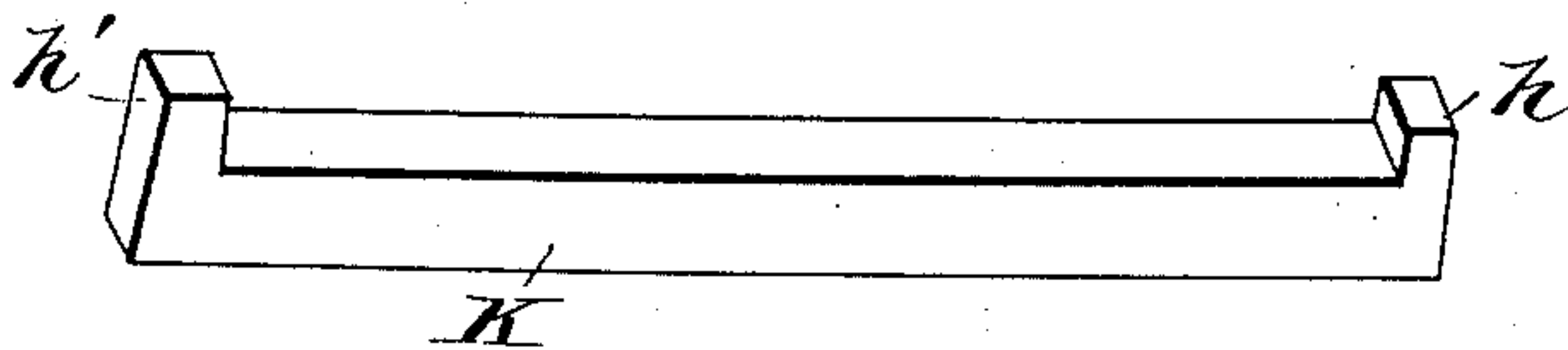


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MEANS FOR ATTACHING GEARS TO SHAFTS.

No. 827,023.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed September 16, 1905. Serial No. 278,800.

To all whom it may concern:

Be it known that I, HERMANN A. KNOENER, a citizen of the United States of America, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Attaching Gears to Shafts, of which the following is a specification.

The object of the invention is to provide a means for attaching gears to shafts by which the gear will be firmly held without being forced eccentric to the shaft or distorted by the attaching means and which will admit of any removal of the gear without any unusual apparatus.

A further object is to provide means which does not involve the tapering of the shaft and which leaves the shaft of cylindrical form and standard dimensions for the substitution of pulleys of standard bores.

These means have been devised with especial reference to their applicability in connection with armature-shafts of electric motors. In the accompanying sheet of drawings, which form a part of this application, Figure 1 shows in perspective the end of a shaft and a gear held thereon by my improved means of attachment. Fig. 2 shows in perspective a key with a head on each end, which may be substituted for the key shown in Fig. 1.

A gear G is bored so that it may be forced on a shaft S with a comparatively moderate pressure—snug enough to prevent shake or appreciable play between the gear and shaft, but not so tight as to present any unusual difficulty in assembly or removal. With an easy fit of this character I have found that the employment of a set-screw or a key fitting tightly at its top and bottom to prevent either it or the gear from becoming displaced will throw the gear sufficiently eccentric to cause uneven running and noise. Therefore a key K fitting in a keyway in the shaft and fitting in a corresponding keyway in the gear, but not fitting tightly at its top and bottom, is provided. This key has a head *h* at one end adjoining the gear to prevent the gear from working endwise of the shaft toward the head. The key is as long as the combined width of the gear, including its hub and a collar C. The collar lies next to the gear on the opposite side of the gear to the head on

the key and prevents the gear from working endwise of the shaft toward this side. A set-screw *s* through the collar clamps the key against the bottom of the keyway in the shaft, thereby securely holding both the collar and key against movement along the shaft. The set-screw may be of any desired style; but what is known as a "hollow" set-screw, which has a socket-head, is desirable, since it has no projecting parts, which are a source of danger when on rapidly-moving machinery.

The key may have a head also on the end outside the collar at *h'*, as indicated in the modification, the object being to prevent improper assembling. In the form having a head at one end only of the key in assembling the key is first put in place either in the keyway in the gear with the head next to the gear or in the keyway in the shaft with the head away from the end, and the gear and collar are then slipped on the shaft. If a key which has a head at each end is employed, the gear and collar are first placed together with their keyways in alinement, then the key is set in the alined keyways, and, lastly, the combination is slipped over the end of the shaft.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

The combination of a cylindrical shaft provided with a keyway, a gear bored to a moderately-snug fit for the shaft and also provided with a keyway, a collar formed with a keyway and adjoining the gear, a key provided with a head adjoining the gear on the opposite side from the collar and extending through the gear and collar and loosely fitting at its top and bottom in the gear and shaft, and a set-screw tapped through the collar and serving to bind the key against the bottom of the keyway in the shaft beneath the set-screw and thereby secure the collar and key against displacement, substantially as described.

Signed by me at East Orange, county of Essex, New Jersey, this 8th day of September, 1905.

HERMANN A. KNOENER.

Witnesses:

SAMUEL W. BALCH.

EDWIN R. DOUGLAS.