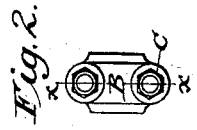
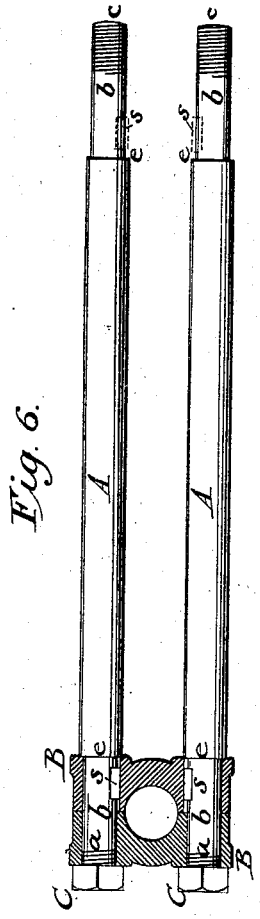
(No Model.)

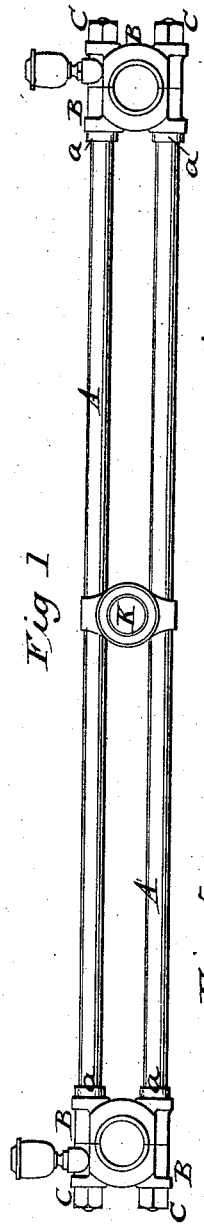
L. SCHUTTE.

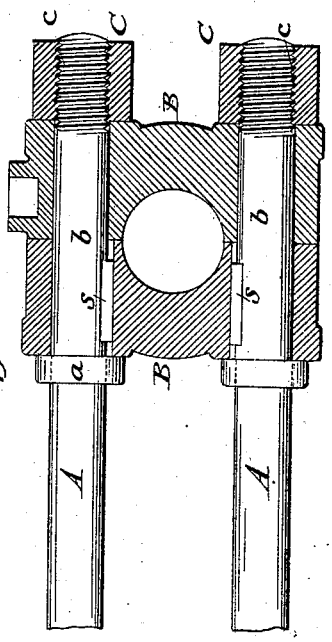
CONNECTING ROD.

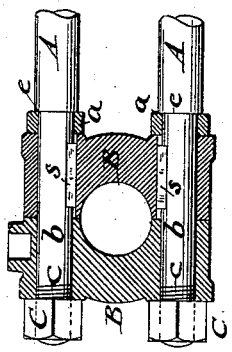
No. 259,776. Patented June 20, 1882.

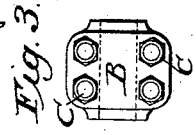












Attest.

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UNITED STATES PATENT OFFICE.

LOUIS SCHUTTE, OF PHILADELPHIA, PENNSYLVANIA

CONNECTING-ROD.

SPECIFICATION forming part of Letters Patent No. 259,776, dated June 20, 1882.

Application filed January 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHUTTE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Connecting-Rods, of which the following is a specification.

My invention relates to an improvement in the manner of constructing what are commonly known in the art as "connecting-rods," "pitman-rods," and "parallel rods," which are employed to change a reciprocating into a rotary motion through the medium of a crank and to transmit rotary motion from one shaft to another, &c. These rods are subjected in use, not only to the longitudinal strains of tension and compression, but also to the lateral strain due to the vibration of the rods in a plane at right angles to their axes, and also in some cases to a torsional strain. The first strain must be resisted by giving the rod a sufficient area in cross-section at all points between its ends. The second strain, being unequal at different points, requires the rod to be given rigidity or stiffness at the points of greatest lateral strain, which in most cases will be at the middle of the rod. The torsional strain must be resisted by providing a sufficient strength of material between the two extremities. To obtain this result when the rod is of circular cross-section it has been customary to increase its diameter at the middle. This strengthens the rod but adds unnecessary weight, and also adds greatly to the cost of construction.

In the accompanying drawings I have represented the rod constructed on my plan, which offers at all points equal strength, and which in its form offers the required stiffness or resistance to the various strains mentioned.

The peculiar advantage of my construction consists in the fact that it admits of the rod being constructed of rolled iron of uniform diameter, such as is commonly sold in the market, without the expense of forging or upsetting the ends of the rods, as has hitherto been the custom.

Referring to the accompanying drawings, Figure 1 is a side elevation of my rod. Fig. 2 is an end elevation of the same, the rod being part composed of two longitudinal bars. Fig. 3 is a like view of a rod constructed with four longitudinal bars. Fig. 4 is a longitudinal section on the line *x x*, Fig. 2. Fig. 5 is a similar section, showing the rod in a slightly modified form. Fig. 6 is a view showing the manner of constructing the rod without the washers represented in the preceding figures.

A A represent longitudinal bars or rods, which may be of a circular or any suitable cross-section. Each rod terminates in a neck or wrist, *b*, of reduced diameter, formed by turning or cutting down the end of the rod in such manner as to leave at the junction of the rod and neck an annular shoulder, *e*. Between the shoulders *e* the rod is made of uniform diameter from end to end. This method of construction admits of the rods being formed, without welding, forging, or upsetting their ends, from ordinary rolled iron.

In constructing the connecting-rod two, four, or more of the necked and shouldered bars or rods A are arranged parallel with each other and their ends inserted through half-boxes B B, as shown, the boxes fitting together to form the usual "stub ends," adapted to encircle the wrist-pin or other bearing. The shoulders *e* of the rods A may bear directly against the boxes B, (represented in Fig. 5,) or two metallic collars or flanges, *a*, may be slipped upon the rods A against the shoulders *e*, as shown in the various figures. These hardened collars *a* are found to give a better support to the parts, though their employment is not essential.

In order to secure the boxes together and confine them upon the bars A, nuts C are applied to the outer threaded ends of the bars, as represented in the drawings.

To prevent the bars from turning within the boxes, keys or feathers *s* are seated in longitudinal grooves in the boxes and the necks *b*, in the manner represented in Fig. 4. These keys prevent the bars from turning when the nuts are tightened, avoid the liability of the parts working loose when in action, and maintain the stub ends or boxes in line with each other, thus preventing the rod, as a whole, from twisting.

If the bars are of great length, I give the rods additional stiffness by applying a brace or connecting-piece around them at the middle, as shown at K, Fig. 1.

I am aware that a connecting-rod has been forged with two forked ends, said ends being made without collars or shoulders, and threaded to receive the box. I am also aware that it is common to provide connecting-rods with collars forged upon their ends and with threaded necks to receive the boxes. I am also aware that a revolving shaft has been provided with shoulders and compound elastic collars thereon to prevent side play in its bearings, and these constructions I do not claim.

What I claim as my invention is—

1. In a connecting-rod, the combination of two or more parallel bars, the boxes or stub ends secured thereon, as shown, and means, substantially such as shown, to prevent the rotation of the rods within the boxes.

2. The combination of the two longitudinal rods or bars, the boxes applied thereon, the nuts, and the splines or feathers arranged, as shown, to prevent the rotation of the rods within the boxes, whereby a torsional motion of the parts is prevented.

3. As an improvement in connecting-rods, the combination of two or more rods having shoulders *e* formed by reducing the ends of the rods, the detachable metallic collars *a* against the shoulders, the half-boxes seated against the collars, and means, substantially as shown, for securing the boxes in place.

4. The improved connecting-rod, consisting of the boxes or stub ends connected by two or more rods, each rod having its ends formed with reduced necks *b* and shoulders *e*, and being made of uniform diameter from one shoulder to the other, as described and shown, whereby their construction from rolled iron is permitted without the necessity of forging the same.

LOUIS SCHUTTE.

Witnesses:
BENTON O. SEVERN,
WILLIAM REYAL.