(No Model.)

M. SCHULTZ.

YOKE FOR CONVERTING MOTION.

No. 252,905. Patented Jan. 31, 1882.

Fig. 1

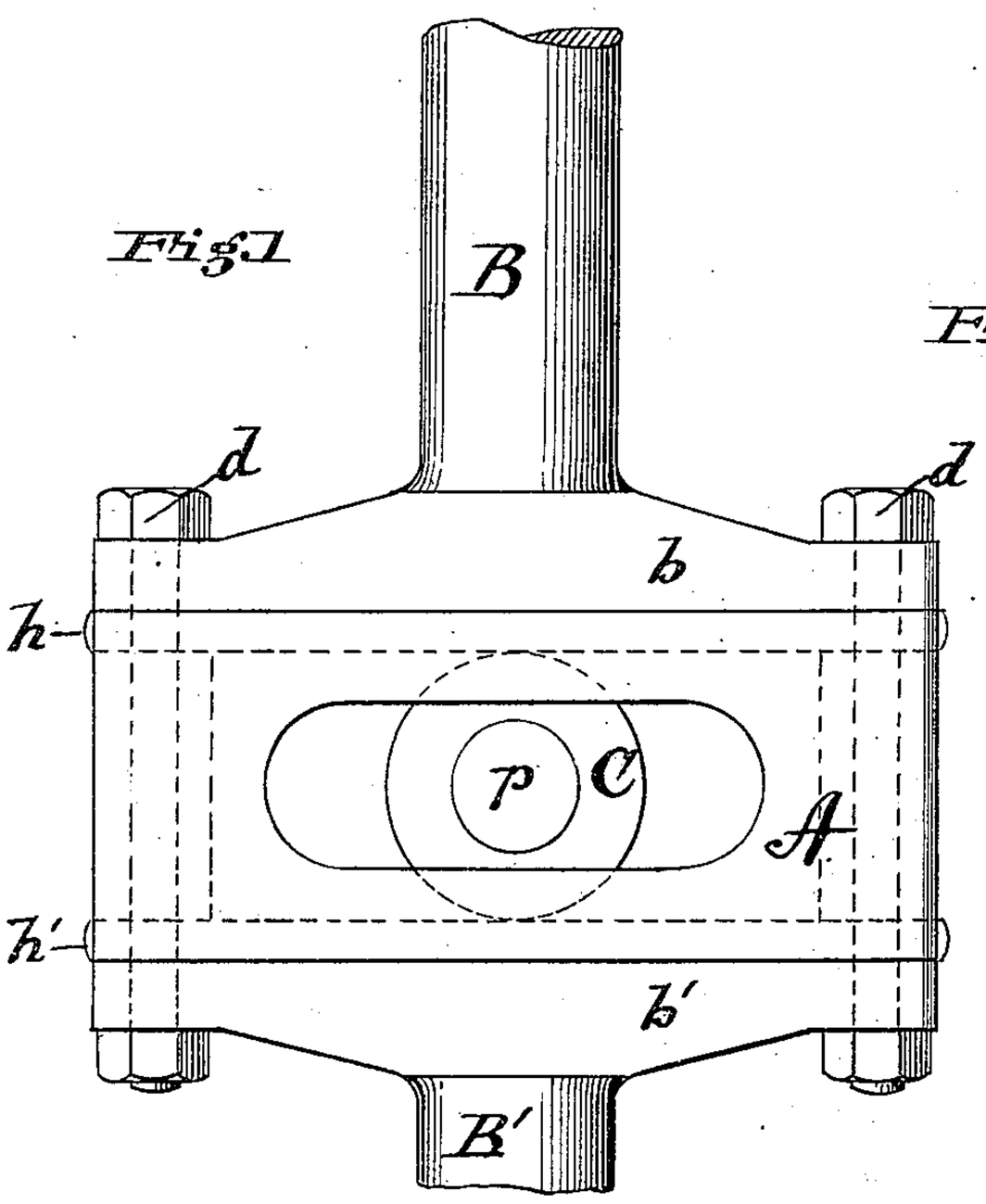


Fig. 2

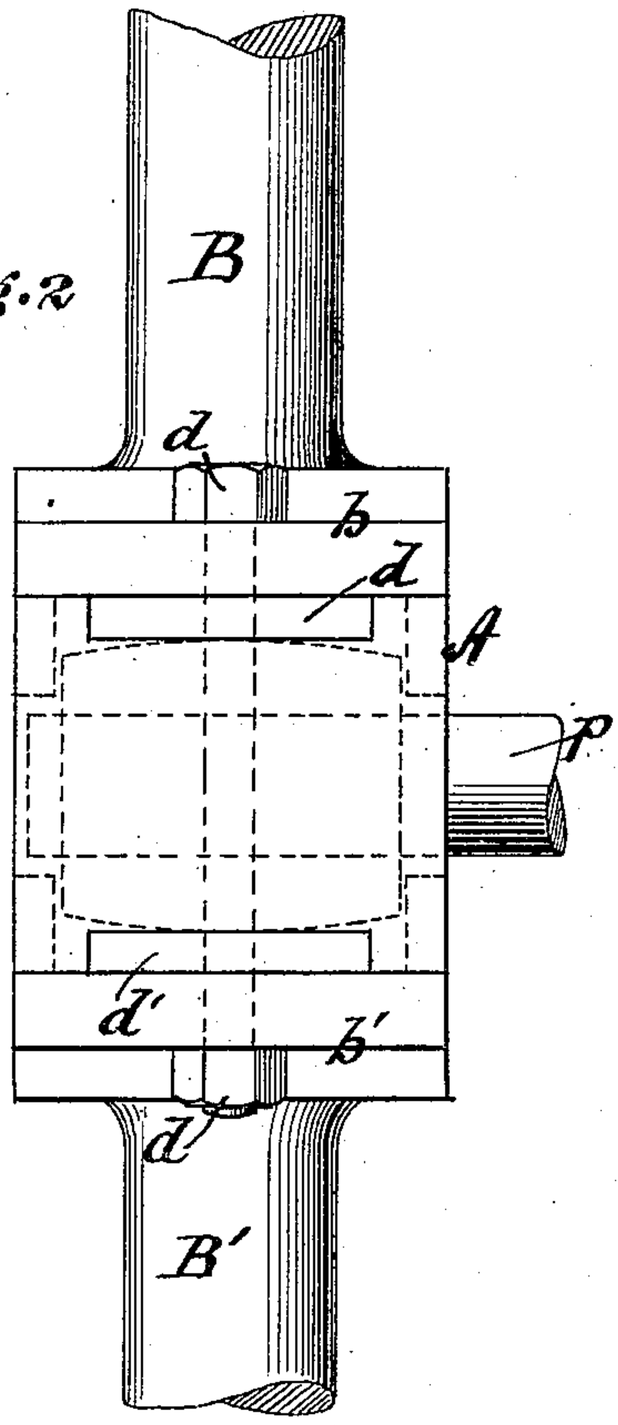


Fig. 3

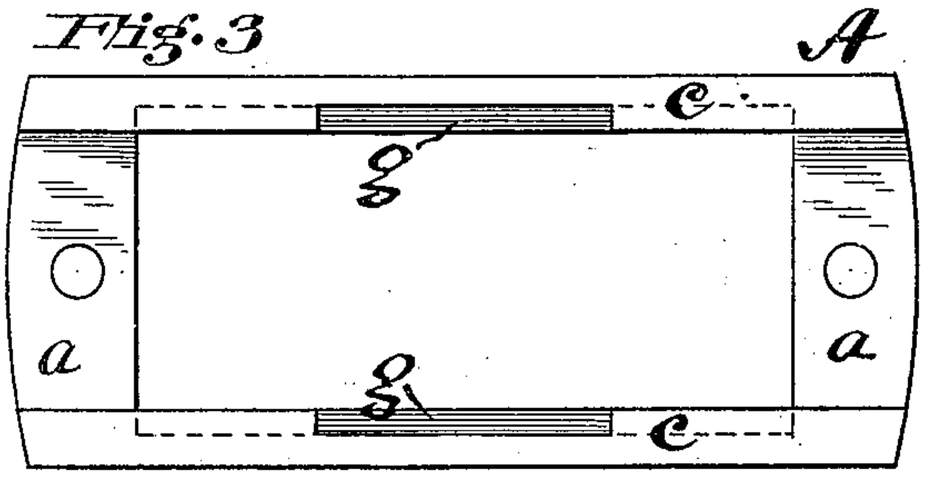


Fig. 4

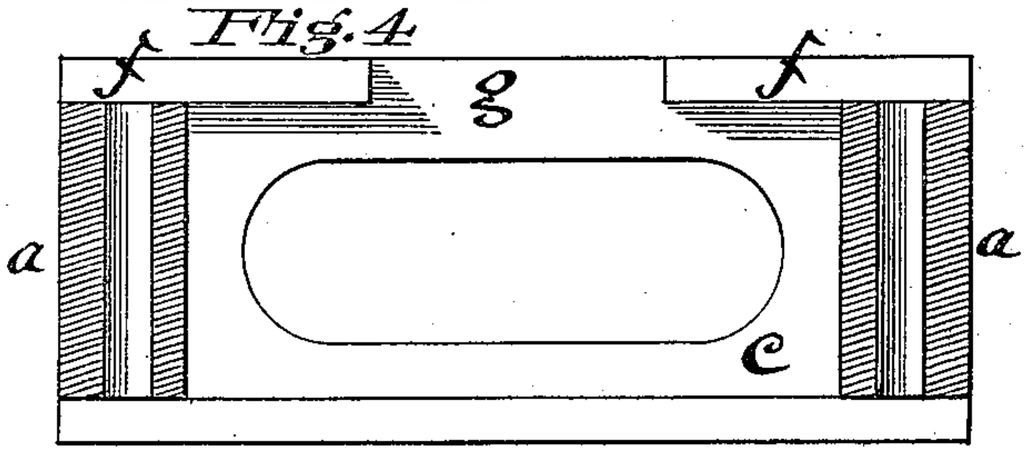
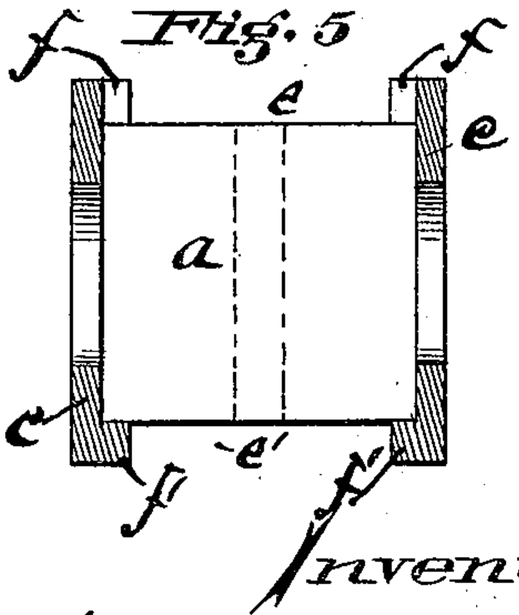


Fig. 5



Attest

C. P. Doolittle.

Thomas Hartz

Inventor

Michael Schultz,

by Kell & Hosea,

Attorney.

UNITED STATES PATENT OFFICE.

MICHAEL SCHULTZ, OF CINCINNATI, OHIO.

YOKE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 252,905, dated January 31, 1882.

Application filed July 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL SCHULTZ, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Yokes for Converting Motion, of which the following is a specification.

My invention relates to yoke devices employed in steam-pumps and similar constructions for converting reciprocatory into rotary motion, or vice versa, its object being to improve the construction and economize the cost of such devices, particularly those in which a roller is employed in place of the sliding box.

To this end my invention consists in the construction of an open block of peculiar form, to be interposed between the yoke-faces, which block, when in position, serves to hold the two members of the yoke more accurately and firmly in position together. The block also serves to form a cage or guide for the roller, and, in connection with the lower face of the yoke, an oil-trough for the lubrication of the roller.

It consists also in the combination, with the block and the members of the yoke, of removable plates for facing the wearing-surfaces of the yoke.

My invention is embodied in mechanism illustrated in the accompanying drawings, in which Figure 1 is a side elevation of a yoke with my invention complete. Fig. 2 is an end elevation of the same yoke. Fig. 3 is a plan view of the block detached. Fig. 4 is a vertical longitudinal section of the block, and Fig. 5 is a vertical cross-section of the block.

Similar letters of reference indicate similar parts in both specification and drawings.

Referring to the drawings, the box in which my invention primarily resides is designated by the letter A, while B B′ indicate the upper and lower extensions of the piston or rod, between which the yoke device is interposed, *b b′* being the cross-heads, formed upon or connected with the pistons B B′, and constituting the upper and lower members proper of the yoke, between whose parallel faces the roller C (or sliding box where such is used) reciprocates.

In the ordinary construction of the yoke, when made in two parts, it is either divided in a central plane passing through the longitudinal axis of the slot or the two members *b b′* are held apart by sleeves or blocks near the ends. The former of these constructions, while the best for durability, &c., is somewhat expensive, owing to the difficulty of properly facing off the interior yoke-surfaces and preserving a true parallelism, notwithstanding which it is far preferable to the second method of construction for many reasons, among which is the difficulty of fitting separate blocks with sufficient accuracy. As a substitute for and improvement on both these constructions, I cast one entire block, A, extending the full length of the yoke. The block may be described as a rectangular box, open at the top and bottom, having thickened end walls, *a a*, connected by side walls, *c c*, the latter being also perforated by corresponding longitudinal openings to permit the lateral reciprocation of the crank-pin *p′*. The interior space between the end and side walls is left entirely open, and in this space the roller *r*, or sliding box, reciprocates upon the parallel faces of the yoke members *b b′*. The parts of the yoke are held together by bolts *d d* passing through the ends of the members *b b′* and the end walls, *a a*, of the interposed box A in suitable perforations. One advantage of this construction is that the yoke-box A may be cast into form and its upper and lower sides dressed parallel with absolute accuracy at one operation, while the pistons B B′, with their yoke members *b b′*, may also be conveniently finished with equal accuracy and convenience in the lathe at one operation, so that when the parts are brought together the bolt-holes may be drilled in one operation, and the yoke, when fitted together, forms a firm and perfectly aligned structure incapable of being weakened or its alignment disturbed by any strains.

Lost motion caused by wear of the faces of the members *b b′* can be easily remedied by refacing the parts specified.

The side walls and end of the box A, besides forming guides for the roller, also form, in connection with the face of the cross-head *b′*, a trough for the retention of oil for the constant lubrication of the roller and crank-pin. This trough as an independent feature is se-

cured to me by former Letters Patent; but the present construction is an improvement in respect to economy and ease of construction and repairs.

I also employ, in connection with the box A, facing-plates *h h'*, of steel, gun-metal, or in some cases of rawhide or wood, for the faces of the cross-heads *b b'*, which plates are also, independently considered, covered by former Letters Patent; but the present construction is also an improvement, since I cast the blocks with open recesses *e e'* at the upper and lower sides of the block, which can be much more accurately and easily fitted to the plates than apertures through solid ends of a yoke, and the plates can be far more easily removed and replaced, because in removing the bolts *d* all the holding parts of the yoke are loosened; and for the same reason the plates are more firmly held in position when the bolt-nuts are tightened.

The side walls, *c c*, may have shallow flanges projecting inwardly above and below, as indicated at *f f'*, Figs. 4 and 5, as a means of retaining the roller in the box A. This construction, however, is only practicable when plates such as *d d'* are used or a corresponding raised surface left on the faces of the cross-heads *b b'*. In this case the upper flanges are cut away at the center, as shown at *g*, Figs. 3 and 4, to permit of placing the roller in the box, which will be securely retained therein when the yoke is put together.

Instead of boring through the walls *a a* for the bolts, open recesses may be cast at the outer ends of the block A.

Having described my invention, I claim and desire to secure by Letters Patent—

1. A yoke for converting rotary into reciprocatory motion in steam-pumps and other machinery, in which a box or open block, A, extending the full length of the yoke, is interposed between the parallel faces of the cross-heads and held by the connecting-bolts securing the cross-heads, substantially as set forth.

2. In combination with the members *b b'* of a yoke, the box A, constructed as described, having thickened end walls, through which pass the retaining-bolts, and side walls, longitudinally perforated for the play of the crank-pin, substantially as set forth.

3. The members *b b'* of the yoke, in combination with the box A, bolts *d d*, and facing-plates *h h'*, as and for the purpose set forth.

4. The members *b b'* of the yoke, in combination with the open box A and the roller C, substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MICHAEL SCHULTZ.

Witnesses:
C. P. DOOLITTLE,
L. M. HOSEA.