C. B. REDRUP.

RADIAL PITMAN FOR MULTIPLE CYLINDER ENGINES.

APPLICATION FILED JUNE 15, 1911.

1,036,337.

Patented Aug. 20, 1912.

2 SHEETS—SHEET 1.

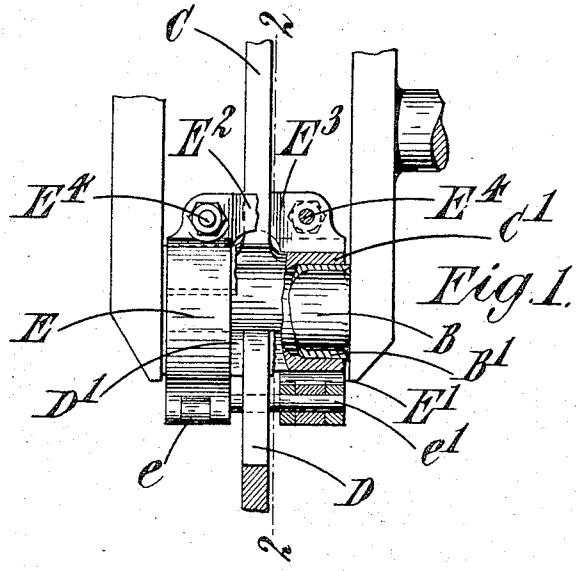

Fig. 1.

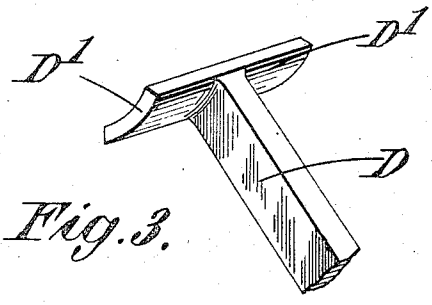

Fig. 3.

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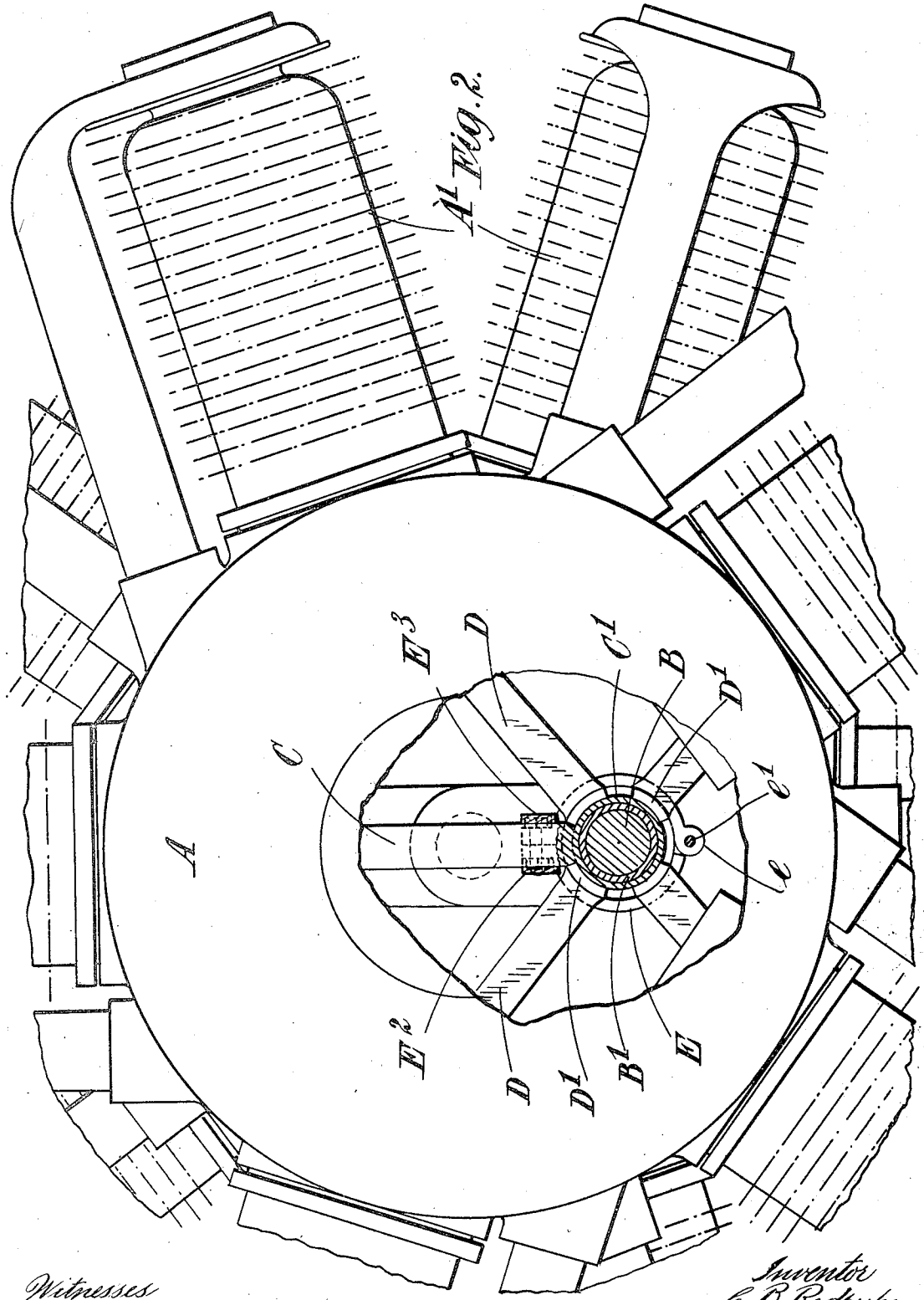

Fig. 2.

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UNITED STATES PATENT OFFICE.

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RADIAL PITMAN FOR MULTIPLE-CYLINDER ENGINES.

1,036,337. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed June 15, 1911. Serial No. 633,333.

To all whom it may concern:

Be it known that I, CHARLES BENJAMIN REDRUP, a subject of the King of England, residing at Cardiff, county of Glamorgan, Wales, England, have invented certain new and useful Improvements in Radial Pitmen for Multiple-Cylinder Engines, of which the following is a specification.

This invention is for improvements in or relating to multiple cylinder engines and has particular reference to the type of engine in which a series of cylinders are disposed radially around the crank-shaft, the piston or connecting rods of several cylinders being engaged with the same crank-pin.

According to the present invention there is employed with two or more piston or connecting-rods and a crank-pin common to all the rods a hinged strap that extends around the whole or part of the crank-pin and locks lateral tongues on one or more of the rods between it and the crank-pin.

With the hinged strap a master rod may be employed whose end encircles the crank-pin and lies between it and the ends of the rods held in place by the hinged strap.

In the accompanying drawings which illustrate one method of carrying out this invention:—Figure 1 shows a crank and the rods connected thereto with part of the locking-device in section: Fig. 2 shows part of a crank-case broken away and the crank and associated parts in section on the line 2—2 of Fig. 1, and Fig. 3 is a perspective view of one of the piston-rod ends shown in Figs. 1 and 2.

Like letters indicate like parts throughout the drawings.

The crank-case A and cylinders A′ may be of any convenient construction and form no part of the present invention. The engine indicated by these parts in Fig. 2 is provided with ten cylinders and a two-throw crank having five cylinders allotted to each. The crank pin B has a surrounding bushing B′ and one of the piston rods C hereinafter referred to as the master-rod, has a big-end C′ that takes over the bushed crank-pin and entirely encircles it. In the drawings for the sake of clearness the big-end C′ is shown in the form of an eye but in practice it is split in two so that it can be attached to the crank-pin in the usual manner. Each of the other piston-rods D has at its end a T-piece or double tongue D′; these T-pieces or tongues project laterally from opposite sides of the piston-rods and extend along in the direction of the axis of the crank-pin. The outer surface of the big-end of the master-rod is curved to a radius struck from the axis of the crank-pin and the inner and outer surfaces of the tongues D′ are all curved to radii struck from the same center.

Surrounding the tongues of the piston-rods D and retaining these in close engagement with the big-end of the master-rod C and thus with the crank-pin itself, is a double strap E, E′. The double strap is divided transversely and the two parts are connected together by hinges e having a common pivot e'. On the other side of the strap the parts E, E′ are connected together by yoke pieces E^2 E^3 which are shaped to embrace the master-rod C. These yoke portions may be made integral with the parts E, E′ and the dimensions of the strap are such relatively to the parts it encircles that when in position the ends of the yokes rest against each other and are secured together by bolts and nuts E^4.

It will be seen from the above description that by removing the bolts and nuts E^4 the strap can be opened out upon its hinge e, e' and all the rods D released from the crank-pin.

Although four rods D are shown in the drawings one such rod only may be employed together with a master-rod or two or more such rods may be used and no master-rod; the invention however is more particularly applicable to engines having more than two rods and a master-rod is preferably employed therewith.

It will be seen that by means of the annular member or strap E′ the rods D are not only held in right relation to the crank-pin but can move circumferentially between the ring or strap and the end of the master-rod against which they bear.

What I claim as my invention and desire to secure by Letters Patent is:—

The combination with a crank pin and a master connecting rod having a bearing sleeve projecting at each side thereof and encircling the crank pin; of a plurality of radially-disposed connecting rods each having arc-shaped tongues projecting on each side thereof; and two spaced straps for retaining the tongues in rotatable engagement with the projecting ends of the bearing sleeve, said straps being each divided longi-

tudinally into two parts, said parts being hinged together at one end on a common pivot, and said straps being connected together at the other end by yokes encircling the master connecting rod, and said connecting rods passing through the space between said straps, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witneses.

CHARLES BENJAMIN REDRUP.

Witnesses:

A. M. HAYWARD,

HARRY B. BRIDGE.