

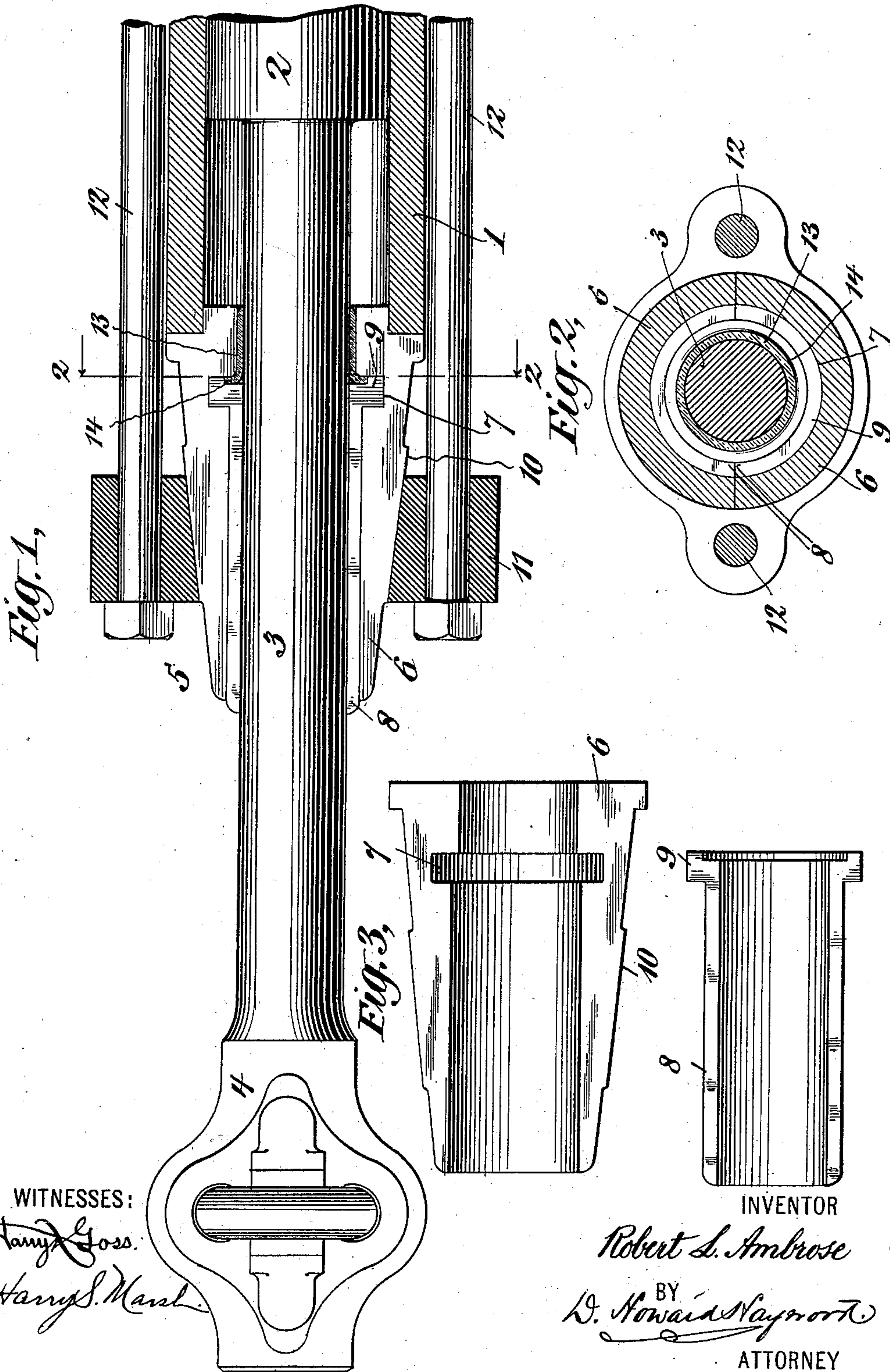
No. 664,453.

Patented Dec. 25, 1900.

R. L. AMBROSE.
ENGINE CYLINDER HEAD.

(Application filed May 9, 1900.)

(No Model.)



WITNESSES:

Harry Goss.

Harry S. Marshall.

INVENTOR

Robert L. Ambrose

BY *D. Howard Seymour*

ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT L. AMBROSE, OF TARRYTOWN, NEW YORK, ASSIGNOR TO THE
RAND DRILL COMPANY, OF NEW YORK, N. Y.

ENGINE CYLINDER-HEAD.

SPECIFICATION forming part of Letters Patent No. 664,453, dated December 25, 1900.

Application filed May 9, 1900. Serial No. 16,017. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. AMBROSE, a citizen of the United States of America, and a resident of Tarrytown, county of Westchester, State of New York, have invented a new and useful Improvement in Engine Cylinder-Heads, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

10 My invention relates to improvements in cylinder-heads, and particularly to improvements in the lower heads for the cylinders of power rock-drills.

15 My invention consists in constructing the cylinder-head in two parts, each part having formed therein a semicircular recess, in constructing a bushing, also in two parts, and fitting it to the said head, each of the two parts of the bushing having a semicircular flange adapted to engage with the corresponding recesses in the cylinder-head members, and providing a packing-ring having a flange portion adapted to fit into the recesses and be held in place between the sides of the recesses
20 and the ends of the bushing members.

25 The object of my invention is to construct a divisible cylinder-head and provide the same with a readily removable and replaceable wearing-bushing and to provide a simple packing means which shall be securely held in place without the provision of independent means for so doing.

30 I will now proceed to describe a cylinder-head embodying my invention and will then point out the novel features in claims.

35 In the drawings, Figure 1 represents a horizontal sectional view of a portion of a rock-drill provided with a cylinder-head embodying my invention. Fig. 2 is a transverse section on the line 2 2 of Fig. 1. Fig. 3 is a view of one of the cylinder-head members and one of the bushing members disassembled.

40 Similar reference characters designate corresponding parts throughout the several views.

45 I have shown my improved cylinder-head as applied to a rock-drill and have shown certain parts of the rock-drill in combination therewith. I, however, do not wish to be limited to the use of the same for rock-drill cylinders, as my invention is obviously applica-

ble to cylinders used in connection with other machinery. My invention, however, is particularly applicable to rock-drills by reason of the fact that it is customary at the present day to make the rock-drill piston, piston-rod, and drill-chuck all in one piece. This construction necessitates a split cylinder-head, and the purpose of this invention is to construct a split cylinder-head which shall have all the advantages that accrue to the most preferred form of solid head.

Reference character 1 designates the cylinder of a rock-drill; 2, a piston fitted thereto; 3, a piston-rod which is in one piece with the said piston 2, and 4 a drill-chuck which is in one piece with the piston-rod 3.

5 designates my improved lower cylinder-head as a whole. The said cylinder-head comprises two members 6 and 6, each of the said members having a semicircular recess 7. Fitted to each of the members 6 is one-half of a sleeve or bushing, each one-half comprising a member 8, provided with a semicircular flange 9. Each of the semicircular flanges 9 fits into its corresponding recess 7 in the members 6 6, and the outer diameter of the main portion of the bushing 8 is of the same size as the inside diameter of the main portion of the head members 6.

The outer portion of the head members 6 is tapered, as at 10, and a ring 11, having a tapered bore, is fitted to the said tapered portion and is drawn up by suitable bolts 12, which are secured to the drill and which not only draw the head members together, but secure the cylinder members as a whole to the cylinder 1.

A packing-ring 13 surrounds the piston-rod 3 and is fitted to the rear end of the cylinder-head 5. The packing-ring 13 is preferably of the type known as "hydraulic packing" and may be conveniently formed of a ring of leather or similar material and is provided with a turn-over or flange portion 14, which portion is fitted into the recesses 7 and is held in position therein between the sides of the recesses and the ends of the bushing members.

The end of the packing-ring 13 is preferably open to the interior of the cylinder 1. This is in order that the motive fluid within

the cylinder, which is ordinarily compressed air, may have a chance to work around the packing-ring and force the same into close proximity with the piston-rod while the piston and its rod are moving forwardly. While moving in the other direction, the pressure upon the packing will be relieved to a certain extent, and the piston-rod 3 will be permitted to move freely.

It will be noted that the flange 14 of the packing-ring 13 extends into only a portion of the depth of the recesses 7 7 in the head members 6 6, throughout the balance of the recesses the flange of the bushing members occupy the entire width. In this way the bushing members 8 are held securely in position against longitudinal movement, while at the same time provision is made for retaining the packing-ring 13 in position in the simplest possible manner.

By my arrangement and construction of parts I have provided a two-part cylinder-head having a desired form of packing-ring and having a suitable bushing of extremely simple and inexpensive construction. In cylinder-heads of this type and for tools of this description it is essential that they may be provided with a renewable lining or wearing bushing, for the reason that the wear on these parts, owing to both friction and shock, is very great. It is further desirable, for the reason that the piston-rod itself being of a fibrous material it is advantageous to construct the wearing portion of the cylinder-head of such material as cast-iron. Cast-iron would not be a suitable metal for the entire head, for the reason that it would be liable to be broken on account of the shocks which it has to withstand.

By my improved arrangement and construction I am enabled to make the head mem-

bers of malleable iron or steel and the bushing members of cast-iron.

When it becomes desirable to renew the bushing members, it is merely necessary to remove the cylinder-head and to lift apart the head members. The bushing members may then be quickly removed from their places and new ones inserted. The head may then be returned to its place, the whole operation being simple and one quickly performed.

What I claim is—

1. The combination with a cylinder, of a cylinder-head comprising two members, each having formed therein semicircular recesses, a bushing composed of two members, each having a semicircular flange adapted to engage with the said recesses, means for securing the head members together, and a packing-ring having a flange portion, arranged to fit, and adapted to be held in place, between the sides of the recesses and the ends of the bushing members.

2. The combination with a cylinder, of a cylinder-head comprising two members, each having formed therein semicircular recesses, a bushing composed of two members, each having a semicircular flange adapted to engage with the said recesses, a packing-ring having a flange portion which is fitted to, and adapted to be held in place in, a cut-away portion between the ends of the bushing members and the walls of the said recesses, the said cut-away portion extending but a portion of the depth of the said recesses, and means for securing the head members together.

ROBERT L. AMBROSE.

Witnesses:

HUGH V. CONRAD,
WILLIAM S. BARNUM.