(No Model.)

G. H. POOR.

CYLINDER AND PISTON.

No. 318,499. Patented May 26, 1885.

Fig 4.

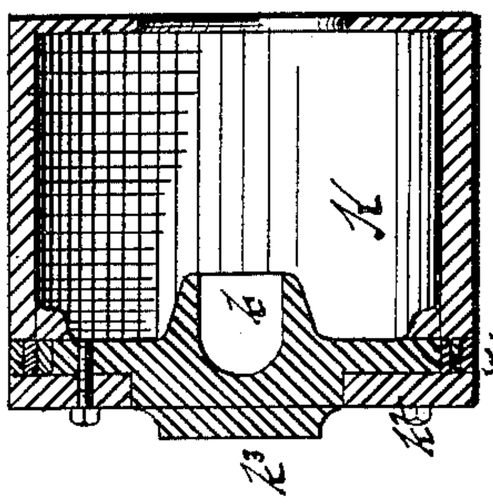

Fig 5.

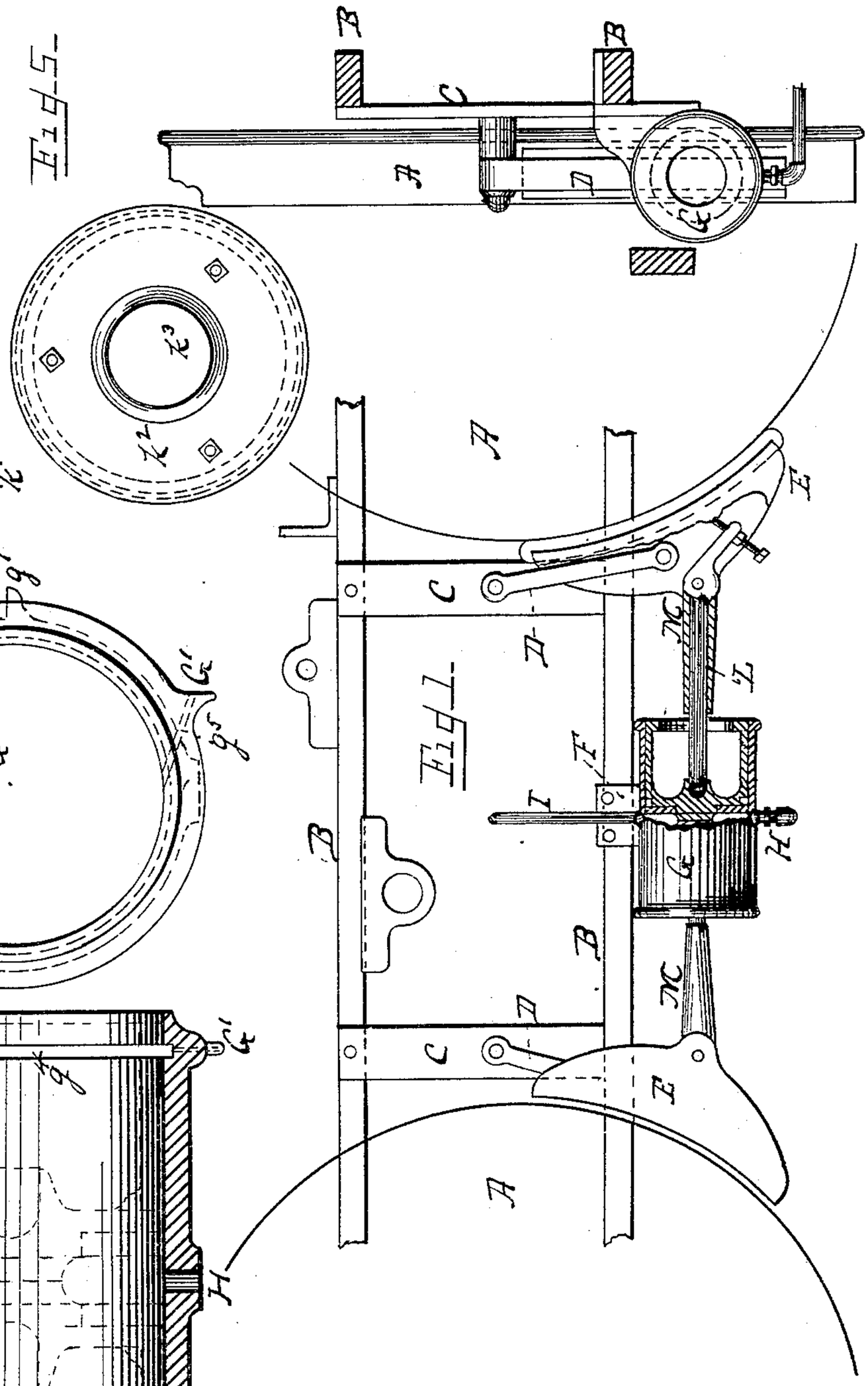

Fig 3.

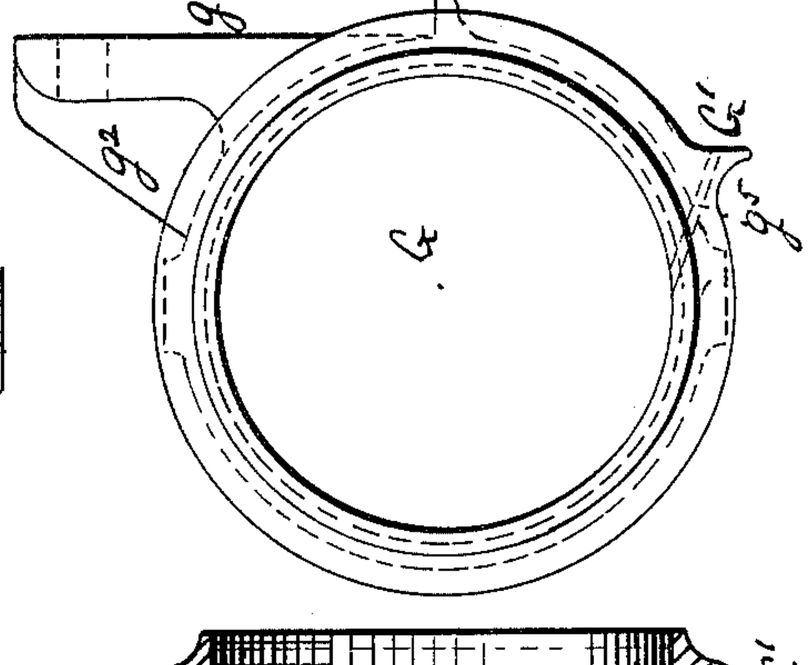

Fig 2.

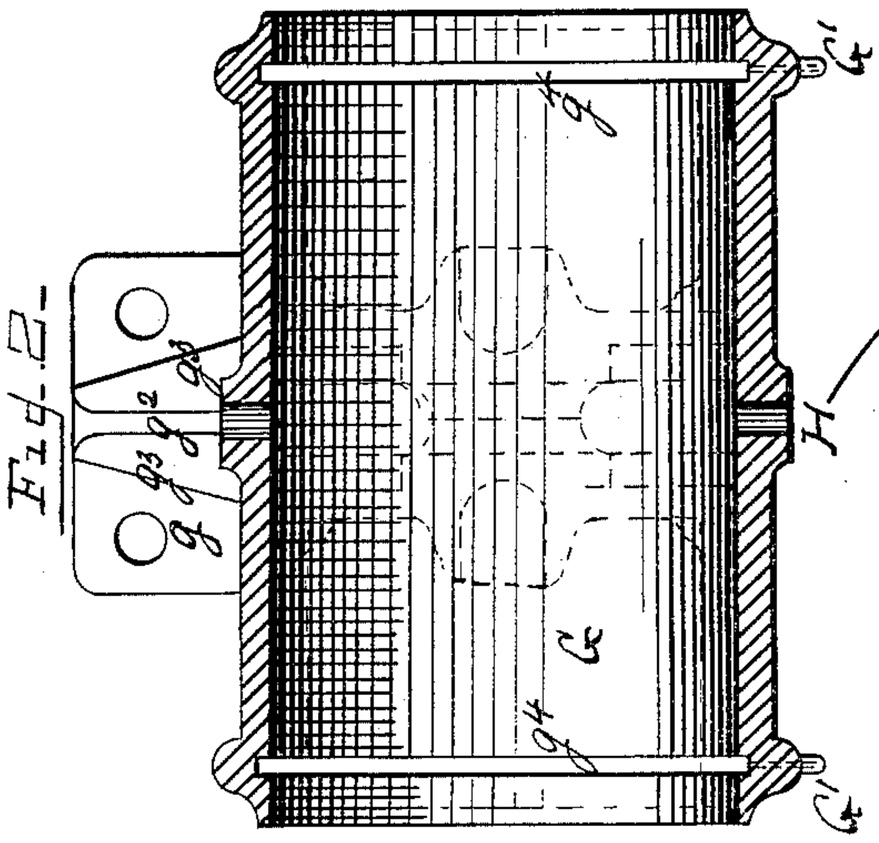

Fig 1.

Witnesses.
G. A. Tauberschmidt
H. B. Moulton

Inventor.
George H. Poor
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Atty

UNITED STATES PATENT OFFICE.

GEORGE H. POOR, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE AMERICAN BRAKE COMPANY, OF SAME PLACE.

CYLINDER AND PISTON.

SPECIFICATION forming part of Letters Patent No. 318,499, dated May 26, 1885.

Application filed December 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. POOR, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Cylinders and Pistons; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a side elevation, partly in section, of a cylinder and piston embodying my invention, in connection with brake mechanism which may be actuated thereby. Fig. 2 is an enlarged longitudinal central section of the cylinder. Fig. 3 is an end view of the same. Fig. 4 is an enlarged sectional view of the piston and its packing-rings and follower. Fig. 5 is an end view of the same.

Like letters refer to like parts wherever they occur.

My invention relates to the construction of cylinders and pistons generally, but more especially to such as are intended for use in inclined or horizontal positions or exposed places.

It has for its object, first, to facilitate the discharge of any moisture or water of condensation occurring in the cylinder exterior to the pistons or between the same and ends of the cylinder, and this I prefer to accomplish by means of circular grooves or drip-chambers and discharge-ports at or near each end of the cylinder; and, secondly, to perfect the packing of the piston and preserve a steamway between the same, so that the pressure on the pistons at the commencement of the stroke shall be uniform, and for this purpose I prefer to provide the piston-faces with truncated conical projections.

There are other and minor combinations and details of special value in cylinders and pistons for operating locomotive-brakes, as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A A represent the drive-wheels of a locomotive; B B, the frames. C C indicate channel-plates for the attachment of hangers D D, by which the brake-heads E are suspended; L L, piston-rods, and M M push-bars for actuating the brake-heads.

The above devices, which form no part of the present invention, will be found more fully described in an application filed by me August 4, 1884, Serial No. 139,589, and here illustrated only for the purpose of showing one place where the present invention can be applied with special advantage.

G indicates the cylinder embodying my invention. It is open at both ends or devoid of heads, and is cast or otherwise formed with a tangential flange, g, at its middle for securing it to the bracket F, has a lip, g', for bracing it against the frame B or point of support, and a rib, g^2, and fillets g^3, for strengthening the flange g. On the inner surface of the cylinder G, near the ends thereof, are circular grooves or channels g^4, which gather any water of condensation which takes place in the outer ends of the cylinder, which moisture is allowed to escape through the channels g^5, made in projections G' on the lower outer surface of the cylinder.

In order to trap out the water from between the pistons, the cylinder may be provided at the middle and lowest side with a port, H, controlled by an automatic drip-valve.

I indicates the supply-pipe through which steam (or air) to operate the piston is admitted, and this supply-pipe is preferably in the same plane as the drip-port H.

K indicates the pistons, two of which are employed. These pistons are preferably hollow cylinders, open at one end, as shown in the drawings, and having a socket, k, for the reception of one end of the piston-rod L. The pistons are each provided at their inner ends with ring-grooves for the packing-rings k', and a follower, k^2, for securing the packing-rings. The inner face of each piston, or that face against which the steam acts, is provided with a truncated conical projection, k^3, which prevents the pistons from coming in contact, except at those points, and thus preserves a steamway and a channel for the escape of the water of condensation.

The devices, being substantially of the character specified, will operate as follows: Steam being admitted to the cylinder G through pipe I will first fill the annular channel surround-

ing the truncated conical projections k^3, so as to exert uniform pressure on the piston-heads and start them with a steady but quick motion, very desirable in applying brakes, and for many purposes. As the pistons return or move toward each other, the faces of the truncated cones will meet, thus arresting further inward movement of the pistons, and forming an annular steamway leading to the port H, which facilitates the escape of the water of condensation which would accumulate between the pistons. Any water of condensation deposited or escaping into the outer ends of cylinder G, instead of escaping therefrom at the most dependent portion, (and falling on the track in cases where the cylinder is used for applying brakes,) will gather in the grooves or channels g^4 and escape by channels g^5, so as to fall (clear of the track or) on one side of the median line of the cylinder.

Having thus set forth the nature, operation, and advantages of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with its two opposite and equal pistons, a cylinder open at each end, having on its inner surface, near the end thereof, a channel or groove to collect and discharge the water of condensation, substantially as and for the purposes specified.

2. A cylinder open at each end, having on its inner surface, at or near the end of the cylinder, a drip groove or channel, and a discharge-channel arranged to one side of the vertical median line of the cylinder, substantially as and for the purposes specified.

3. In combination with their cylinder, open at each end, two equal and opposite pistons having each on its interior face a truncated projection adapted for impact, and on its opposite side a projection with a cupped recess to form a ball-and-socket connection with the piston-rod, said projections, both interior and opposite, being integral with the piston, substantially as and for the purposes specified.

4. In combination with their cylinder, open at each end, two equal and opposite pistons, one of which has on its interior face a truncated projection adapted for impact, and both of which have on the opposite side a projection with a cupped recess to form a ball-and-socket connection with the piston-rod, said projections being integral with the piston, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 29th day of November, 1884.

GEORGE H. POOR.

Witnesses:
E. B. LEIGH,
H. A. WAHLERT.