

W. J. Ford,

Piston Packing

No. 107243.

Patented Sept. 13. 1870

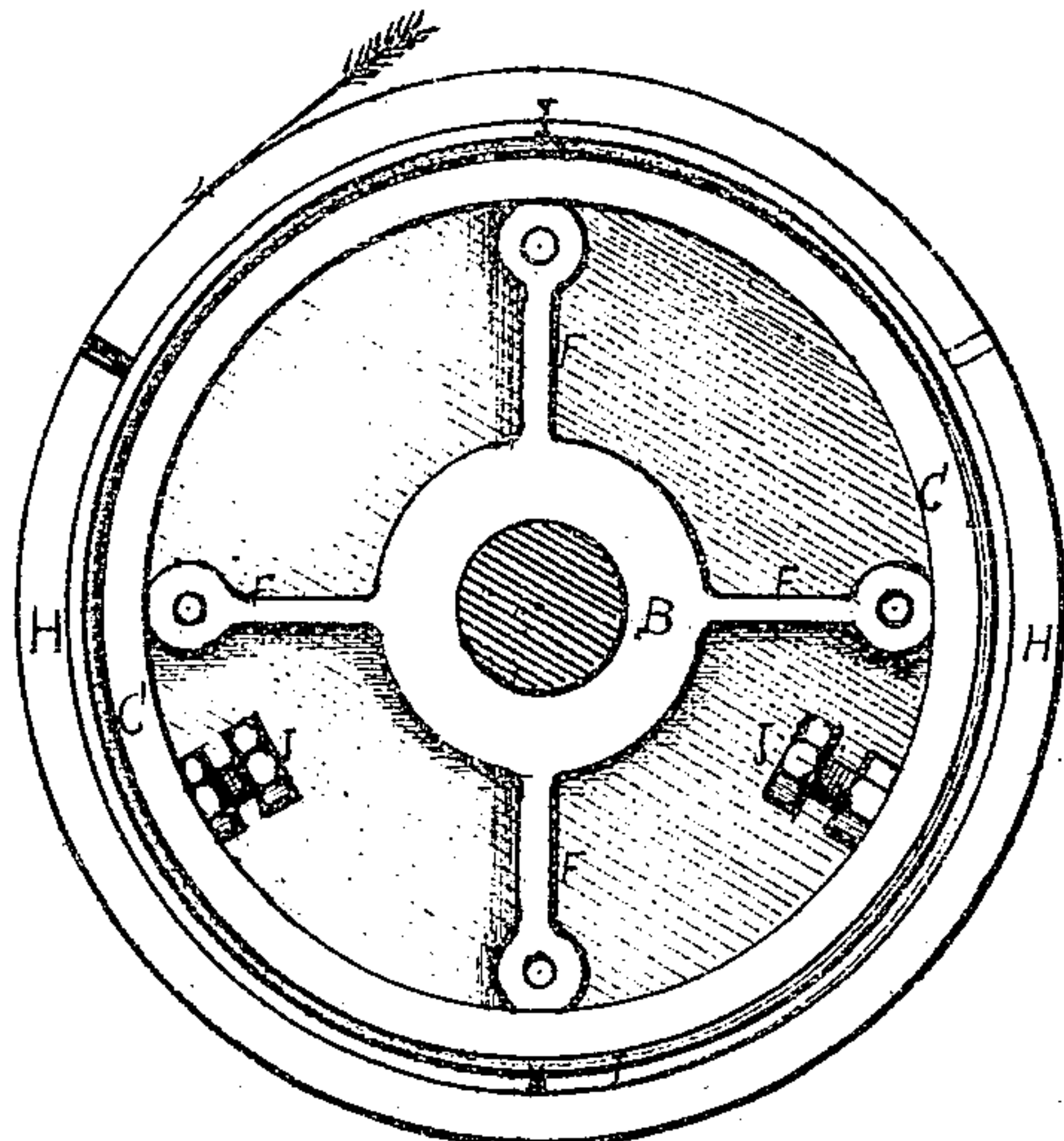


Fig. 1.

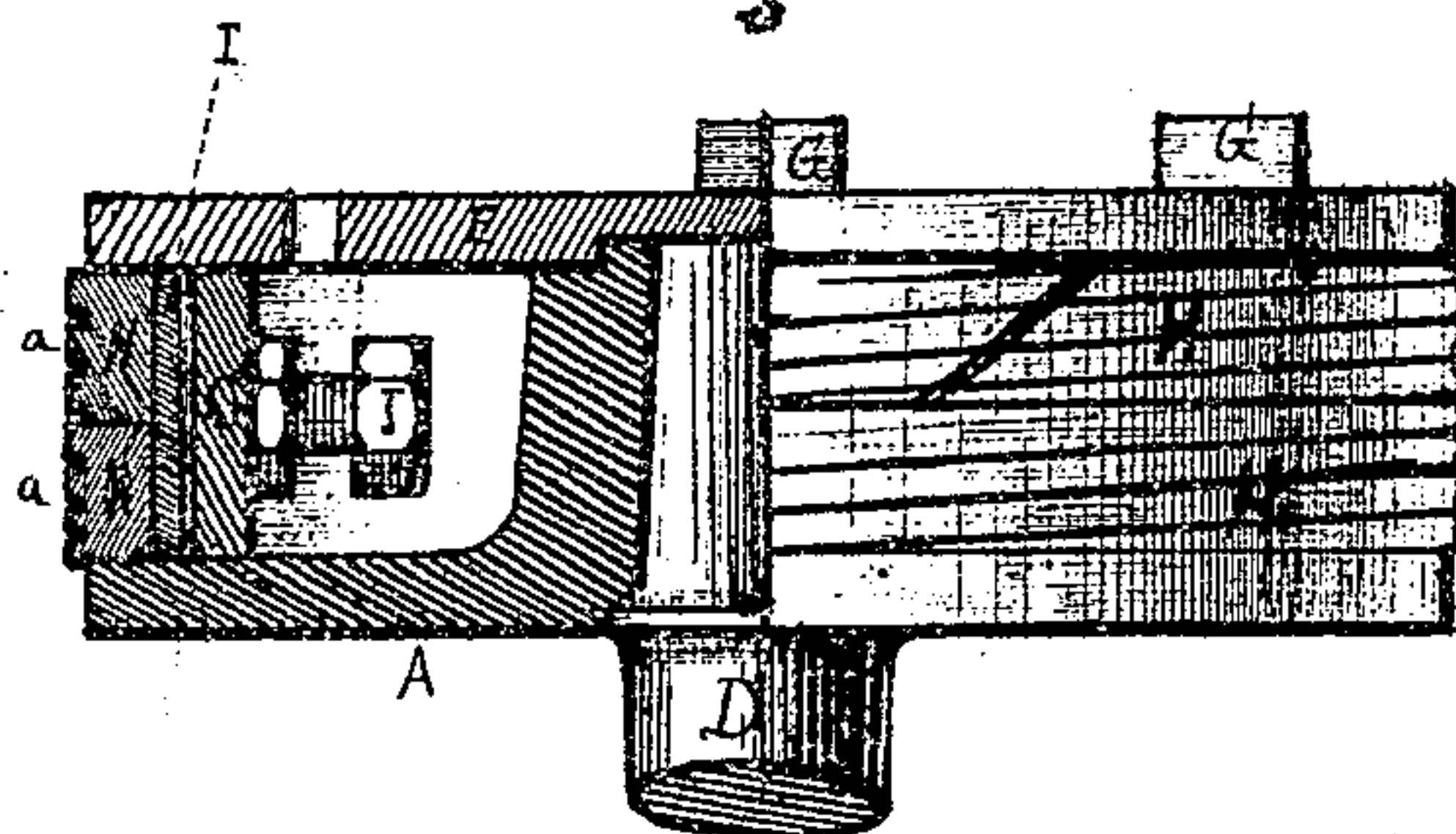


Fig. 2.

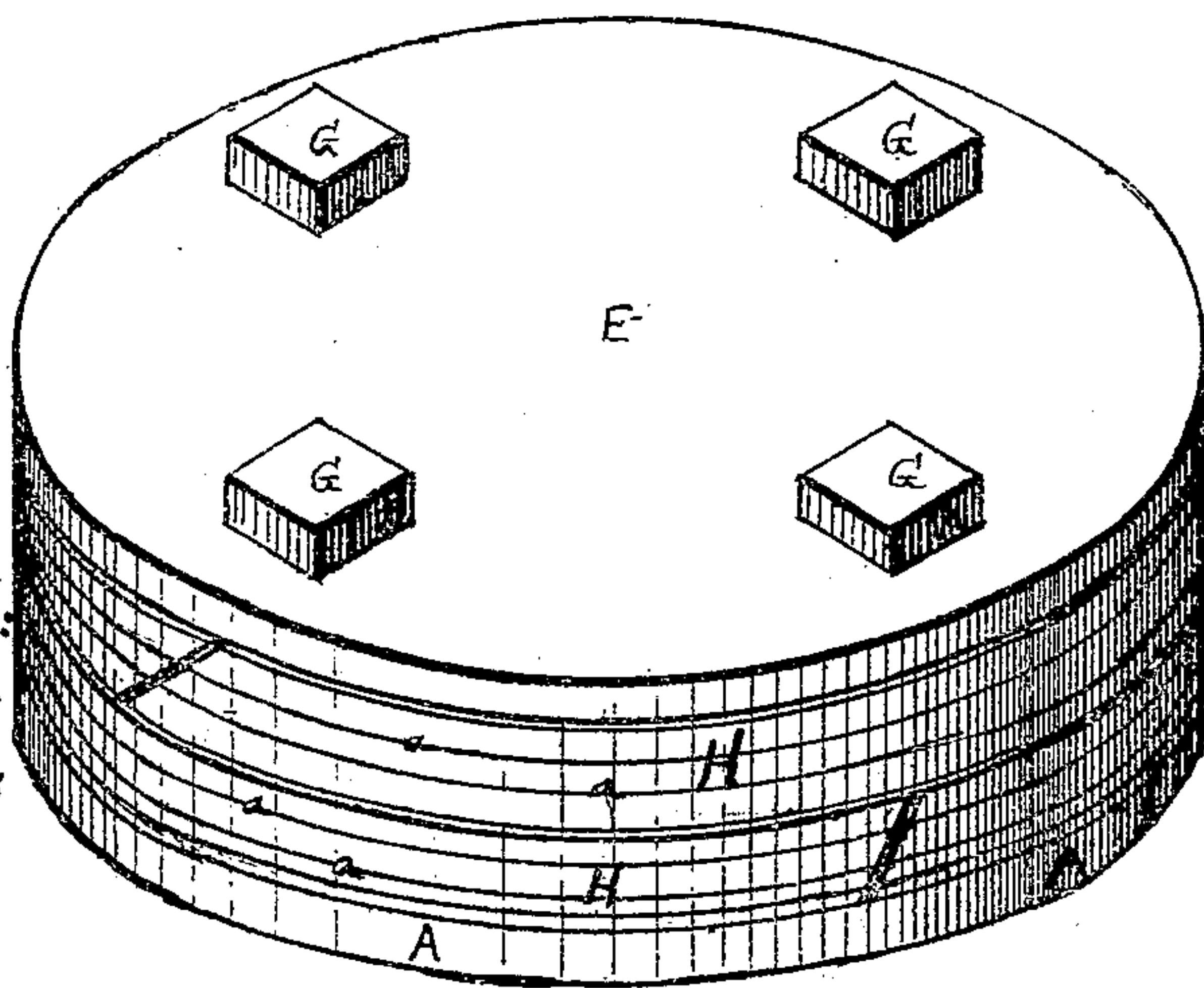


Fig. 3.

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WALTER J. FORD, OF CHICAGO, ILLINOIS.

Letters Patent No. 107,243, dated September 13, 1870.

IMPROVEMENT IN PISTON-PACKING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WALTER J. FORD, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Piston Packing for Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

Figure 1 is a plan view of a piston, with the follower removed to show the arrangement of the packing-rings.

Figure 2 is a side elevation of a piston, partly in section.

Figure 3 is a perspective view of the piston, with the follower in place.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

My invention has for its object to improve the construction of piston packing for steam-engines, and to prevent the unequal wear of the packing and the cylinder of the engine.

It consists—

First, in preventing the unequal wear of the packing-rings and cylinder, by adapting the former for rotation upon the piston while in use; and

Secondly, in combining, with said rotary rings, two adjusting screws, arranged at equal distances on each side of the center, and so operating as to be capable of adjusting the packing while permitting it to rotate upon the piston.

In the accompanying drawing—

A is the piston-head or spider, and

C, the ring surrounding the spider, to form a support for the packing-rings, all cast in one piece, and secured to the piston-rod D in the usual manner.

If desired, the ring C may be cast separately from the spider, and attached thereto by suitable means.

E is the follower, secured to the arms F of the spider, by means of screws G, shown in fig. 3, and forming a steam-tight joint with the ring C.

H H are the packing-rings, cut in the usual manner, and placed around the ring C, between the head and follower.

I is also a cut ring, interposed between the ring C and the packing-rings.

This ring fits the interior of the packing-rings with close contact, while considerable space is permitted between it and the ring C.

J J are adjusting-screws, passing from the interior of the piston outward through the ring C.

They are arranged upon the lower side of the ring C, in inclined positions, and their ends bear against the ring I, carrying the packing-rings.

The piston is centered in the cylinder by adjusting the screws J, the whole weight being borne by the packing-rings.

The piston is, therefore, prevented from sagging upon the rod.

The space between the rings C and I is sufficient to permit the requisite adjustment as the packing-rings become worn.

I am aware that a single screw has been employed for the adjustment of the packing-rings, but it is located vertically beneath the center of the piston, and consequently the latter is liable to rock from side to side within the cylinder, turning upon that portion of the packing-rings projected by the point of the screw.

This liability to rock is increased in the cylinder of a locomotive engine, and results in the unequal wear of the cylinders.

By the use of two adjusting screws, arranged in accordance with my invention, the piston is forced to travel evenly through the cylinder without the possibility of rocking, and can be balanced to bear equally upon all sides.

In order to compensate for the unequal wear of the packing-rings, and the cylinder, the packing-rings, together with the ring I, are made to travel around the ring C, constantly bearing upon the points of the adjusting screws.

For this purpose, the interior of the ring I is made perfectly smooth, and the points of the screws slightly rounded or flattened.

The rotary motion is imparted to the packing-rings, and the ring I, by the pressure and friction of the steam, which strikes the periphery of the packing-rings tangentially.

This effect is produced by the steam ports in the cylinder being both inclined to one side, so that when the piston, near the completion of each stroke, is directly under the ports the steam from the steam-chest shall impinge against the periphery of the rings in the direction of the arrow shown in fig. 1.

By this means the packing-rings are constantly turning, and, as a consequence, must wear evenly.

Around the periphery of the packing-rings grooves are cut, as shown at *a a*, to admit steam entirely across the face of the rings, for the purpose of lubrication.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The adjustable piston-packing H, and ring I, adapted for rotation within the horizontal cylinder of a steam-engine, substantially in the manner described, for the purpose specified.

2. The combination of the adjustable packing H, rotary ring I, flange C, separated from the ring by a small space, two screws J J, arranged as described, and piston A E, when said parts are constructed and arranged in the manner and for the purposes set forth.

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