

No. 751,802.

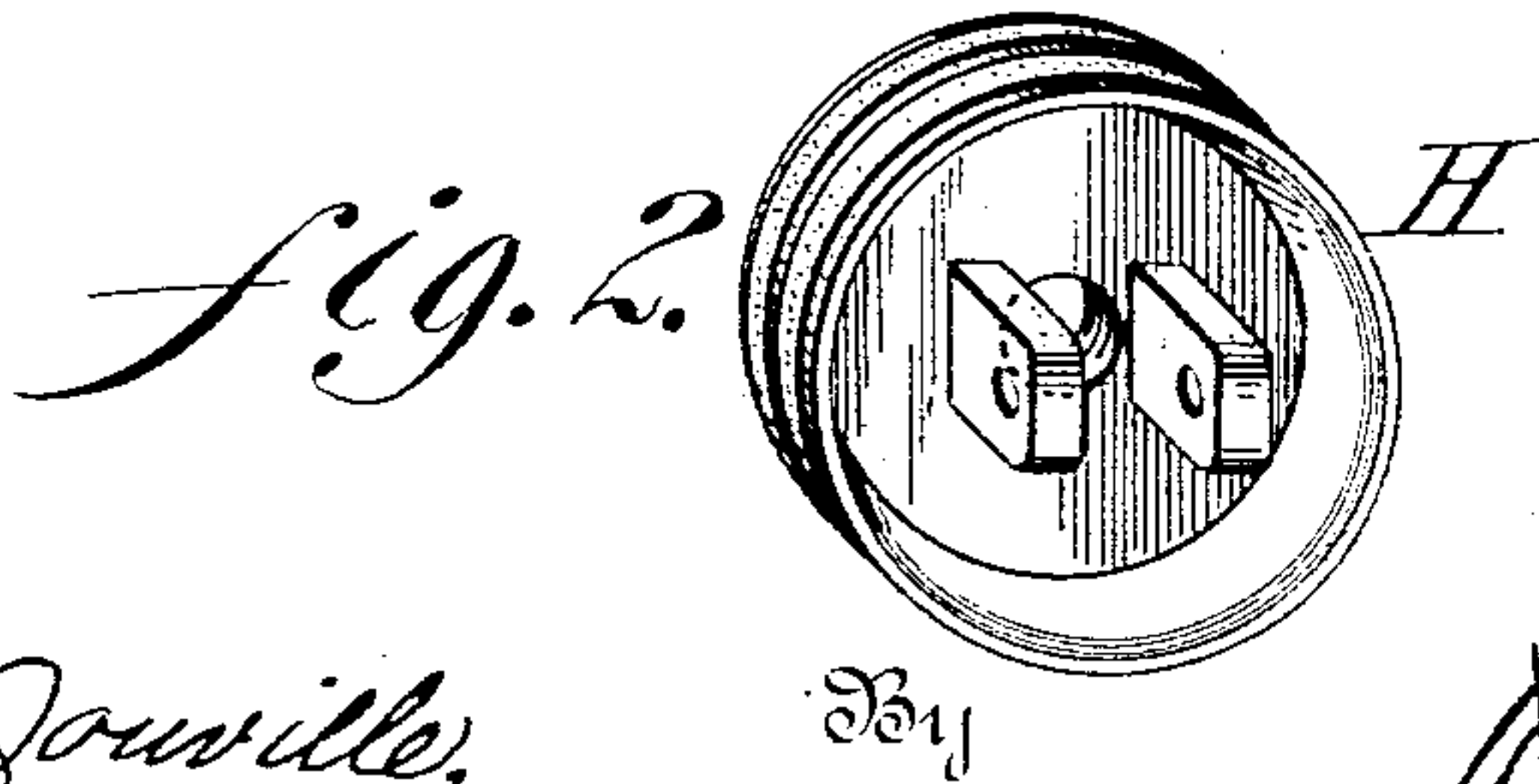
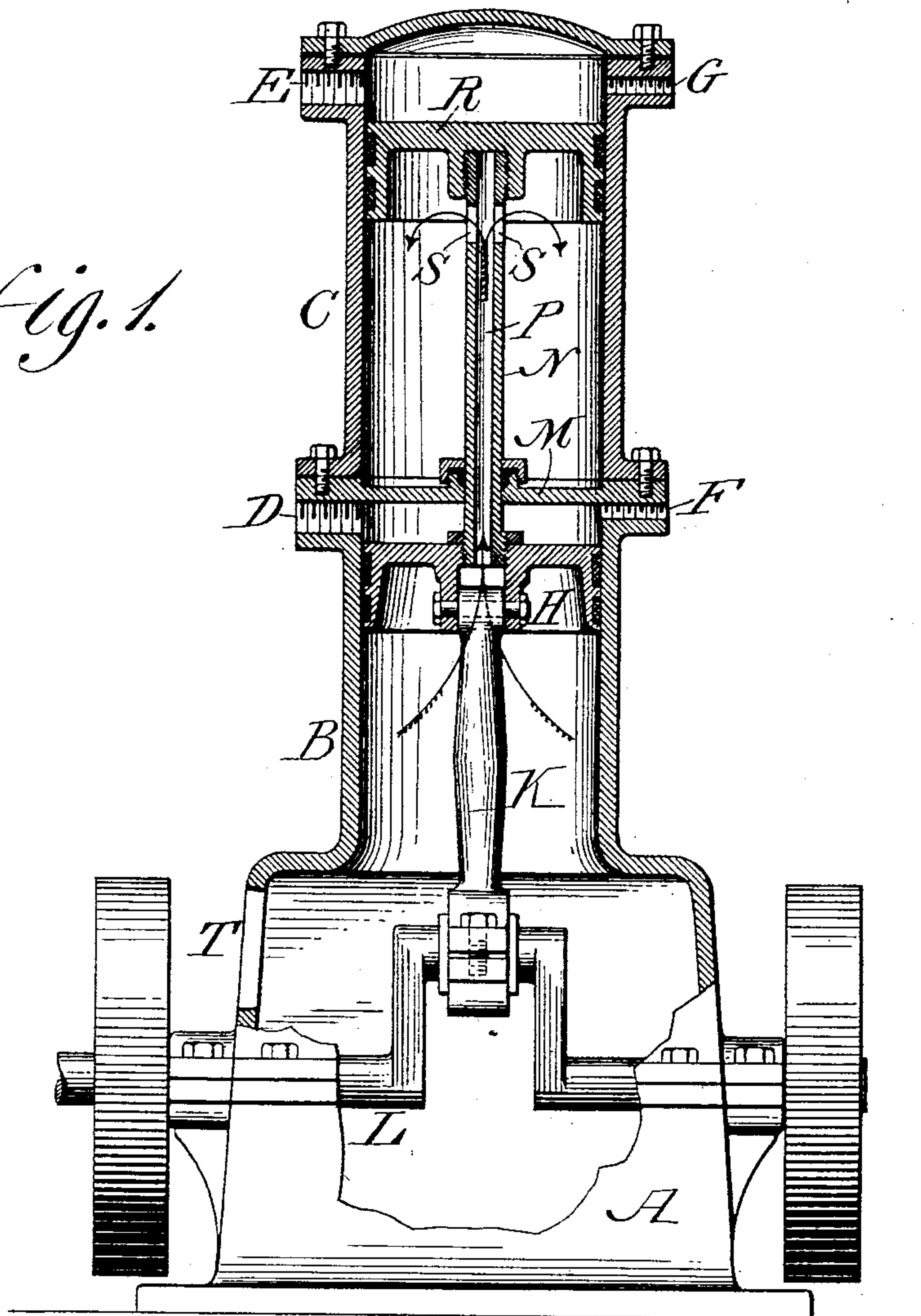
PATENTED FEB. 9, 1904.

T. MATSON.
DEVICE FOR COOLING PISTON RODS.

APPLICATION FILED MAY 13, 1903.

NO MODEL.

fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

TAYLOR MATSON, OF PHILADELPHIA, PENNSYLVANIA.

DEVICE FOR COOLING PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 751,802, dated February 9, 1904.

Application filed May 13, 1903. Serial No. 156,897. (No model.)

To all whom it may concern:

Be it known that I, TAYLOR MATSON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Devices for Cooling Piston-Rods, of which the following is a specification.

My invention relates to the pistons used in explosion-engines; and it consists of means for preventing the overheating of such pistons.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a partial elevation and partial vertical section of an explosion-engine embodying my invention. Fig. 2 represents in elevation a detached piston.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates the base of an explosion-engine, mounted on which is a cylinder B, above and in alinement with which is a second cylinder C. These cylinders are provided with the usual ports D and E, threaded for connection with pipes for the introduction of the explosive mixture, and with ports F and G for the igniting devices. The lower piston H is connected by the rod K to the ordinary crank-shaft L of the engine. Passing through the head M between the cylinders B and C is a tubular piston-rod N, the bore P of which opens to the atmosphere at its free end below the piston H. Near the upper end of the rod N, where it is secured to the upper piston R, are lateral apertures S, leading to the bore P. A port T on the wall of the base A serves to admit air.

The operation is as follows: The engine shown is of the tandem-cylinder four-cycle type, in which explosions are simultaneously produced in both cylinders above the pistons H and R, respectively. The passage of the piston-rod N through the lower explosion-chamber B tends to heat it, thereby causing it to cut its stuffing-box. In my device each return stroke of the pistons draws air through the port T and base A up through the bore P of the piston-rod, such air discharging through the apertures S into the dead end of the cylinder C. The next forward stroke expels this air from the cylinder, again forcing it through the rod N.

I have shown in dotted lines, Fig. 1, that, if desired, the tubular rod N may be carried up through the head of the cylinder C and there be open to the atmosphere.

It is evident that the large volume of free air passing several hundred times per minute through the rod will fully prevent its heating and that such air will also act to cool the end of the cylinder to which it is admitted.

By the term "free end" as applied to a piston-rod the end of said rod which extends out of the cylinder into the atmosphere is obviously meant.

It will be evident that various changes may be made by those skilled in the art which will come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described—as, for instance, to the four-cycle type of engine.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an explosion-engine, a cylinder, heads in said cylinder, a piston, means for producing an explosion in said cylinder at one side of said piston, a piston-rod secured to the other side of said piston, said piston-rod having a bore opening adjacent its ends, whereby air is admitted to the end of said cylinder in which no explosion occurs.

2. In a single-acting explosion-engine, a cylinder, a piston, a crank, a tubular piston-rod by which motion is communicated from said piston to said crank, the bore of said rod being open at its free end and means forming a lateral passage from said bore within said cylinder, whereby air is admitted to the end of said cylinder in which no explosion occurs.

3. In a single-acting tandem explosion-engine, a plurality of cylinders, pistons in said cylinders, a tubular piston-rod connecting said pistons, the bore of said rod being open to the air at its free end and means forming a lateral passage communicating with said bore, whereby air is admitted to the interior of said cylinder at the end in which no explosion occurs.

4. In an engine, a cylinder, heads at each end of said cylinder, a piston, a tubular piston-rod open adjacent its outer and inner ends and

means forming a lateral passage opening from the bore of said rod, whereby air is admitted to the end of said cylinder in which no explosion occurs.

- 5 5. In a tandem explosion-engine, a tubular rod connecting the pistons, the bore of said rod open to the atmosphere through one piston and to the end of the other cylinder in which no explosion occurs through an aperture adjacent
10 the piston therein.

6. In a tandem explosion-engine, means for the admission of air to one of the cylinders, an aperture through the head of the piston in said cylinder, a tubular rod connecting the pistons and an aperture connected with the bore 15 of said rod within the other of said cylinders.

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Witnesses:

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