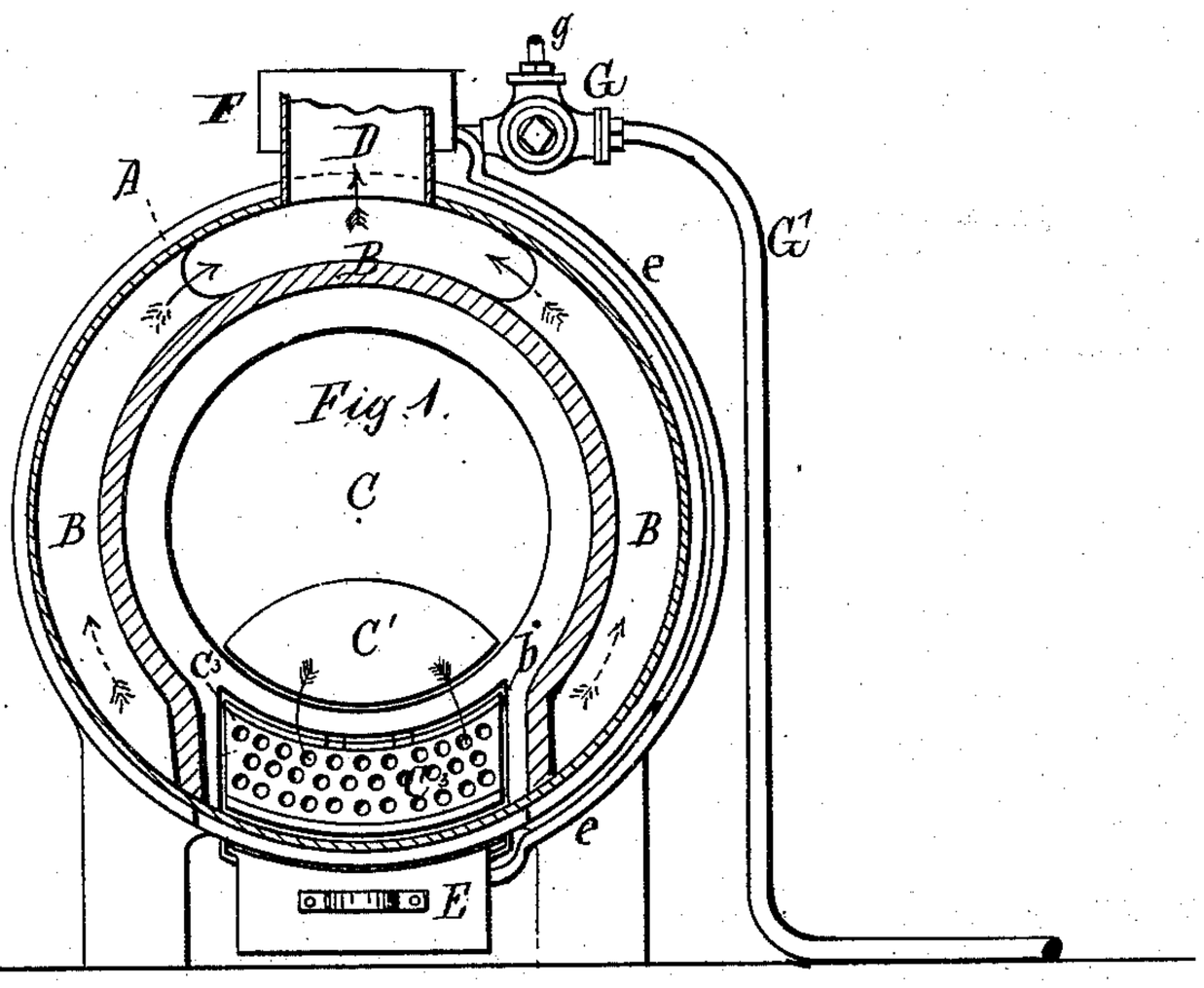
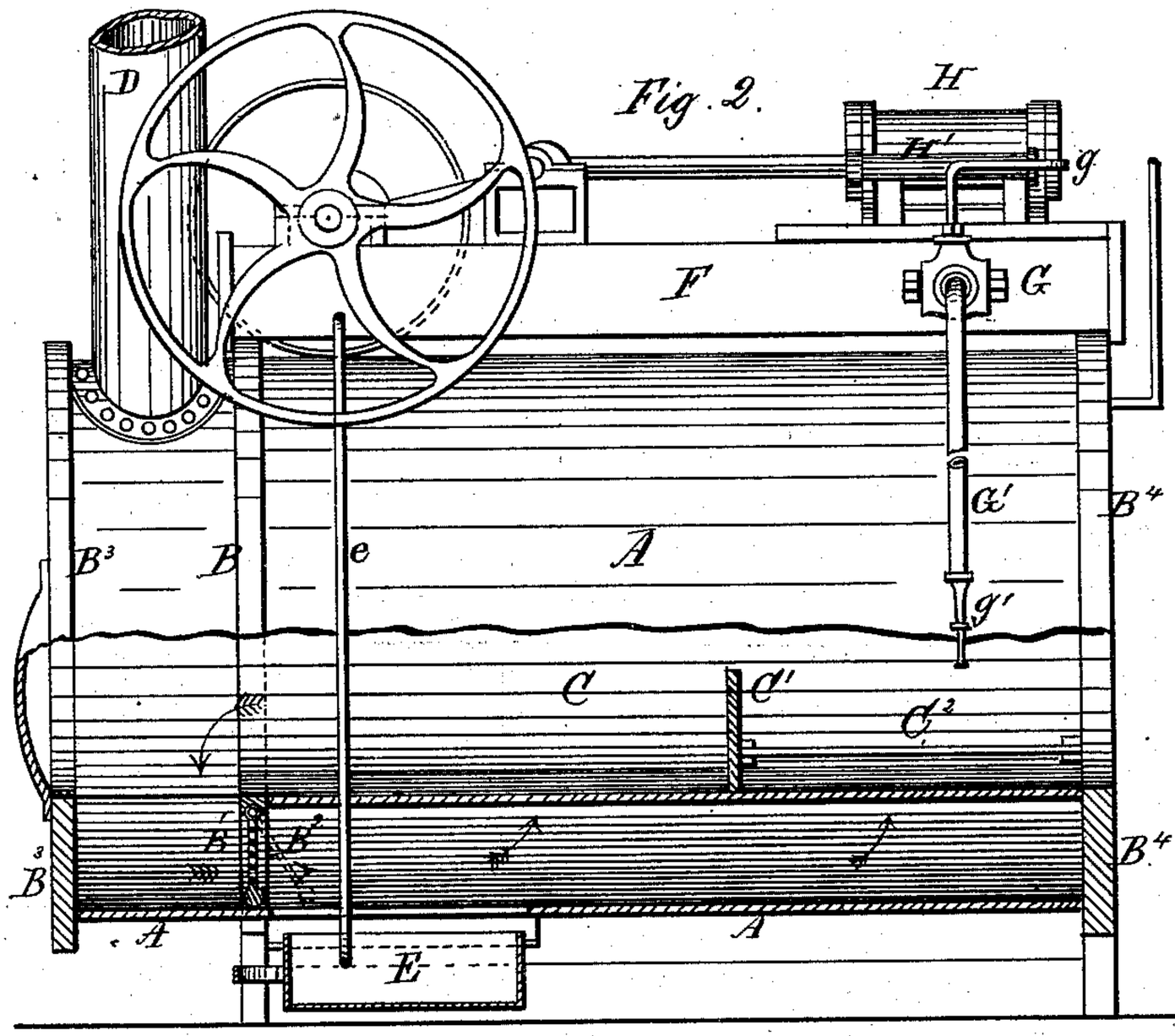
W. H. TAPPEY.

Portable Steam-Engine.

No. 207,082. Patented Aug. 13, 1878.





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UNITED STATES PATENT OFFICE.

WILLIAM H. TAPPEY, OF PETERSBURG, VIRGINIA.

IMPROVEMENT IN PORTABLE STEAM-ENGINES.

Specification forming part of Letters Patent No. **207,082,** dated August 13, 1878; application filed November 23, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. TAPPEY, of the city of Petersburg, in the county of Dinwiddie, State of Virginia, have invented certain new and useful Improvements in Steam-Engines, of which the following is a specification:

My invention relates to certain new and useful improvements in that class of steam-engines particularly applicable for agricultural purposes; and consists in the combination, with the inner boiler-head aperture and the furnace, of a weighted swinging and perforated screen adapted to be slightly depressed or deflected by the draft, and arrest and precipitate the sparks and cinders that may escape from the furnace prior to their reaching the flue or chamber formed by the boiler and furnace and the outer jacket, through which the products of combustion are carried previous to their reaching the chimney or smoke-stack.

The invention further consists in the combination, with said furnace and flue-aperture, of a water-box into which the sparks or cinders are precipitated, and in the necessary means whereby said water-box is automatically supplied with water.

In the accompanying drawings, Figure 1 is a front elevation, the outer head of the boiler being removed, and Fig. 2 is a side elevation, partly in section.

A is the outer jacket or casing secured to the boiler-heads B B^3 B^4, between which jacket and boiler is formed the flue or chamber, through which the products of combustion pass around the boiler and furnace into the smoke-stack D in the usual manner. B is the inner boiler-head, provided with an aperture, B^1, and B^2 is a weighted perforated screen pivoted or hinged into the aperture. The weight of the plate is regulated according to the draft, so that the plate may be slightly deflected, as shown in dotted lines, Fig. 2, by said draft.

It will be readily understood that by this arrangement of screen B^2 the sparks or cinders escaping from the furnace C over the fire-bridge C′ will strike the perforated screen B^2 and be precipitated into the flue or smoke-chamber upon the bottom of the jacket A. But to insure further safety against the escape of sparks, and preclude any possibility of a fire originating therefrom, which is so often the case owing to the highly combustible nature of the material in connection with which this class of engines is generally employed, I employ a water-box, E, sliding in suitable brackets immediately in rear of the aperture B^1 and plate or screen B^2, and it will be readily seen that all sparks and cinders striking the plate will fall into the water-box and are at once extinguished. The water-box is automatically fed by means of the pipe *e*, one end of which is connected with the feed-water heater and exhaust or condensing chamber or chest F, and the other with the water-box E.

The water-box E is removably connected with the jacket A, so that it may be emptied when cinders or other products of combustion have accumulated therein.

Under some circumstances I may prefer to place the perforated screen B^2 in front of and covering the aperture B^1, or locate it on a line with the bottom of the furnace C transversely across the space formed by the inner boiler-head, B, and the outer head, B^2.

The passage of the products of combustion is plainly indicated by the arrows, and is effected in the usual manner.

H is the steam-cylinder, H′ the pump-cylinder, and *g* the suction-pipe and feed-pipe, pumping the water into the feed-water heater and thence into the boiler in the usual manner. G is a three-way cock interposed upon the feed-pipe, one branch of which is provided with a fire-hose, G′, and usual nozzle *g′*.

When the pump is not employed for feeding the boiler the three-way cock is turned to conduct the water into the hose, for the purpose of keeping the surroundings of the engine or the roof of the shed or building in which it is located saturated with water, or to extinguish a fire should such occur from any cause.

Having now described my invention, what I claim is—

1. The combination, with the aperture B^1 of the boiler-head B and the furnace C and jacket A, of a perforated screen, B^2, substantially as described, for the purpose specified.

2. The combination, with the aperture B^1 of the boiler-head B, the furnace C, and the jacket A, of a weighted yielding perforated screen,

B^2, substantially as described, for the purpose specified.

3. The combination, with the furnace C, the aperture B^1 of the boiler-head B, and the jacket A, of a removable water-box, E, connected with said jacket immediately in rear of the aperture B^1, substantially as described, for the purpose specified.

4. The combination, with the jacket A, furnace C, aperture B^1, and perforated plate B^2, of a removable water-box connected with said jacket immediately in rear of the aperture B^1, substantially as described, for the purpose specified.

5. The combination, with the water-box and the exhaust or condensing chamber, or the feed-water heater, of the pipe *e*, substantially as described, for the purpose specified.

In witness that I claim the foregoing I have hereunto set my hand.

W. H. TAPPEY.

Witnesses:

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