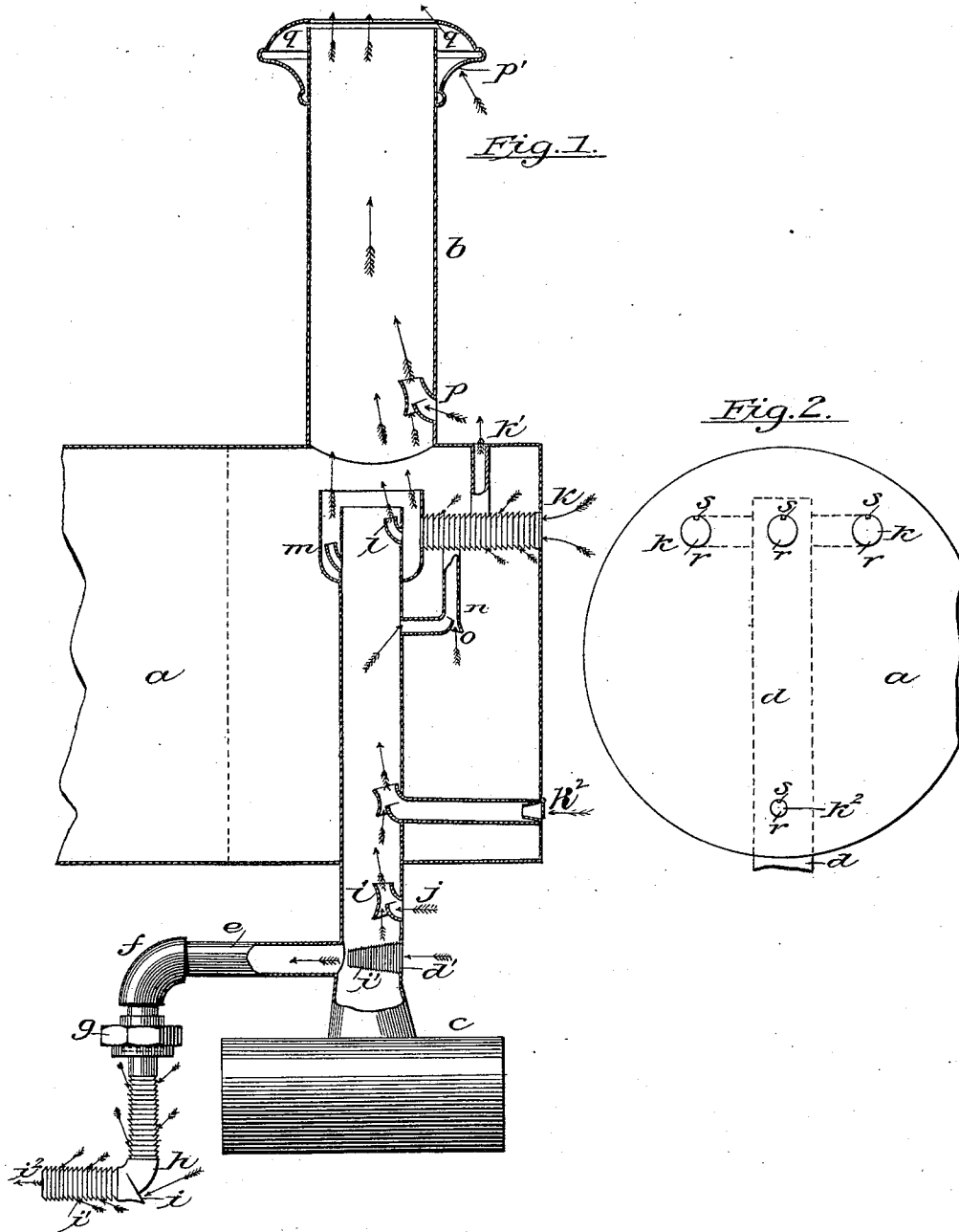


(No Model.)

B. F. TAYLOR.
LOCOMOTIVE.

No. 471,281.

Patented Mar. 22, 1892.



Witnesses.

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UNITED STATES PATENT OFFICE.

BENJAMIN F. TAYLOR, OF NEWARK, NEW JERSEY.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 471,281, dated March 22, 1892.

Application filed June 1, 1891. Serial No. 394,808. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. TAYLOR, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Locomotives; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to relieve the piston as much as possible from atmospheric pressure and to destroy the smoke, gases, and cinders by the introduction of air into the exhaust-pipe and smoke-stack, impelled by the speed of the locomotive.

The invention consists in the arrangements and combinations of certain devices to secure these results, as herein set forth, and finally pointed out in the claims.

Referring to the accompanying drawings, in which similar letters of reference indicate corresponding parts wherever they occur, Figure 1 represents a central longitudinal section of a locomotive boiler, smoke-stack, exhaust-pipe, cylinder, &c.; and Fig. 2 is a front end elevation of the same.

In said drawings, *a* indicates the boiler, *b* the smoke-stack, *c* the cylinder, and *d* the exhaust-pipe.

In carrying out my invention I tap the exhaust-pipe, preferably in front at *d'*, below the smoke-box, if it can be done at that point, and if not at the most favorable point allowable to utilize the benefit of the current of air produced by the speed of the engine, and attach an outlet-pipe *e* to the exhaust-pipe in the rear or opposite the inlet *d'*. If the mouth or end of said outlet be obstructed by any portion of the locomotive, I attach an elbow *f* thereto and carry it downward or to one side by means of a swivel *g*, so as to afford a free and unobstructed passage and escape for the air and steam, as indicated in Fig. 1. At the bottom of said elbow, if desirable, I form another elbow *h* with an opening *i* at the joint to further admit a current of air thereat. At the inner portion of said inlet-pipe and the outer extremity or portion of said elbow I also

form a series of funnel-shaped openings *i'* and *i''*, the design of which is to create a stronger draft and suction in order to more thoroughly vaporize the steam and to increase to the utmost the draft of air to mingle with and draw the exhaust-steam from the exhaust-pipe, and to thereby decrease the atmospheric pressure upon the piston as much as possible. As a further means of aiding to secure these results I tap the exhaust-pipe at different points above that above described, either below the smoke-box, as indicated at *j*, Fig. 1, if it be admissible, or if not above the lower line of the boiler, or both, as indicated by the inlet pipe or pipes (as there may be several) *k*, which pass through the front end of the smoke-box to said exhaust-pipe, as shown in said Figs. 1 and 2, the inner ends of said inlet-pipes being curved upward and, if desired, having outlets *l* at the side, the object being to induce a strong draft of air to help carry the remaining exhaust-steam, if there be any, out through the smoke-stack to condense the steam and to mingle with the gases and smoke and as far as possible destroy them. These pipes may enter from the side of the stack, if there be no room in the front end, as indicated at *k'*. If desirable, in this case an air-chamber *m* may be formed around the exhaust-pipe, Fig. 1, and a pipe or an elbow be connected therewith and with the exhaust-pipe, the same having, also, an inlet or opening *o* at the bottom to admit the entrance of the smoke and gases from the smoke-box, which are drawn therein by the draft, and the mingling of them with the air and steam, all being thus expelled through the smoke-stack, as will be understood. As a still further means of promoting these results, I also tap the smoke-stack at one or more points, in the present case at or near the bottom and top, at *p* and *p'*, the latter connecting with an air-chamber *q*, which is formed around the upper end of the stack, as shown in Fig. 1. The effect of the inrushing air at these several points, when a locomotive is rushing at full speed, in securing the results mentioned will be obvious. These inlets or any of them may be provided with automatic valves *r*, which in this case are plain or flat disks suspended at the entrance by a pivotal connection *s* and swing inward automatically when the locomotive is in motion, and

when at rest and in getting up steam these valves will be closed automatically, so as not to deleteriously affect the draft, as will be understood.

5 The location and construction of these several devices may be varied to suit the different styles of locomotives, as will be understood.

Having thus described my invention, what I claim, and wish to secure by Letters Patent
10 of the United States, is—

1. In a locomotive, the combination, with the exhaust-pipe thereof, of an air port or inlet opening at or toward the front and an outlet-opening at or toward the rear of the exhaust-pipe, as described, and for the purposes
15 set forth.

2. In a locomotive, the combination, with the exhaust-pipe, of an air port or inlet opening at or toward the front and an outlet-
20 opening at or toward the rear of the exhaust-pipe, said inlet having openings at the side, as described, and for the purposes set forth.

3. In a locomotive, the combination, with the exhaust-pipe and the inlet and outlet, of
25 a swivel-coupler whereby said outlet may be

turned automatically in any desired direction, as and for the purposes set forth.

4. In a locomotive, the combination, with the exhaust-pipe and the smoke-box, of a pipe
30 connecting therewith to admit the passage of air to said exhaust-pipe and having openings at the side to admit the passage, also, of smoke and gases from the smoke-box, as and for the
purposes set forth.

5. In a locomotive, the combination, with
35 the exhaust-pipe and the smoke-box, of a pipe connecting therewith to admit the passage of air to the exhaust-pipe, and also a pipe or an elbow connecting with said air-pipe and ex-
40 haust-pipe to admit the passage of steam or other contents of the exhaust-pipe to said air-pipe, as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of
May, 1891.

BENJAMIN F. TAYLOR.

Witnesses:

OLIVER DRAKE,

OSCAR A. MICHEL.