

(No Model.)

T. PLAIN.
Locomotive Lift Pipe.

No. 231,356.

Patented Aug. 17, 1880.

Fig: 1.

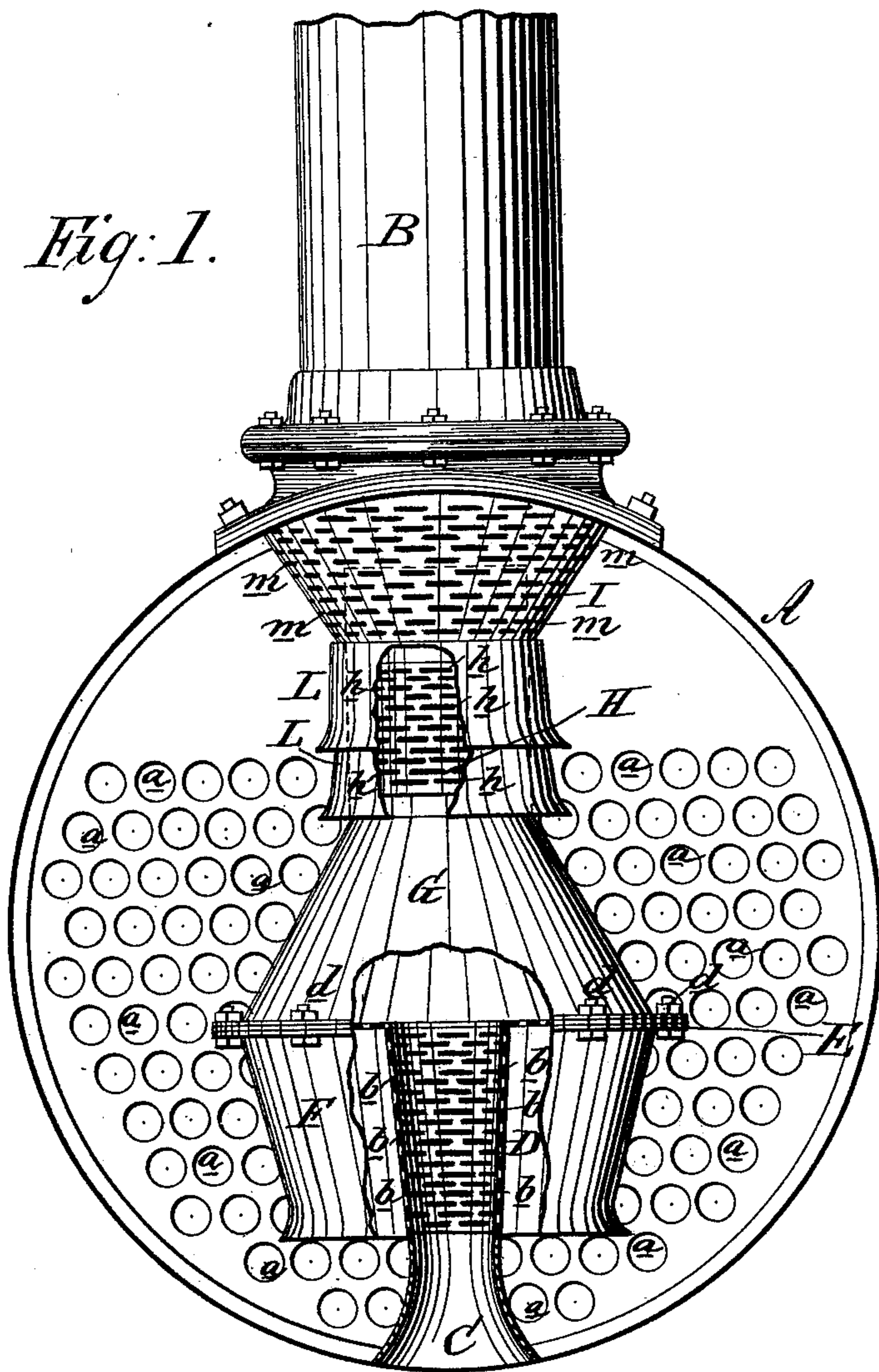
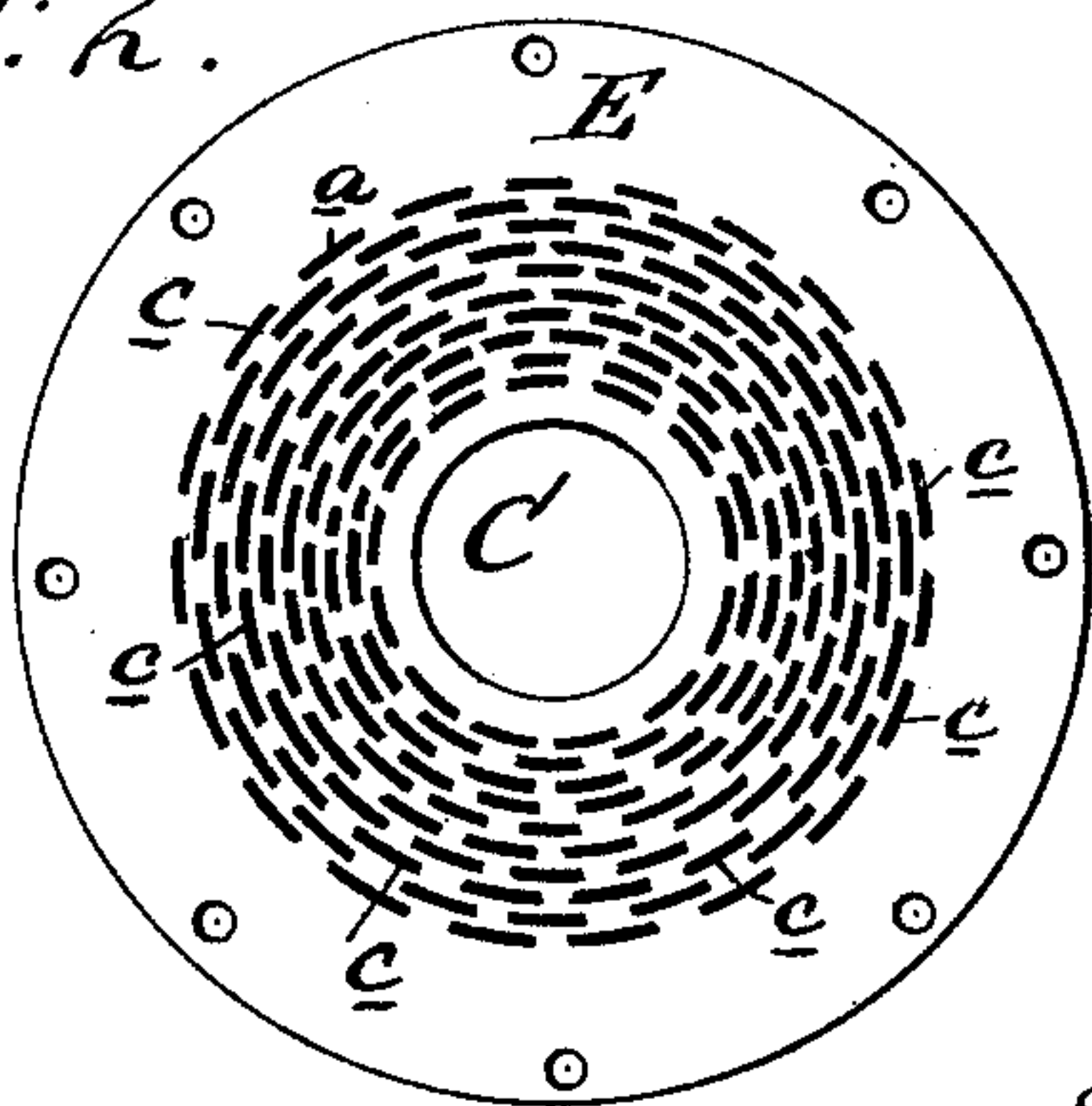


Fig: 2.



WITNESSES:

A. Schehl.
C. Dugwick

INVENTOR:

T. Plain

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS PLAIN, OF ELMIRA, NEW YORK.

LOCOMOTIVE LIFT-PIPE.

SPECIFICATION forming part of Letters Patent No. 231,356, dated August 17, 1880.

Application filed June 21, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS PLAIN, of Elmira, in the county of Chemung and State of New York, have invented a new and Improved Locomotive Lift-Pipe, of which the following is a specification.

The object of this invention is to insure better combustion in a locomotive and to prevent the accumulation of cinders in the locomotive smoke-box.

The invention consists of a novel arrangement of pipes and diaphragm and inclosing-curtains connecting the steam-exhaust pipe within the locomotive smoke-box with the smoke-stack, all of which is hereinafter described.

Figure 1 is a vertical elevation, showing the device in position, with parts broken away to exhibit other parts. Fig. 2 is a plan of the perforated diaphragm.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the smoke-box end of a locomotive-boiler, B the smoke-stack, and C the steam exhaust-pipe nozzle, through which the exhaust-steam from the engine-cylinder (not shown) escapes into the stack B. The rear ends of the boiler-flues are shown at *a a*.

A great difficulty heretofore experienced with many devices for saving fuel and disposing of the cinders in locomotives has been the accumulation of cinders in the smoke-box, and the consequent necessity of frequently removing them therefrom. This difficulty is avoided by the device herein shown and described, wherein D is a laterally-perforated pipe having numerous perforations *b b*, fitted upon and over the steam-exhaust nozzle C, and extending vertically upward and supporting on its top a horizontal circular flange or diaphragm, E, provided with numerous perforations *c c*. Surrounding or inclosing this pipe D and diaphragm E is a curtain, F, somewhat in the form of an inverted cone, whose upper edge is flanged and secured to the edge of the diaphragm E by means of bolts and nuts *d d*. A conical hood, G, has its base secured on the upper face of the diaphragm E by the same bolts and nuts *d d*, and extends upward nearly

as high as the upper row of the boiler-flues *a a*, at which point said hood G is connected by the perforated pipe H, which pipe H is provided with perforations *h h*, with the inverted cone I, which cone I extends upward and connects with the base of the smoke-stack B, said inverted cone I being also provided with numerous perforations *m m*. This pipe H may be extended upward more or less through the cone I to regulate the draft of the stack B. Surrounding this pipe H, and extending downward from the base of the inverted cone I to the top of the conical hood G, are two cylindrical aprons or sleeves, LL, overlapping each other and having annular spaces between them and between them and the said pipe H.

The exhaust-steam escaping from the nozzle C has a free and unobstructed outlet to the open air; and by arranging the perforated pipe D, diaphragm E, and curtain F as shown a partial vacuum is produced by the escaping steam in the bottom of the locomotive smoke-box, and by means of this vacuum a current of air is created through the lower flues, *a a*, strong enough to lift the cinders through the perforations in said pipe D and diaphragm E into the hood G, where they are caught by the escaping exhaust-steam and thrown into the open air through the smoke-stack B.

The arrangement of the perforated pipe H and inverted cone I and aprons or sleeves LL insures an even draft through all the flues *a a*, because of the partial vacuum created by the exhaust-steam escaping through the stack B. In some instances, and in order to create a more powerful lift or draft through the diaphragm E, the perforations in the pipe D may be dispensed with, and in the pipe H and inverted cone I the number or size of the perforations will depend upon the strength of the draft or lift desired.

By equalizing the draft through the flues, as herein set forth, a more perfect combustion is effected in the fire-box, and thereby an economy of from ten to twenty-five per cent. of fuel effected, together with an almost complete absence of black smoke, and at the same time but few cinders are drawn through the flues, but nearly all remain in the fire-box to be consumed.

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

- 5 1. A locomotive lift-pipe constructed substantially as herein shown and described, consisting of vertical perforated pipes D H, perforated diaphragm E, perforated inverted cone I, aprons F L L, and conical hood G, as set forth.
- 10 2. The combination, with the exhaust-steam nozzle C and smoke-stack B, of the pipe D, supporting a diaphragm, E, and apron F, hood

G, pipe H, provided with aprons L L, and inverted cone I, substantially as herein shown and described.

- 15 3. In a locomotive lift-pipe, the combination, with the pipe D, of the horizontal perforated diaphragm E, apron F, and conical hood G, substantially as herein shown and described.

THOMAS PLAIN.

Witnesses:

F. S. STEVENS,
L. B. TAGGART.