(No Model.)

H. D. DUNBAR.

EXTENSION SMOKE STACK FOR LOCOMOTIVES.

No. 447,106. Patented Feb. 24, 1891.

FIG. 1.

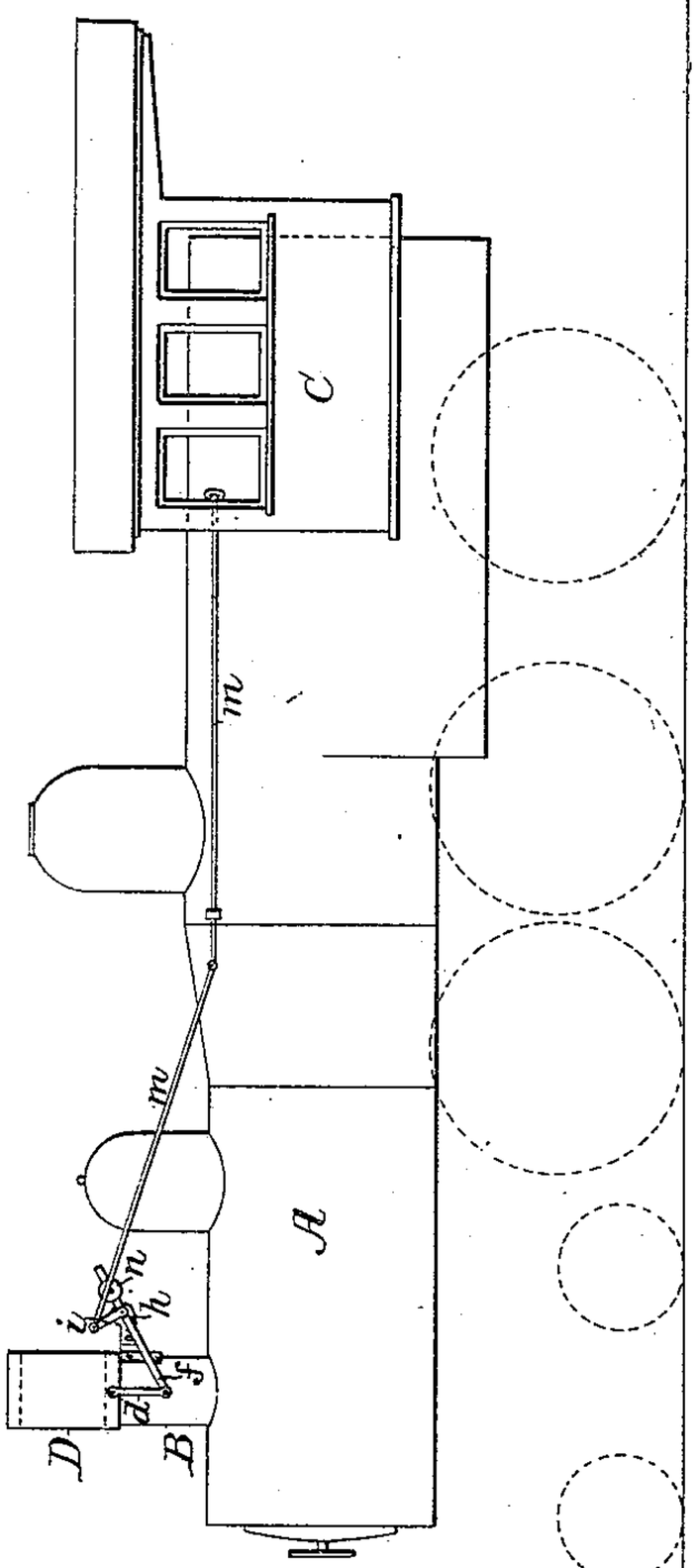


FIG. 2.

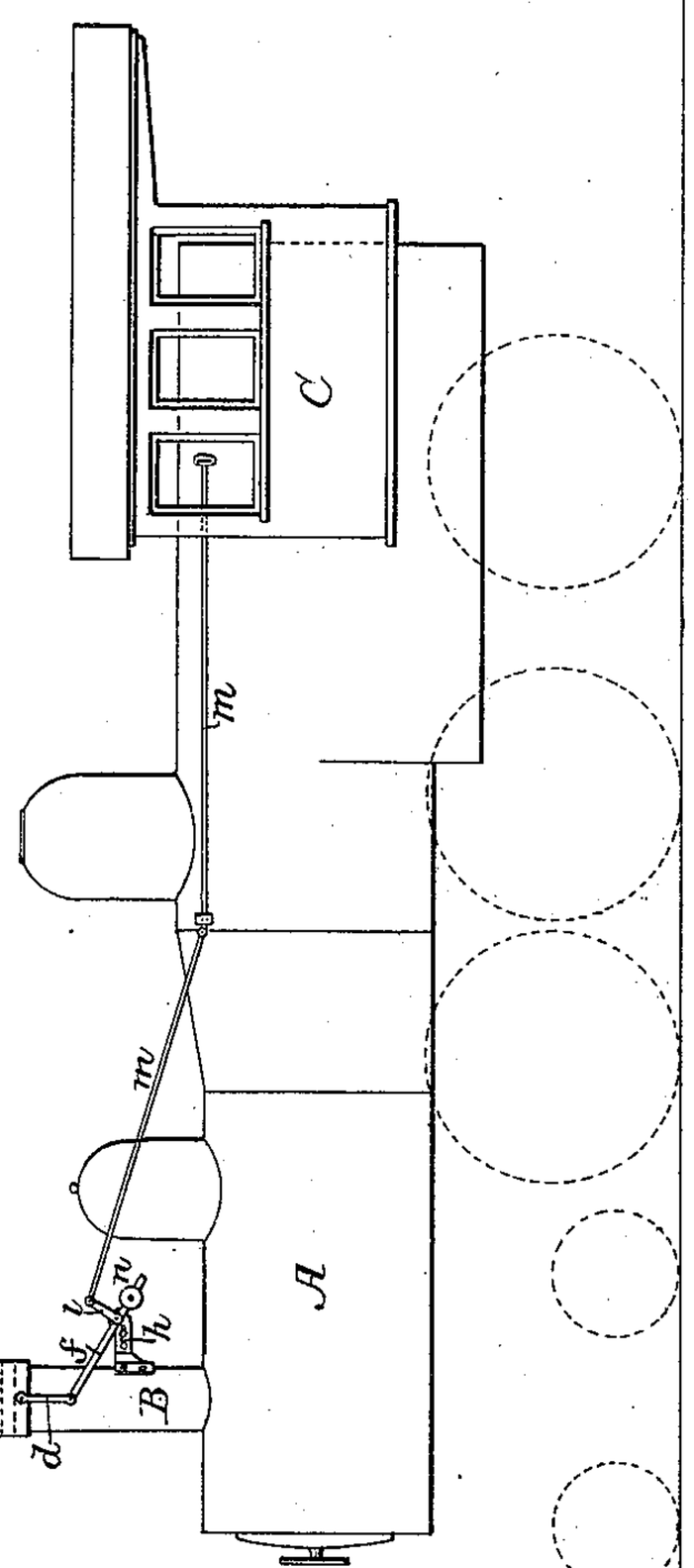


FIG. 4.

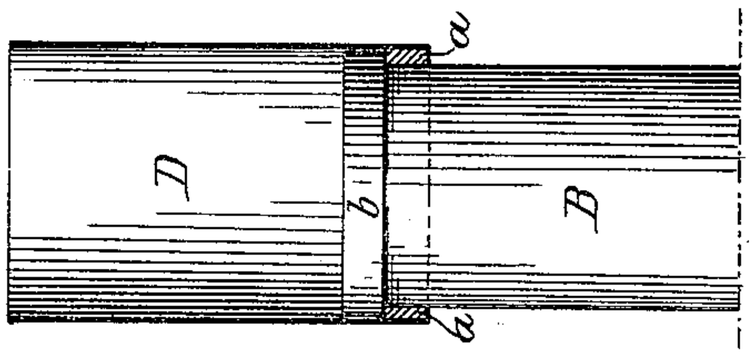


FIG. 3.

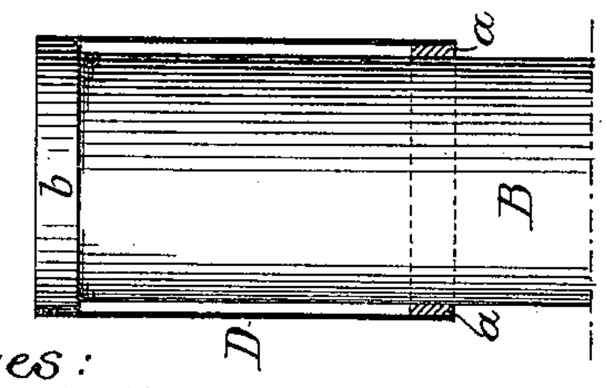


FIG. 5

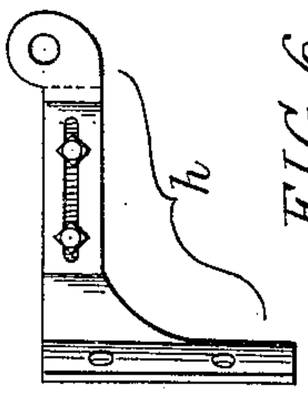
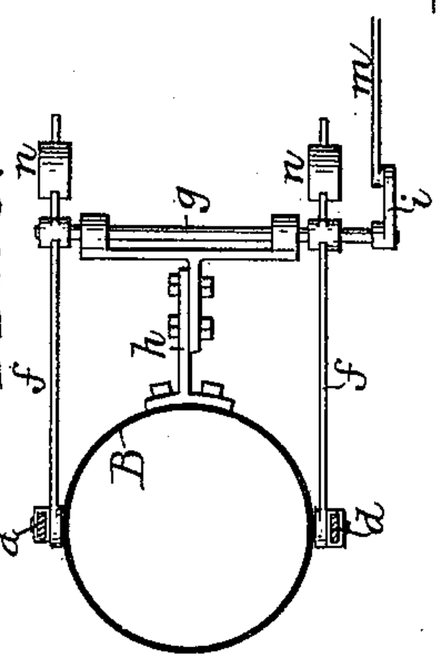


FIG. 6.



Witnesses:
Alex. Barkoff
R. Schlicher.

Inventor:
Henry D. Dunbar
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

HENRY D. DUNBAR, OF NORTH HARTLAND, VERMONT.

EXTENSION SMOKE-STACK FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 447,106, dated February 24, 1891.

Application filed October 27, 1890. Serial No. 369,387. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. DUNBAR, a citizen of the United States, and a resident of North Hartland, Windsor county, Vermont, have invented certain Improvements in Extension Smoke-Stacks for Locomotives, of which the following is a specification.

The object of my invention is to provide a simple and practicable form of extension smoke-stack for locomotive-engines, and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of sufficient of a locomotive-engine to illustrate my invention, the smoke-stack being shown in the contracted condition. Fig. 2 is a similar view showing the stack extended; and Figs. 3, 4, 5, and 6 are detached views, on a larger scale, of parts of the device.

In Figs. 1 and 2, A represents part of the boiler of the engine, B the permanent stack at the front end of the same, and C the cab.

In modern engines having large driving-wheels and boilers of large diameter the stacks are necessarily short, owing to the limited height of bridges, tunnels, round-house entrances, &c., and it becomes desirable to increase the height of the stack when the engine is running, as a slight addition to the height of the stack—say about eighteen inches or two feet—materially increases the steam-producing qualities of the boiler. I therefore mount upon the permanent stack B a sliding stack D, which is free to move vertically upon the permanent stack, this sliding stack consisting of a cylinder of light sheet metal, so that in the event of its being struck while in a projected position it will be readily broken and knocked out of the way without injuring the main stack or without any liability of being thrown back into the cab of the engine with such force as to injure the occupants of the same.

At the bottom of the sliding stack D is an internal ring *a*, Fig. 3, which serves to stiffen and strengthen the base of said stack D, and by contact with an external ring *b* at the top of the permanent stack B also serves to limit the extent of projection of the sliding stack above the permanent stack, the contact of the two rings also forming a tight joint and preventing smoke or cinders from finding their way down between the two stacks. (See Fig. 4.)

The opposite sides of the sliding stack D are connected by means of links *d* to arms *f*, carried by a rock-shaft *g*, which is also provided with another arm *i*, from which an operating-rod *m* extends rearwardly into the cab of the engine, so as to be within convenient reach of the engineer or fireman, who can thus readily raise and lower the sliding stack, as desired.

Various means may be adopted for mounting the rock-shaft *g;* but I prefer to use for this purpose a bracket *h*, secured to and projecting rearwardly from the fixed stack B. The bracket *h* has an arm in two parts, the outer of which carries the bearings for the shaft *g* and is adjustable on the other, as shown in Fig. 5, to suit the different lengths of arms *f* which may be used, and the rod *m* is also preferably made in two parts jointed together, so that one part may be guided longitudinally on the boiler-casing, as shown in Figs. 1 and 2. The arms *f* are preferably provided with weights *n*, which serve to counterbalance or partially counterbalance the weight of the sliding stack D, and thus facilitate the movement of the same.

I do not claim, broadly, an extension smoke-stack for locomotives, as such stacks hung to chains passing over pulleys on the fixed stack and wound upon windlasses at the base of said fixed stack have heretofore been proposed; but

I claim as my invention and desire to secure by Letters Patent—

1. The combination of the permanent stack of a locomotive with a sliding stack consisting of a light sheet-metal cylinder open and unstiffened at the top, but having at the lower end a stiffening or strengthening ring sliding upon the permanent stack, and external devices for raising and lowering the sliding stack, substantially as specified.

2. The combination of the permanent stack having an external ring at the top with the sliding stack opened and unstiffened at the top, but having an internal ring at the bottom, and external devices for raising and low-

ering said sliding stack, the two rings serving as stops to limit the upward movement, substantially as specified.

3. The combination of the permanent stack, the sliding stack mounted thereon, and raising and lowering mechanism, one of the elements of which is an operating-rod extending back to the cab of the engine, whereby the sliding stack can be readily raised or lowered from said cab, substantially as specified.

4. The combination of the permanent stack, the sliding stack mounted thereon, counterbalanced arms connected to said sliding stack, and means for vibrating said arms, so as to raise and lower the sliding stack, substantially as specified.

5. The combination of the permanent stack, the sliding stack mounted thereon, a bracket secured to the permanent stack and projecting rearwardly therefrom, a rock-shaft mounted on said bracket and having arms connected to the sliding stack, and an arm provided with an operating-rod leading back to the cab of the engine, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY D. DUNBAR.

Witnesses:

EUGENE ELTERICH,

HARRY SMITH.