(No Model.)

G. GRAY.

SMOKE STACK.

No. 264,076. Patented Sept. 12, 1882.

Fig. 1.

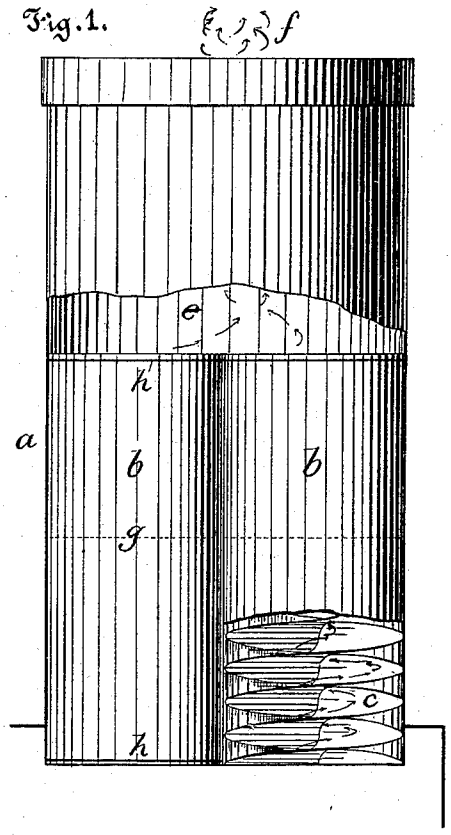
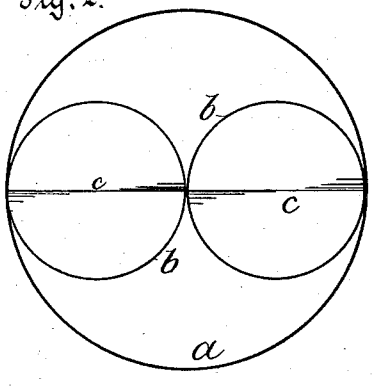


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

GORHAM GRAY, OF BOSTON, MASSACHUSETTS.

SMOKE-STACK.

SPECIFICATION forming part of Letters Patent No. 264,076, dated September 12, 1882.

Application filed March 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, GORHAM GRAY, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Smoke-Stacks, of which the following description, in connection with the accompanying drawings, is a specification.

My invention relates to a smoke-stack or uptake especially intended for locomotives, and has for its object to raise the column of smoke high up into the atmosphere, so that it will not enter the car-windows, and also to prevent the cinders from being scattered upon the train.

The invention consists in the employment of two or more spiral passages in the lower part of the stack, by means of which the smoke and other products of combustion when forced therethrough will acquire a rotary or spiral movement, and the different columns issuing from the said spiral passage into the upper cylindrical portion of the stack will combine in a single column, which ascends with a spiral or gyratory movement for a long distance before the compact column thus formed is broken by the action of the currents of air striking against it. The spiral passages are nearly flat, or have a small angular inclination to a horizontal plane, so that the cinders, in striking against the sides of the said passages, will mostly recoil and fall into the lower part of the smoke-box, and such cinders as pass through the passage will be reduced in size, so as to be lifted with the column of smoke and products of combustion.

Figure 1 is a side elevation of a smoke-stack embodying this invention, portions of the side walls being broken away; and Fig. 2, an under side view thereof.

The lower portion, *a*, of the stack has two or more channels or tubes, *b*, containing a spiral partition, *c*, having a small pitch or inclination to the horizontal plane. The said partition thus forms in the tube *b* two smaller spiral passages, through which the smoke and other products of combustion are forcibly carried by the action of the exhaust-steam from the cone in the usual manner. In being thus forcibly driven through the spiral passages in the channels *b* the products of combustion will acquire a spiral or gyratory movement, as indicated by the arrows, and in issuing from the said channels into the upper portion, *e*, of the stack the different columns will combine, forming a single column, *f*, which is very compact, and will ascend unbroken for a considerable distance, so as to afford no inconvenience to the train of cars passing beneath. Many of the cinders, especially the large ones, in striking against the flat sides of the partition *c*, will recoil therefrom and fall at the sides of and below the cone *d*, as indicated by the arrows 4, and those which pass through the stack will be so comminuted as to be readily raised with the column of smoke, so as to offer no inconvenience. The spiral partitions *c* terminate some distance below the tops of the channels *b*, as indicated by the dotted line *g*, leaving a free passage in the said channels above the said line.

The space between the channels *b* and the outer cylinder or casing, *a*, of the stack is provided with diaphragms *h*, preventing the passage of products of combustion through the said space.

The exhaust-cone will preferably be provided with two orifices or nozzles, one in line with each of the channels *b*, instead of the usual single central orifice.

I claim—

In a smoke-stack, the channels *b*, provided with spiral partitions *c*, substantially as and for the purpose described.

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

GORHAM GRAY.

Witnesses:
JOS. P. LIVERMORE,
B. J. NOYES.