

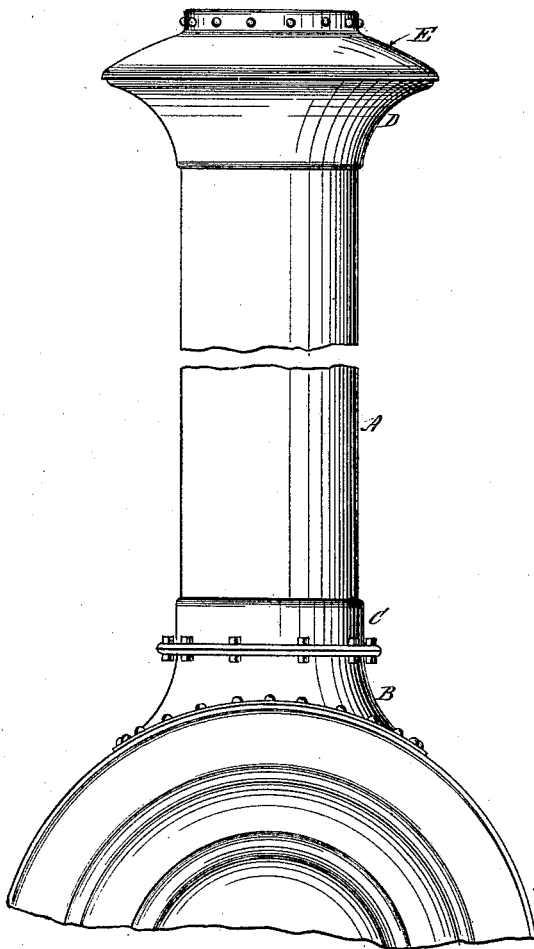
(No Model.)

E. W. M. HUGHES.  
LOCOMOTIVE SMOKE STACK.

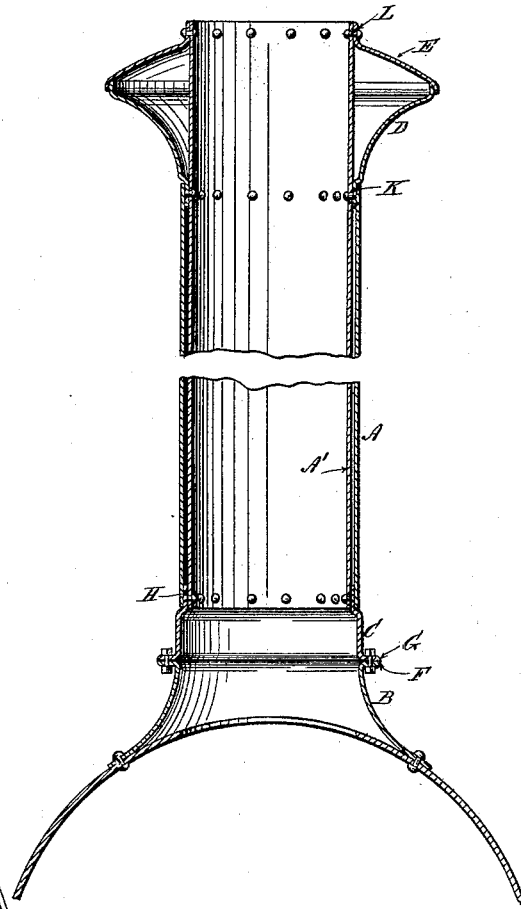
No. 418,182.

Patented Dec. 31, 1889.

*Fig. 1.*



*Fig. 2.*



Witnesses:

*D. W. Gardner*  
*A. Coutant*

Inventor:

*Edward William Mackenzie Hughes*  
*By his Attorney,*  
*E. N. Dickerson*

# UNITED STATES PATENT OFFICE.

EDWARD WILLIAM MACKENZIE HUGHES, OF CHICAGO, ILLINOIS, ASSIGNOR  
TO THE FOX SOLID PRESSED STEEL COMPANY, OF SAME PLACE.

## LOCOMOTIVE SMOKE-STACK.

**SPECIFICATION** forming part of Letters Patent No. 418,182, dated December 31, 1889.

Application filed May 23, 1889. Serial No. 311,880. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD WILLIAM MACKENZIE HUGHES, of Chicago, Cook county, Illinois, have invented a new and useful Improvement in Locomotive Smoke-Stacks, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This invention relates to an improvement in locomotive smoke-stacks, in which I make the upper and lower part of pressed steel shaped in the desired form, as will be hereinafter indicated.

In my drawings, Figure 1 represents an elevation, and Fig. 2 a cross-section showing my invention in position.

The smoke-stack proper is shown at A, and consists of two cylinders of metal A A', as indicated, between which my improved smoke-stack base and top are applied.

The smoke-stack base consists of two parts B C, which are formed of single pieces of steel pressed to a circular form, as indicated. The advantage of this arrangement is to insure tightness of fit between the parts which are pressed in dies, so as to make absolute contacts, and also to prevent any escape of the products of combustion or interference with the drafts. The part B is flanged outward into a bell shape, as indicated at the bottom, and cut away at the front and rear, so as to be shaped to the top of the boiler. It has likewise a flange F, as indicated, corresponding to a flange G of the part C. The part C is likewise provided with a cylindrical flange H, entering between the parts A A', where it is riveted.

The smoke-stack top D E consists of the two parts shown, the part D having a flange

K fitting between the parts A A', and the part E a flange L for riveting upon the pipe A'. The parts D E fit each other exactly, and are supported in position by the upper and lower riveting, as indicated. By making these parts of continuous pressed steel, as indicated, I lighten the weight of the front of the engine, which is a great advantage at that point, where weight is useless, and the fittings themselves are superior, owing to their great strength, lightness, and cheapness.

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

1. In a smoke-stack, the combination, with the two cylinders A and A', of a pressed-steel base secured thereto, the upper portion of which is provided with a cylindrical flange, which is secured between said two cylinders, substantially as described.

2. In a smoke-stack, the combination, with the cylindrical portion, of a base secured thereto, composed of two flanged pressed-steel pieces B and C, one of which is bell-shaped and cut away at the front and rear, substantially as described.

3. In a smoke-stack, the combination, with the two cylinders A and A', of a top composed of two pressed-steel pieces D and E, one of which is provided with a flange K, which is secured between said two cylinders, substantially as described.

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

EDWARD WILLIAM MACKENZIE HUGHES.

Witnesses:

WM. VOSS,

W. S. HARTWELL.