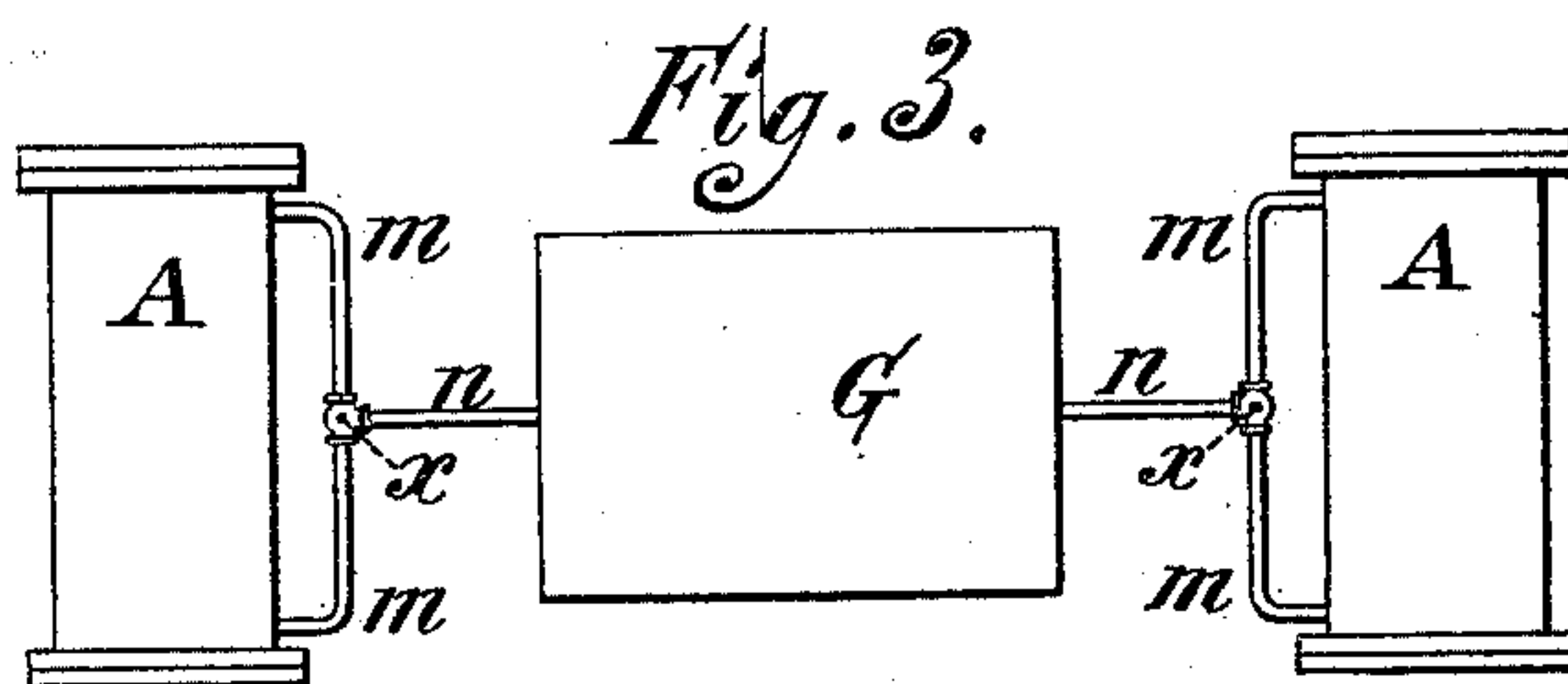
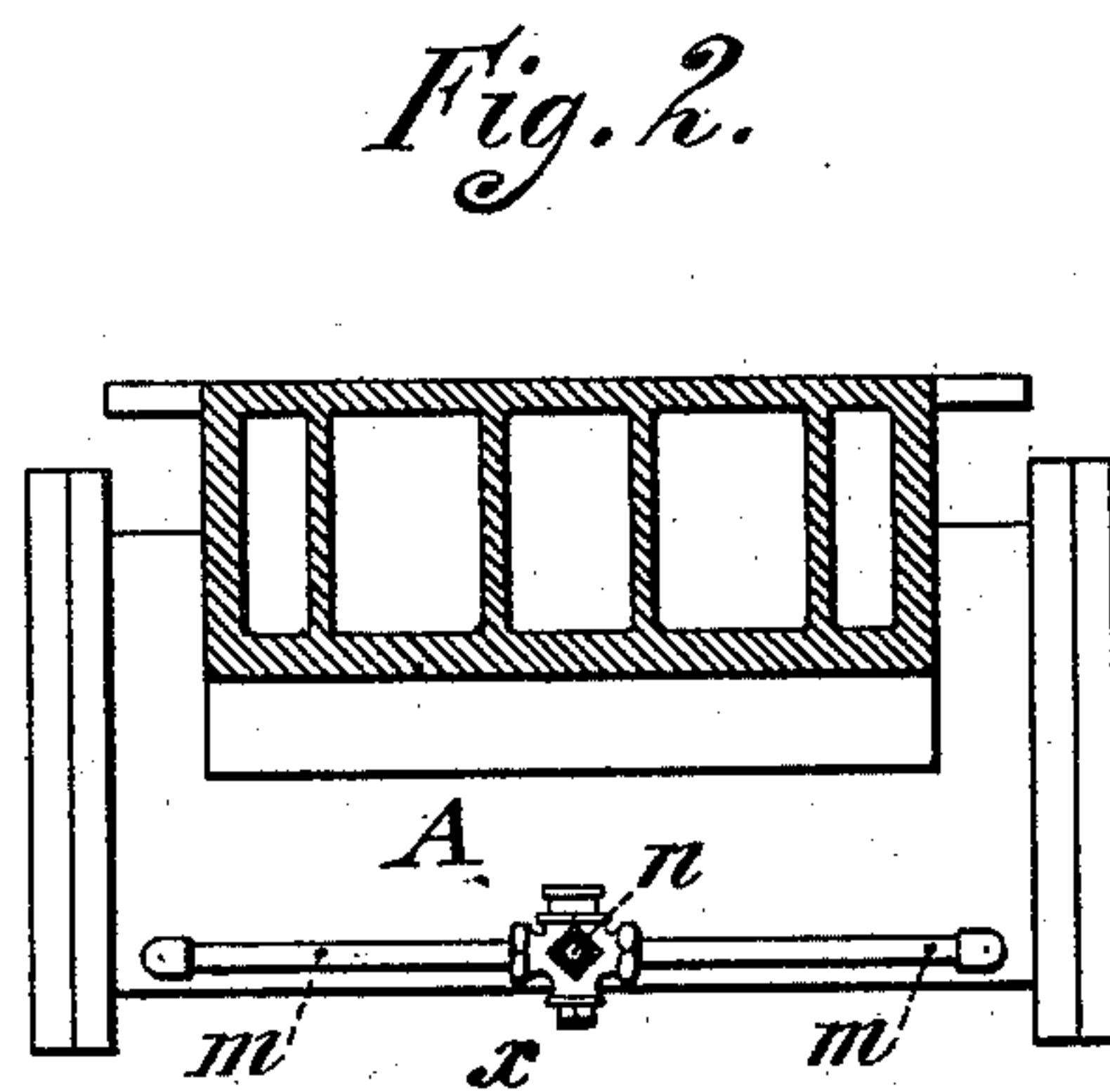
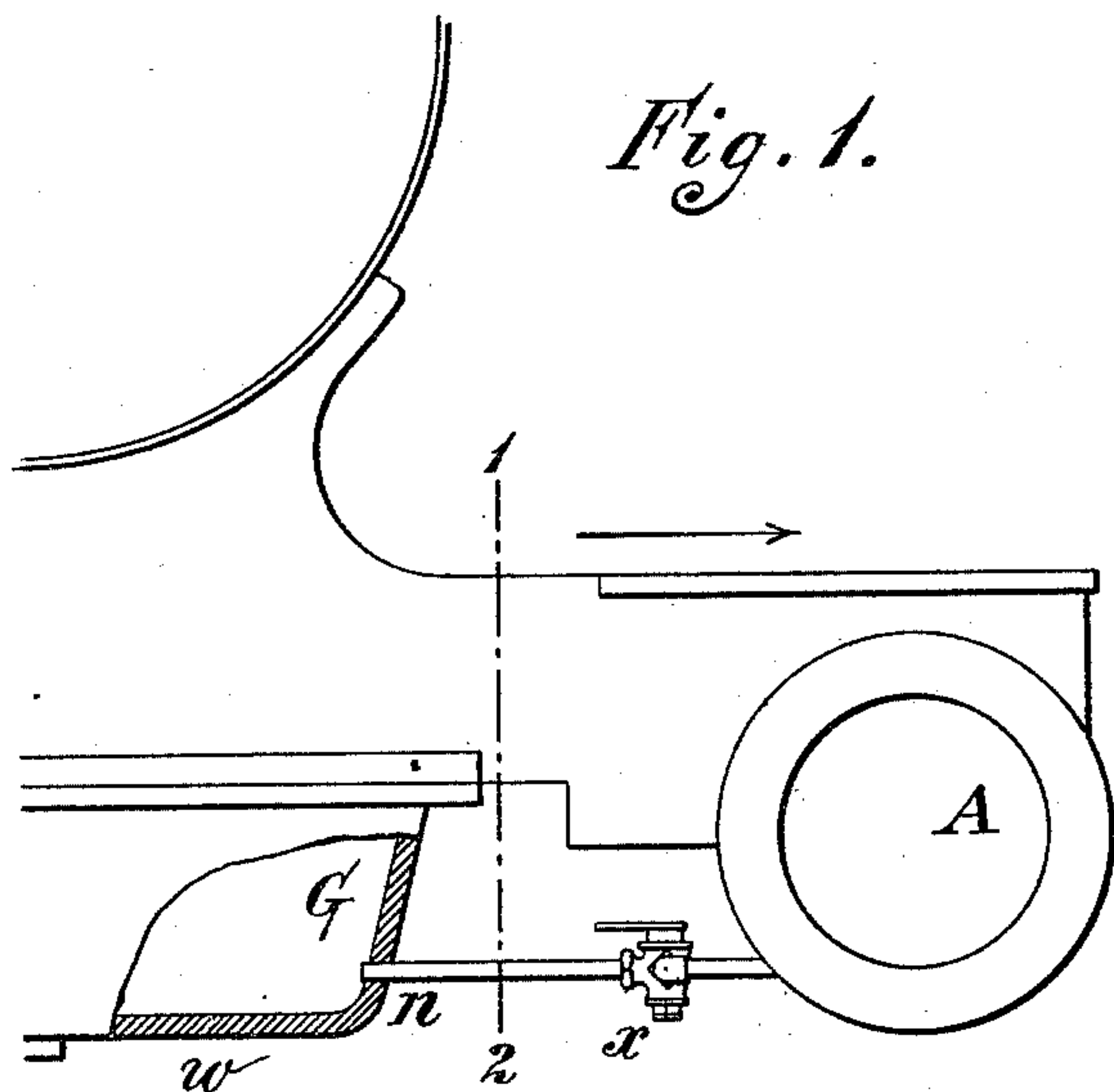


(No Model.)

E. LONGSTRETH.
Cylinder Blow-Offs for Locomotives.

No. 232,046.

Patented Sept. 7, 1880.



Witnesses:
McDermott
Harry Smith

Inventor.
Edward Longstreth
by his Attorneys
Howson & Son

UNITED STATES PATENT OFFICE.

EDWARD LONGSTRETH, OF PHILADELPHIA, PENNSYLVANIA.

CYLINDER BLOW-OFF FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 232,046, dated September 7, 1880.

Application filed July 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD LONGSTRETH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented an
5 Improvement in Cylinder Blow-Offs for Locomotives, of which the following is a specification.

The object of my invention is to prevent the noise which accompanies the discharge of steam
10 and water of condensation from the cylinders of locomotive-engines through the usual blow-off cocks; and this object I attain by directing the steam thus discharged to any part of the exhaust-passages or exhaust-chest, as explained hereinafter.

In the accompanying drawings, Figure 1 is a front view, partly in section, of a portion of the smoke-box end of a locomotive, showing my improvement; Fig. 2, a section on the line
20 1 2, looking in the direction of the arrow; Fig. 3, an inverted plan view, drawn to a reduced scale.

A represents one of the cylinders of a locomotive, and G the exhaust-chest communicating with the exhaust-ports of the said cylinder, and with the usual nozzle through which the exhaust-steam is discharged into the chimney.

It has not been deemed necessary to illustrate
30 or describe the character of the steam and exhaust ports and passages and nozzle, as these may be of any style adopted in locomotive-engines.

A central three-way cock, X, communicates,
35 through pipes *m m*, with the opposite ends of each cylinder, this cock being under the control of the engineer, so that when the water of condensation has to be discharged from the cylinder he can open the cock, thereby permitting the water and steam to be forced first
40 from one end and then from the other end of the cylinder as the piston reciprocates. This is a common arrangement in locomotives; but it has been usual to permit the water and steam
45 to escape into the atmosphere, the result of which is the well-known sharp intermittent and disagreeable noise, which, together with

the jets of steam emitted, tends to frighten horses, and is more or less of a nuisance generally, especially when the locomotive is passing through towns, cities, and suburbs.

In order to obviate this evil I extend a pipe, *n*, from a branch of the cock X to the exhaust-chamber G, or to the exhaust-passage communicating with the said chamber, so that no
55 noise will accompany the discharge of the steam from the cylinder.

It will be understood that the cock may be an ordinary three-way cock, the construction of which is too well known to need description.

In some locomotives each cylinder has a discharge-cock at each end, in which case there will be two pipes, *n*, communicating with the exhaust-chamber or exhaust passages, one pipe
65 for each cock.

It will be advisable to make a small hole, *w*, in the bottom of the exhaust-chamber, so that water of condensation may escape therefrom, and there may be a larger opening, through
70 which any accumulation of mud or sediment may be removed from the exhaust-chamber from time to time, this latter opening being provided with a detachable cover.

The invention may be used on locomotives
75 in which compressed air or gas under pressure is employed in place of steam.

I claim as my invention—

In a locomotive-engine, the discharge or blow-off cock or cocks of the cylinder and the
80 exhaust chamber or passages communicating with the usual exhaust-nozzle, in combination with a pipe or pipes through which the waste steam may, on operating the cock or cocks, be discharged into the said exhaust-chamber and
85 may then expand prior to passing into the chimney, all substantially as set forth.

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

EDWARD LONGSTRETH.

Witnesses:

JAMES F. TOBIN,
HARRY SMITH.