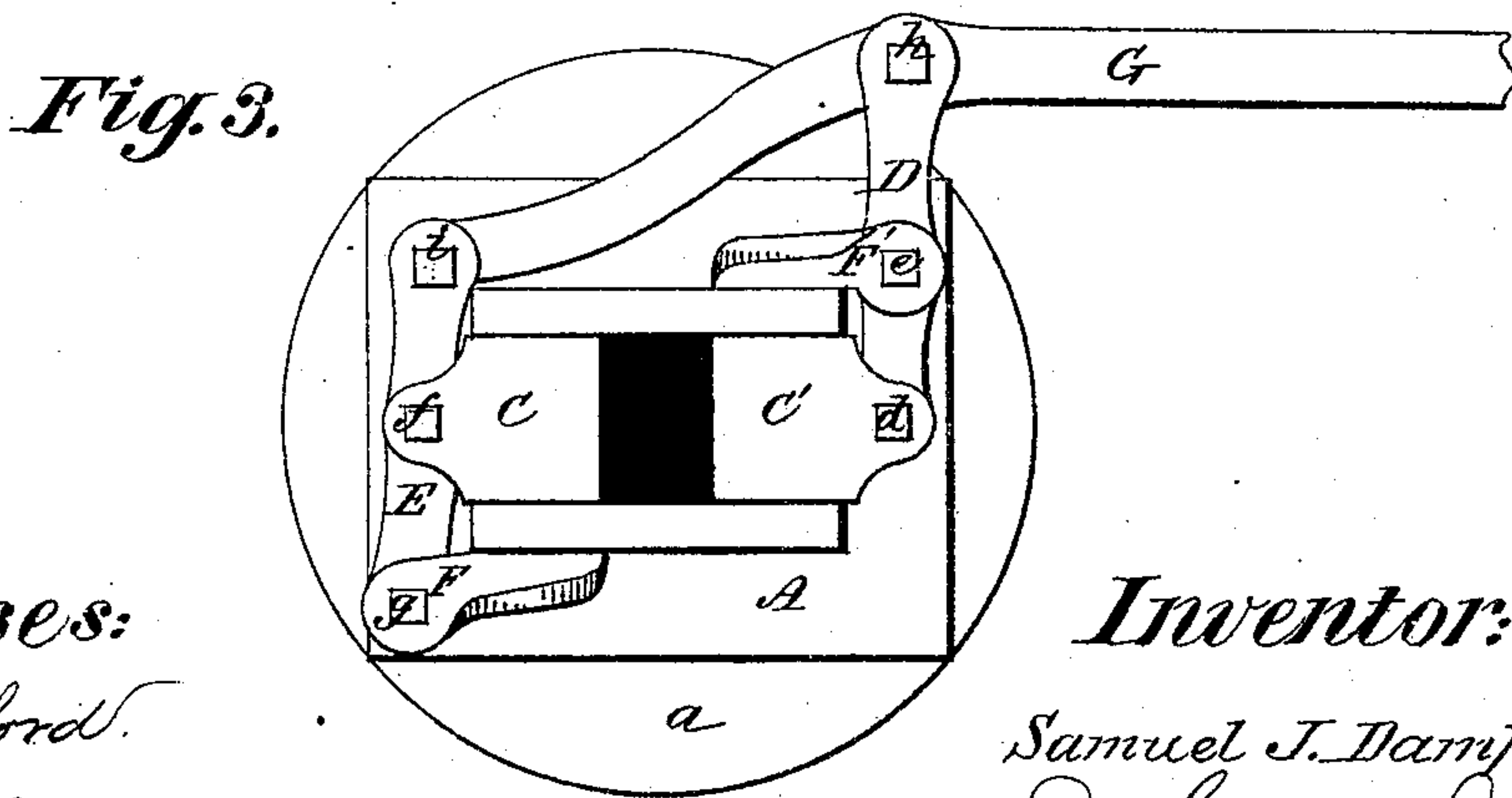
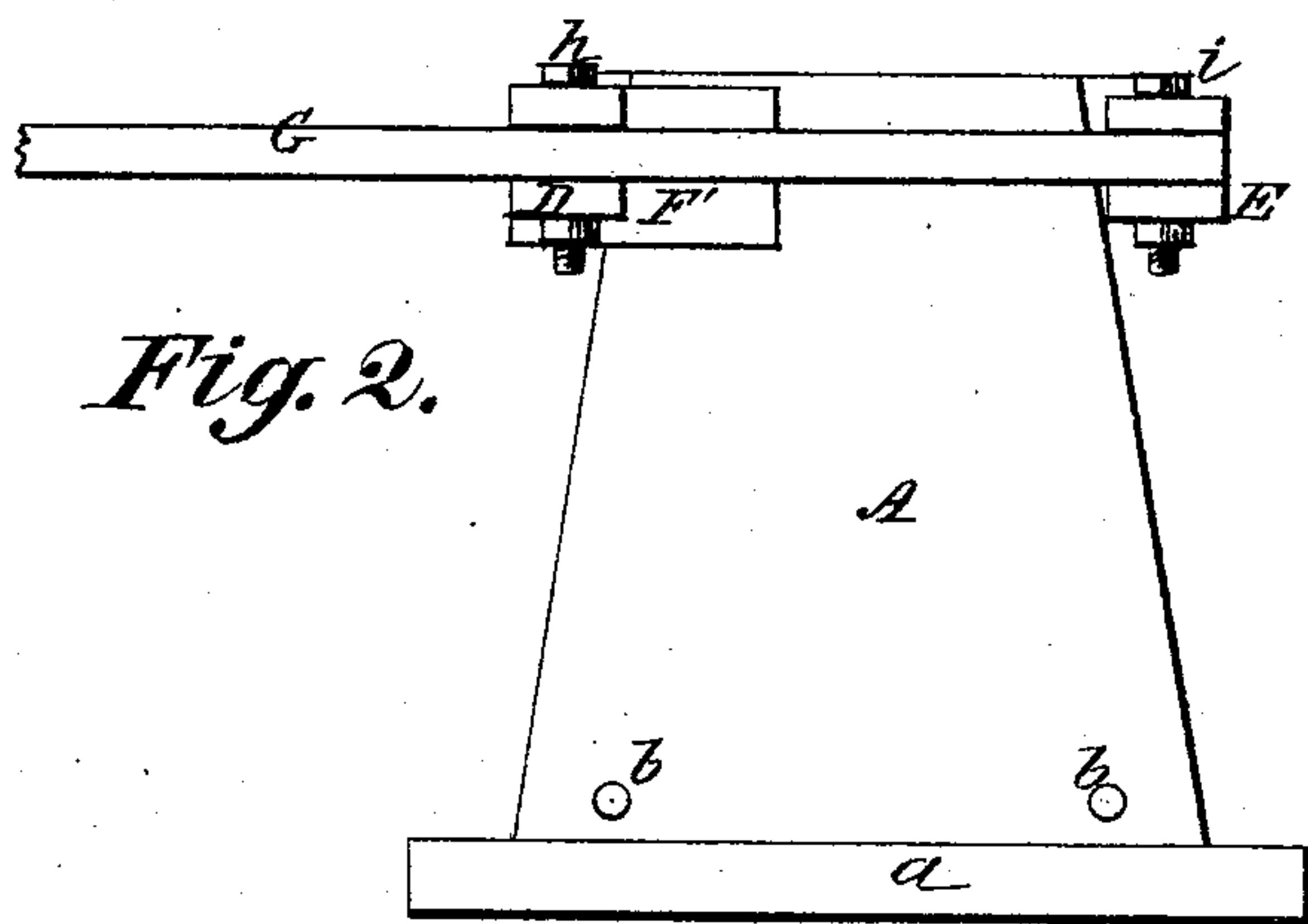
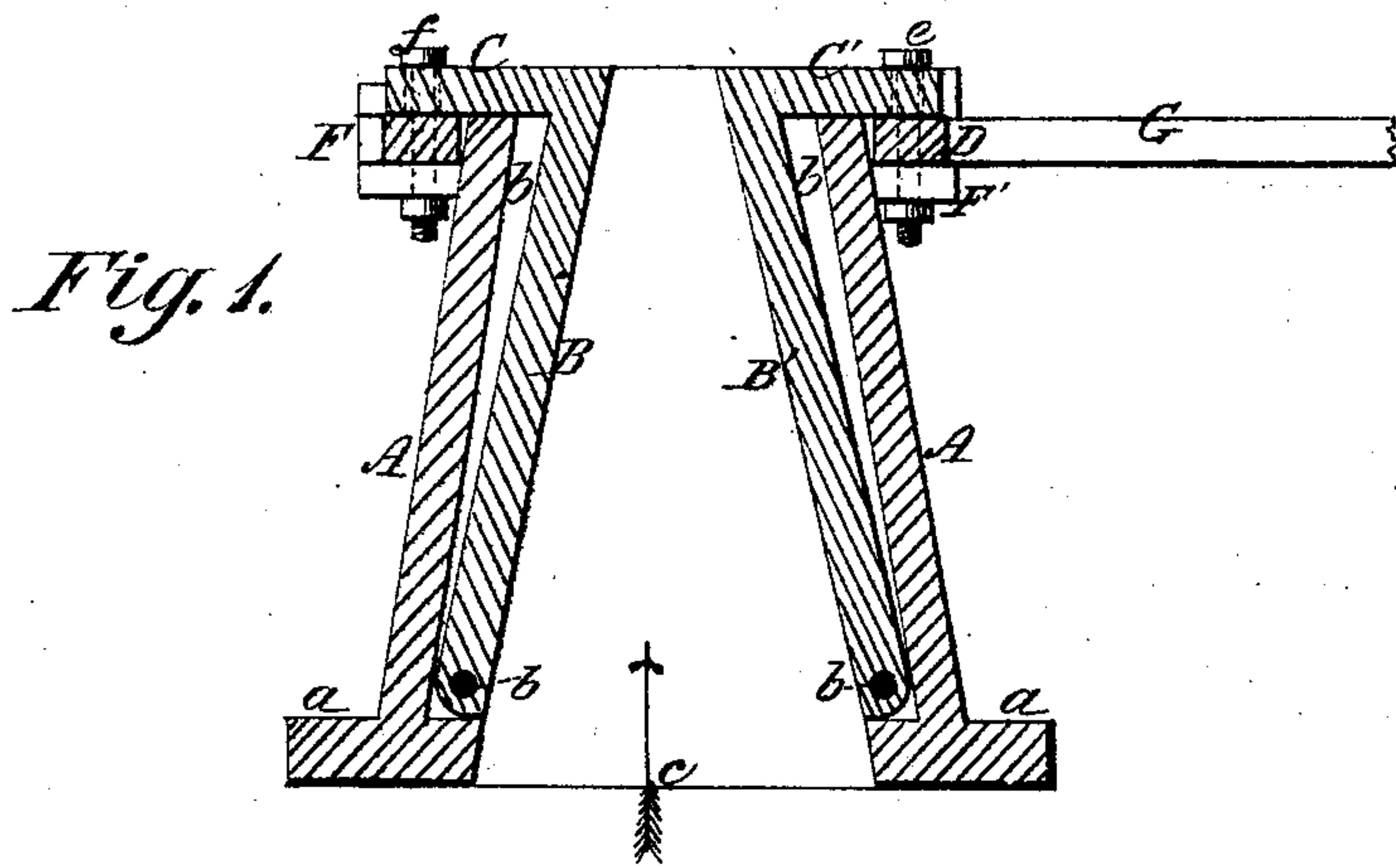


S. J. DAMPMAN.

Variable Exhausts for Locomotive-Engines.

No. 147,107.

Patented Feb. 3, 1874.



Witnesses:

J. A. Rutherford.
W. E. Chaffee.

Inventor:

Samuel J. Dampman,
By Johnson and Johnson
His Attorneys.

UNITED STATES PATENT OFFICE.

SAMUEL J. DAMPMAN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN VARIABLE EXHAUSTS FOR LOCOMOTIVE-ENGINES.

Specification forming part of Letters Patent No. **147,107**, dated February 3, 1874; application filed January 12, 1874.

To all whom it may concern:

Be it known that I, SAMUEL J. DAMPMAN, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Variable Exhaust for Locomotive-Engines, of which the following is a specification:

My invention relates to the exhaust-nozzle of the exhaust-pipe of locomotive-engines, and from which nozzle the steam is caused to escape with greater or less velocity to increase or diminish the draft of the furnace; and my said invention consists in the combination of pivoted adjusting-wings with top guards or caps and the nozzle-box, whereby the said wing-caps serve the twofold purpose of closing the openings between the adjusting-wings and the inner sides of the nozzle or box, and means for the attachment of arms to effect the adjustment of said wings toward or from each other for changing the area of the exhaust-opening; also, in the combination of the guard-caps with the arms pivoted to the opposite corners of the box, to the projecting ends of the wing-guards, and to a horizontal side connecting-rod leading direct to the engineer's cab, the said connection of the parts being such that the end of one arm and the middle of the other are respectively pivoted to the wing-guards to effect the adjustment of the wings by the movement of the arms in one and the same direction, instead of in opposite directions, by which disposition of the adjusting devices I am enabled to locate them in a horizontal line with the top of the exhaust, and entirely out of the way of being obstructed by the accumulating dirt, while avoiding the use of crank-connections with the operating-rod.

In the accompanying drawing, Figure 1 represents a vertical section of a locomotive steam-exhaust embracing my invention; Fig. 2, a side elevation, and Fig. 3 a top view, of the same.

The device consists of a cast-iron box, A, having a base-flange, a, by which it is bolted to the upper sides of the exhaust-pipes leading from the steam-cylinders into the smoke-box of the locomotive. This box is of rectangular form, tapering from its base to the top, and may be of any suitable dimensions, a medium size being ten inches high, with an ex-

haust area of six inches at the base and four inches at the top. Within the box A, and at opposite sides thereof, I arrange a wing-piece, B B', pivoted at the base by half-inch bolts b, with the inner sides of the wings flush with the edges of the opening c in the base, so as to form close joints to prevent the entrance of steam behind the wings. These wings B B' correspond in form with that of the box, and, therefore, can only be inserted in place through the base opening. They are cast with horizontal caps C C', which fit into recesses in the sides of the box to bring them flush with its top. Between the wings and the sides of the box there is always more or less space, b, and it is one of the purposes of these caps C C' to form covers to these open spaces b, to prevent the cinders and dirt from falling in and filling them up, and which in time would prevent the proper adjustment of the wings. These caps, in this capacity, form guards to the wings, and keep them free for changing the size of the exhaust. The caps serve another function, and that is to connect the wings with their operating devices, and for this purpose they project beyond the sides of the box, and are pivoted, respectively, to the end of one arm, D, and to the middle of another arm, E, which arms are pivoted to legs F F' at the opposite corners of the box, and extend beyond the same side of the latter, where they connect with a rod, G, leading to the engineer's cab. In adjusting the wings, the caps move over the top edges of the box, and perpetually seal the spaces b between the wings and the box.

It is important that the adjustment of the wings shall be equal; otherwise the steam would be directed against one side of the convey-pipe, and cut it out. For this equal adjustment I dispose the pivot-bolts of the arms D E so that the distances between pivots d e of the arm D and the pivots f' g of the arm E shall be equal, while the distance between the pivots e h of the arm D and the pivots f i of the arm E shall be of unequal distances apart, as to themselves and the pivots first named. The distances between these respective pivots will vary according to the size of the exhaust, but their unequal relative disposition as to distances will equalize the movement of the wings.

The arrangement of the working parts on a level with the top of the exhaust is also of advantage in keeping them out of the way of the dirt which accumulates in the box, and it also avoids the use of casing to protect these devices from being clogged, as the connecting-rod joins both arms, and extends horizontally from the top of the exhaust.

The device is simple, cheap, and durable.

The openings in the caps for the bolts *d f* are slightly elongated to prevent the parts from binding.

I claim—

1. The combination of the wings *B B'* with their horizontal cap-guards *C C'* and the wing-box *A*, as described, whereby the spaces *b* be-

tween the wings and the box are closed to the entrance of dirt from the furnace.

2. The combination of the guard-caps *C C'* with the arms *D* and *E*, disposed and pivoted to the caps *C C'*, the box *A*, and the connecting-rod *G*, as described, whereby the wings are connected and adjusted by the covering-caps.

The above specification of my improvement in variable exhaust for locomotive-engines signed this 3d day of January, A. D. 1874.

SAMUEL J. DAMPMAN.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.