

(No Model.)

G. ENGEL.

STEAM RADIATOR ATTACHMENT.

No. 275,757.

Patented Apr. 10, 1883.

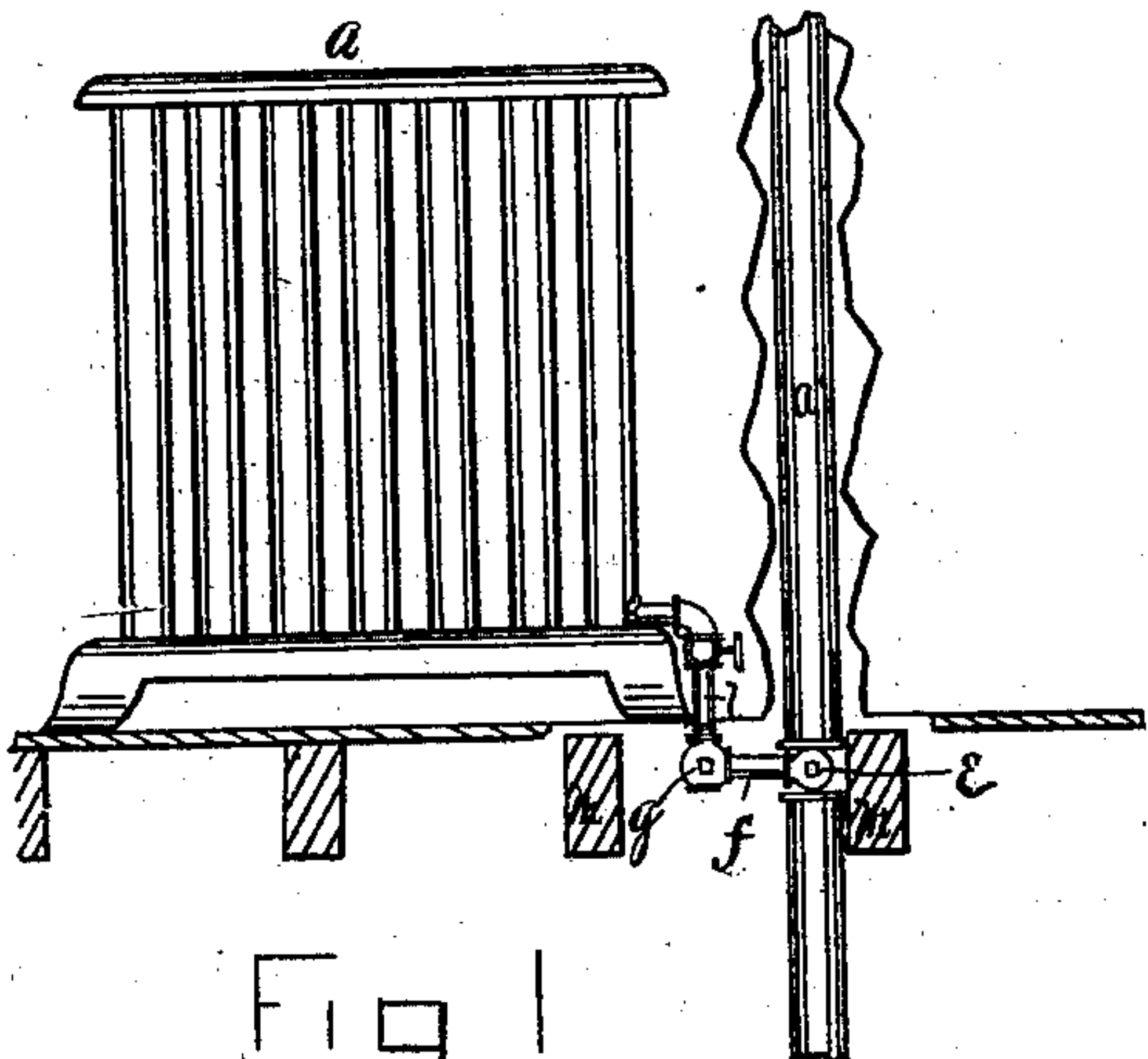


Fig 1

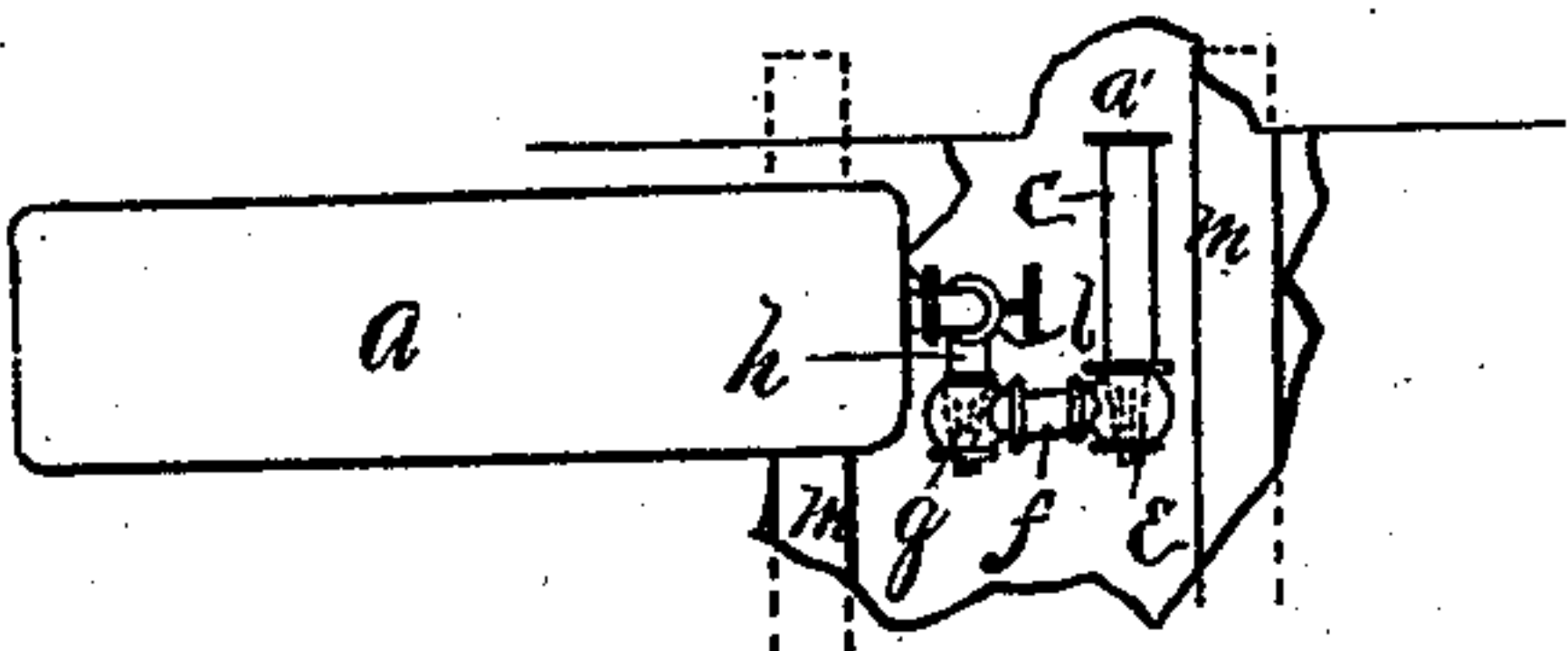


Fig 2

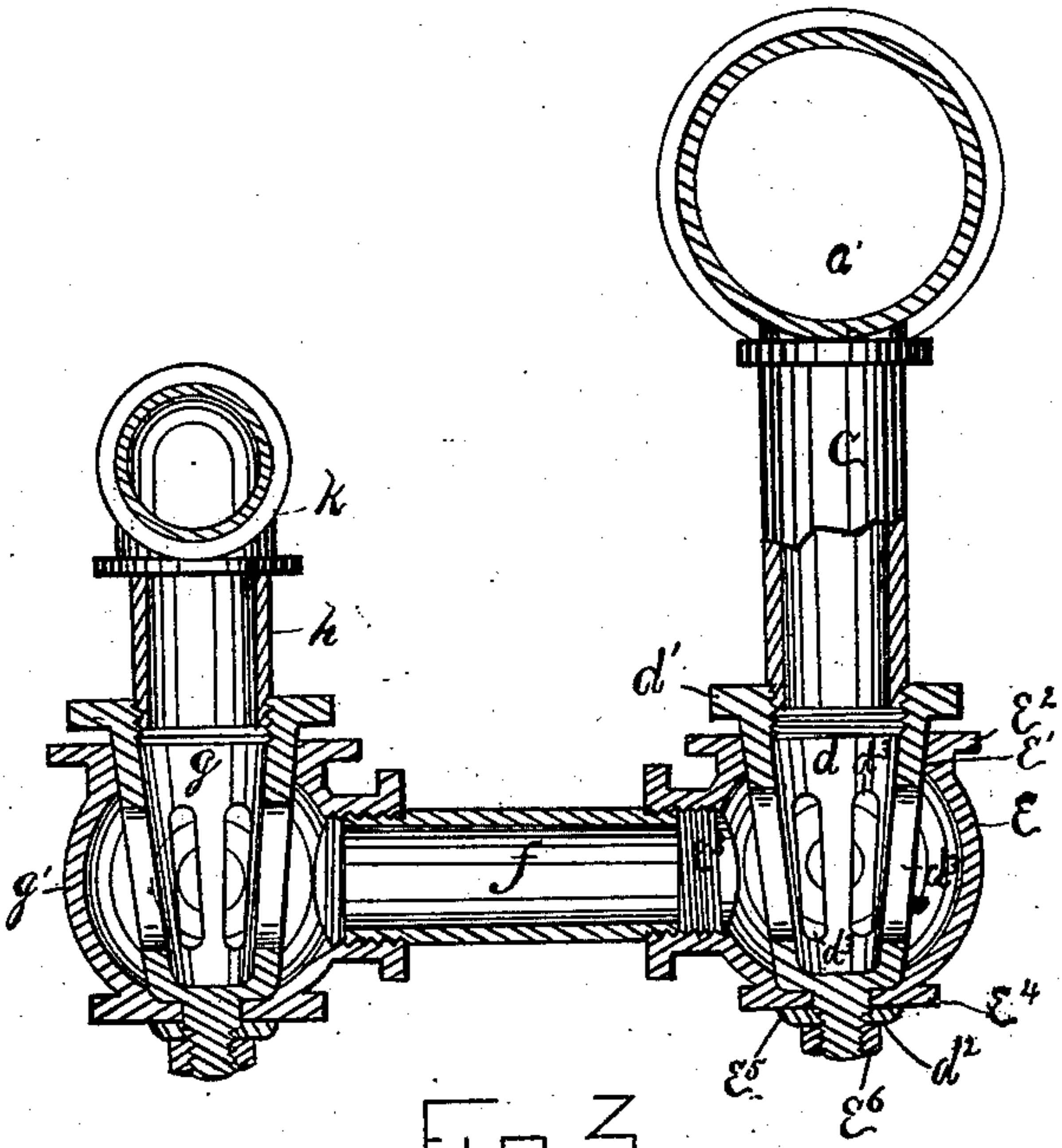


Fig 3

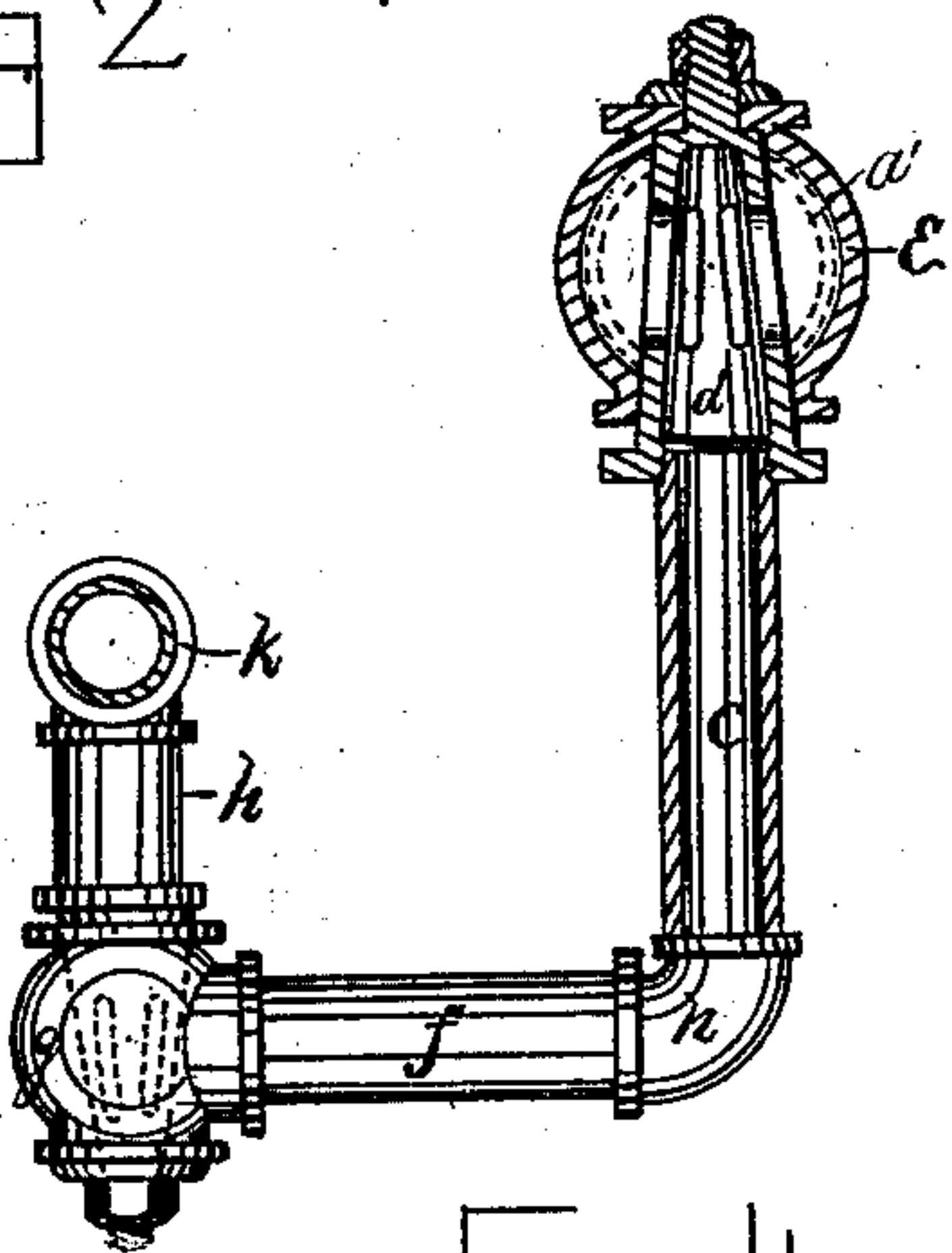


Fig 4

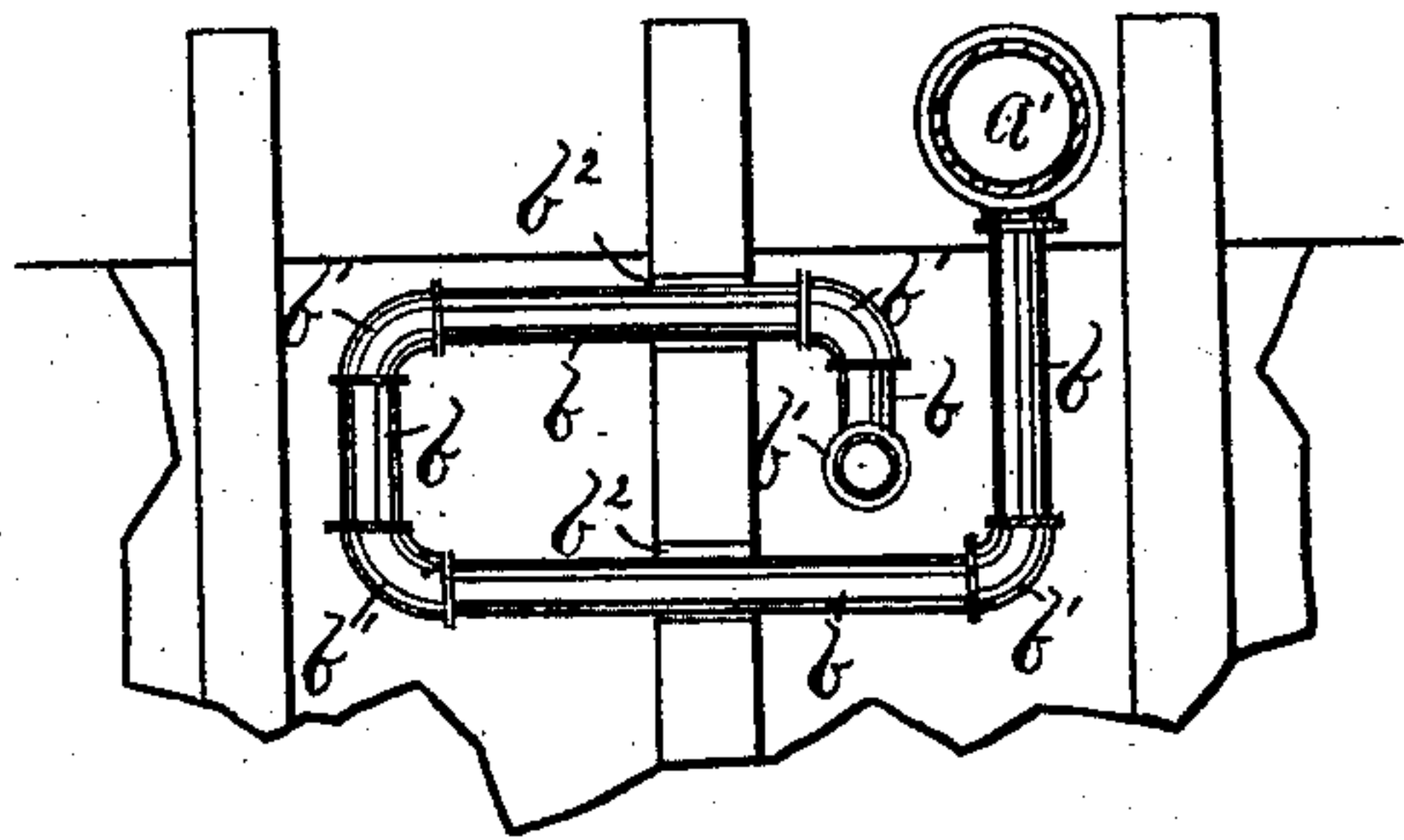


Fig 5

Witnesses:  
Otto Hoddick.  
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# UNITED STATES PATENT OFFICE.

GEORGE ENGEL, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO  
MARTIN ENGEL, OF SAME PLACE.

## STEAM-RADIATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 275,757, dated April 10, 1883.

Application filed October 20, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE ENGEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Steam-Radiator Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates more particularly to certain improvements in the connections between steam-radiators and the supply-pipe from the boiler. It is a well-known fact that the expansion of the supply-pipe when heated with steam is so considerable that it often lifts the radiator out of its position, and in many cases so strains the connections as to cause them to break.

The object of my invention is to prevent the displacement of the radiator, and obviate accidental leakage; and to these ends it consists in a certain arrangement and combination of pipes and pivoted joints, which will be more fully hereinafter set forth and claimed.

In the drawings, Figure 1 is an elevation of a radiator and its supply-pipe, showing my improved connections between the two. Fig. 2 is a plan view of Fig. 1. Fig. 3 is an enlarged sectional view of my improved connections. Fig. 4 is a modification thereof, and Fig. 5 is a plan view of one of the old style of connections.

Referring to the drawings, *a* is the steam-radiator, and *a'* the steam-supply pipe, with which the radiator is connected and from which it is furnished with steam. This pipe *a'* extends from the boiler in the basement of the building to the top story, and connections are made with it and the series of radiators upon each floor. The heat of the steam creates such an expansion of the pipe as to cause in some instances a vertical displacement of about four or five inches. To allow for such displacement it has been common to provide some such arrangement of pipes as is shown in Fig. 5, in which the main supply-pipe *a'* is connected

with the radiator *a* by the lengths of pipe *b*, (generally five in number,) rigidly connected by the elbows *b'*, in order to obtain enough spring action to overcome the effects of expansion by heat without causing leakage at the elbows.

In Figs. 1, 2, and 3 I have shown my improved arrangement which is to take the place of that just described. Referring more especially to Fig. 3, in which the operative parts are shown in central section, *a'* is the steam-supply pipe. Into this pipe, just below the floor, is rigidly secured the short pipe *c*. Upon its outer end, which is screw-threaded, is secured the hollow tapering axle *d*, having the flange *d'* upon its open end and the pin *d<sup>2</sup>* upon its closed end, which pin is screw-threaded at its outer end.

*d<sup>3</sup>* represents a series of elongated slots in the tapering axle for the passage of steam.

*e* is a globular socket, having the circular tapering opening *e'*, which is surrounded by the exterior flange, *e<sup>2</sup>*, the screw-threaded opening *e<sup>3</sup>*, and the smaller circular opening *e<sup>4</sup>*. The tapering axle *d* is inserted in the tapering opening *e'*, and passed through until the pin *d<sup>2</sup>* rests in the smaller opening *e<sup>4</sup>*. A washer, *e<sup>5</sup>*, is placed over the pin *d<sup>2</sup>*, and the tapering axle *d* and washer are secured in place in the socket *e* by the nut *e<sup>6</sup>*, thus forming a pivoted joint, through which steam can pass in any position of the socket.

In the screw-threaded opening *e<sup>3</sup>* is secured a short pipe, *f*, which is in turn secured to a pivoted joint having a tapering axle, *g*, and globular socket *g'*, similar in construction to the one just described, and having its axle in the same relative position to the pipe *f* as the axle *d*. A short pipe, *h*, connects this joint *g* with one end of an elbow, *k*, to the other end of which is secured the pipe *l*, leading from the radiator *a*. These pipes and joints just described are all arranged, as shown in Figs. 1 and 2, between the two joists *m m* of the floor.

It will readily be seen that as the supply-pipe *a'* is vertically displaced by expansion the globular sockets at each end of the pipes *f* will turn upon their respective axles, thereby preventing any straining of parts.

In Fig. 4 I have shown a modified form of connection, in which the globular joint *e* is lo-



cated upon the supply-pipe *a'*, the axle *d* working therein, and a common elbow, *n*, joins the pipes *c* and *f*. The operation of this modified form of connection is in effect the same as in that shown in Figs. 1, 2, and 3.

It will thus be seen that by my improved connection the displacement of the radiator is prevented and any accidental leakage due to the straining of parts obviated.

I claim—

1. An improved connection for steam-radiators and their supply-pipes, consisting substantially of a system of short pipes connected at substantially right angles to each other, and having pivoted joints arranged at two or more of the angles in such a manner as to prevent the straining of parts, substantially as shown and described.

2. An improved connection for steam-radiators, having the pipes *c* and *h*, connecting respectively with the supply-pipe *a'* and the pipe *l*, leading to the radiator, each of the pipes *c* and *h* having rigidly secured to their ends the perforated tapering axles *d* and *g*, and the connecting-pipe *f*, having secured to each end the globular sockets *e* and *g'*, in which the tapering axles *d* and *g* are pivoted, all combined and operating substantially as shown and described.

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

GEORGE ENGEL.

Witnesses:

OTTO HODDICK,

W. T. MILLER.