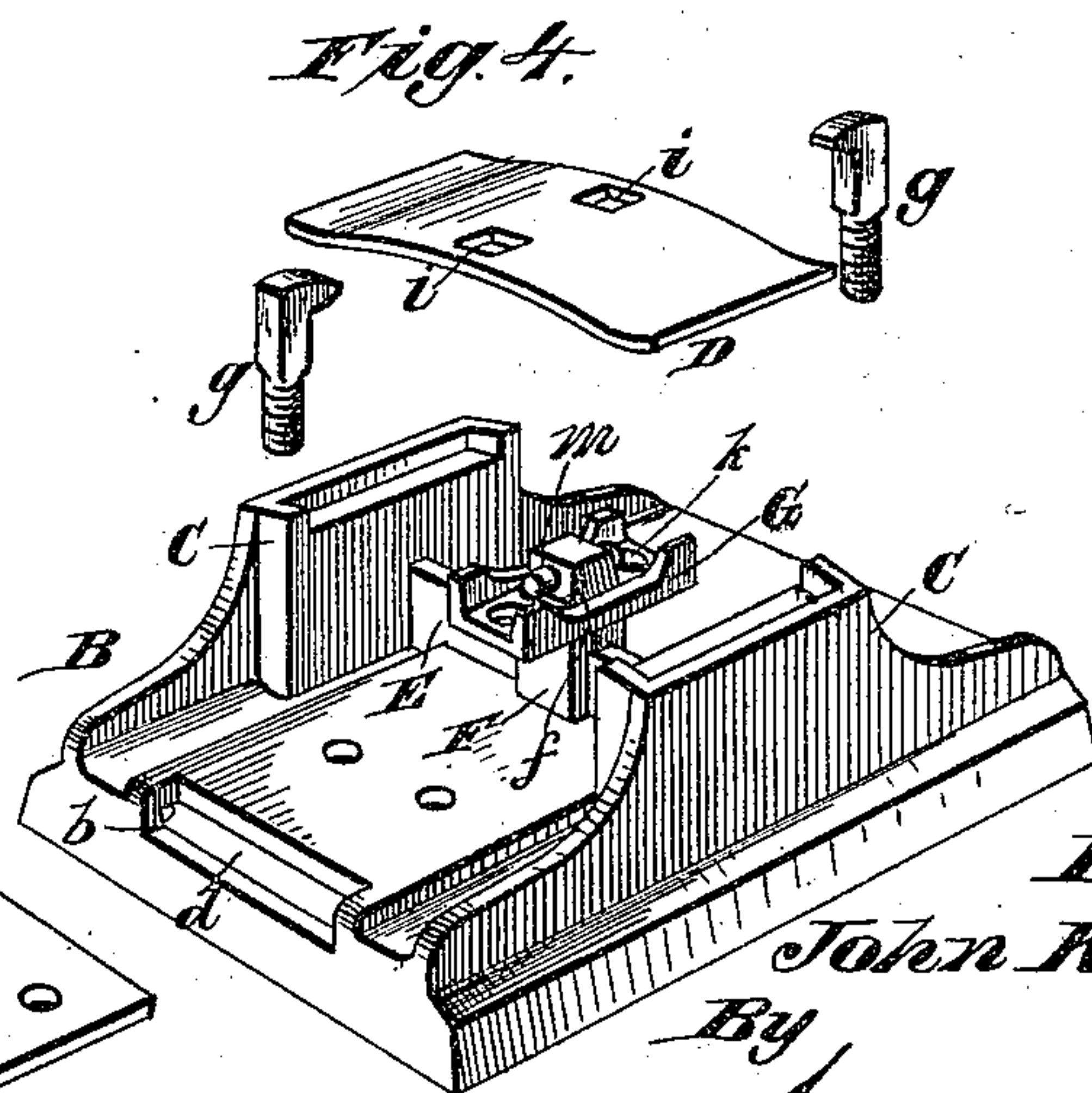
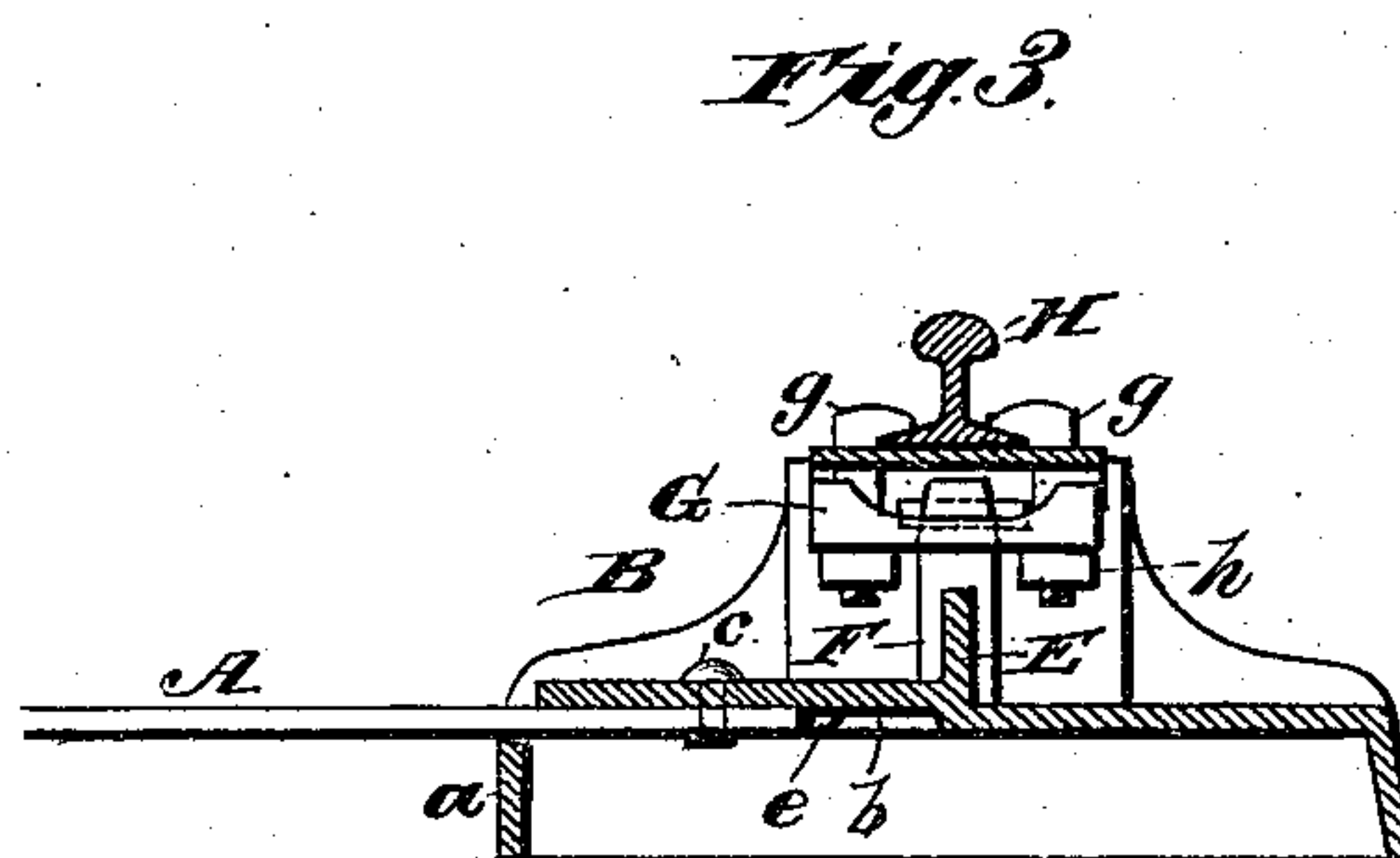
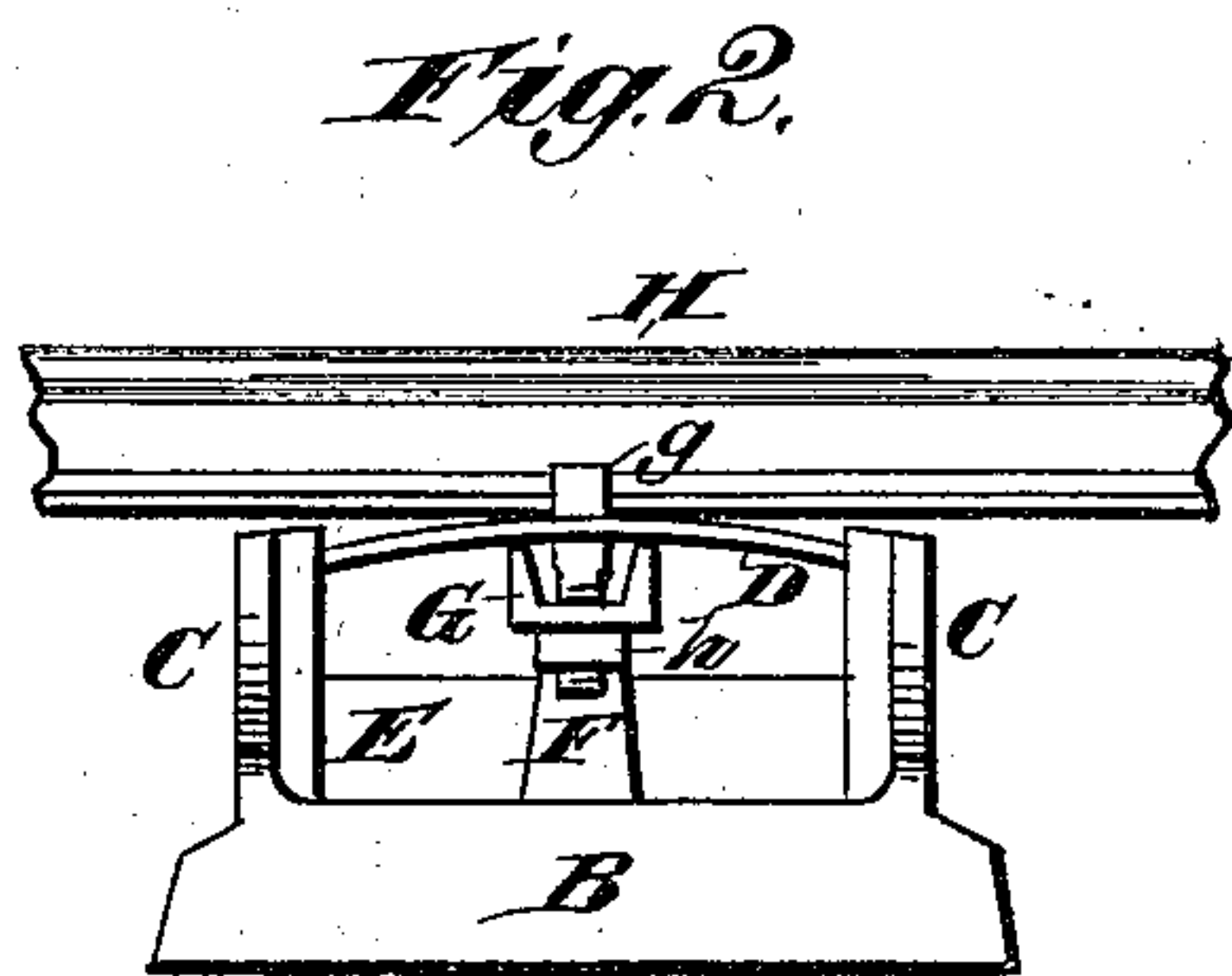
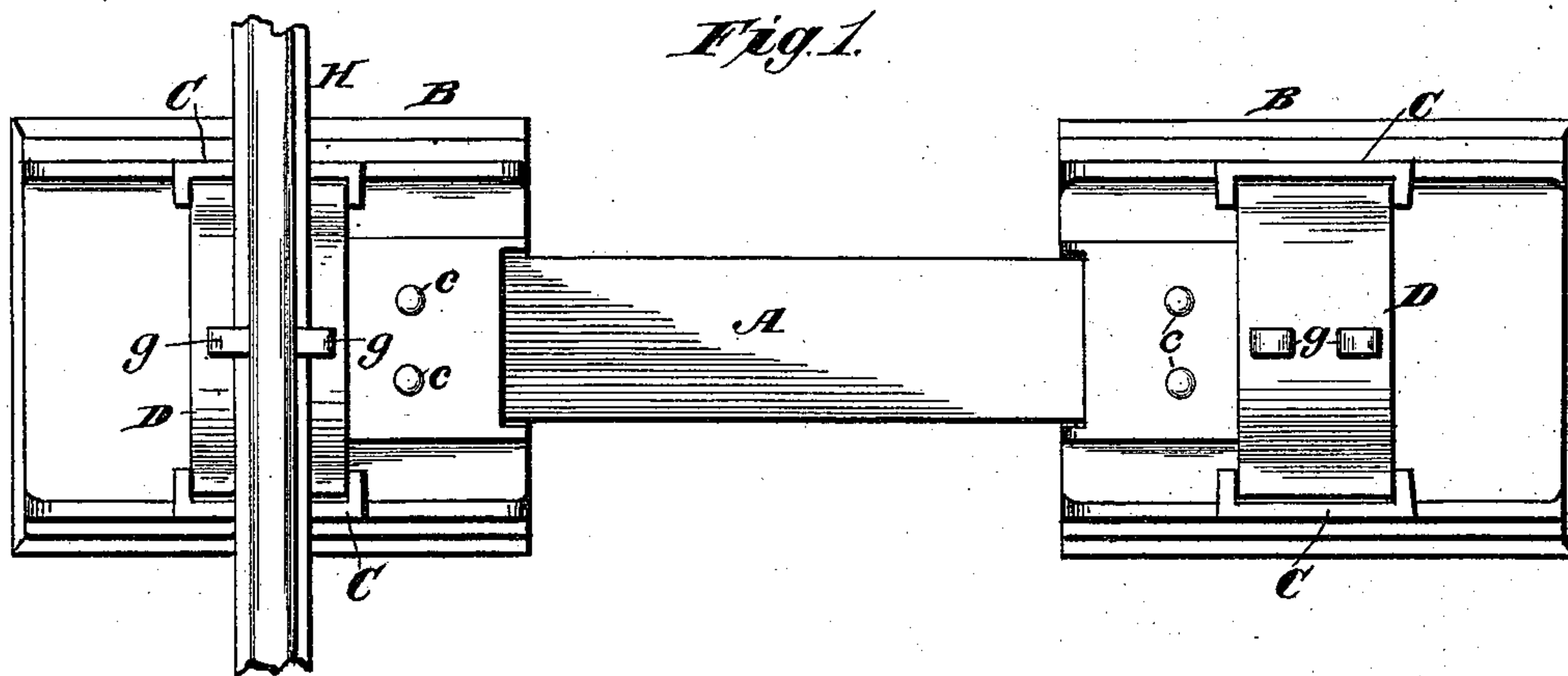


(No Model.)

J. K. CLARK.
RAILROAD TIE OR SUPPORT.

No. 350,478.

Patented Oct. 12, 1886.



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UNITED STATES PATENT OFFICE.

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RAILROAD TIE OR SUPPORT.

SPECIFICATION forming part of Letters Patent No. 350,478, dated October 12, 1886.

Application filed January 15, 1886. Serial No. 188,660. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. CLARK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Railroad Ties or Supports, of which the following is a specification.

My invention relates to railroad ties and supports of that class in which two metallic rail-supports or tie-heads are connected transversely by an oblong metallic tie-plate.

The object of the invention is to afford a durable and improved yielding support for the track-rails so constructed and arranged as to diminish wear of the track and rolling-stock and prevent washing out or disturbance of the foundation or road-bed.

The invention comprises a railroad-tie embodying a transverse metallic tie-plate that is housed and fulcrumed at each end in a metallic tie-head or rail-support, to each of which said tie-plate is securely riveted.

The invention also consists of a rectangular tie-head or rail-support provided on its upper surface with standards that sustain a flexible or elastic steel plate, to which the track-rails are detachably secured, said tie-head being recessed on its under side to confine the earth, and thereby secure a firm foundation for the track, while the rails are capable of affording a yielding support for the rolling-stock, so as to greatly lessen the liability of strain and wear.

Other features of my invention will be hereinafter set forth.

In the annexed drawings, illustrating the invention, Figure 1 is a plan view of my improved railroad-tie and rail-support with a track-rail in position on one side. Fig. 2 is an end view of the tie-head with rail attached. Fig. 3 is a longitudinal section of one of the tie-heads through the recess for receiving the end of the transverse connecting tie-plate. Fig. 4 is a perspective of one of the tie-heads, viewed from its inner end, with connecting tie-plate, elastic rail-plate, and rail-fastenings detached.

Referring to these drawings, the letter A designates a metallic tie-plate, and B B are the

metallic tie-heads or rail-supports. The tie-heads or rail-supports B are box-shaped or recessed on the under side to take a firm hold on the earth and gravel forming the road-bed, and to confine the same and prevent its being loosened and washed away by storm waters. This is effected by the vertical or nearly-vertical walls *a* of the tie-head. The upper surface of the tie-head is preferably flat, except a central portion at its inner end, which is slightly elevated to form a recess, *b*, for receiving the end of the connecting tie-plate A, that is secured therein by rivets *c c* or otherwise. The end of the tie-plate A enters the recess *b* through an oblong opening, *d*, formed at the junction of the upper surface of the head B and its inner end wall. The width of the recess *b* corresponds with that of the tie-plate A, and the length of said recess may be proportioned to the gage of the track, so as to afford a firm thrust-bearing for the end of the tie-plate; or such bearing can be furnished by a lug, *e*, within the recess. It will be seen that when the ends of the tie-plate A are thus housed in the tie-heads B the recesses *b b* serve to prevent both lateral and end movement of said tie-plate, which is also further secured by the rivets *c c*, besides having a fulcrum or support on the lower edge of the opening *d*, and being preferably composed of steel or malleable metal, it is obvious that said tie-plate will form an elastic brace and connection for the rail-supports.

On the upper surface of each tie-head B, at the front and rear edges thereof, are standards C C, which are recessed or flanged at the top for receiving the ends of an elastic steel plate or spring, D, which forms a yielding support for the track-rail. The standards C C are connected along the surface of the tie-head by a brace, E, which intersects a central standard, F, that supports a detachable bearing-block, G. This bearing-block is preferably oblong and somewhat trough-shaped, and has a central rectangular opening, *f*, that fits over the upper tapering end of the central standard.

In each end of the bearing-block G is a perforation for passage of a spike-headed bolt, *g*, that secures the track-rail H and its spring sup-

porting-plate D, each bolt being held in place by a nut, *h*, on its lower end. The spring rail-supporting plate D is preferably made of a low grade of steel, so that in practical operation it will be capable of vibrating from one-sixteenth to one-eighth of an inch, the amount of flexibility depending somewhat upon the thickness of the plate, a degree of vibration sufficient to avoid a dead-pressure or rigid bearing being sufficient. This flexible or spring rail-supporting plate D may be made flat, if desired, but is preferably arched, as shown. On each side of the plate D is a perforation, *i*, for passage of the bolt *g*, which also passes through a perforation, *k*, in the end of the bearing-block G, as before mentioned. It will be observed that by arranging the spike-headed bolts *g g* directly opposite each other the track-rail can be properly secured without interfering with the flexibility of its spring supporting-plate. In order to detach or replace the rail, it is necessary to remove but one of these bolts. The bearing-block G is detachably secured to the standard F by means of a pin or key, *m*, passed through a perforation in said standard. This block G, besides affording a bearing for the bolts *g g*, also serves to brace the plate D without interfering with its resiliency. The block may be made of malleable iron at small cost. When the parts are connected, the pin or key *m* prevents lifting of the block G and the connected spring-plate D, so that while said plate is free to vibrate it is secure from removal or displacement. In this way the block G serves both as a bearing for the bolts *g* and as a clamp for connecting the parts of the rail-support.

The advantage of a flexible or elastic supporting-plate for the track-rails is apparent in avoiding the great wear of both track and rolling-stock incident to a rigid unyielding roadway. This objection to a metallic tie and rail-support is greatly lessened by my improved construction of railroad-tie, as herein described, whereby the rail-supports and their connecting braces or ties are made capable of affording a yielding and elastic support for the track and rolling-stock.

Besides furnishing an elastic rail-support and cross-tie, it is also important to afford a means of maintaining a firm foundation beneath the track supports, and this is readily accomplished by the construction of the tie-heads with vertical or nearly vertical walls *a*, inclosing a space on the under side of each tie-head, as described, so as to confine the earth and gravel and secure an enlarged and firmer bearing-surface. By preventing the access of water beneath the tie-heads the confined earth remains comparatively dry, and is not liable to be dislodged to the injury of the road-bed. In practice these tie-heads are to be embedded so as to cover the entire base portion of each, and after the track is in position the "ballast" is spread and packed

over the connecting tie-plates and upper surfaces of the tie-heads.

Having thus described my invention, what I claim is—

1. A railway-tie consisting of two separate tie-heads connected by a tie-plate, and each head comprising a bottom wall formed with two vertical walls, an elastic metallic plate having its ends supported by the upper ends of said walls, and locking devices on the plate for clamping the base of the rail directly upon said plate, substantially as described.

2. A railway-tie support consisting of a base-plate formed at opposite sides with vertical walls, an elastic metallic plate having its ends supported by the upper ends of the walls, a central bracing-support for said plate connected with the base-plate intermediate its side walls, and devices for clamping the rail upon the plate, substantially as described.

3. A railway-tie consisting of two separate tie-heads connected by a tie-plate, and each head comprising a base-plate formed with opposite side walls, and provided between the latter with an attached standard carrying a bearing-block, and an elastic metallic plate having its ends supported by said walls and centrally connected with the bearing-block, substantially as described.

4. A railway-tie consisting of two separate tie-heads having end recesses and a tie-plate entering said recesses and rigidly riveted or bolted to the bottom wall of the head, each tie-head comprising its bottom wall, two opposite vertical side walls, a bearing-block between the latter, and an elastic plate having its ends supported by the upper ends of the vertical walls, and devices on the plate for clamping the bases of the rails thereupon, substantially as described.

5. The combination, with a railroad-tie having a metallic tie-head or rail-support provided with standards, of an elastic metallic plate adapted to furnish a yielding bearing for the track-rail, a metallic bearing-block supported beneath said elastic plate, and bolts passed through said plate and block, substantially as described.

6. The combination, with a railroad-tie having metallic tie-heads or rail-supports provided with standards projecting from the center and from the front and rear side of each tie-head, of a bearing-block mounted on each center standard, a pin passed through each center standard above said blocks, elastic metallic plates supported by said standards and blocks, and bolts passed through the said plates and blocks, and having spike-heads adapted to clamp the rail-flanges, substantially as described.

7. The combination of a connecting cross-tie, detachable tie-heads, elastic metallic plates supported on the tie-heads and adapted to furnish a yielding bearing for the track-rails, bearing-blocks supported beneath said elastic

plates, and spike-headed bolts passed through the bearing-blocks and elastic plates and adapted to secure the track-rails to said plates, substantially as described.

- 5 8. A metallic railroad-tie and rail-support comprising the tie-plate A, the recessed tie-heads B, having walls *a*, provided with openings *d*, for passage of the tie-plate ends, said tie-heads being also provided with standards

C C and F, the elastic metallic plates D, bearing-blocks G, and spike-headed bolts *g g*, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN K. CLARK.

Witnesses:

F. A. WARREN,

HARLOW C. CURTISS.