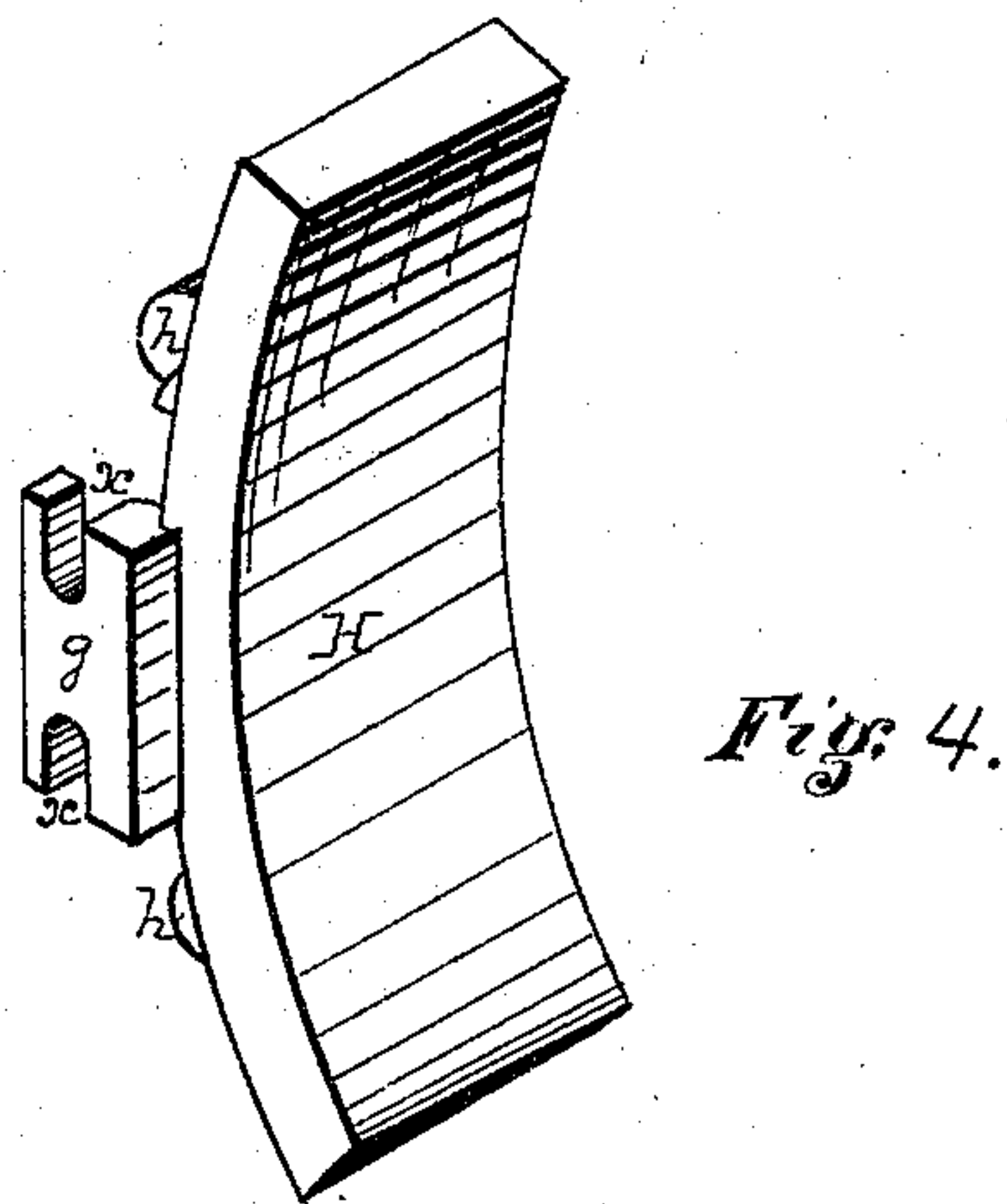
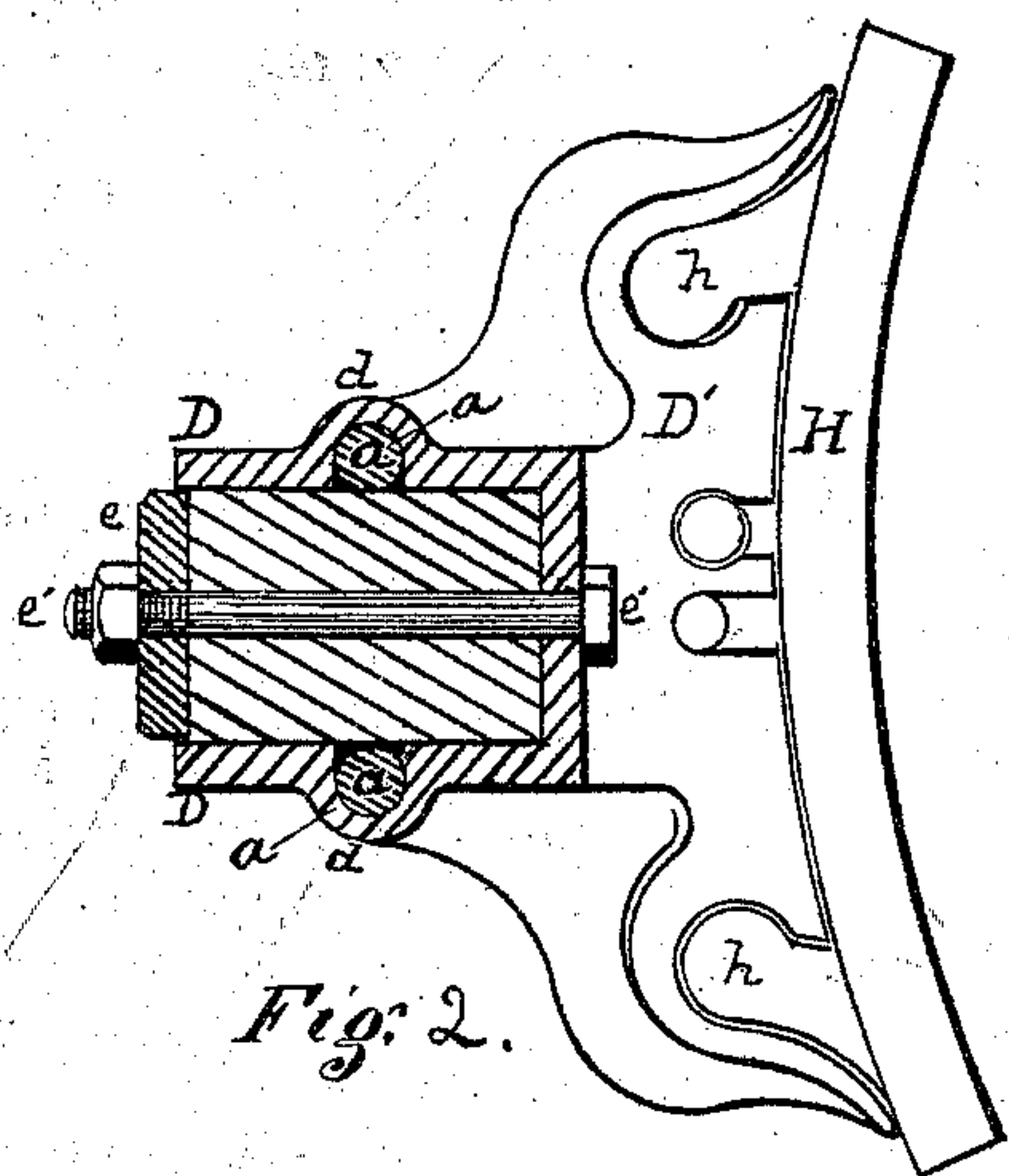
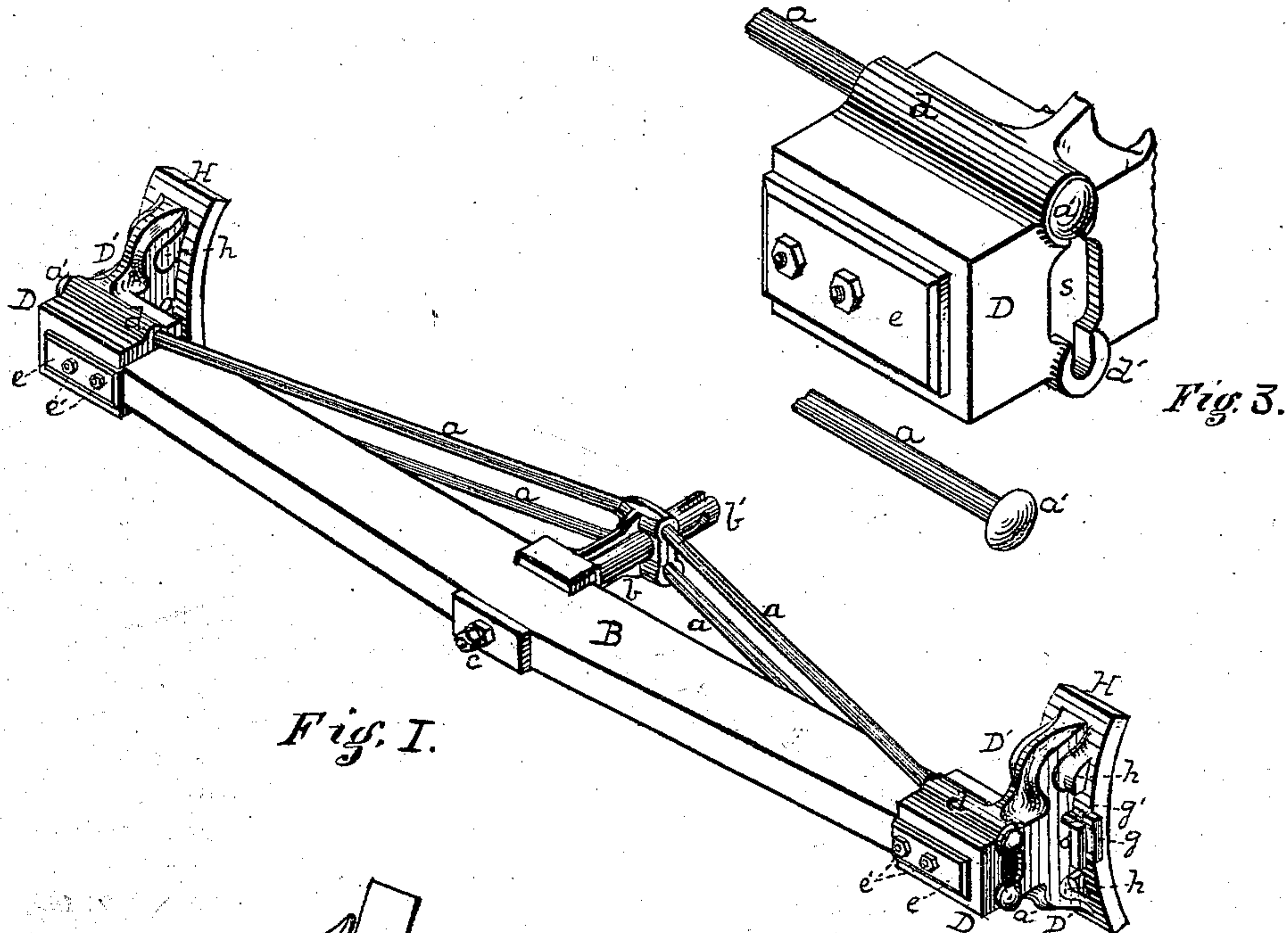


G. WESTINGHOUSE, Jr.
Car-Brakes.

No. 149,902.

Patented April 21, 1874.



Witnesses { James L. Kay
Fred. Standish.

Inventor.
George Westinghouse Jr.
by George H. Christy.
his atty.

UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, JR., OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **149,902**, dated April 21, 1874; application filed November 22, 1873.

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, Jr., of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Railway-Brakes; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, by a perspective view, illustrates my invention. Fig. 2 is an enlarged sectional view through the end of the brake-beam of Fig. 1. Fig. 3 is an enlarged perspective view of the box which goes onto the end of the brake-beam, and Fig. 4 is a like perspective view of the reversible brake-shoe.

Like letters of reference indicate like parts in each.

My invention relates to an improved construction of brake-beam and brake-shoe for use on railway-cars and other vehicles; and the nature of it consists in the combination hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and manner of use.

The bar B is made preferably of wood, and somewhat less in size than the ordinary wooden brake-bar now in use. Onto each end of the bar B, I fit a cast-metal box, D, which incloses such end on all sides and faces, except the rear or the face away from the trucks. Each box has, in its upper and lower face, a recess of suitable size for receiving one of the tension-rods *a*, such recess being made by an enlargement or swell, *d*, as represented in the drawings; and the outer end of each such recess terminates in an open-sided seat, *d'*, and with an outer face, such that the upset or solid head *a'* of each tension-rod may rest thereon, and thereby resist tensile strain. The tension-rods *a* are made preferably of iron, with the upset or solid heads *a'*, and of such length that they may be bent at or about the middle of each, and, at the angle so formed, bear against the inner end of a post, *b*, which is arranged between them at the angle and the adjacent face of the bar B. This post *b* is made hollow, so that the stem *b'* may pass through it, be secured on the outer side of the bar B, by a

washer and nut, or other suitable device, as shown at *c*, and, by its inner or opposite end, be connected with the ordinary brake rod or chain, by which the brakes are applied to the wheels. In putting together the devices described, the ends of the tension-rods *a* are first passed through an opening, *s*, in the end of the box D, and then are seated in the recesses *d d'* in the top and bottom of the box, as represented in the drawings, with their heads bearing on the outside of the box in suitable position to resist a tensile strain applied to the rods at the middle point. The bar B is then inserted into the boxes D at the rear open sides thereof, and such open sides of the boxes are then closed by means of the plates *e*. By means of the bolts *e'*, passing through the bar B from the opposite or front sides of the boxes D, and nuts on such bolts, as represented in the drawings, the ends of the bar B are pressed forward into the boxes, the post *b* being first placed in position, so as to tighten up the tension-rods *a*, and cause them to hold the bar B securely in the proper place; and this tightening may be carried so far as to give the bar B a slight crown or arch, as shown in Fig. 1.

It will now be seen that the power being applied to the stem *b'*, so as to operate the brakes, the strain of such application of power will come partly on the bar B, as heretofore, but chiefly on the tension-rods *a*. The ends of the bar B, bearing against the inside ends of the boxes D, will keep them from approaching each other under this strain, so that the devices described, operating on the principle of the inverted truss, will give a brake-beam of greater strength for less weight, with greater simplicity in construction and use, than the ordinary wooden beams now in general use. The shoe-holder D' is cast onto or is a part of the box D, as represented in Fig. 1. This shoe-holder is made with two recesses, which are occupied by lugs *h*, which project back from the rear face of the shoe H, substantially as shown in the drawing, so as when inserted to be held securely in place. These lugs *h* are made at equal distances above and below the catch *g*, which is made, as shown in Fig. 4, projecting backward from the outer rear edge of the shoe. The shoe being slipped into position on the holder D', a hook, *g'*, is turned

down outside the catch *g*, so as to retain it on the shoe-holder; but the catch *g* is made with a recess, *x*, in both its upper and lower ends, so that the hook *g'* may enter one or the other of these recesses, accordingly as the shoe *H* is attached to one or the other of the holders *D'* at opposite ends of the brake-beam. Also, the shoe *H* is beveled somewhat on its face, as shown in Fig. 4; or, in other words, made thicker at one edge than the other, so as to be adapted to take a bearing over its whole face on the surface or periphery of the wheel, which, as is well known, is made slightly coning. It will now be seen that the lugs *h*, being at equal distances above and below the catch *g*, and the catch *g* being at suitable point to be engaged on either its upper or lower edge by the hook *g'*, and the face of the shoe being beveled to fit the cone of the wheels, the shoe itself may be attached to either holder simply by being inverted. Consequently, the same shoe may be used on either end of the brake-beam, with a face adapted to the cone of either wheel. The tightening of the brake-beam *B*, the boxes *D*, and the tension-rods *a*, instead of being effected by the plates *e* and bolts and nuts *e'* may be effected in other convenient

way, such as will readily occur to those skilled in the art—for example, any suitable clamping device may take the place of the plate and bolts referred to; or the boxes *D* may be made close on the rear face, and the tightening power be applied at the post *b*, as is common in the inverted truss.

The mode of hanging and operating the devices described, otherwise than as they are above described, is substantially as set forth in Letters Patent granted to me September 9, 1873, No. 142,600.

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

1. A brake-beam, consisting of the bar *B*, boxes *D*, tension-rods *a*, and post *b*, combined substantially as described.

2. In a car-brake, the combination of the bar *B*, boxes *D*, and tension-rods *a*, substantially in the manner set forth.

In testimony whereof I, the said GEORGE WESTINGHOUSE, Jr., have hereunto set my hand.

GEO. WESTINGHOUSE, JR.

Witnesses:

ALEX. H. MILLER, Jr.

G. H. CHRISTY.