(No Model.) 2 Sheets—Sheet 1.

R. H. LITTLEFIELD.

CAR BRAKE.

No. 376,660. Patented Jan. 17, 1888.

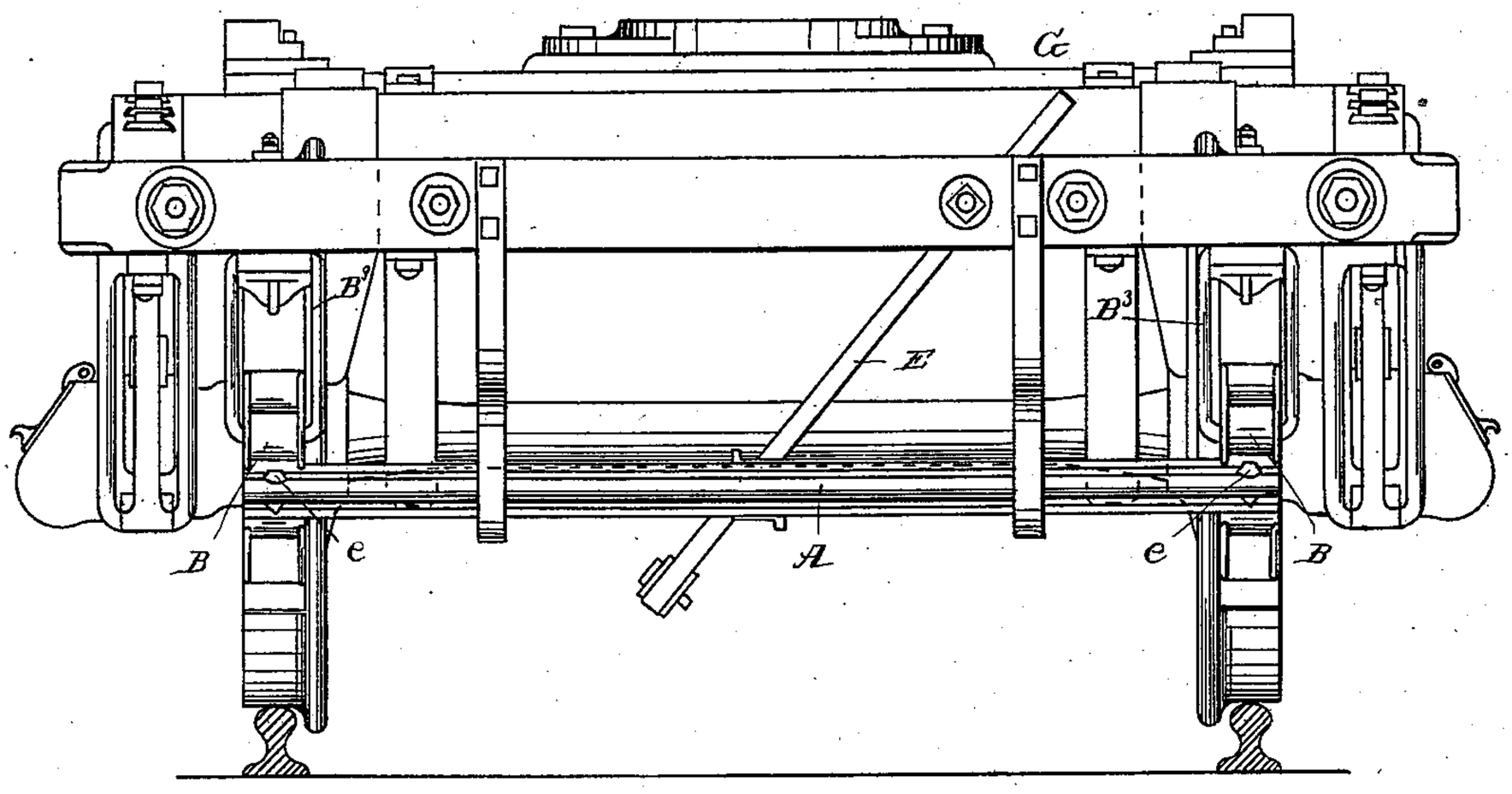

Fig. 1.

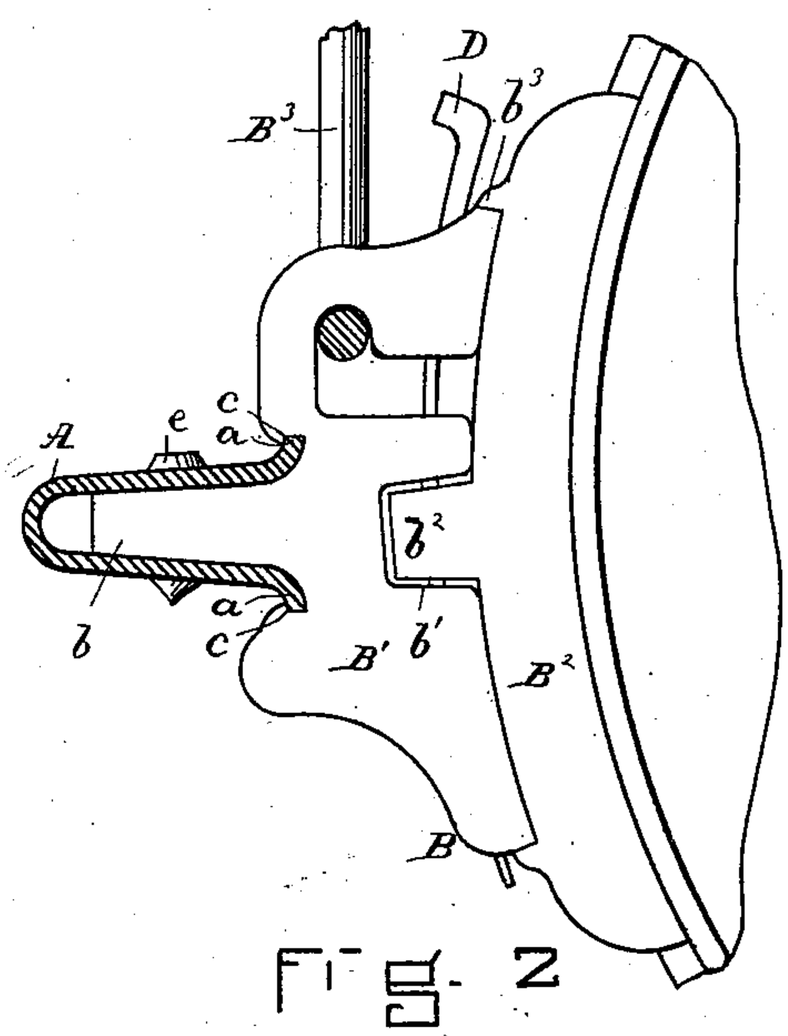

Fig. 2

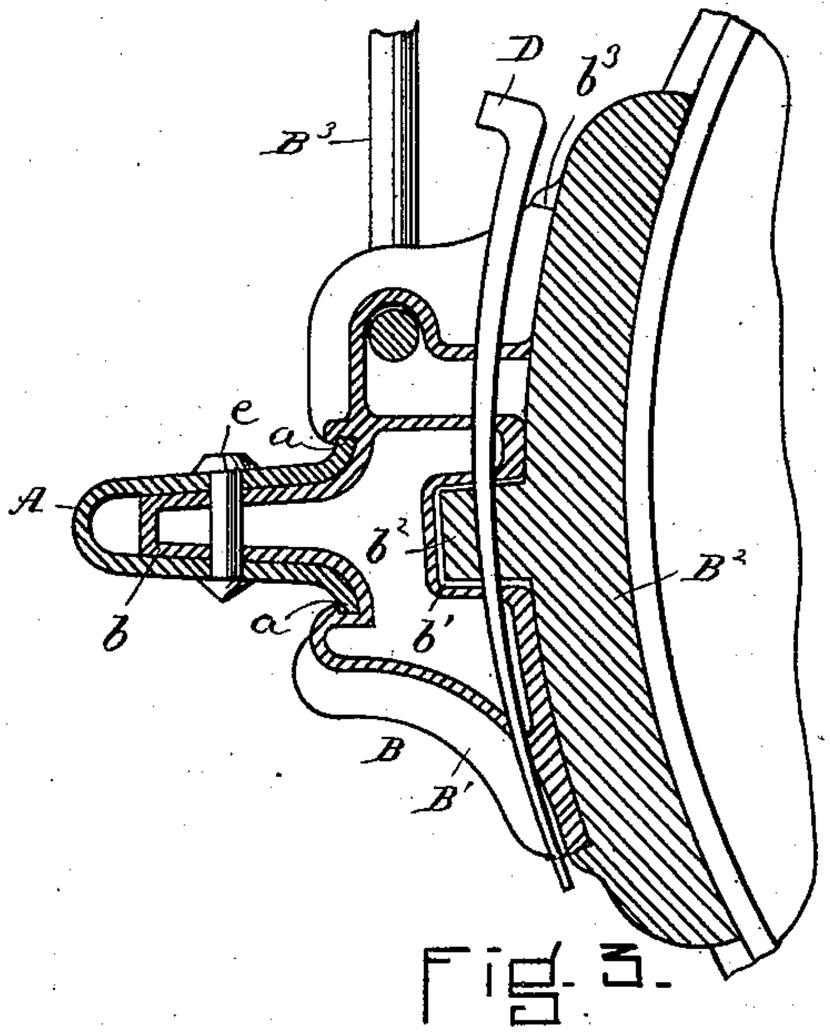

Fig. 3.

WITNESSES.

INVENTOR.

Richmond H. Littlefield.

Chas. E. Barbour Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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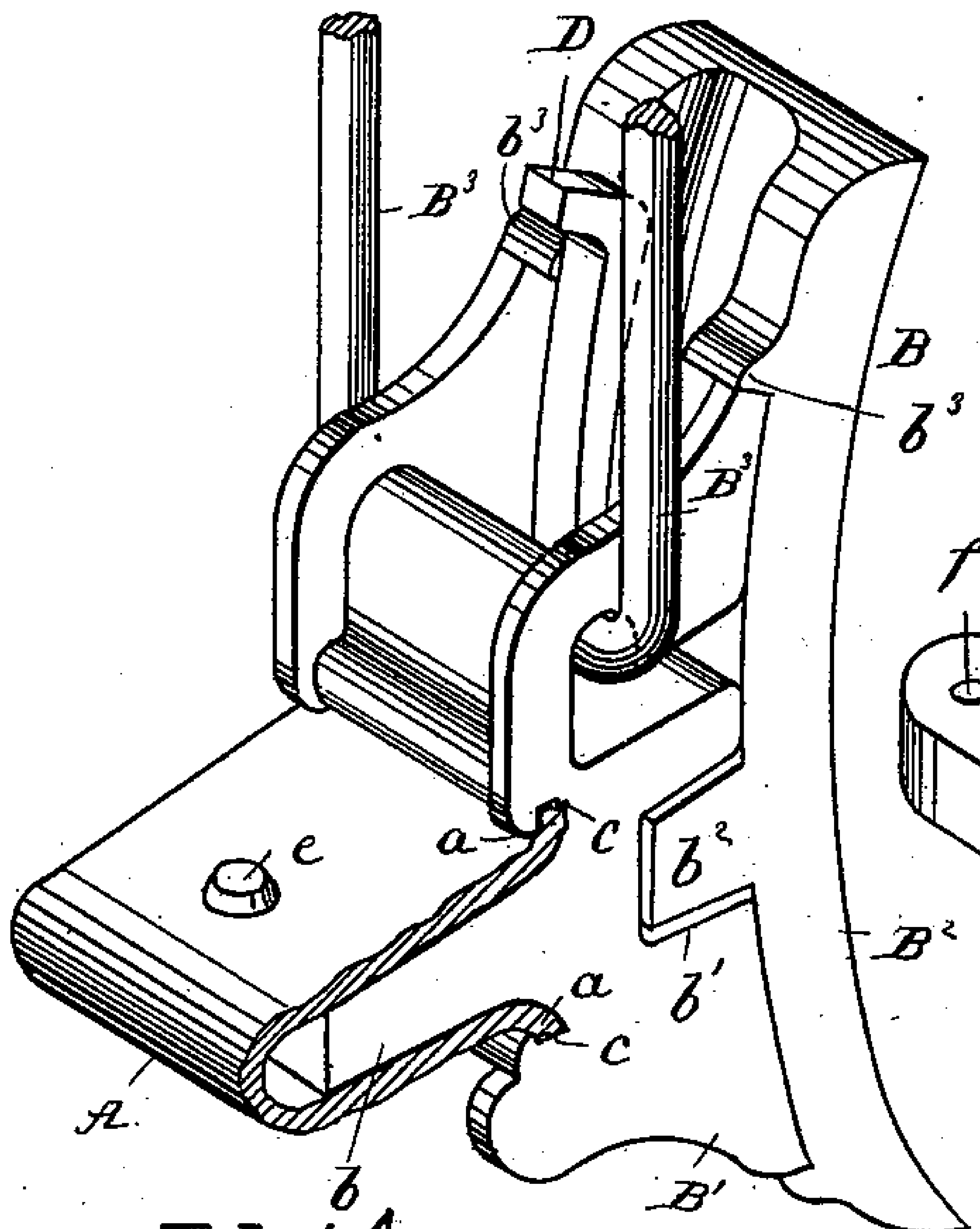

Fig. 4.

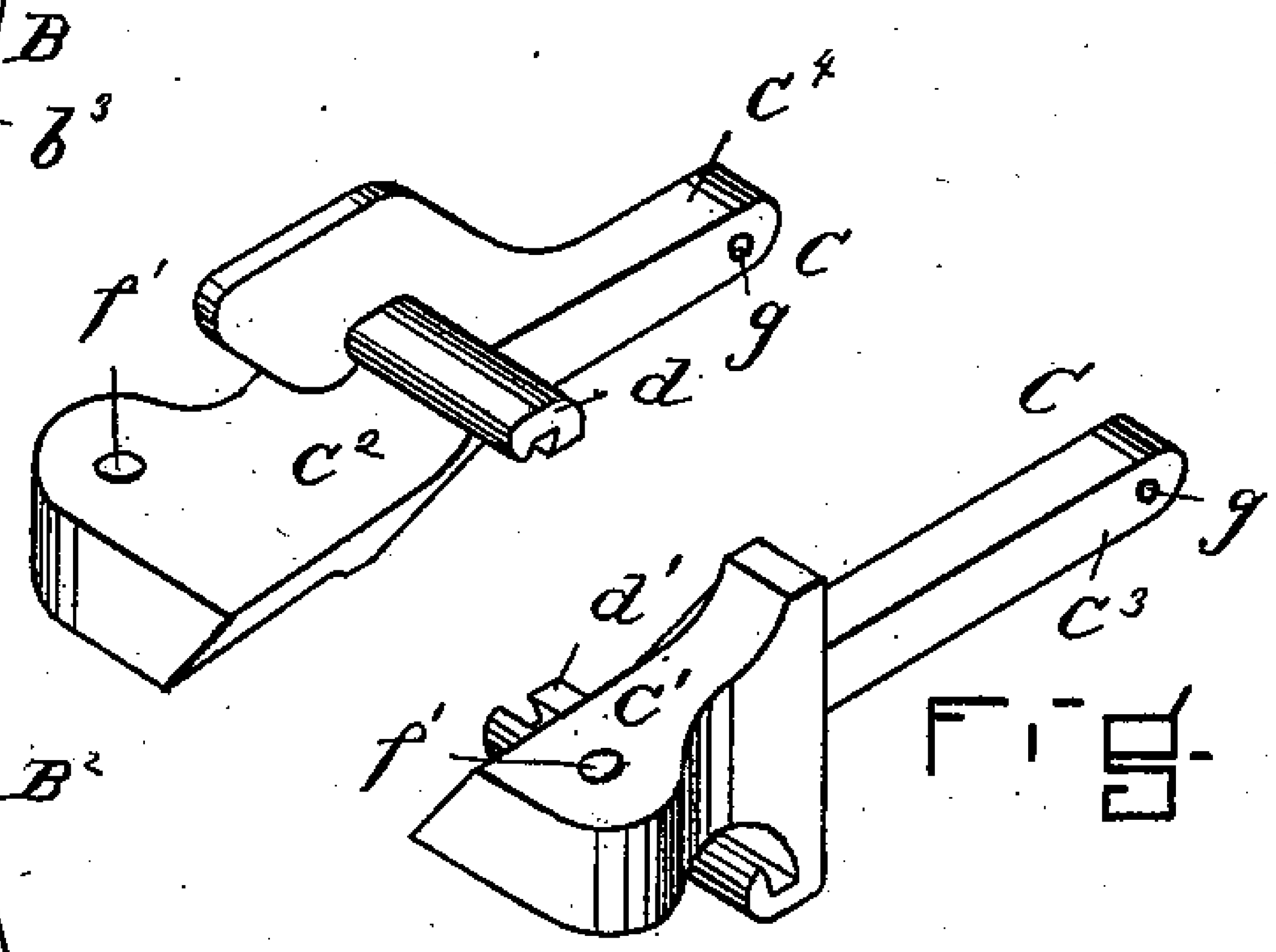

Fig. 6.

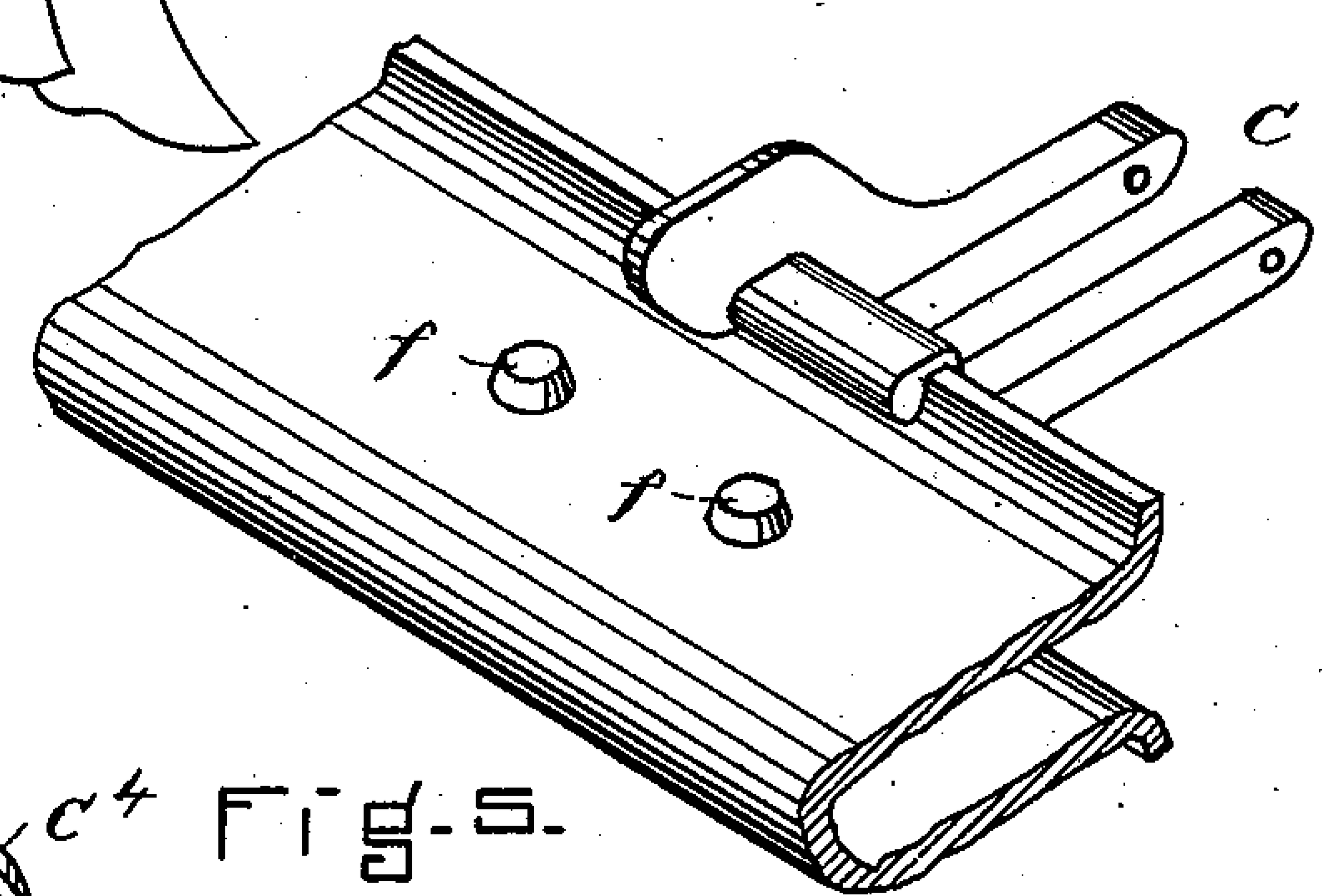

Fig. 5.

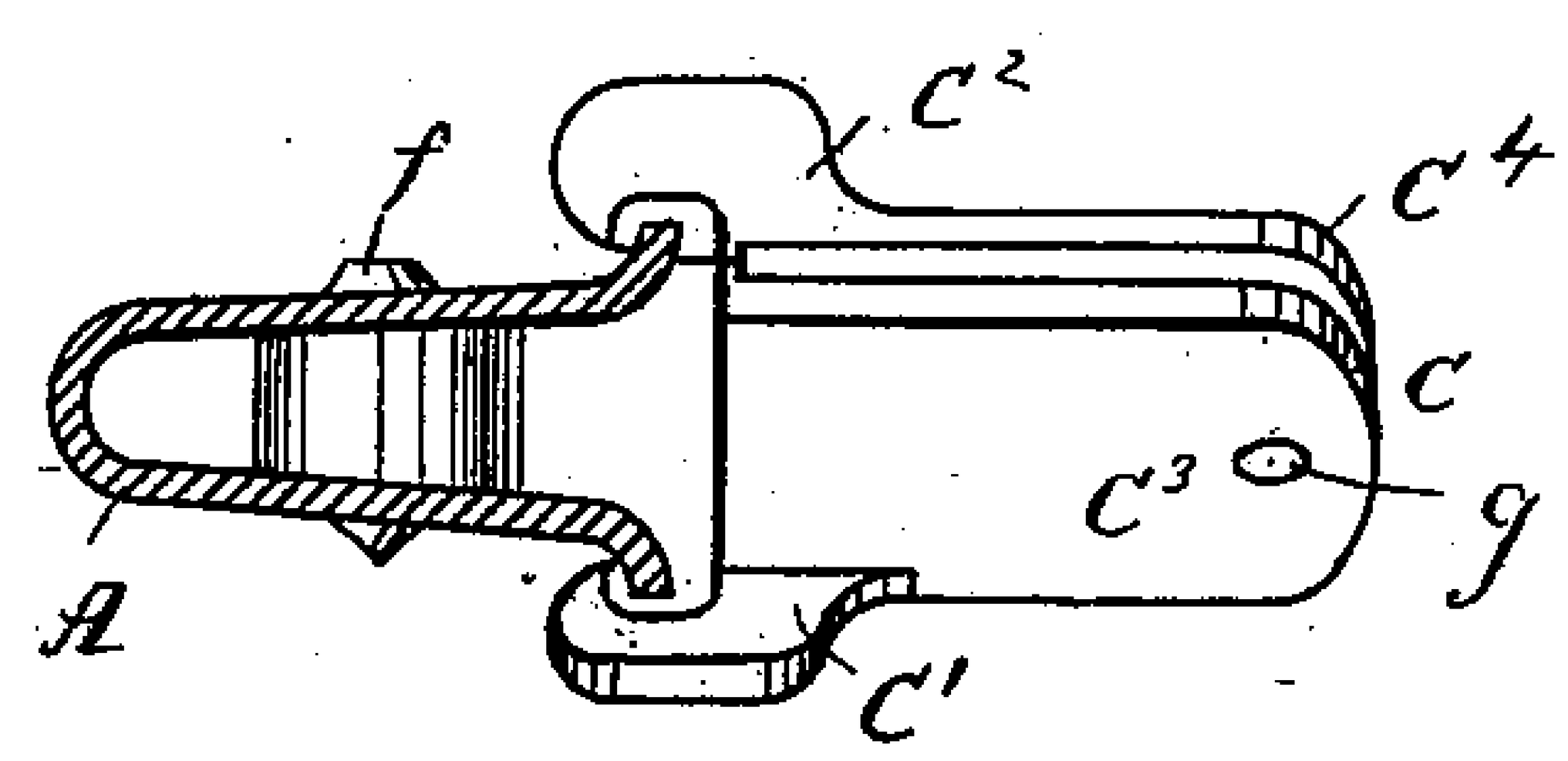

Fig. 7.

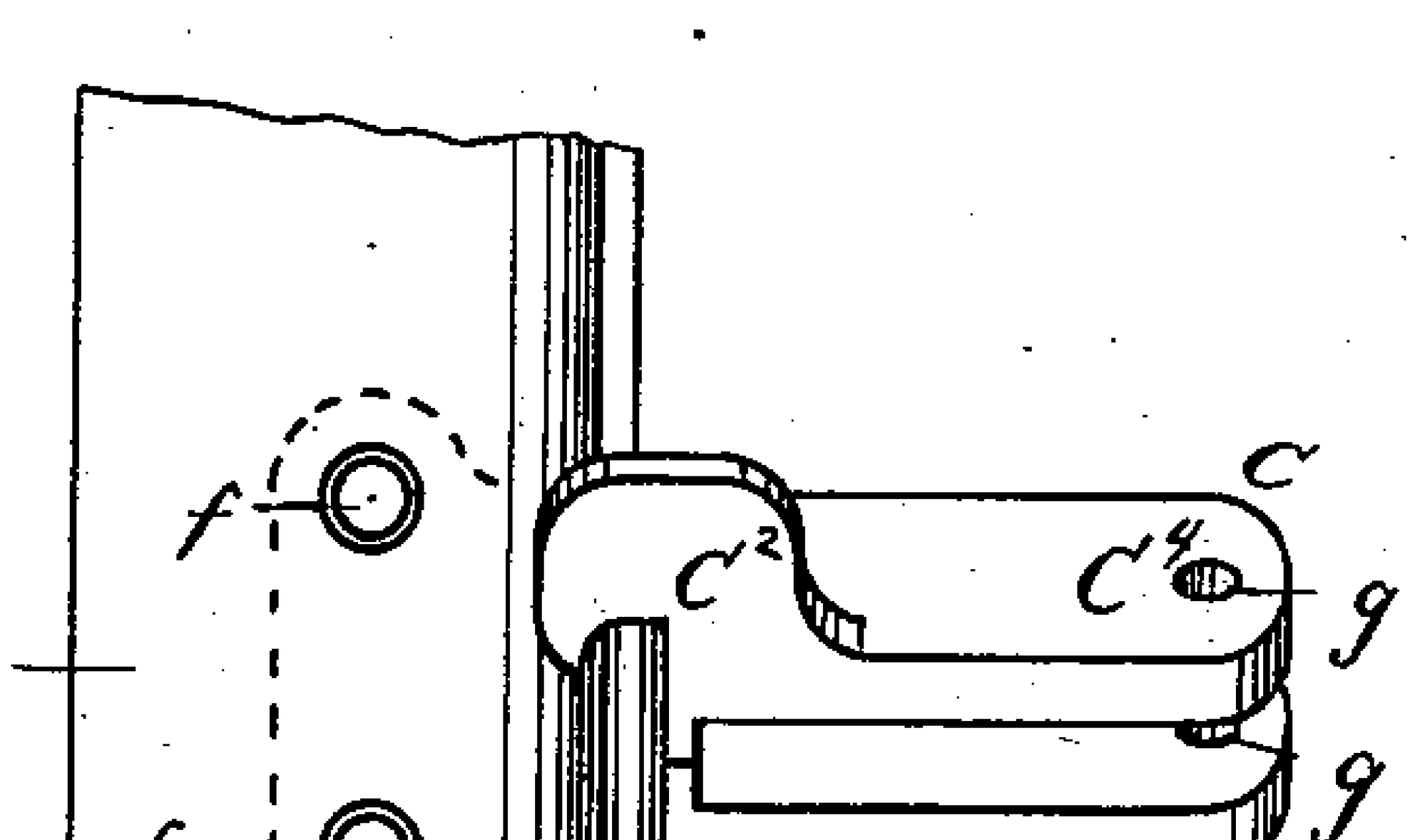

Fig. 8.

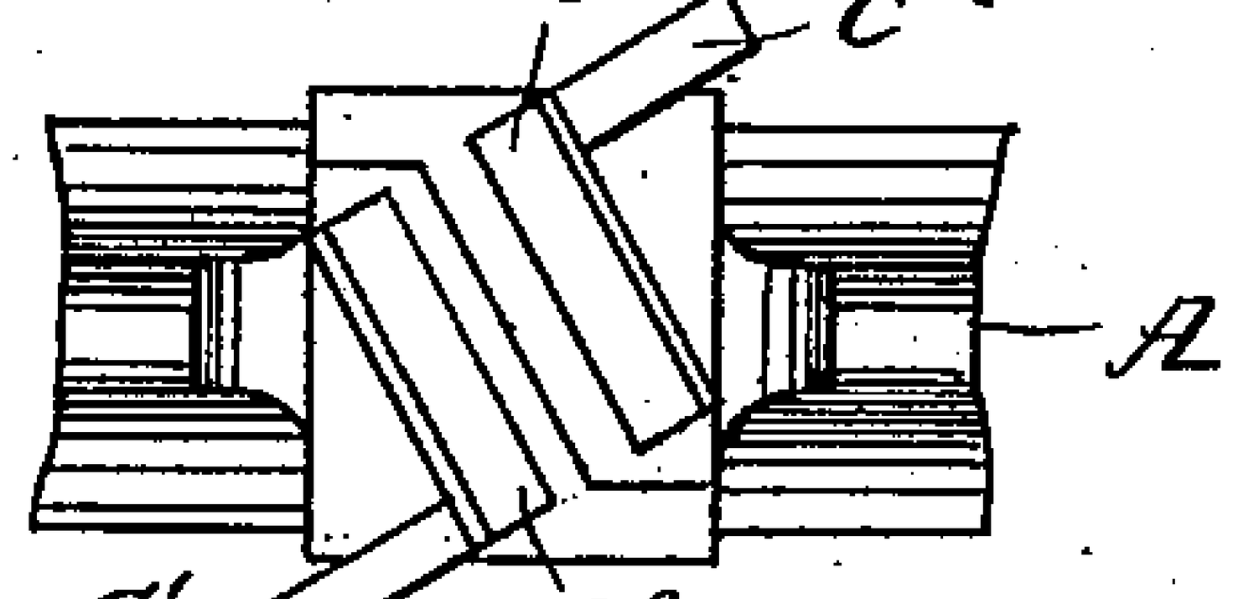

Fig. 9.

WITNESSES.

INVENTOR.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

RICHMOND H. LITTLEFIELD, OF SOMERVILLE, MASSACHUSETTS.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 376,660, dated January 17, 1888.

Application filed August 9, 1887. Serial No. 246,527. (No model.)

To all whom it may concern:

Be it known that I, RICHMOND H. LITTLEFIELD, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Car-Brakes, of which the following is so full, clear, and exact a description as will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings.

This invention relates to an improvement in car-brakes; and it consists in certain peculiarities in the construction, arrangement, and combination of parts, substantially as will be hereinafter fully described, and particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, illustrating my invention, and in which similar letters denote corresponding parts, Figure 1 is a rear end elevation of a car-truck with my improved brake attached thereto. Fig. 2 is a side elevation of the brake-shoe, showing it in its relative position to the car-wheel. Figs. 3 and 4 are a section and a perspective, respectively, of the same. Figs. 5, 6, 7, 8, and 9 are detail views of a portion of the brake-beam and the fulcrum-piece, showing most clearly the form of the said brake-beam and the manner of attaching the fulcrum-piece thereto.

The object of this invention is to construct an elastic brake-beam, fulcrum-piece, and shoe capable of fitting wheels under all circumstances.

Another object of my invention is to construct a brake-beam which, from the absence of any bolts or nuts, will not have any parts liable to work loose and rattle, caused by straining of the said parts due to the constant application of the brake to the wheel.

Still another object of my invention is to construct a brake-beam of such elasticity that it will immediately and noiselessly spring back into its normal position when the brakes are released.

The object, further, of my invention is to construct a device of the character set forth which will not flatten the car-wheels.

Another object of my invention is to construct a brake-beam of such flexibility that it will adjust itself to different pressures caused by one side of the car being lower than the other, due to weight, faulty springs, or other causes.

Another object of my invention is to construct a brake-beam which shall not be liable to contraction or expansion due to changes in temperature, and one which will save the cost of repairing, diminish the wear and damage to the wheels, be less expensive in itself than any other, combine durability, elasticity, and lightness with extraordinary strength, and which shall be more perfect in its working throughout than any other beam.

The above objects are obtained by the mechanism illustrated in the accompanying drawings, in which the brake-beam is designated by the letter A, the shoe by the letter B, and the fulcrum-piece by the letter C.

G represents a car-truck of the ordinary construction, to which my car-brake is adapted to be attached. The brake-beam A is made of steel of suitable length, bent cold into the form shown in the drawings, and having its edges formed with flanges *a a*. Obviously this brake-beam is to be situated transversely of the car-truck, and extends entirely across the same in the usual manner, and upon its extremity are situated the brake-shoes B, which shoes are formed with flanges *b*, fitting within the beam A when they are secured together, and with grooves or mortises *c* for the reception of the flange *a* of the brake-beam. These shoes are formed of two parts—a rim, B^2, and the head B′. The rim B^2 is formed with a lug or projection, b^2, fitting within a correspondingly-formed slot, *b*′, in the head B′, and the rim B^2 is also formed with lugs b^3, for keeping the portion B′ from accidental displacement. A key, D, is adapted to be driven down through the said head B′ and rim B^2, and serves to lock them securely together.

Each of the shoes B is secured to the brake-beam A by a rivet, *e*, and by means of the flanges *a*, fitting within the groove *c* of the said shoe. These shoes, and consequently the brake-beams, are suspended from the car-truck by means of the links B^3, as shown best in Fig. 1; but I do not wish to be understood as limiting myself to the links B^3 for suspending the brake-beam, &c., as any other suitable suspending device might be employed without departing from the spirit of my invention.

The fulcrum-piece C is formed in two portions, C′ and C², which portions are formed with projections *d* and *d′*, having grooves or mortises formed on their lower and upper sides, respectively, and which lugs are adapted to embrace the flanges *a* of the beam A when the fulcrum-piece is attached thereto, as will be hereinafter more fully described.

Referring to the drawings, it will be observed that when the said fulcrum is secured in proper position upon the beam A its heads will be situated within the said beam and the lug *d* will embrace the flange on the upper side of the beam A and the lug *d′* will embrace the flange on the lower side of the said beam A; and as a further means of securing the fulcrum-piece to the beams, bolts, rivets, or keys *f f* are employed, the said bolts passing down through the said beam and through perforations *f′ f′*, formed in the heads of the fulcrum-piece. The fulcrum-piece C is also formed with outwardly-projecting arms C³ and C⁴, having perforations *g g*, between which arms a rod or lever, E, is adapted to be situated, and to which the rod or lever is pivoted by means of a pivot-pin passing through the said perforations *g* and through the rod or lever.

The head and fulcrum are of malleable iron, braced so as to obtain the greatest possible strength without increasing the weight.

It is a well-known fact with railroad men that when a wooden beam, or any beam that is equipped with bolts and nuts, is used, the said bolts and nuts are liable to work loose and rattle, and a constant application of the brake to the wheels has a tendency to strain the parts referred to and cause them to work loose and rattle.

Obviously with a beam and shoe constructed after the plan herein set forth there are no bolts or nuts. The only bolt of any description is the rivet which goes through the end of the beam near the shoe-head, and that is made permanent by being riveted.

It will be evident, further, that by forming the fulcrum-piece of separable pieces, should one of the said pieces become broken or worn, it will not necessitate the substitution of an entire fulcrum-piece; but either portion can be replaced, if desired.

Having now described the objects, uses, and advantages, and having set forth a preferred means of carrying the same into effect, what I desire to secure by Letters Patent, and what I therefore claim, is—

1. In a device of the character described, the hollow brake-beam of a form substantially U-shaped.

2. In a device of the character described, a hollow U-shaped brake-beam formed with flanges, for the purpose substantially as herein shown and set forth.

3. In a device of the character described, the combination, with the hollow brake-beam, of the shoe, the head of which is formed with a lug fitting within said brake-beam and secured together by a single rivet, substantially as shown and described.

4. In a device of the character described, the combination of the hollow brake-beam having flanges, and the shoe formed with a lug fitting within the said brake-beam and with grooves for the reception of the said flanges, and a rivet for further securing the said beam and shoe together, substantially as shown and described.

5. In a device of the character herein described, the brake-beam having flanges, in combination with a shoe formed of separate pieces, one of which pieces is formed with a lug at or near its central portion and with smaller lugs at each extremity, and the other of which pieces is formed with a groove for the reception of the said central lug, a groove for the reception of the flanges of the beam, and a slot for the reception of a suitable suspending device, and a locking-key for securing the said parts together.

6. In a car-brake, the combination, with a hollow brake-beam, of a fulcrum-piece formed of parts independently secured within the brake-beam.

7. In a device of the character described, the hollow brake-beam, in combination with a fulcrum-piece formed of separable pieces, substantially as described.

8. In a device of the character described, the hollow brake-beam having flanges, in combination with a fulcrum-piece formed of separable pieces, substantially as described.

9. In a device of the character described, the combination, with the hollow brake-beam having flanges, of a fulcrum-piece formed of separable pieces and having lugs provided with grooves adapted to embrace the said flanges, substantially as described.

10. In a device of the character described, the hollow brake-beam having flanges, in combination with a fulcrum-piece formed of separable pieces and having lugs formed with grooves adapted to embrace the said flanges, and the head of the said fulcrum-pieces adapted to be situated within the hollow beam and secured thereto by rivets, substantially as described.

11. In a car-brake, the combination, with a hollow brake-beam formed with flanges, of a fulcrum-piece formed of portions C′ and C², independently secured within the said beam and having lugs formed with grooves adapted to embrace the said flanges, and also having outwardly-extending arms adapted to receive a lever between them.

12. In a device of the character described, the combination, with the hollow brake-beam, of the shoes at its extremities, which shoes are formed of separable pieces, one of which pieces, as B′, is formed with a lug fitting within the brake-beam and with grooves for the reception of the flanges of the said brake-beam, and the other of which pieces, as B², is formed with a lug fitting within a recess formed in the said

piece B′, and a key or wedge adapted to be driven down through the said pieces B′ and B^2 and serving to secure them together, and the fulcrum-piece formed of separable pieces, each of which has a lug or projection grooved to embrace the flanges of the said brake-beam and provided with arms for the reception of an operating-lever, and the said operating-lever, all arranged and combined to operate in the manner and for the purposes substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

RICHMOND H. LITTLEFIELD.

Witnesses:
REES C. VIDDER,
H. G. CORNING.