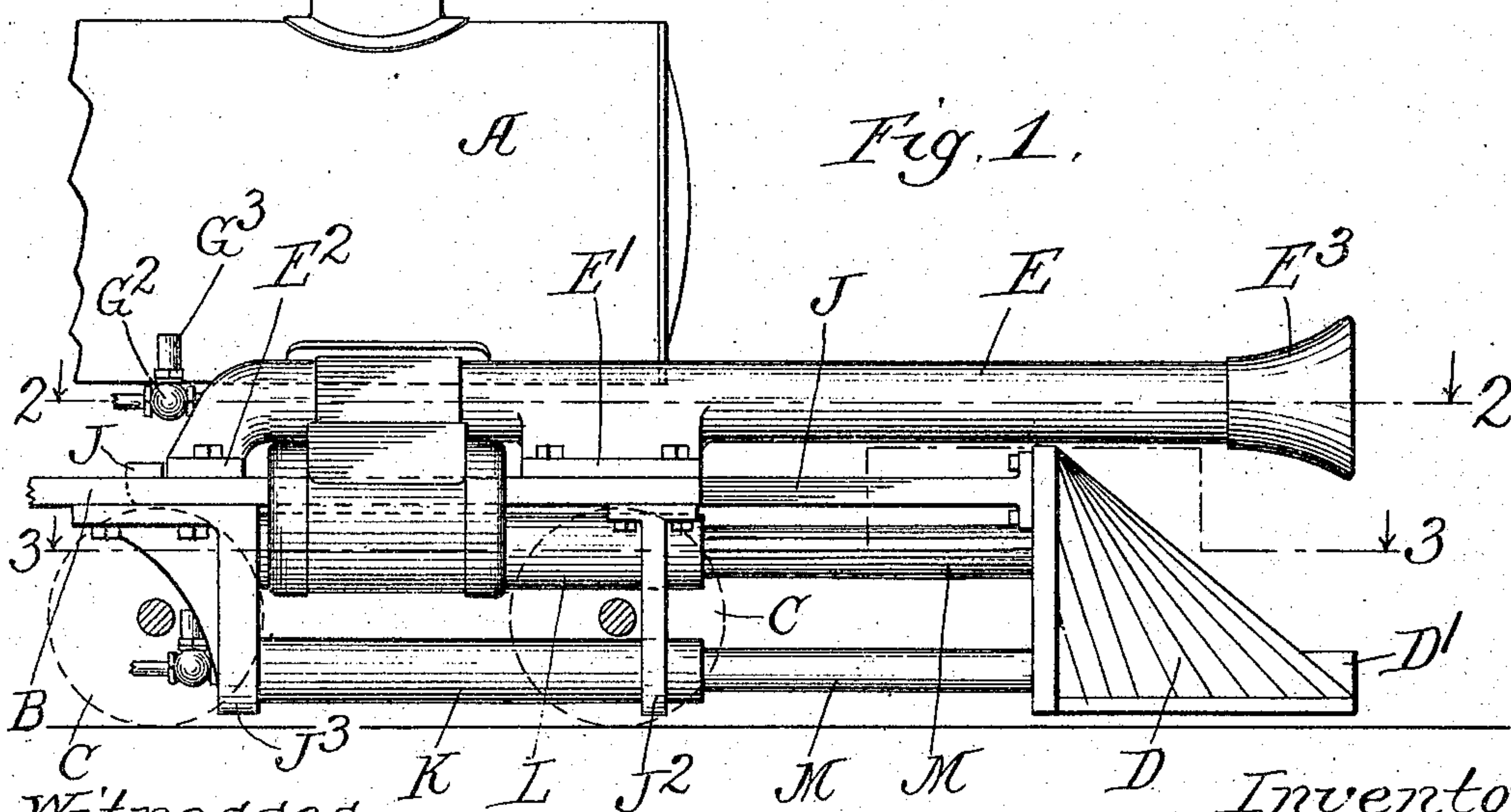
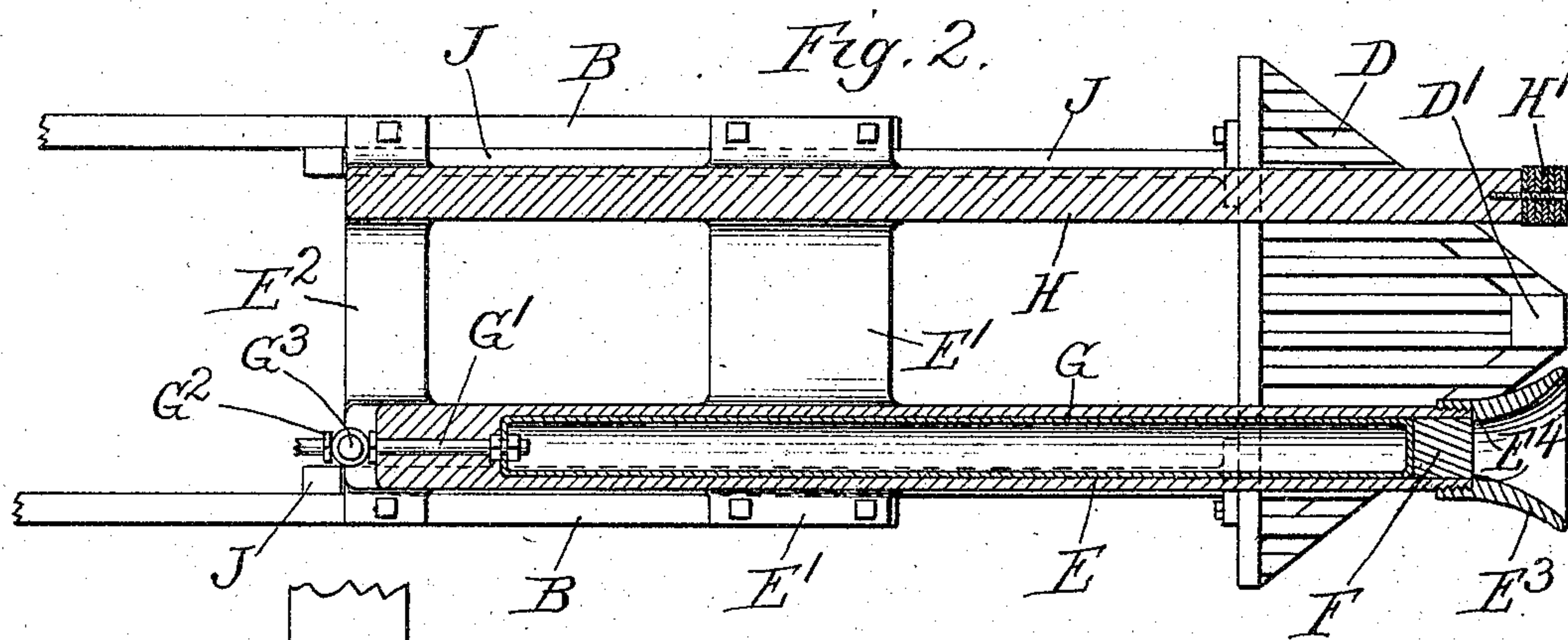
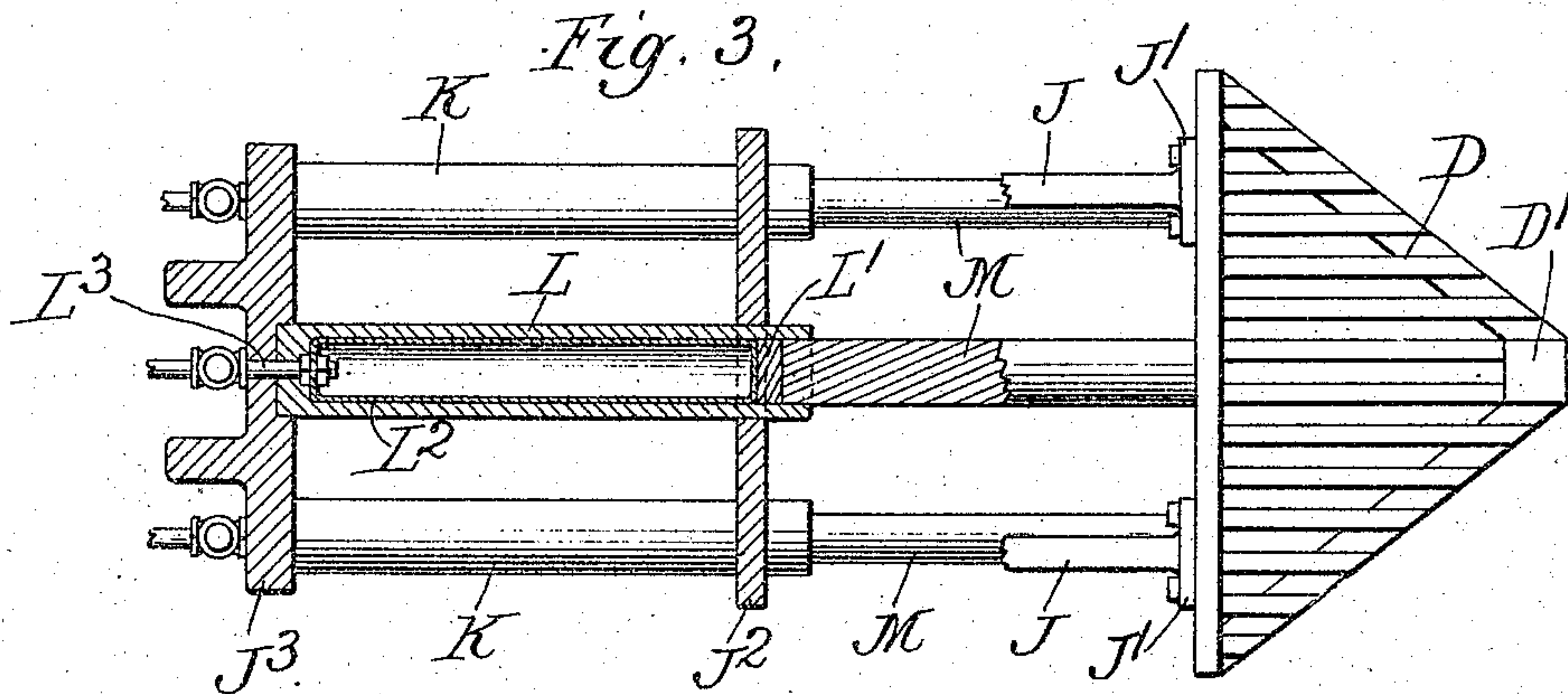


No. 785,208.

PATENTED MAR. 21, 1905.

F. C. FOSTER.
RAILWAY SAFETY DEVICE.
APPLICATION FILED OCT. 31, 1904.



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UNITED STATES PATENT OFFICE.

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RAILWAY SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 785,208, dated March 21, 1905.

Application filed October 31, 1904. Serial No. 230,675.

To all whom it may concern:

Be it known that I, FRELING C. FOSTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway Safety Devices, of which the following is a specification.

My invention relates to railway safety devices, and has for its object to provide means to be used in connection with railway-cars and locomotives and the like for the lessening of shocks and the prevention of accidents due to collisions.

The device is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the forward end of a locomotive with my device applied thereto; Fig. 2, a horizontal sectional view on line 2 2 of Fig. 1, and Fig. 3 a sectional view on line 3 3 of Fig. 1.

Like letters of reference refer to like parts in all the drawings.

My invention consists of a buffer device or a system of buffer devices which are adapted to be placed on locomotives to act in connection with complementary devices on other trains or which may be placed on the cars of a single train, so as to act in prevention of telescoping and the like mischances.

In the accompanying drawings I have illustrated one form of my invention as applied to the forward end of a locomotive; but I wish this particular application of the device to be taken as illustrative of one of the uses of my invention and the particular forms and constructions here shown to be taken as in a sense diagrammatic and as showing one of many possible forms in which my invention might be embodied.

In the accompanying drawings, A represents the boiler of a locomotive; B, a longitudinal member of the supporting-framework; C C, the wheels of the forward truck, (shown in dotted lines,) and D the pilot. The safety device here shown may consist of two members, which are adapted to coact in case of collision with two correspondingly-placed like members on the other train. One of these members consists of a cylinder E, which may be

secured by the cross-piece E' integral therewith to the frame B and further held in position by a connection with some part of the engine-body, as at E². This cylinder is provided at the forward end with a flaring neck E³, which I preferably make with the shoulder E⁴ extending a trifle over the end of the cylinder E. Against this shoulder rests normally the plunger F, and within the cylinder and against the plunger F, I may place a tube G of some elastic material, such as rubber. This, however, is not absolutely essential, as the devices would be capable of operation without it. Air is admitted to the cylinder and to the tubing G through the pipe G', which is provided with the customary check-valve G², and may also be provided with a relief-valve G³ of any desired type. Air may be forced into the cylinder and the tube either by means of a pump or the pipe G or may be in permanent connection with the air-brake system of the train, or the cylinder may be otherwise supplied. The other member of the safety device and to be used in connection with the part just described consists of a ram or plunger H, which may be secured to the framework B on the other side of the engine in any desired manner, and I have here represented the cross-pieces E' E² as being integral also with the plunger H and extending from one side to the other of the engine-framework. I may also provide the forward end of the ram H with a cushioning device H', consisting of a series of leather washers or the like.

In connection with the above-described safety or buffer devices or to be used independently I provide another form of buffer device, which is here shown as applied to the pilot of the engine. The pilot D may be provided with a flattened end D' and supported on the framework of the engine by two or more sliding bars J J, attached thereto at J' J', and which may have bearings upon the brackets J² and J³, which are secured to and extend downwardly from the longitudinal frame B. These brackets serve also to support the air-cylinders used to cushion the pilot. There may be any number of these air-cylinders.

ders, and I have here shown them as three in number, two lower ones being designated K K and an upper one L. These air-cylinders are provided each with a plunger, such as L', and
 5 may have the inner elastic tube L², as is shown in the section of the upper cylinder in Fig. 3. These cylinders are provided with the inlet-pipes, as shown at L³, having check-valves and relief-valves, as is the case with the cyl-
 10 nder E. Extending backward from the pilot and secured thereto are three rams or plunger-rods M M M, which extend one into each of the cylinders K, K, and L and normally rest against the plungers therein.

15 In the above I have described two forms of my invention adapted to be used in connection with each other or separately; but it will be very clear that the above-described devices might be very greatly varied in construction
 20 and arrangement without departing from the broad spirit of my invention, and therefore I do not limit myself to the specific arrangements shown nor the precise forms and constructions set forth, but, on the contrary, wish
 25 that these specific constructions be taken as in a sense illustrative of the general nature of my invention.

The use and operation of my invention are as follows: The buffer devices herein shown
 30 may be applied, as is here illustrated, to the forward ends of locomotives, or they may be attached to the separate cars of a train of cars, so that when the train is made up each car will be elastically connected with the next adjoining
 35 and the train provided at both ends with safety devices. These devices, if adopted in whole or in part, tend very largely to prevent or mitigate accidents.

In the use of the devices G and H these two
 40 members must of course be arranged invariably on certain sides of the car or locomotive—as, for example, the cylinder on the right side and the ram on the left side. If, then, two engines come together head on, the ram H on
 45 each engine will extend into the flaring end of the cylinder G on the other engine and by the action of the air-cushion, from which the air may be allowed to gradually escape through the relief-valve, if such valve is used, the
 50 impact of the two engines one upon the other will be materially lessened. The rams M, attached to the pilot, operate in the same manner within their cylinders K, K, and L, which in this form of invention are arranged on the
 55 same vehicle and in like manner reduce the shock of collision.

In its use between two cars of a train it is clear that either form of device might be
 60 utilized, according to the particular exigencies of construction and the like.

I claim—

1. A safety device for railway-vehicles comprising a ram on one of such vehicles, a cylinder on the other vehicle, a flexible air-cushion in the cylinder with the end of which the
 65 ram comes in contact, such devices adapted to be brought into operation one with the other to lessen the shock to such vehicles in the case of collision.

2. A safety device for railway-vehicles comprising a ram on one of such vehicles, a cylinder on the other vehicle, such cylinder having a flaring end, a flexible air-cushion in such
 70 cylinder with the end of which the ram comes in contact, such devices being adapted to be brought into operation one with the other to lessen the shock to such vehicles in the case of
 75 collision.

3. A safety device for railway-vehicles comprising a ram on one of such vehicles, a cylinder on the other vehicle, an air-cushion of elastic material in the cylinder, and a plunger adapted to act against the air-cushion, such
 80 devices adapted to be brought into operation one with the other to lessen the shock to such
 85 vehicles in the case of collision.

4. A safety device for railway-vehicles comprising a ram and an air-cushioning device arranged one on each vehicle and adapted to
 90 coact with the corresponding devices on other vehicles so as to lessen shock to such vehicles in case of collision.

5. A safety device for railway-vehicles comprising a ram and an air-cushioning device arranged on each vehicle and adapted to coact
 95 each with the corresponding device on other vehicles, a sliding device at the end of such vehicle, and an air-cushioning device interposed between such sliding device and the body
 100 of the vehicle.

6. A safety device for railway-engines and the like, comprising a ram device and an air-cushioning device arranged on each engine so as to coact with similar correspondingly-
 105 arranged devices on other vehicles in combination with a sliding pilot and an air-cushioning device interposed between such pilot and the framework on its engine.

7. A safety device for railway-engines and the like, comprising a ram and an air-cushion
 110 adapted to coact with corresponding devices on other vehicles in combination with a sliding pilot, a ram device on such pilot, and an air-cushioning device on the main body of the engine with which the ram device is adapted to
 115 coact in case of collision.

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Witnesses:

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