

G. W. MILES & J. E. LEE.

CAR-COUPLING.

No. 174,697.

Patented March 14, 1876.

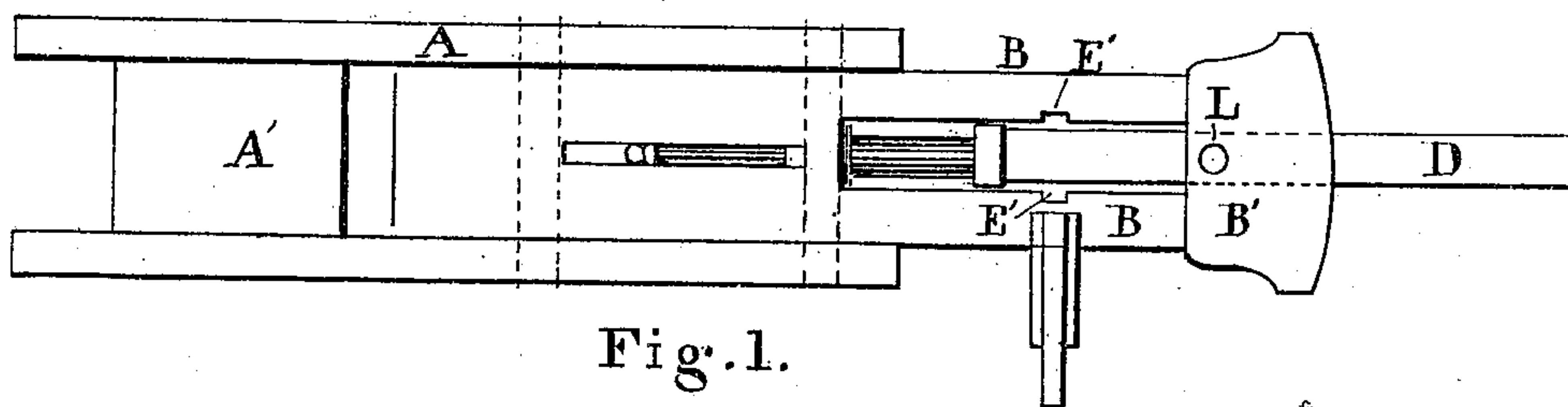


Fig. 1.

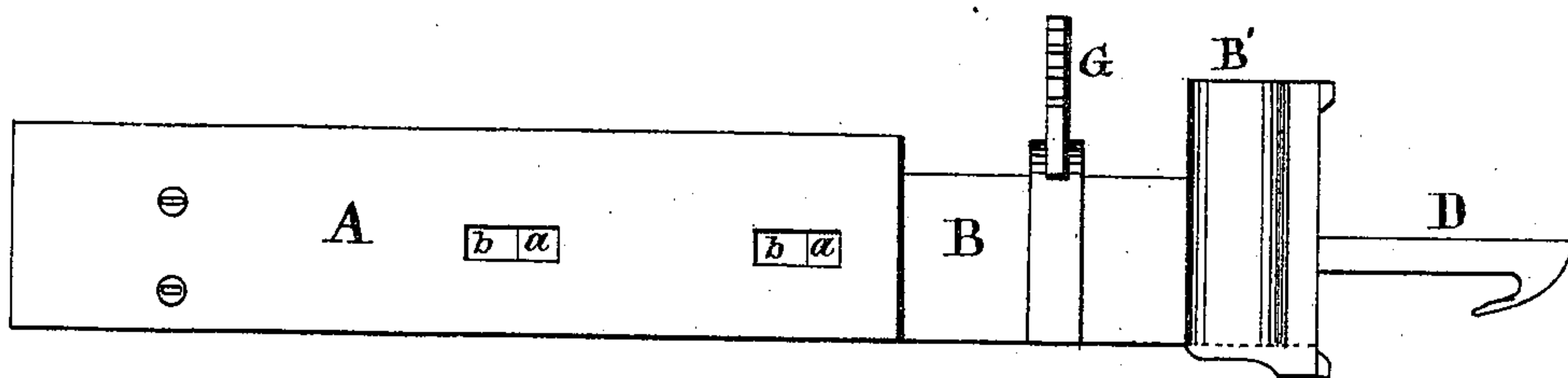


Fig. 2.

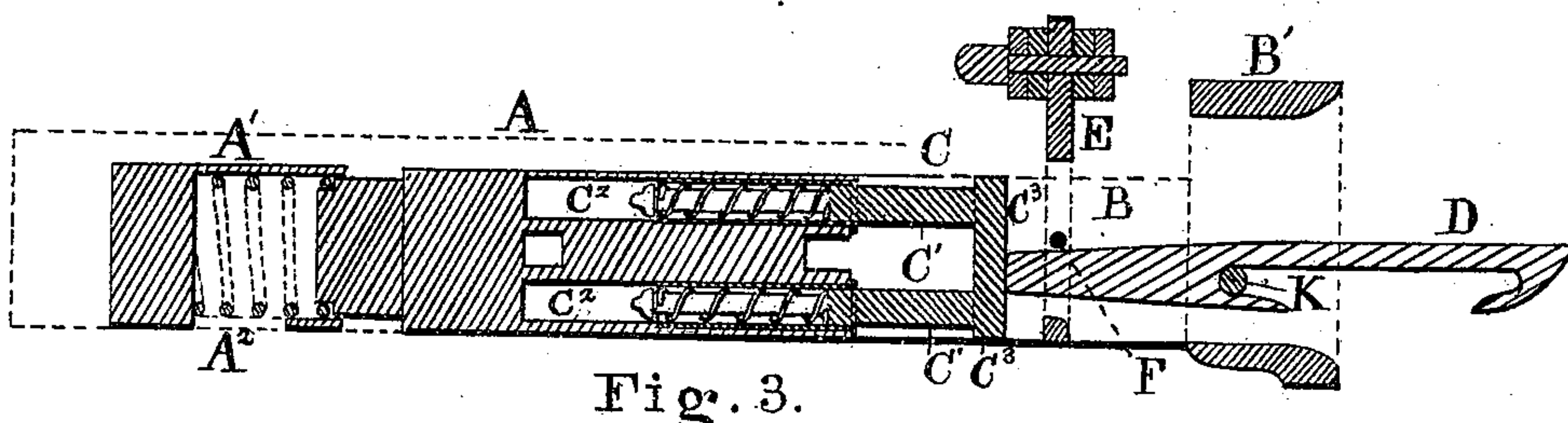


Fig. 3.

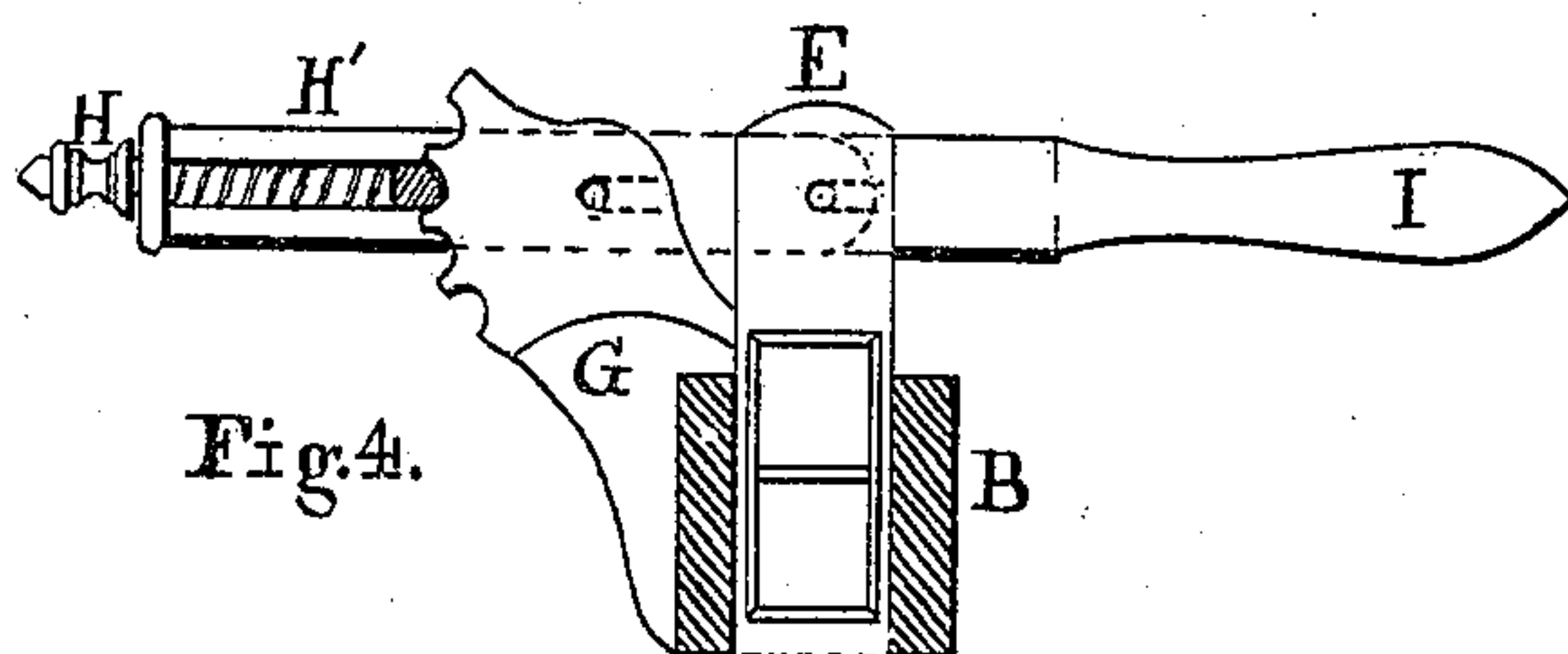


Fig. 4.

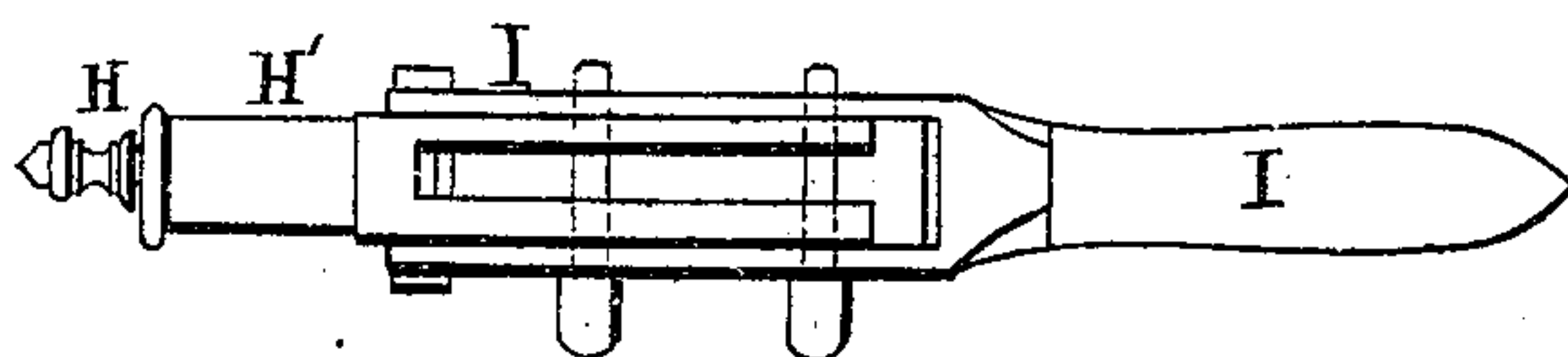


Fig. 5.

Fig. 6.

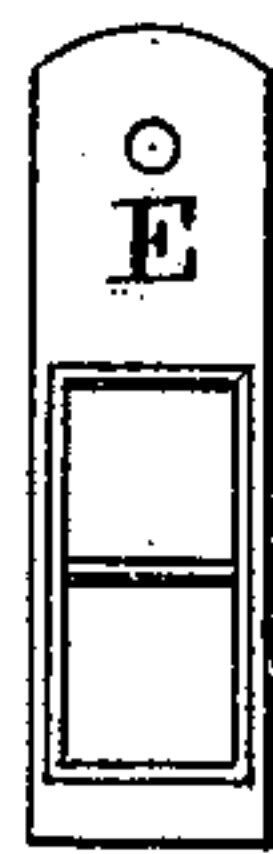


Fig. 7.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. **174,697**, dated March 14, 1876; application filed  
February 15, 1876.

*To all whom it may concern:*

Be it known that we, GEORGE WATERMAN MILES, of Erie, in the county of Erie and State of Pennsylvania, and JOSEPH EDWARD LEE, of Fort Erie, in the county of Welland and Province of Ontario, Canada, have invented certain new and useful Improvements in Draw-Heads; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification—

Figure 1 being a plan view of our improved draw-head, showing the socket in which the buffer-spring is placed, and which serves as a guide for the buffer and its appendages; it showing also the coupling-bar, the spring for relieving the shock thereupon when the cars are brought together, and the adjustable lever regulating the position of the bar. Fig. 2 is a side elevation, showing the frame in which the buffer slides, the wedges therein for controlling its movements, the coupling-bar and sector for holding the lever, which controls its movements in position. Fig. 3 is a sectional elevation, showing the position of the parts and the mode of operation. Fig. 4 is a detached front elevation of the lever for elevating or depressing the coupling-bar, the sliding frame through which the bar passes, the sector for holding the lever in position, and the bracket which supports the sector. Fig. 5 is a plan view of the parts shown in Fig. 4. Fig. 6 is a side elevation of the frame, through which the coupling-bar passes; and Fig. 7 is a side elevation of the coupling-bar, showing the recessed portions in which the coupling-pins rest.

Corresponding letters denote like parts in the several figures.

This invention relates to that class of devices which are used upon railroad-cars for the purpose of automatically coupling such cars when brought together upon the track; and it consists, first, in a coupling-bar, having upon one of its ends an extension, which

passes through a vertically-moving frame, by which its position can be changed for the purpose of adapting it to cars of different heights; and, secondly, in certain combinations and arrangements of a horizontally-moving frame and springs, and a spring-buffer, they being such that when the cars are brought together forcibly, the coupling-bar may be forced into or housed within the buffer, before said buffer is caused to recede to any considerable extent, and be thus protected from injury; and, thirdly, in the combination of an adjustable lever, a vertically-sliding frame, and a sector for adjusting the position of the coupling-bar; in certain other combinations and arrangements which will be more fully described hereinafter.

The desirableness of having buffer-heads so constructed that the cars to which they are attached will automatically couple when brought together is universally acknowledged, and it is also known that it is very important that such coupling should take place when the cars vary several inches in height. Another desideratum in devices of this character is that they may be capable of being so manipulated by the person in attendance that the cars when brought together may be coupled or not, according to circumstances.

The object of our invention is the production of a coupling mechanism that shall fully meet all of the requirements above enumerated, and at the same time be capable of being operated from either side of the car or track.

In constructing our improved draw-head and its appendages we form a frame, A, which may consist of two plates of metal, or it may consist of a box, the vertical walls of which have slots *a a* formed in their sides, for a purpose to be described hereinafter.

Between the vertical portions of the frame A there is placed a block of metal, A<sup>1</sup>, which is located near its rear end, and is provided with a recess, A<sup>2</sup>, for the reception of a buffer-spring, which may be of coiled steel, as shown, or it may be composed of rubber or any suitable material.

The slots above referred to as being formed



in the side of the frame are for the purpose of receiving wedges *b b*, which pass through them and through the buffer, and serve as stops therefor, and thus prevent too much force from being applied to the spring, and also to prevent the buffer from being drawn out of the frame.

The buffer employed by us is, by preference, composed of wrought or cast iron, its rear end being rounded so as to allow it to pass into the cavity formed in the block *A*<sup>1</sup> in the frame *A*. This buffer, which is designated by the letter *B*, has upon its outer end a head, *B*<sup>1</sup>, which has in it a vertically elongated aperture for the passage of the coupling-bar, it being of sufficient length to allow of the bars being raised or lowered to such an extent as to cause it to couple with cars which are higher or lower than the one to which it is attached. That portion of the buffer which is immediately in the rear of the head *B*<sup>1</sup> is slotted, as shown in Fig. 1, in order that the coupling-bar may pass freely therein, and also so that a horizontally-moving frame, *C*, may move in it and be guided thereby. This frame consists of one or more rods, *C*<sup>1</sup>, which pass into a recess or recesses, *C*<sup>2</sup> *C*<sup>2</sup>, formed in the buffer *B*, as shown in Figs. 1 and 3, their inner ends being surrounded with springs which, as well as the recesses in which they move, are of such length as to permit the coupling-bar to be pushed entirely within the buffer or its head when the cars are brought violently together, and thus prevent its being bent or otherwise injured by the concussion, which will, after the housing of the bar, be received by the buffer, and both it and the bar will recede together.

Upon the outer ends of the rods *C*<sup>1</sup> *C*<sup>1</sup> there is placed a head or plate, *C*<sup>3</sup>, it being of such length as to cause the inner end of the coupling-bar to come in contact with it, whatever may be the position of said bar within the buffer.

The coupling-bar *D* which we have devised for use, in connection with our improved buffer, consists of a bar of metal recessed, as shown in Figs. 3 and 7, there being a hook formed near one of its ends for the reception of a pin, and another near its central part, while upon its rear end there is a shank or extending portion, which, when in use, reaches to and bears against the plate upon the horizontally-moving frame *C*. In order that this coupling-bar may be elevated and depressed, its inner end is made to move through a vertically-moving guide, *E*, which is arranged to work in recesses formed in the inner surfaces of the buffer, as shown in Fig. 1, its lower end being slotted so as to cause it to span the coupling-bar, and its upper end being of such length as to admit of its being attached to a lever by which it is moved. Through the vertical sides of this frame a hole is bored, into which a pin, *F*, is inserted, the space between it and the lower cross-bar of the frame

being sufficient to allow of the passage of the coupling-bar, and to allow of its free movements therein when the cars are in motion.

In order that this frame may be moved up and down at pleasure, and thus the outer end of the coupling-bar be raised and lowered to admit of its being connected to cars varying in height, and also that it may be raised to such an extent as to prevent it from coupling when it is desirable to do so, a bracket, *G*, is attached to one side of the buffer, as shown in Fig. 4, its upper end being provided with a toothed sector, in such a manner that a spring-dog, *H*, placed in the end of bifurcated lever *H'*, may be made to engage therewith, the lever alluded to being pivoted to the sector *G* and to the upper end of the vertically-moving frame *E*, the arrangement of these parts being such that the operator can, by taking hold of the outer end of the spring-dog *H*, and drawing its inner end out of contact with the teeth of the sector, raise or depress the outer end of the coupling-bar by raising or lowering the dog.

Provision is made for operating the coupling-bar, as above described, upon the opposite side of the car or track by the addition to the devices above enumerated of lever *I*, the inner end of which is forked, so as to allow it to span the lever *H*, and be pivoted to the same parts that support that; and in order that it may be made to change the position of said bar, and to retain the same in its adjusted position, that end thereof which is slotted, as above described, has in each of its parts, and at their ends, a recess, which receives the projecting portions of the spring-dog *H*. It is also furnished with slots in its forked portions, which allow it to slide upon the pins which connect it to the sector and to the frame *E*.

This construction and arrangement enable the operator when standing upon that side of the track toward which the handle of the lever points to disengage the spring-dog from the sector by pushing the lever from him, and thus control the position of the outer end of the bar, and by allowing the lever to return to its normal position, with reference to the dog, the bar will be secured either in a position to couple with another car provided with the same form of buffer, or the bar may have its outer end so elevated that the cars may be brought together any number of times without coupling, when, by releasing the dog from the control of the sector, the next time the cars are brought together the coupling will be automatically effected.

Fig. 3 represents the parts in position, where it will be seen that the inner hook upon the coupling-bar is resting upon a pin, *K*, which passes horizontally through the buffer-head *B*<sup>1</sup>. In the position there shown the parts are ready to be coupled to another head of about the same height; but should it become desirable to arrange it for coupling to a car of



different height the dog is to be disengaged from the sector, and the inner end of the coupling-bar raised or lowered, which will produce a reverse movement of its outer end, and so bring it in position; or the inner end may be so far depressed as to prevent it from coupling by raising the outer end of the bar so high as to prevent it from falling upon the pin in the opposite buffer.

Provision is also made for using our improved draw-head in connection with the usual forms of heads having in them vertical pins, which change can be effected by turning the coupling-bar upon its side, or one-fourth of a revolution, and a pin may be passed vertically through the aperture shown at L in Fig. 1, when the outer end of the coupling-bar will be in a position to attach itself to a pin in the usual form of head. Another important advantage due to this method of constructing the coupling-bar is that, in the event of one or more of the pins K being broken, it may be turned upon its side and the vertical pins be used, and thus the necessity of leaving a car, or for sending a man to repair it, will be obviated, which, together with the fact that the bar is allowed to retreat within the buffer, is of importance.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A coupling-bar for railroad-cars, having a hook at or near one of its ends, and another at or near its center, it being provided with a shank extending beyond the central hook for passing through a vertically-moving frame, whereby its outer end may be elevated or depressed, as and for the purpose set forth.

2. The combination of the horizontally-moving frame, consisting of rods  $C^1$   $C^1$ , plate  $C^3$ , springs for controlling the movements of said

rods, and a buffer, the movements of which are controlled by separate and independent springs, the construction and arrangement of the parts being as described, whereby the coupling is allowed to be housed within the buffer-head, and then both allowed to recede together, substantially as shown and described, for the purpose set forth.

3. The combination of the horizontally-moving frame C, having a plate,  $C^3$ , upon its outer end, and the herein-described coupling-bar D, substantially as and for the purpose set forth.

4. In a draw-head for railroad-cars, the combination of the buffer B, the sector G, the spring-dog H, bifurcated levers  $H^1$  and I, the levers being arranged at a right angle to the buffer, substantially as shown.

5. The combination of the horizontally-moving frame C, the vertically-moving frame E, and coupling-bar D, substantially as and for the purpose set forth.

6. The combination of the vertically-moving frame E, the adjustable levers I and  $H^1$ , and spring-dog H, the parts being arranged to operate substantially as and for the purpose set forth.

7. The buffer-head  $B^1$ , when provided with a fixed horizontal pin, K, and a removable vertical pin, whereby provision is made for using the coupling-bar to connect to cars of the usual construction by turning said bar upon its side, as set forth.

In testimony that we claim the foregoing as our own invention, we affix our signatures in presence of two witnesses.

GEORGE WATERMAN MILES.  
JOSEPH EDWARD LEE.

Witnesses:

JAMES C. BROOKS,  
GEORGE B. HOYT.