

(No Model.)

2 Sheets—Sheet 1.

G. BUTLER.  
BRAKE LEVER FOR VEHICLES.

No. 489,456.

Patented Jan. 10, 1893.

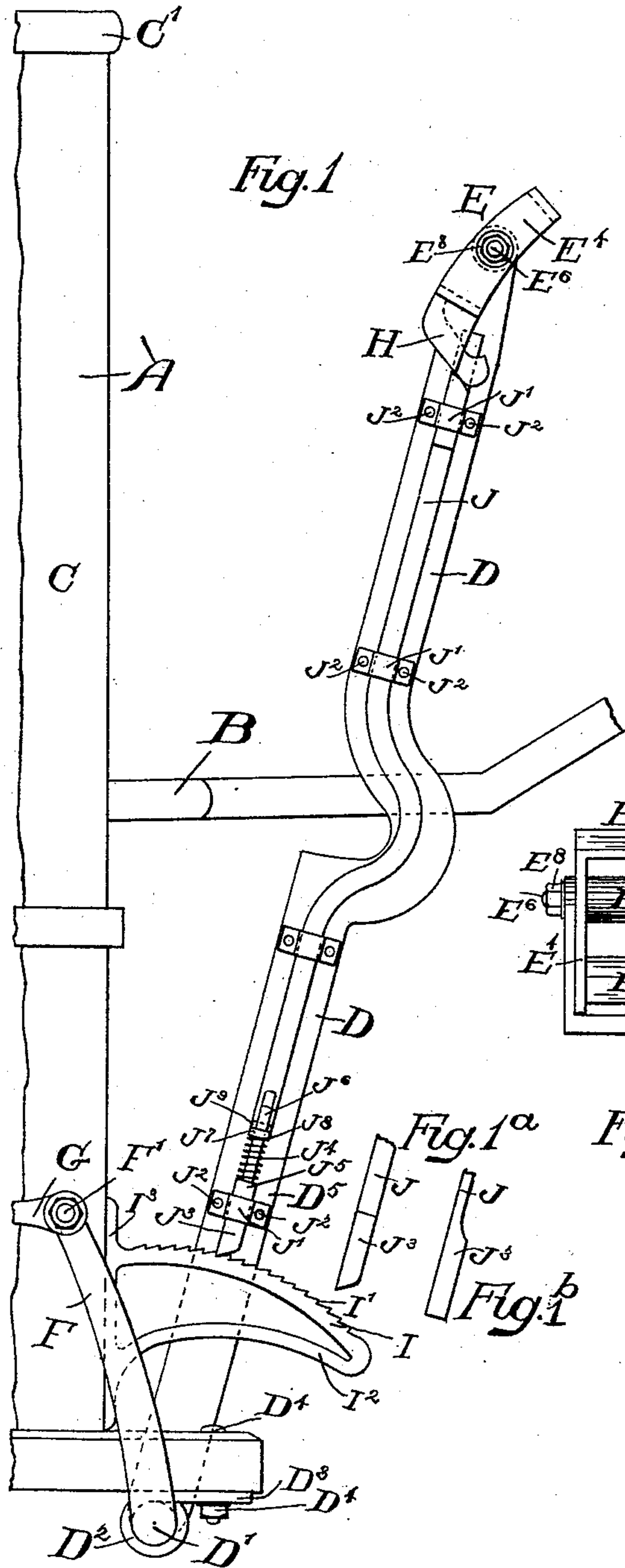


Fig. 1

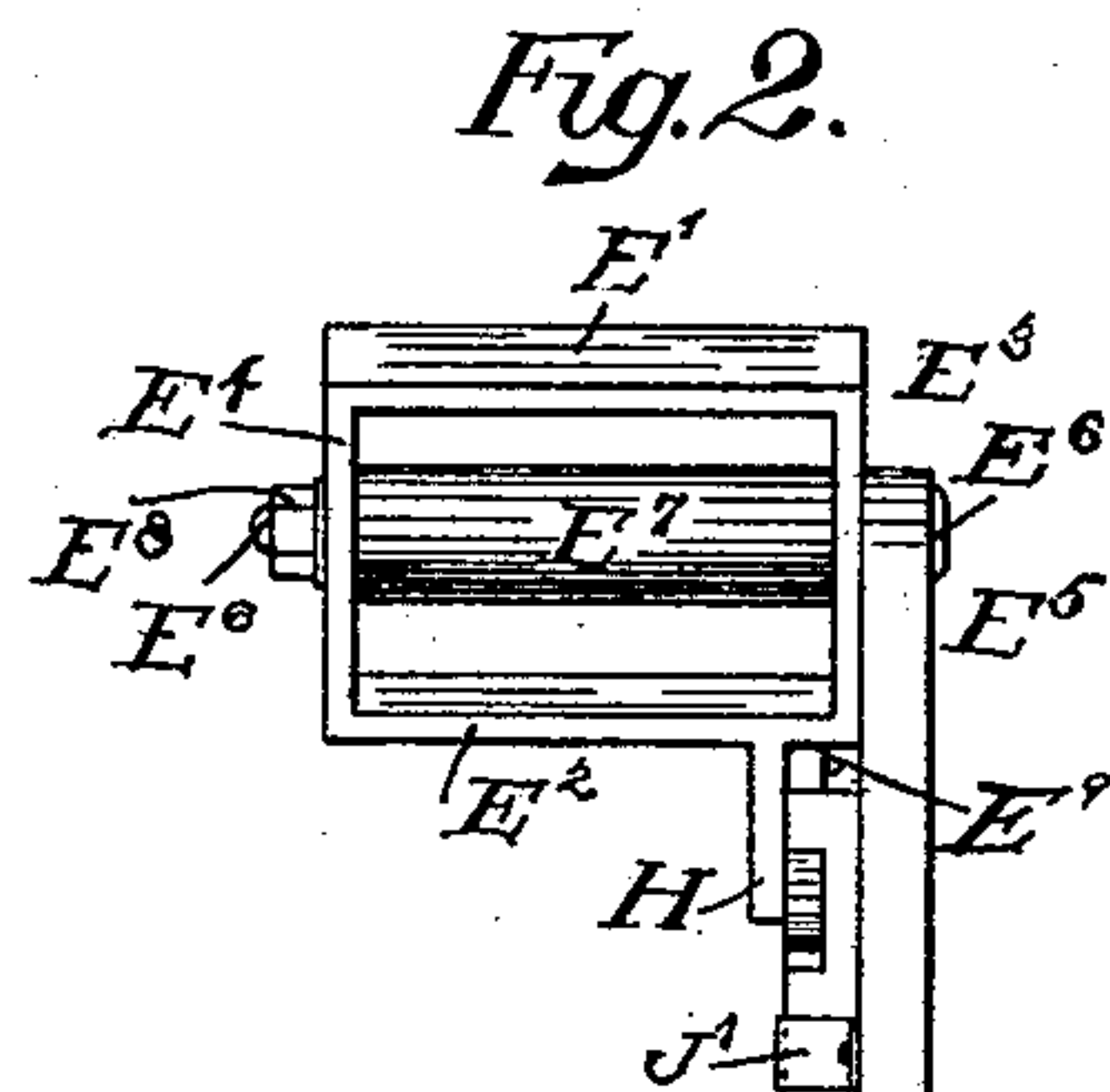


Fig. 2.

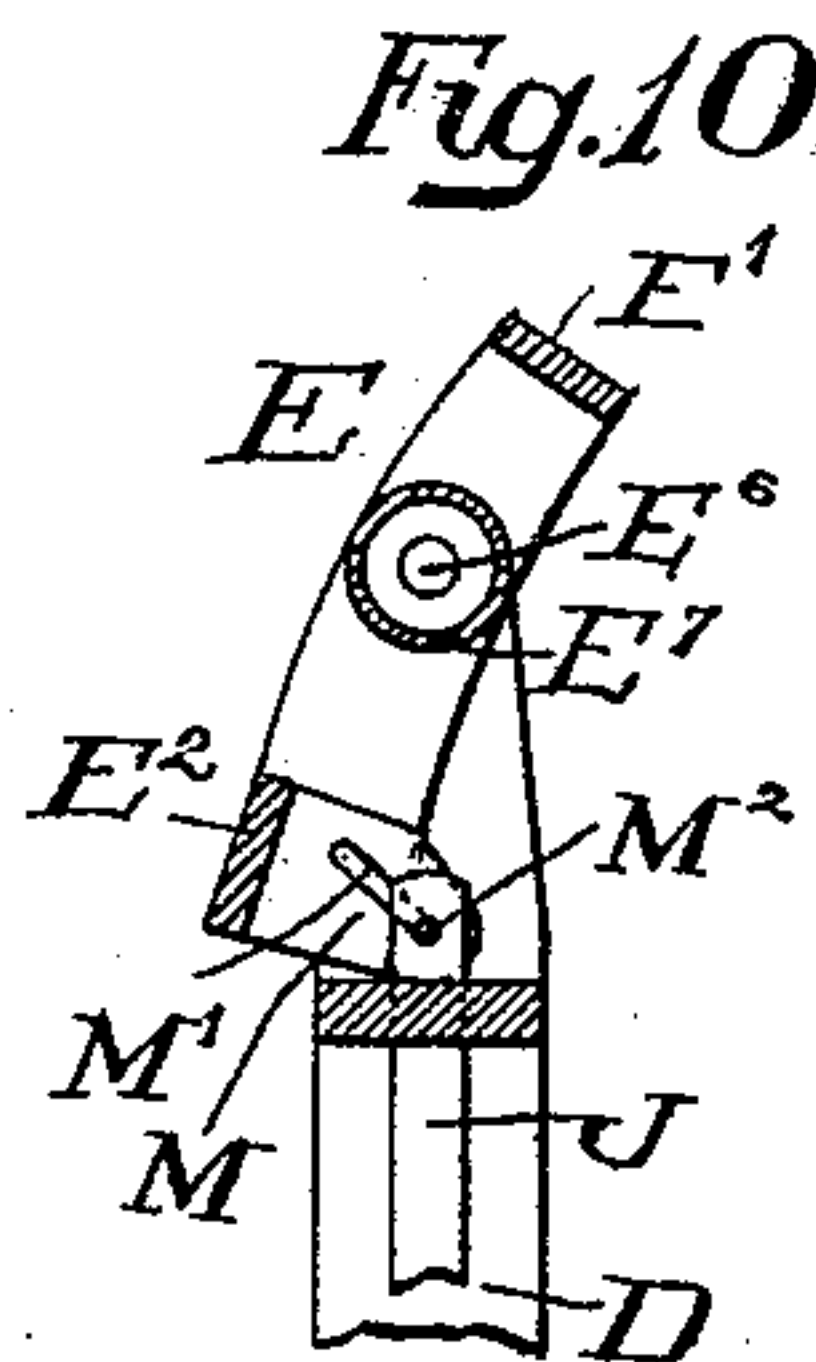


Fig. 10

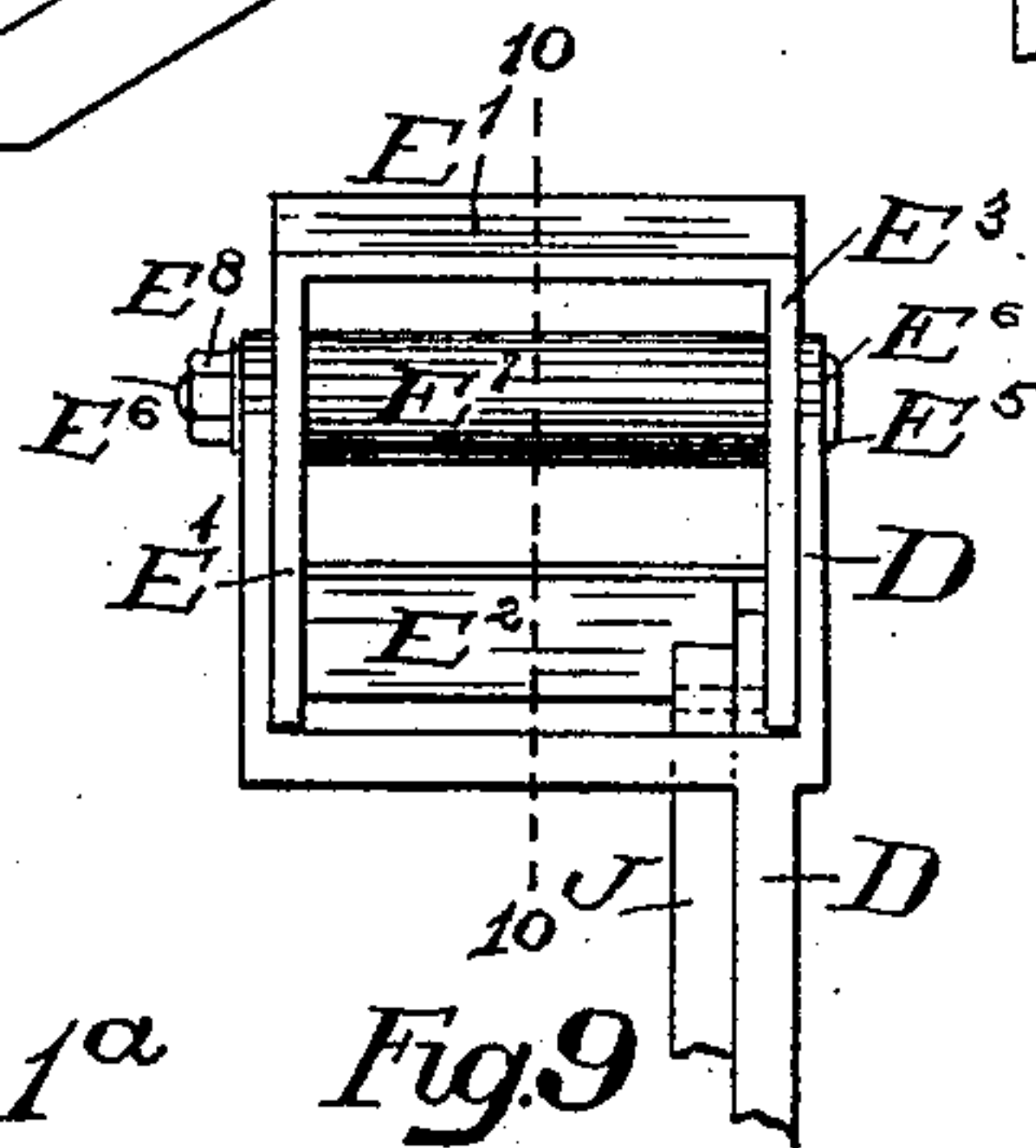


Fig. 9

Fig. 1^a

Fig. 1^b

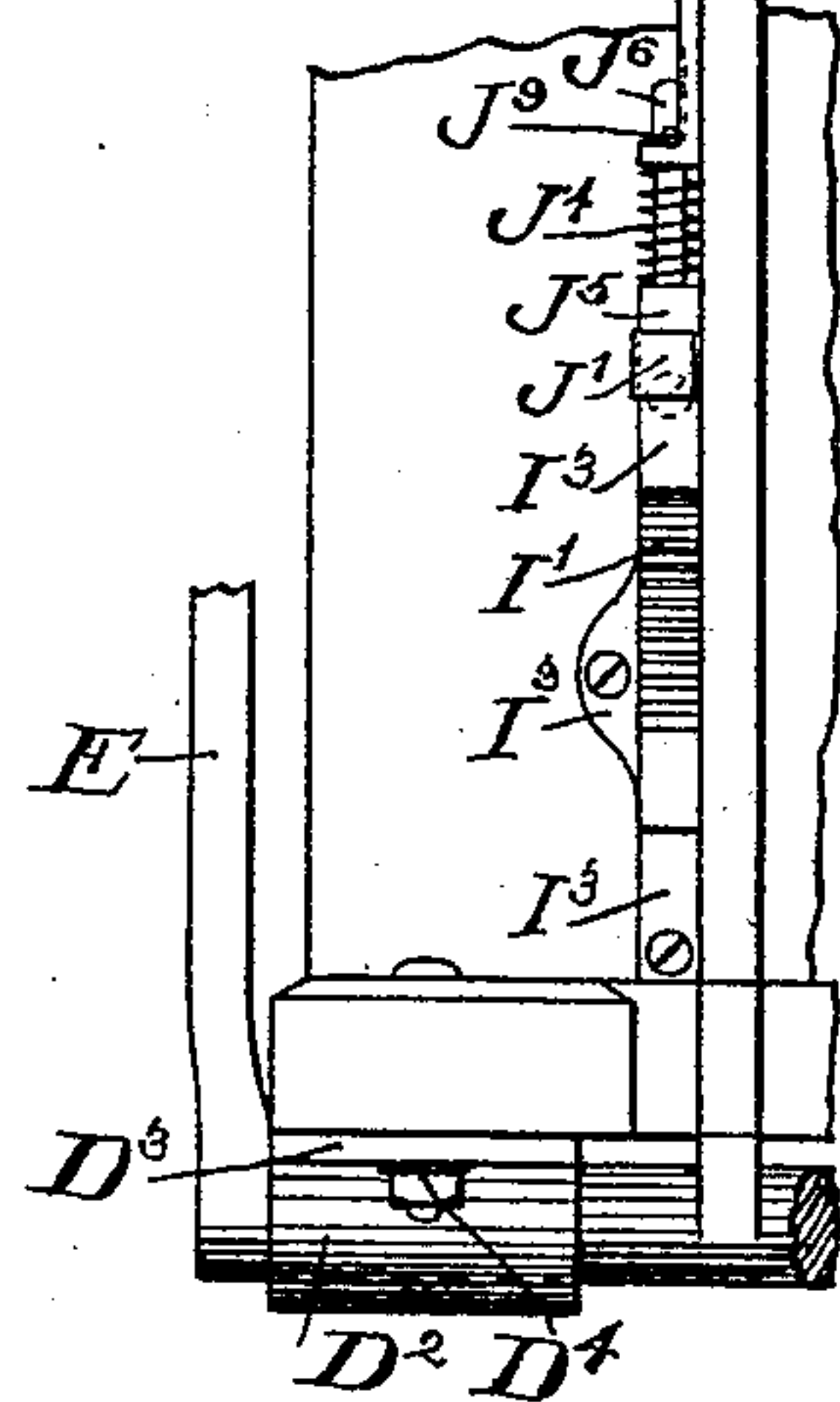


Fig. 1^c

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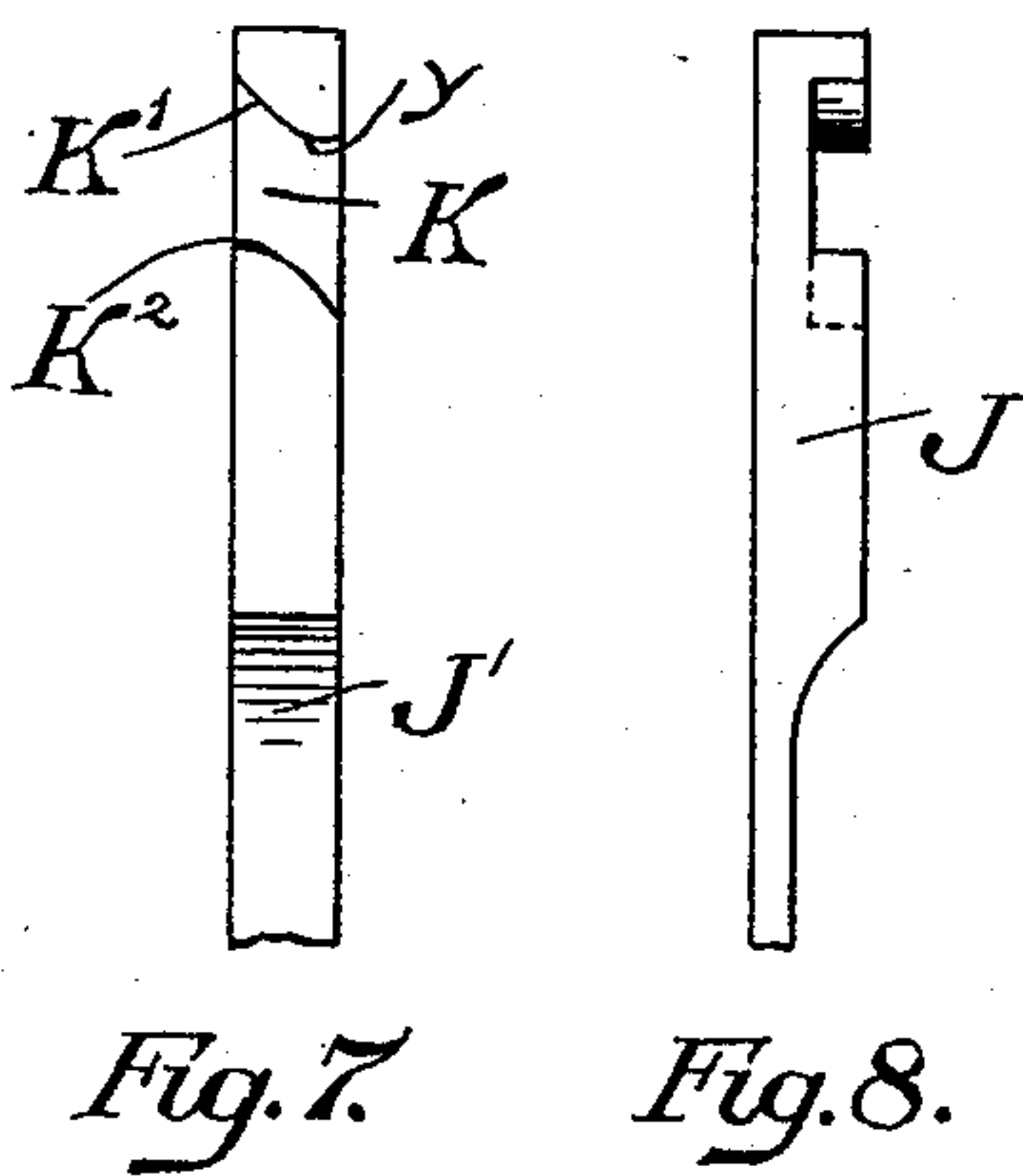
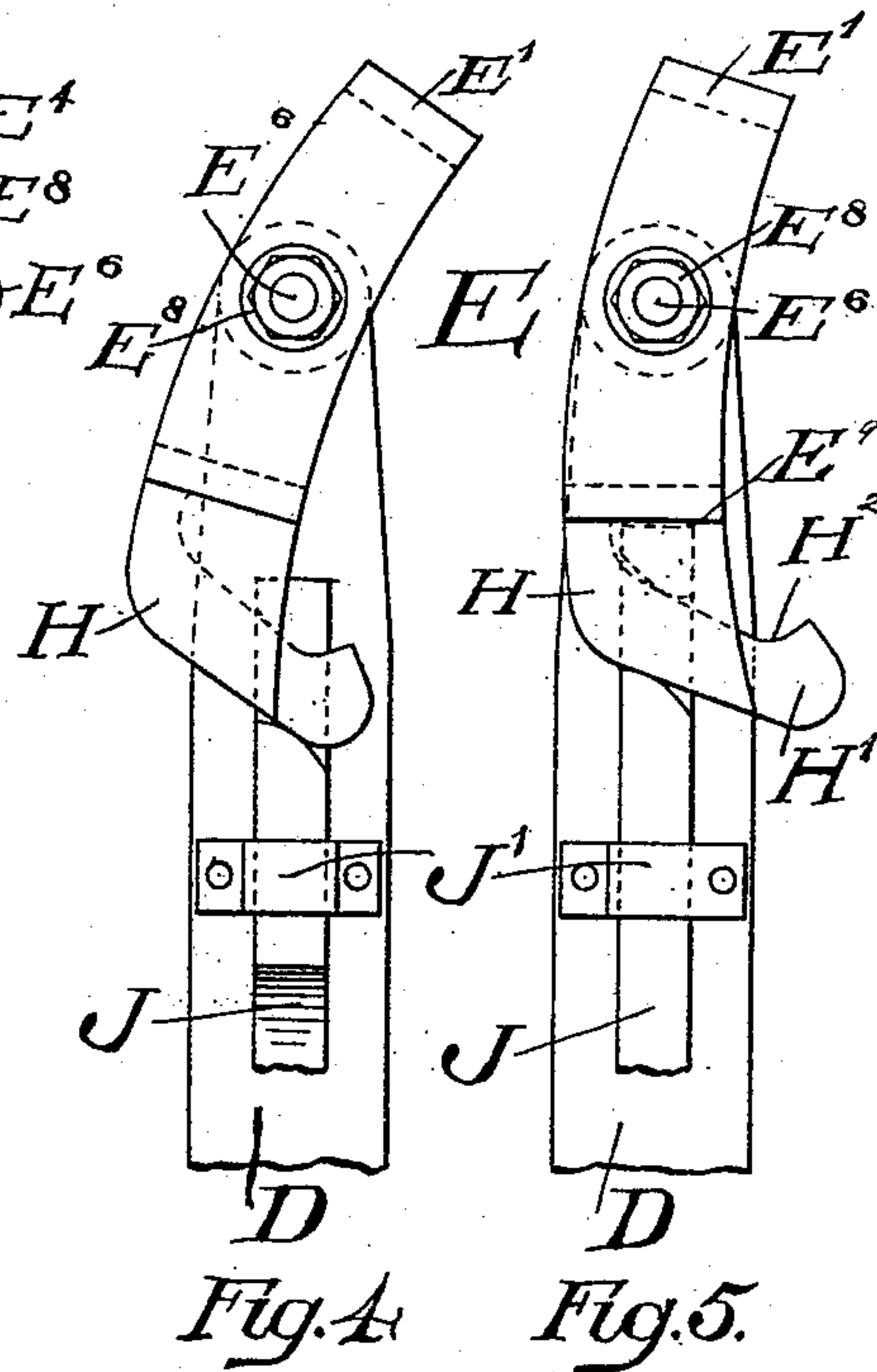
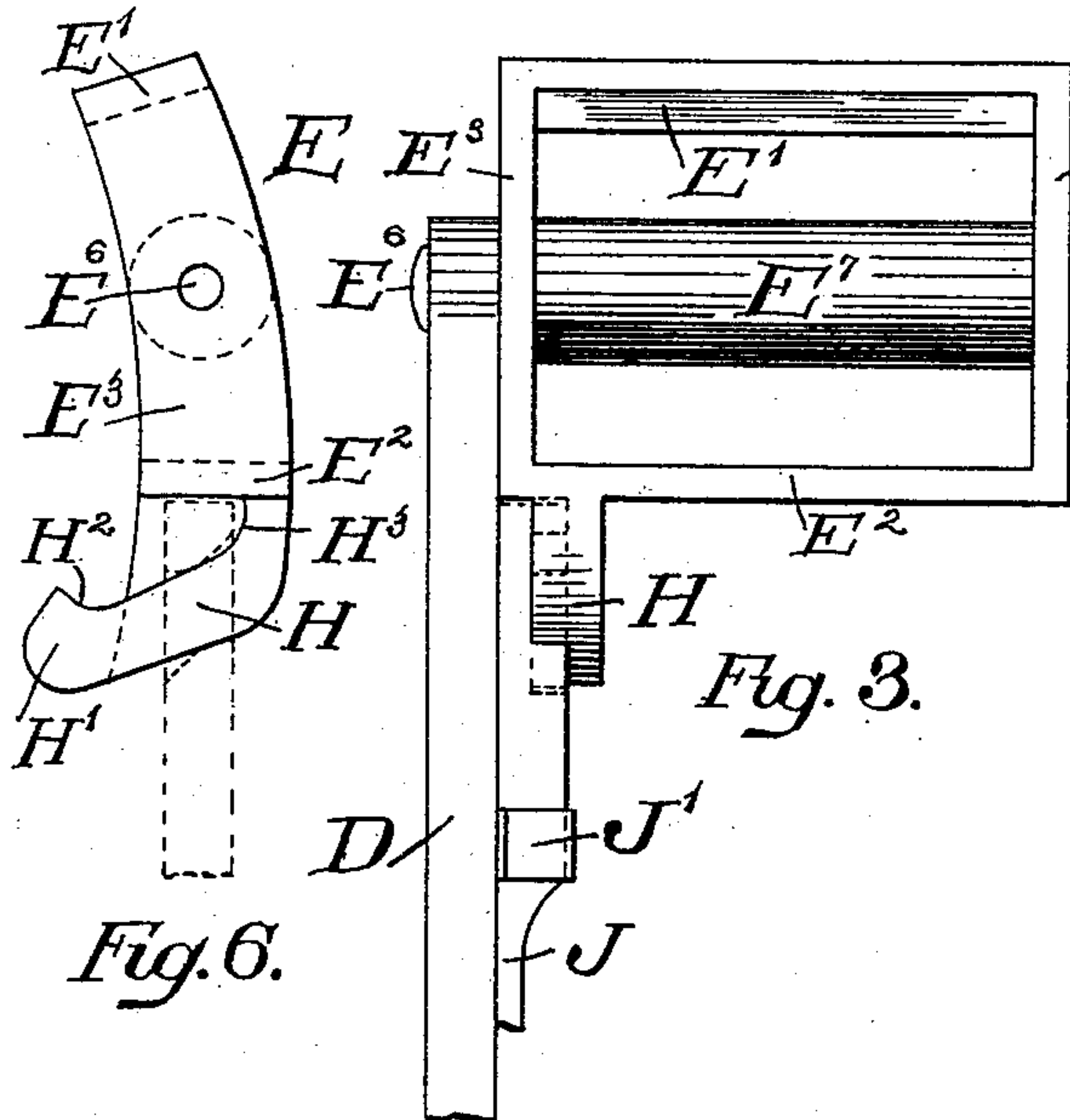
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# UNITED STATES PATENT OFFICE.

GEORGE BUTLER, OF CINCINNATI, OHIO.

## BRAKE-LEVER FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 489,456, dated January 10, 1893.

Application filed October 8, 1892. Serial No. 448,267. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE BUTLER, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Brakes for Vehicles, of which the following is a specification.

The several features of my invention, and the various advantages resulting from their use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings making a part of this specification, and to which reference is hereby made,—Figure 1, Sheet 1, is a side elevation of a brake lever embodying my invention and showing the adjacent front corners of a vehicle body and the adjacent end edges of the foot board. Fig. 1<sup>a</sup> is an elevation of the preferred form of the lower end of the latch bar and latch when used without an intervening spring, this elevation showing the same side of the bar and latch as is shown in Fig. 1. Fig. 1<sup>b</sup> is an elevation of the backing devices shown in Fig. 1<sup>a</sup>. Fig. 2 represents a front elevation of the brake lever and a lower portion of the front adjacent corners of the vehicle body. Fig. 3 is a back view of the upper portion of the brake lever including the foot treadle and adjacent mechanism. Fig. 4 is a view of that side of the mechanism shown in Fig. 3 which faces toward the right hand in said Fig. 3, and showing the position of the treadle and the accompanying mechanism when the latch is depressed and the brake is locked. Fig. 5 is a view similar to Fig. 4, and showing the parts in position they occupy when the brake is unlocked. Fig. 6 represents that view of the treadle and its accompanying cam arm which is seen when looking toward the left in Fig. 3, the brake bar being removed, the dotted lines in said figure showing the upper portion of the latch bar and its relation to the said cam arm. Fig. 7 is a view of that side of the upper end of the latch bar which faces toward the right in Fig. 3. Fig. 8 is an elevation of that side or edge of the latch bar which faces toward the left in Fig. 7. Fig. 9 is a front elevation of the treadle and a modified description of mechanism whereby the treadle is connected to the latch bar. Fig. 10 is a vertical central section taken in the plane of the dotted lines 10, 10, of Fig. 9, and

showing that face of the section which faces toward the left in Fig. 9.

A indicates the body of a vehicle of any desired form and construction.

B indicates one of the many descriptions of foot rests which may be employed. In the present illustrative instance, the front edge of the side is indicated by the letter C.

D indicates the main operating rod or lever whereby motion is transmitted from the treadle E to the lever F, in turn operating a rod G, whereby the brake shoe is brought into contact with the periphery of the wheel or removed therefrom. This brake lever D has a suitable pivot fulcrum as D', and this pivot fulcrum preferably consists of a rod journaled in the eye or journal bearing D<sup>2</sup> secured to the vehicle by appropriate means, such as, for example, the flange D<sup>3</sup> and the bolt nut D<sup>4</sup>. One end of the lever F is rigidly connected to the pivot rod D' and the other end is pivotally connected at F' to the rod G aforementioned. Whether the rod G itself carries the brake shoe or whether the latter is connected to the said rod G by intervening devices is a matter of no consequence in relation to my present invention. All that is necessary so far as the arrangement and connection of the brake shoe with the rod G is concerned is that when the brake lever D is moved forward and outward from the wagon, the said rod G shall cause the brake to press against the wheel. The lever F is not necessarily essential to the operation of my invention, as the rod G might be connected directly to the brake lever D at a suitable point, as for example, D<sup>5</sup>, but for convenience of construction, I prefer to employ the extra lever F as shown, and connect it to the rod G. When the lever D is pressed outward and the brake shoe pressed against the periphery of the wheel, it becomes desirable in many instances, to set the brake lever in such a position to allow the driver the free use of both of his feet for other purposes. This is essentially desirable when wagons are descending hills or grades of considerable length. It often becomes desirable to thus set the brake after the wagon has been stopped and thus assist in preventing the horse from readily starting off without the consent of the driver. For this purpose, a curved ratchet



I is provided having teeth  $I'$ , and is provided with a suitable brace as  $I^2$ . Both the ratchet I and the brace  $I^2$  for economy of manufacture, may be cast in one piece with the backing plate as  $I^3$ , whereby the ratchet and brace are rigidly and securely fastened to the vehicle body. When desired, the ratchet I may be extended downward, in which event the brace  $I^2$  will be merged into the ratchet I.

Upon the treadle E slides a latch bar J. The mode whereby this latch bar is secured to the brake rod or lever is not material, so long as the bar slides upon or in said lever and is always held thereto in a secure manner. A preferred means of connecting this bar J to the brake lever D is as shown, viz: by means of the loop straps  $J'$ , located at different points along the brake lever D, and bolted at  $J^2$ , or otherwise suitably secured thereto. The bar J passes through the respective loops of this strap and slides back and forth therein, substantially in line with the longitudinal axis of the length of the bar. The lower end of this latch bar J carries the latch  $J^3$  whose lower end is pointed and beveled away obliquely upward and forward.

At the upper end of the latch bar is the treadle E, having an upper foot rest  $E'$  and a lower foot rest  $E^2$ , connected together in a suitable manner. A desirable means of connecting these foot rests are the end pieces  $E^3$ ,  $E^4$ , which respectively connect together the adjacent ends of said rests.

The treadle is pivotally upheld at  $E^5$ , (see Fig. 2) upon the brake bar D. The essential feature of this pivotal connection is that it shall hold the rests in a horizontal position, and at the same time furnish a point at or near midway between the foot rest  $E'$  and the foot rest  $E^2$ , at which the treadle shall oscillate, the foot rests being sufficiently far from each other and from the pivotal axis to enable the foot of the driver resting on both rests to readily and effectively oscillate the treadle.

The preferred pivotal connection between the treadle and the brake bar consists of a long spindle  $E^6$ , fixed at one end to the brake lever and extending through the side  $E^3$  and a sleeve  $E^7$ , and the side  $E^4$ , and beyond. A nut  $E^8$  is screwed on this end of the spindle which projects beyond the left hand side of the treadle, (see Fig. 2,) secures the treadle on the spindle and holds it in position close to the brake lever. The sleeve  $E^7$  should be, as shown, integral with the side pieces  $E^4$ ,  $E^3$ , of the treadle.

The connection between the treadle and the brake lever is also a feature of my invention, and is as follows,—the lower portion of the treadle is provided with an arm, H, (see Figs. 1, 2, 3, 4, 5, and 6,) extending obliquely downward and backward, and is located within a channel or passage K in the latch bar J. The top and bottom surfaces  $K'$ ,  $K^2$  of the channel K are curved substantially as shown, and

the arm H of the treadle is preferably tapered slightly substantially as shown, toward its free end. The arm H lies within the channel K, and the object of thus curving the faces  $K'$ ,  $K^2$  of the channel and tapering the arm H is that the latter when sliding through the said channel K will not only operate to reciprocate the ratchet bar J and will continually keep that surface of the arm H which is at that time doing the working in close contact with that surface of the channel K which is operated upon by the arm and at the same time permit the arm H to move through the channel K without undue friction and without obstruction. The free end of the arm H is provided with an enlarged portion  $H'$  having a part of its upper side formed in a curve  $H^2$ , substantially as shown. This enlarged portion  $H'$  prevents the arm H from slipping out of the channel K after it, the arm, has reached the end of its stroke in moving rearwardly, at which time the curve  $H^2$  nicely fits against that portion of the curve which is indicated by the letter  $\gamma$ . The position of this arm H within the channel K in reference to the curved surfaces  $K'$ ,  $K^2$ , of the channel K is well illustrated in Figs. 4, 5 and 6 of the drawings.

Fig. 4 indicates the position of the arm when it is in its rear position namely, having been moved backward as far as possible, while Figs. 5 and 6 indicate the position of the arm when the latter has been advanced as far as possible in a forward direction.

The mode in which these features of my invention operate is as follows,—The driver sitting upon a suitable point of the wagon as C, and desiring to apply the brake to the wagon, places his foot upon that side of the treadle E which is nearest him, namely, the rear side, (see Fig. 1) and pushes the treadle forward. This carries the upper end of the brake lever forward and moves the latch  $J^3$  forward over the ratchet I and consequently through the agency of the rod  $D'$  connected to the lower end of the brake lever moves the free end of lever F forward and advances the rod G, thereby applying the brake to the wagon. On account of the conformation of the teeth  $I'$  of the ratchet I and of the point of the latch  $J^3$ , the latch will catch against the adjacent tooth of the ratchet and will prevent the brake lever from moving backward. Consequently, the driver can take his foot off of the brake, and use his foot for some other purpose. Meanwhile, the latch holds the brake lever in the position given to it in the first instance by the driver and holds the brake shoe against the wheel. When the driver desires to release the brake, he places his foot against the treadle E and drawing back his toe and pressing forward the foot rest  $E^2$ , he advances the arm H. As the arm H passes through the channel K of the latch, it bears against the upper surfaces of said channel and operates to lift the latch bar J and with it latch  $J^3$  away from the ratchet.



The latch now being clear of the ratchet, the driver allows the brake lever to move rearward toward him, and it will, as a matter of course do this, inasmuch as the tendency of the parts when the brace is pressed against the wheel is to relax as soon as it is allowed to do so. Pressure upon the upper portion of the treadle, namely, at the foot rest  $E'$ , moves the said foot rest  $E'$  of said lever forward and moves backward the foot rest  $E^2$ , and also the arm H, thus depressing the latch bar J and causing the latch  $J^3$  to engage one of the teeth of the ratchet I.

For further convenience of manipulation and for diminishing the wear upon the latch bar, I interpose between the latch  $J^3$  and the bar J a spring  $J^4$ . In such event, the latch bar may be provided as shown with the shoulder  $J^5$  and a pivotal extension  $J^6$  passing up through an opening  $J^7$  located in lower portion of the latch bar and preferably in a flanged projection thereof, such as  $J^8$ . The latch reciprocating through the adjacent loop  $J'$  and also the opening  $J^7$  of the latch bar, will reciprocate in a line substantially identical with the axial length of the brake bar D. The spring  $J^4$  is compressed between the shoulder  $J^5$  of the latch bar J and the projection  $J^8$  or equivalent part of the latch bar J and encircles the extension  $J^6$  of the latch. Thus the latch is continually pressed downward against the ratchet. As the driver presses forward and outward the brake bar he need have no fear as to whether he lift the latch  $J^3$  away from the ratchet I or not, because the pressure of the latch  $J^3$  in moving downward upon the ratchet teeth is equivalent to a slight downward pressure of the spring  $J^4$ . The spring, however, operates to cause the latch  $J^3$  to engage with the teeth of the ratchet I as soon as the brake lever has been pushed out the desired distance,—provided of course that the treadle is not operated so as to raise the latch out of the ratchet I which is always the case when the arm H of the treadle is in a forward position in relation to the latch bar. On this extension  $J^6$  of the latch bar there is a projection  $J^9$  so that when the latch bar is lifted by the arm H, the projection  $J^8$  which is located directly under said projection  $J^9$  will lift said projection  $J^9$  and with it the latch out of engagement with the ratchet.

It may be here remarked that the surface  $E^9$  of the treadle (see Fig. 2) is preferably used as a stop against which the upper end of the latch bar strikes and further elevation of the latter is prevented. The employment of the surface  $E^9$  as a stop prevents the upper front portion of the arm H from colliding with the latch and compelling the same to be used as a stop, which would have a tendency to bend the latch bar out of line, whereas when the surface  $E^9$  is employed as a stop, the latch bar J is stopped in the direction of its axial length, and no tendency to deflect it out of line is present.

A modified form of that feature of my invention which consists of the operating connection between the treadle E and the latch bar J is shown in Figs. 9 and 10. In this modification, there is present in the lower end of the treadle a slot  $M'$ , present in an arm M. In the upper end of the latch bar is a stud or projection  $M^2$  located in the slot  $M'$ . The slot  $M'$  lies in a direction substantially oblique to the front and rear faces of the treadle. As the lower portion of the treadle is advanced, the stud  $M^2$  moves up in the slot  $M'$  and the latch bar J is raised. As the lower portion of the treadle is retracted, the stud  $M^2$  descends in the slot  $M'$ , and the latch bar J is lowered. Otherwise, the operation of the treadle conjointly with the latch bar J and with or without the spring  $J^4$  is substantially the same as hereinbefore specified.

While the various features of my invention are preferably employed together, one or more of the said features may be used without the remainder, and in so far as applicable, one or more of the said features may be used in connection with brakes for wagons of a description other than the one herein specifically described.

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

1. In a brake device for a vehicle, the combination of the brake lever D, reciprocating latch bar J, latch  $J^3$  connected therewith, and ratchet I and treadle E, having arm H, the latch bar J having the channel K, in which is located the said arm, substantially as and for the purposes specified.

2. In a brake device for a vehicle, the combination of the brake lever D, reciprocating latch bar J, latch  $J^3$  connected therewith, and ratchet I and treadle E, having arm H, the latch bar J having the channel K, in which is located the said arm H, the arm H provided with a terminal enlargement  $H'$  at its free end, substantially as and for the purposes specified.

3. In a brake device for a vehicle, the combination of the brake lever D, reciprocating latch bar J, latch  $J^3$  connected therewith, and ratchet I, and treadle E, having arm H, the latch bar having the channel K, in which is located the said arm H, the upper face  $K'$  and the lower face  $K^2$  of the channel K curved substantially as described for the reception of the arm H, substantially as and for the purposes specified.

4. In a brake device for a vehicle, the combination of the brake lever D, reciprocating latch bar J, latch  $J^3$  connected therewith, and ratchet I and treadle E, having arm H tapered slightly toward its free end, the latch bar J having the channel K, in which is located the said arm H, the upper face  $K'$  and lower face  $K^2$  of the channel K curved substantially as described for the reception of the arm H, substantially as and for the purposes specified.

5. In a brake device for a vehicle, the com-



5 combination of the brake lever D, the reciprocating latch bar J, latch J<sup>3</sup> connected therewith, and ratchet I and treadle E, having arm H, the latch bar J having the channel K, in which  
10 is located the said arm H, the lower end of the treadle being provided with the portion E<sup>9</sup> directly above the latch bar J serving as a stop for the latter in its reciprocation, substantially as and for the purposes specified.

15 6. The treadle formed as shown, having the foot rest E' and the foot rest E<sup>2</sup>, pivotally supported at E<sup>6</sup> on the brake lever D, and having the arm H and reciprocating latch bar J provided with the channel K in which is located the arm H, the latch bar provided with a suitable latch J<sup>3</sup> engaging the ratchet I, substantially as and for the purposes specified.

20 7. The treadle formed as shown, having the foot rest E' and the foot rest E<sup>2</sup>, and pivotally supported on the bar E<sup>6</sup> connected to the brake lever, and having the arm H and reciprocating latch bar J provided with the channel K in which is located the arm H, the latch bar provided with a suitable latch J<sup>3</sup>  
25 engaging the ratchet I, the treadle pivotally supported on the bar E<sup>6</sup>, connected to the

brake lever D, substantially as and for the purposes specified.

8. The treadle, and the latch bar reciprocating on the brake lever, the latch provided 30 with the shoulder J<sup>5</sup> and extension J<sup>6</sup> having projection J<sup>9</sup>, the extension reciprocating through the opening in the latch bar, the latch bar having a flange or projection J<sup>7</sup> against which the projection J<sup>9</sup> of the extension shall impinge, and spring J<sup>4</sup> located between the shoulder J<sup>5</sup> and the projection J<sup>7</sup> of the latch bar, and ratchet I for engaging with the latch J<sup>3</sup>, substantially as and for the purposes specified. 40

9. The treadle, pivotally supported by and connected to the brake lever, and the reciprocating latch bar and latch, and ratchet, and mechanism substantially as described for enabling the oscillation or rocking of the treadle 45 to transmit to the latch bar a reciprocating motion, substantially as and for the purposes specified.

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