

No. 668,443.

Patented Feb. 19, 1901.

G. T. GLOVER.
VEHICLE SPRING AND HANGER.

(Application filed Dec. 14, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

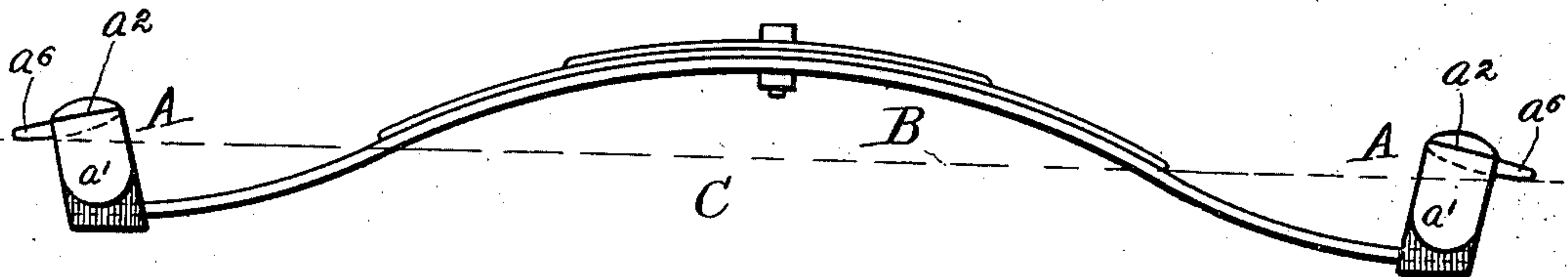


Fig. 2.

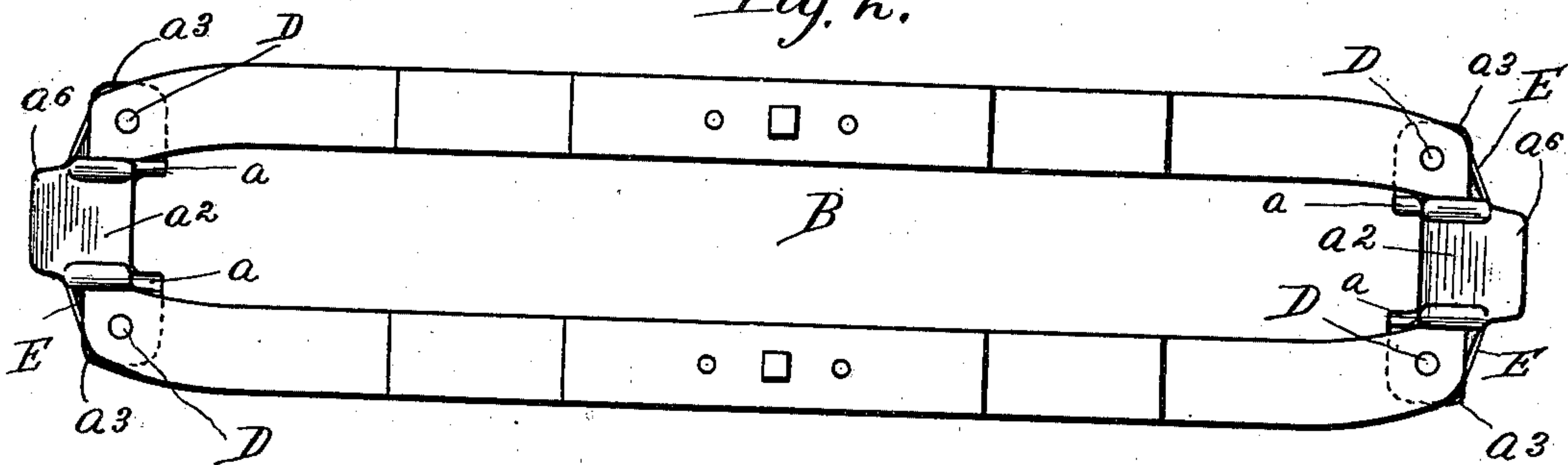


Fig. 3.

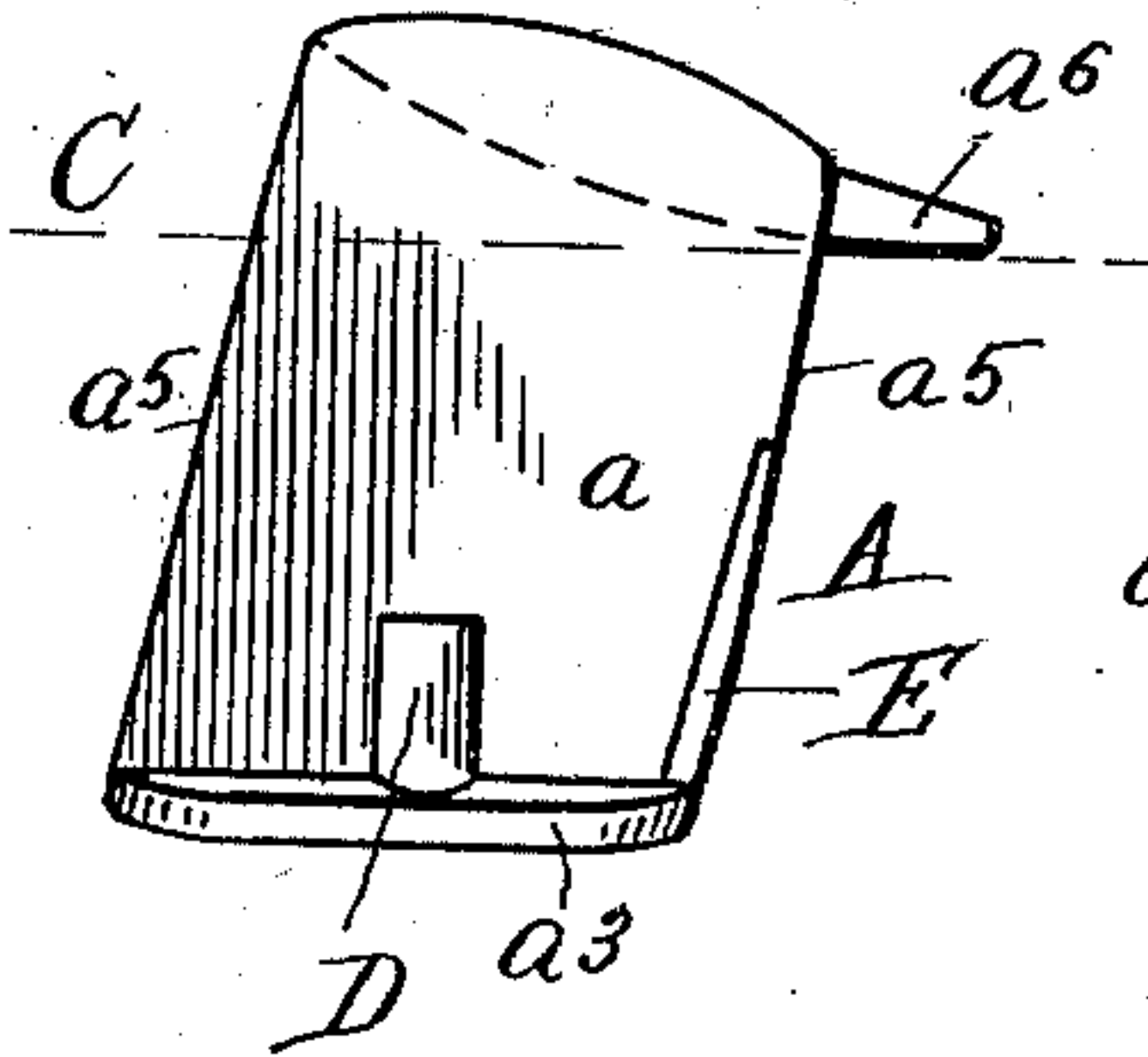


Fig. 4.

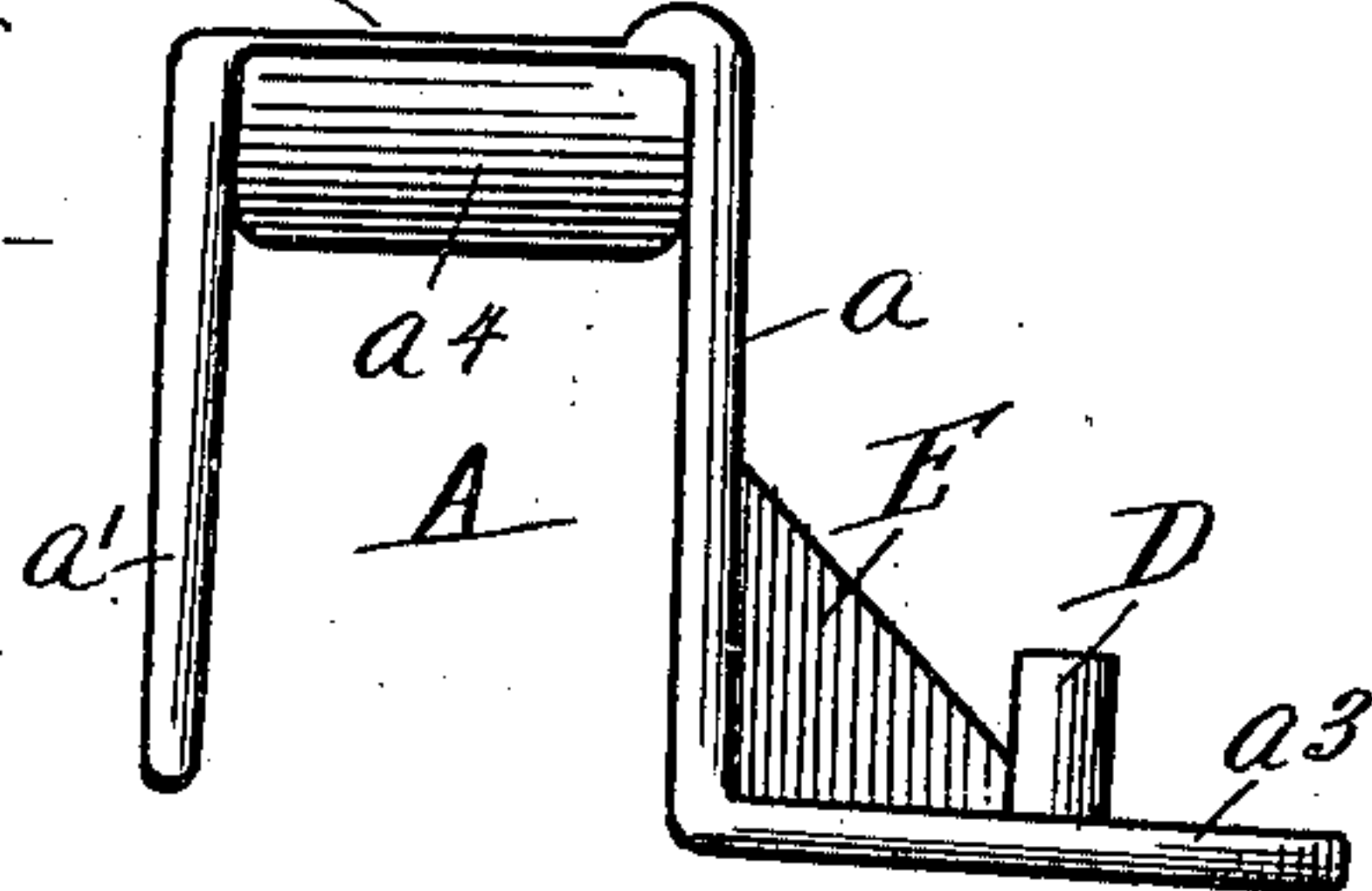
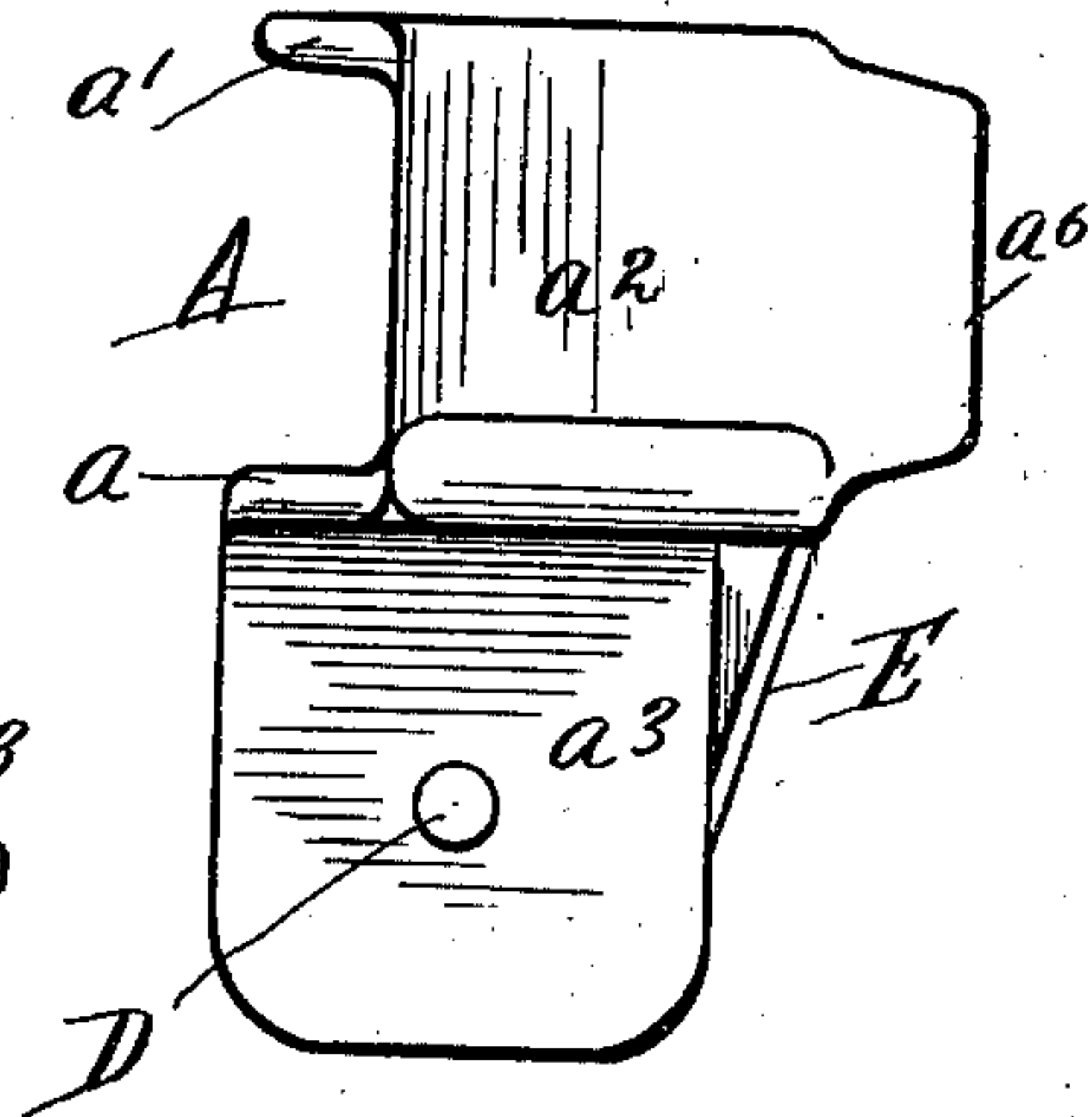


Fig. 5.



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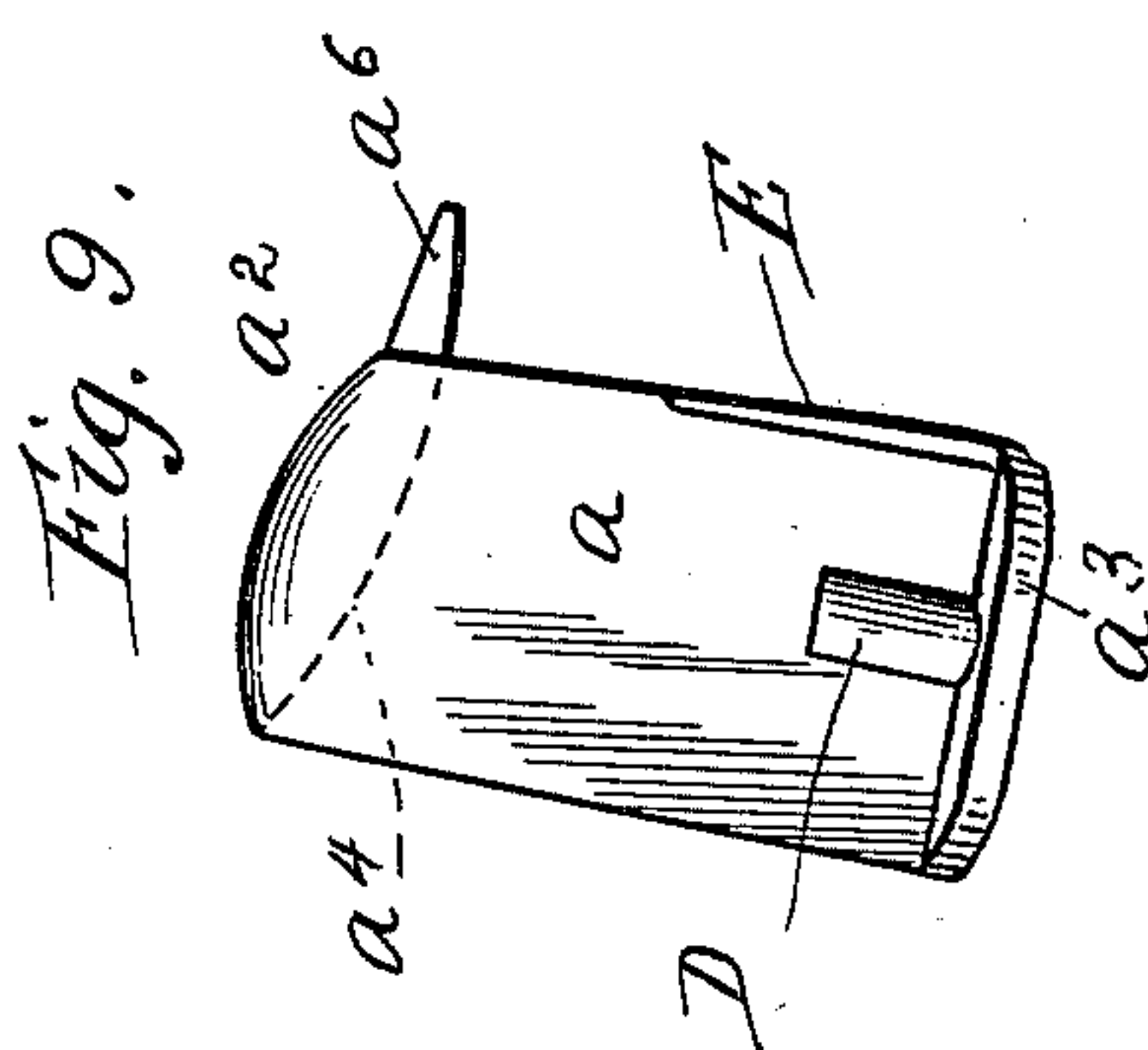
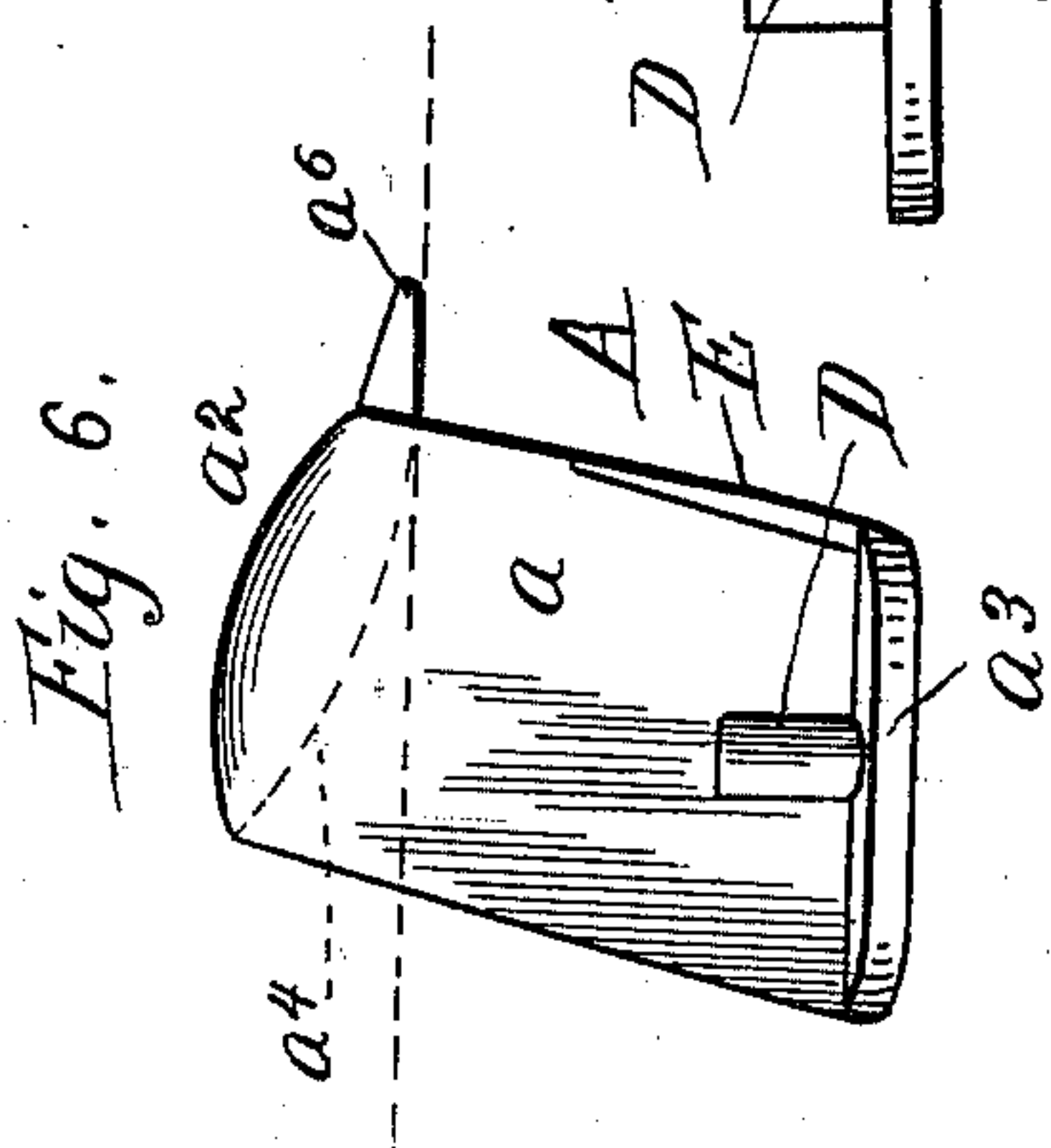
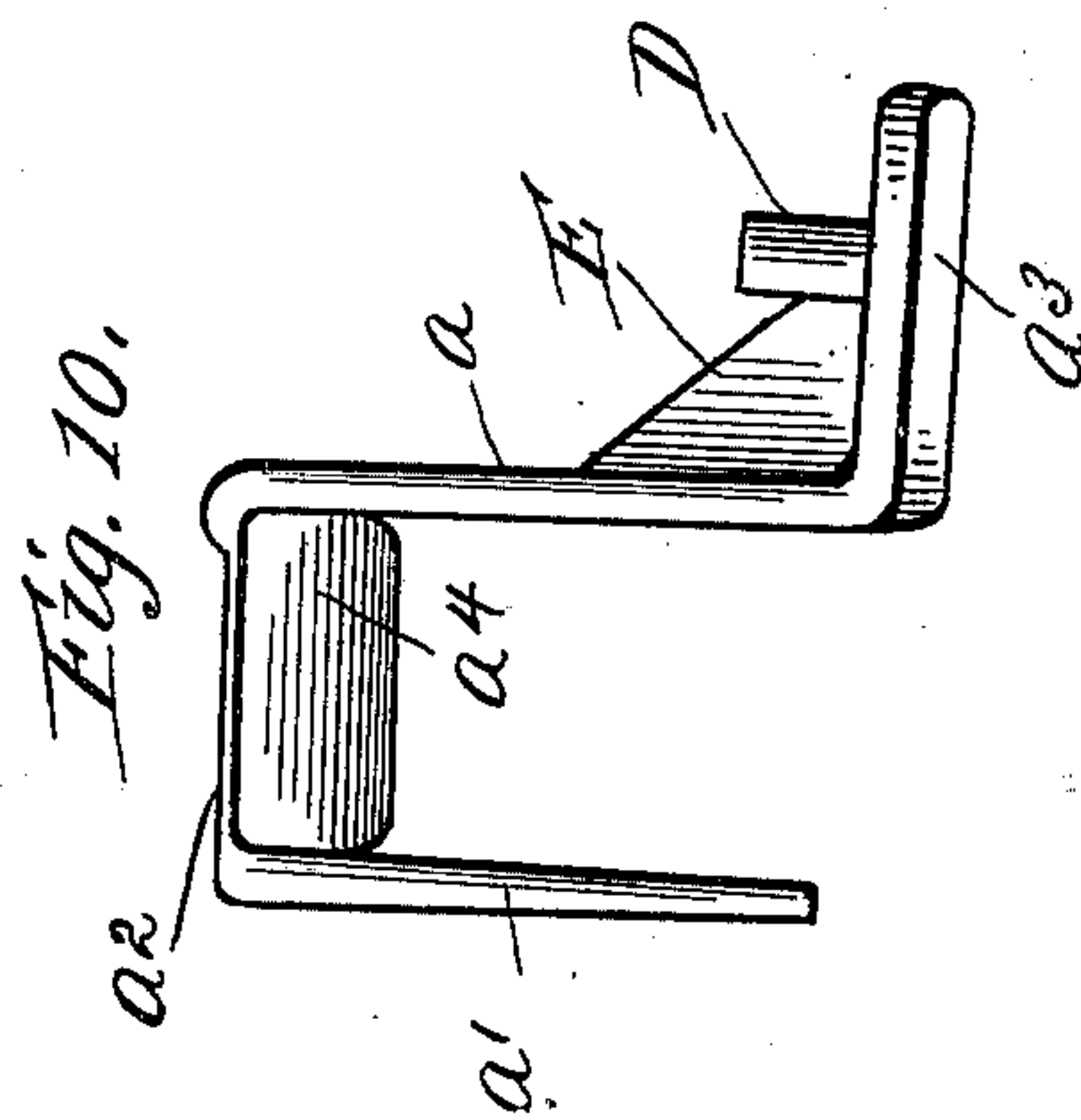
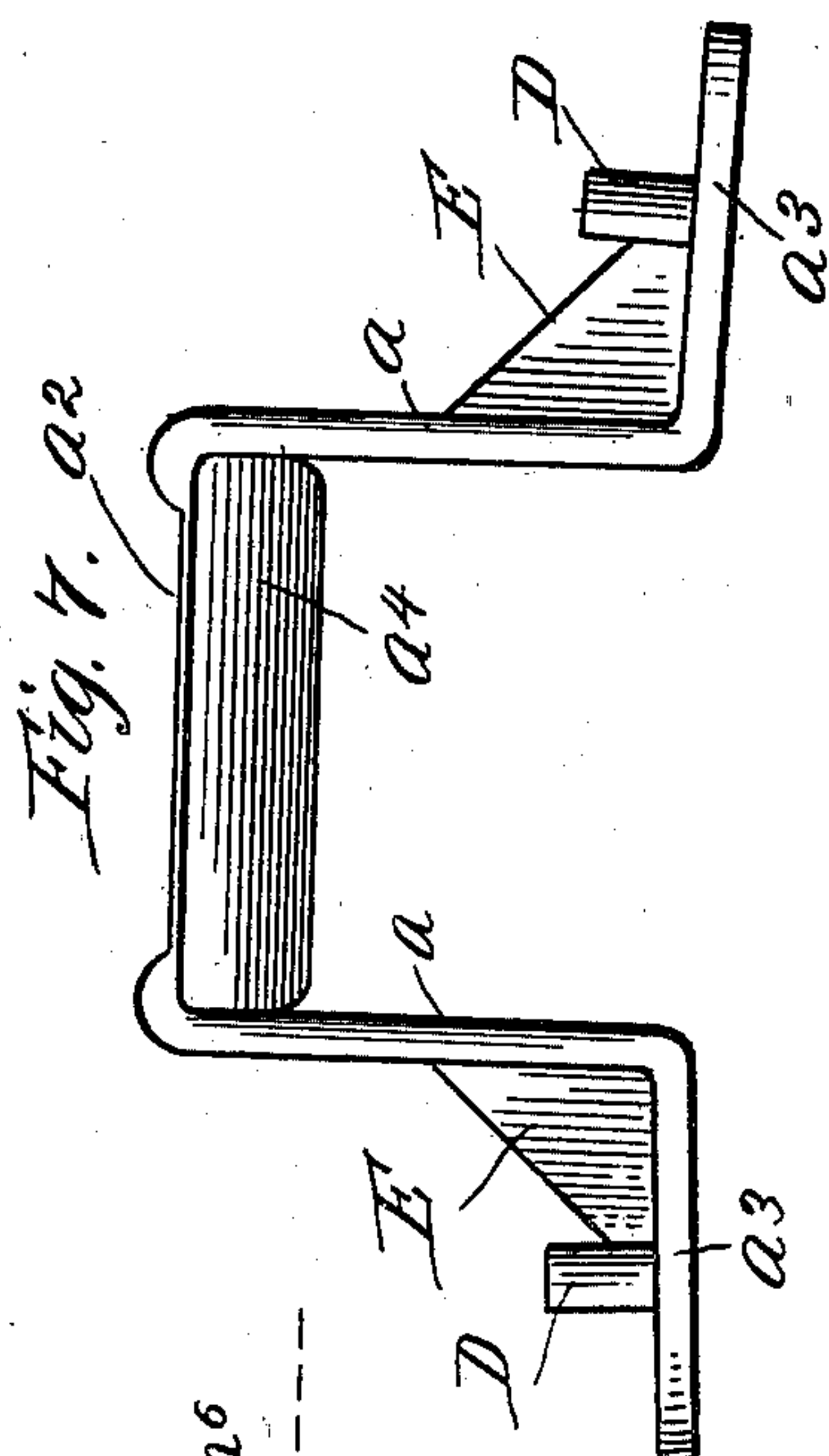
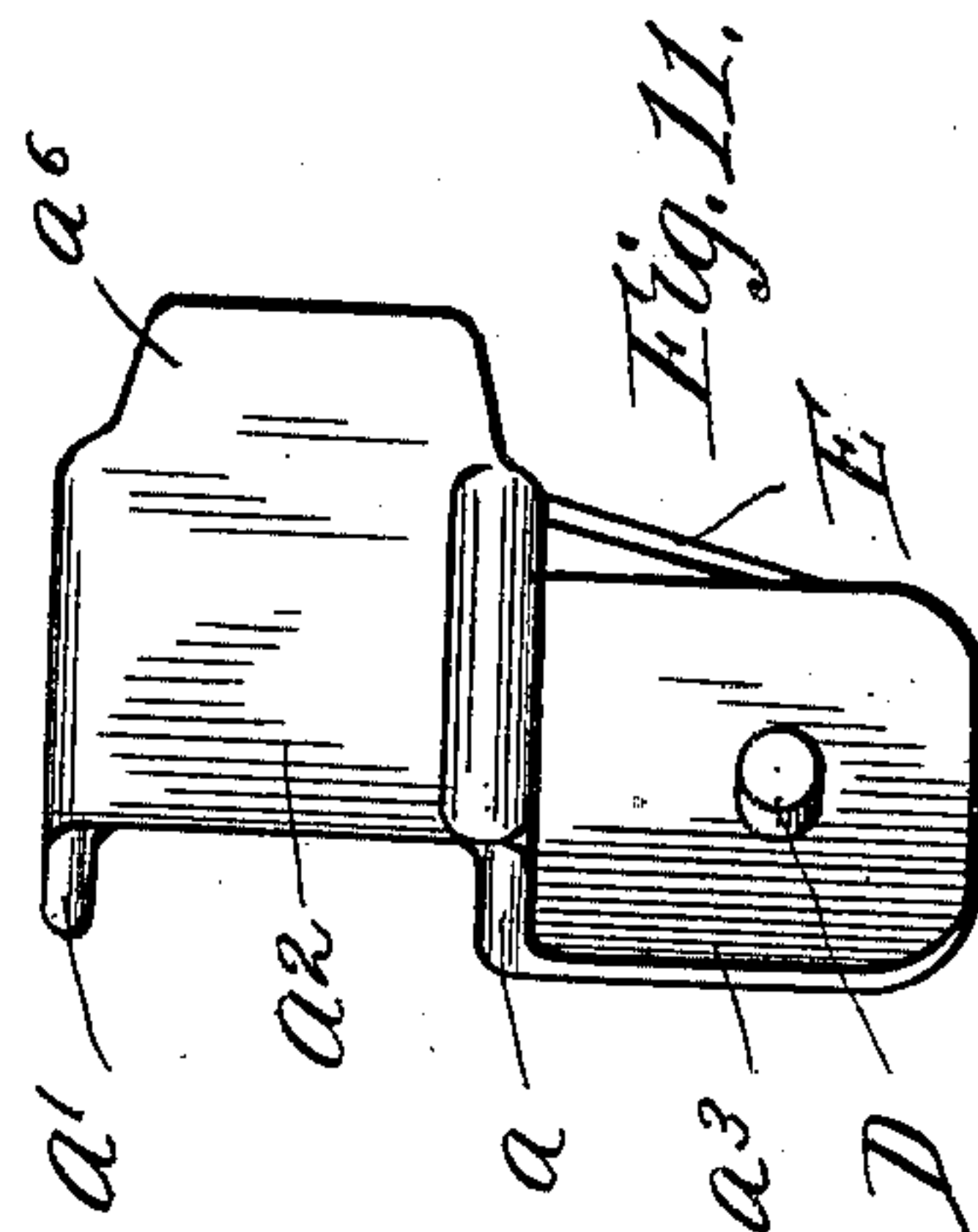
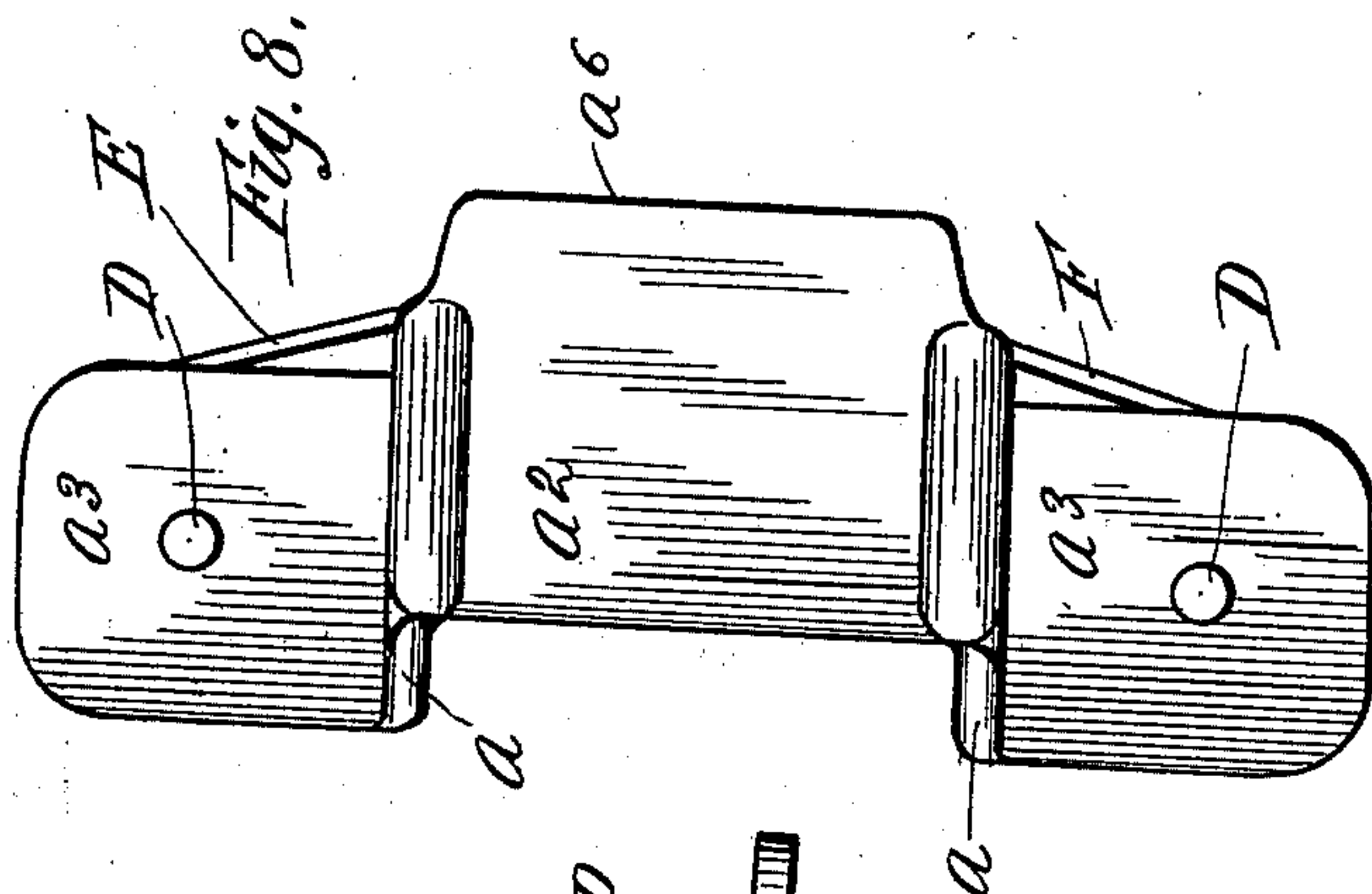
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UNITED STATES PATENT OFFICE.

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VEHICLE-SPRING AND HANGER.

SPECIFICATION forming part of Letters Patent No. 668,443, dated February 19, 1901.

Application filed December 14, 1900. Serial No. 39,868. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. GLOVER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have
5 invented a certain new and useful Improvement in Vehicle-Springs and Hangers Therefor, of which the following is a specification.

My invention relates more particularly to an improvement upon the construction of
10 hanger for vehicle-springs illustrated in Letters Patent of the United States No. 553,558, dated January 28, 1896. In said patent the spring, which may be single or double, is provided at its ends with hangers which are rigid
15 with the spring and adapted to form rocking supports arranged to engage and rock upon a suitable bearing without end slip. A further feature involved in the construction of spring-hanger described in said patent is that where
20 a bow-spring is provided with a hanger at each of its ends the bearing portions or faces of the hangers will normally stand at opposite angles to a right line between the ends of the spring for purposes fully set forth in
25 the specification of the patent.

Objects of my present invention are, first, to provide a formation or construction of hanger whereby, while maintaining all of the advantages incident to the use of the hangers described in said patent, a special formation or
30 bending of the end portions of the spring will not be required in order to set the bearing portions of the hangers at desired relative angles, thereby permitting the hangers to be
35 applied to any ordinary bow-spring; second, to avoid breakage of the hangers when the springs are subject to a heavy load; third, to shorten the spring and economize in spring metal without detracting from the desired
40 spring action; fourth, to dispense with the use of separate rivets as a means for securing the hangers to the springs; fifth, to adapt the hangers to practically lengthen the spring; sixth, to cause the spring to more effectively
45 resist breakage of the hangers when the spring is overweighted.

To the attainment of the foregoing and other useful ends, my invention consists in matters hereinafter set forth, and illustrated by the
50 accompanying drawings, in which—

Figure 1 represents in side elevation a

single bow-spring with a hanger at each end. Fig. 2 is a top plan view of a double bow-spring provided at each end with a hanger—that is to say, a couple of parallel springs arranged side by side and connected together
55 at their ends by hangers, the whole forming a spring structure which I term a “double” spring. Figs. 3 and 4 are elevations viewed from different sides, and Fig. 5 is a top plan
60 view of a construction of hanger for single springs involving certain features of my invention. Figs. 6, 7, and 8 are views respectively corresponding with the three preceding views, but showing the hanger adapted
65 for a double spring. Figs. 9, 10, and 11 are views respectively corresponding with Figs. 3, 4, and 5, but showing a construction of single-spring hanger, having its upright side edges perpendicular to the plane of the seat-
70 flange in place of being inclined thereto, as shown in Fig. 3.

The principles of my invention are applicable to both single and double spring hangers—that is to say, they are applicable to
75 hangers for single bow-springs composed of one or more leaves and also to hangers for double springs comprising a pair of connected springs arranged side by side and each constructed with one or more leaves, as may
80 be desired.

The construction of single-spring hanger A (illustrated in Figs. 1, 3, 4, and 5,) involves a hook-shaped formation whereby it may engage and bear upon a suitable support, such
85 as the top edge portion of a side of a vehicle-body, where the spring B is used as a seat-spring, or upon a bolster or axle or the like, as the case may be, where the spring is employed as a body-spring. The hanger referred to is formed with a body portion comprising opposite upright sides a a' , connected
90 together at their upper ends by a transverse web or top a^2 , and having a seat flange or lip a^3 , which projects laterally from the lower end portion of the upright side a . The seat-flange a^3 provides a seat to which the flat end of a bow-spring is to be secured, and the transverse top of the hanger provides a bearing
100 portion adapted to engage and tilt or rock upon a support, such as the upper edge of a vehicle-body side or a bolster or axle or other

suitable supporting part of the vehicle, as the case may be.

The under side of the top a^2 of the hanger forms the engaging and bearing face or bearing portion a^4 of the hanger and is preferably curved or rounded, as in Fig. 3, to facilitate rocking, although, broadly considered, such bearing-face may be flat, or substantially so. Whether curved or flat, however, the said engaging and bearing portion has a general inclination relatively to the plane of the seat-flange a^3 , or, what is the same thing, the seat-face of the seat-flange a^3 which is secured to the spring is on a plane which converges toward the general plane of the bearing-face a^4 of the top of the hanger, the arrangement being such that when the hanger is applied to a spring, as in Fig. 1, the planes referred to will converge in a direction away from the end of the spring. When the hanger is thus applied and a flat end of the spring is secured to the seat-flange a^3 , the bearing-face of the top of the hanger will be at an angle to the seat-flange a^3 , and with a hanger applied to each end of the spring the engaging and bearing portions of such hangers will be at opposite angles to a right line between the ends of the springs, while the seat-flanges may be parallel, or nearly so, with such line, a further illustration being the line C, indicating the supporting edge or portion of a vehicle-body side or other support on which the bearing portion of the hanger is arranged to rock, it being seen that when the spring is not weighted down by a load or is in its normal condition the bearing portions of the two hangers will stand at opposite angles to such line and that in use the successive actions of the spring, tending to alternately straighten it out and permit it to bend back toward its normal bowed condition, will cause the hangers to rock on the supporting part of the vehicle without end slip. By such construction it will not be necessary to specially bend the ends of the spring in order to cause the bearing portions a^4 of the hangers to normally stand in planes inclined to a horizontal plane or line, and hence the hangers can be applied to ordinary forms of bow-springs, either with or without reverse bends or the like.

As best shown in Figs. 1 and 3, the hanger thus far described has its sides, or more particularly its side a , formed to incline relatively to the seat-flange a^3 —that is to say, the upright edges of the side a are inclined relatively to the plane of the seat-flange, or, more particularly described, when the lower seat portion, to which the spring is secured, is substantially on a horizontal plane, as in Figs. 1 and 3, the normal point of contact between the normally-inclined upper bearing portion of the hanger and the supporting part of the vehicle will be intersected by a vertical plane somewhat beyond the end of the spring. In this way the part of the upper bearing portion which normally rests upon the vehicle-

support is thrown forward in a direction to practically extend or lengthen the structure composed of the spring and hangers, with the general effect of lengthening the spring proportionally to the inclination of the hanger, comprising an inclined upright body portion having a top bearing face or portion which is on a plane inclined to the plane of the seat-flange, to which an end of the spring is secured.

To further practically lengthen the spring structure as a whole, comprising the spring and a hanger at each end, and at the same time save spring metal by shortening the spring proper, the top bearing portion a^4 of the hanger is formed with an end extension a^6 , which normally bears upon the vehicle-body or bolster or other support when the hanger is applied and in use. This extension projects in a direction away from the end of the spring, as best illustrated in Fig. 1.

In order to dispense with separate rivets for securing the springs to the hangers, the hanger can be cast with a stud D, integral with and projecting upwardly from its seat-flange, and by making the hanger of malleable casting or the like the upper end of such stud can be headed down upon the end of a spring after the latter, having a suitable hole for the reception of the stud, has been properly fitted to the seat, having a stud D adapted to extend up through the hole in the spring.

When the spring is overloaded, it will have a tendency to twist, and this, augmented by the down pressure of the weight sustained by the seat-flange, will tend to bend such seat-flange downwardly and cause it to break from the body of the hanger along the line of its junction with the upright side a . In order to strengthen the hanger and to materially oppose such tendency toward breakage, I provide two constructions each contributing toward the desired end. First, I form the hanger with a vertical web E, arranged to connect the seat-flange a^3 with the upright side a of the hanger, thereby materially strengthening the device and rendering it strong and durable under all conditions. Secondly, I form the seat-flange a^3 on a plane which slopes laterally downward from the side a , so that when, for example, the middle of the transversely-flattened bow-spring is clipped or bolted to the vehicle seat or body and its flattened ends are seated upon and secured to the seat-flange of the hangers the application of the latter to the portions of the vehicle with which they are to engage, or a moderate weight upon the spring in conjunction with such application thereof, will cause each end portion of the spring adjacent to a hanger to have a moderate extent of abnormal twist or torsional deflection in opposition to its inherent spring resistance thereto. In this way the bending down of the seat-flange in a direction to cause the hanger to crack or break along the junction-line between its seat-flange a^3 and upright body side a will be opposed by

retractive spring energy acting in an opposite direction—that is to say, acting in a direction tending to bend the seat-flange upwardly. This arrangement permits me to make a lighter construction of hanger and at the same time renders the hanger more durable.

The construction of hanger shown in Figs. 2, 6, 7, and 8 may be described as the hanger of Figs. 1, 3, 4, and 5, having each of its upright sides provided with a seat-flange α^3 , formed, arranged, and connected as hereinbefore described, it being observed that in Figs. 6, 7, and 8 each side α is similar to the side α shown in Figs. 1, 3, 4, and 5, in which four last-mentioned figures the side indicated by reference-letter α' may be made shorter than the opposite side, as best shown in Figs. 1 and 4. Parts of the double hanger illustrated by Figs. 2, 6, 7, and 8 which are formed as in Figs. 1, 3, 4, and 5 have corresponding letters and involve like principles, the application of a couple of such double hangers to a double bow-spring (or pair of bow-springs) being shown in Fig. 2, in which it will be seen that the hangers serve to connect the ends of the springs.

In Figs. 9, 10, and 11 the upright edges of the sides $\alpha \alpha'$ of the hanger are perpendicular to the plane of the seat-flange, and the top bearing-face α^4 is inclined relatively to the plane of the seat-flange, the hanger being otherwise the same as hereinbefore described in connection with Figs. 1, 3, 4, and 5. In either the single or double form of hanger herein described the hanger as a whole is substantially a hook-shaped device having an upper bearing-face and one or a couple of lower seat-flanges, according to whether it is to be secured to one or two springs. In order to briefly define the difference between the inclination of the lower seat portion relatively to the upper bearing portion and the outward and downward slope or inclination of the lower seat portion relatively to the upright side α of the hanger, the former may be described as an inclination longitudinal as to the spring and the latter as a slope or inclination transverse as to the spring.

What I claim as my invention is—

1. The combination with a spring for vehicles, of a hanger having a lower, laterally-projecting seat portion to which an end of the spring is secured, and an upper transverse bearing portion adapted to engage and tilt or rock upon a suitable supporting part of the vehicle, the laterally-projecting seat portion and the transverse bearing portion being on planes having a relative inclination in a direction longitudinal as to the spring.

2. The combination with a spring for vehicles, of a hanger having a lower, laterally-projecting seat portion to which an end of the spring is secured, and an upper transverse bearing portion adapted to engage and tilt or

rock upon a suitable supporting part of the vehicle, the laterally-projecting seat portion and the transverse bearing portion being on planes having a relative inclination in a direction longitudinal as to the spring, and the intervening upright body portion of the hanger being inclined relatively to the plane of the laterally-projecting seat portion in a direction to permit the upper bearing portion to normally bear upon the supporting part of the vehicle at a point intersected by a vertical plane beyond the end of the spring.

3. The combination with a spring for vehicles, of a hook-shaped hanger secured to an end portion of the spring and having an upper engaging and bearing portion normally inclined as to a line between the ends of the spring and provided with an extension which projects in a direction beyond the end of the spring.

4. The combination with a spring for vehicles, of a hanger adapted for application to an end portion of the spring and having an upper engaging and bearing portion, and a lower seat portion to which the spring is secured, the lower seat and upper engaging and bearing face being on planes which converge in a direction away from the end of the spring, and the said upper engaging and bearing face being provided with an extension which projects in a direction beyond the end of the spring.

5. The combination with a spring for vehicles, of a hanger adapted for application to an end portion of the spring and having an upper engaging and bearing portion, and a lower seat portion to which the spring is secured, said seat portion being on a plane which slopes laterally downward from the upright side of the hanger to which it is united, so that when the hanger is applied to the spring, its upper bearing portion will normally incline longitudinally as to the length of the spring.

6. The combination with a spring for vehicles, of a hanger adapted for application to an end of the spring and having an upper engaging and bearing portion, a lower lateral seat portion to which the spring is secured, an intervening upright side portion, and a web connecting the seat portion with the upright side portion.

7. A hanger adapted for securement to an end of a spring for vehicles and formed with a transverse upper bearing portion, a laterally-projecting lower seat portion to which the spring is secured, and a stud integral with the seat portion and adapted to be inserted through a hole in the spring and headed down upon the spring.

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