

No. 734,337.

PATENTED JULY 21, 1903.

F. F. KEELER.
SPRING BUFFER.
APPLICATION FILED APR. 1, 1903.

NO MODEL.

Fig. 1.

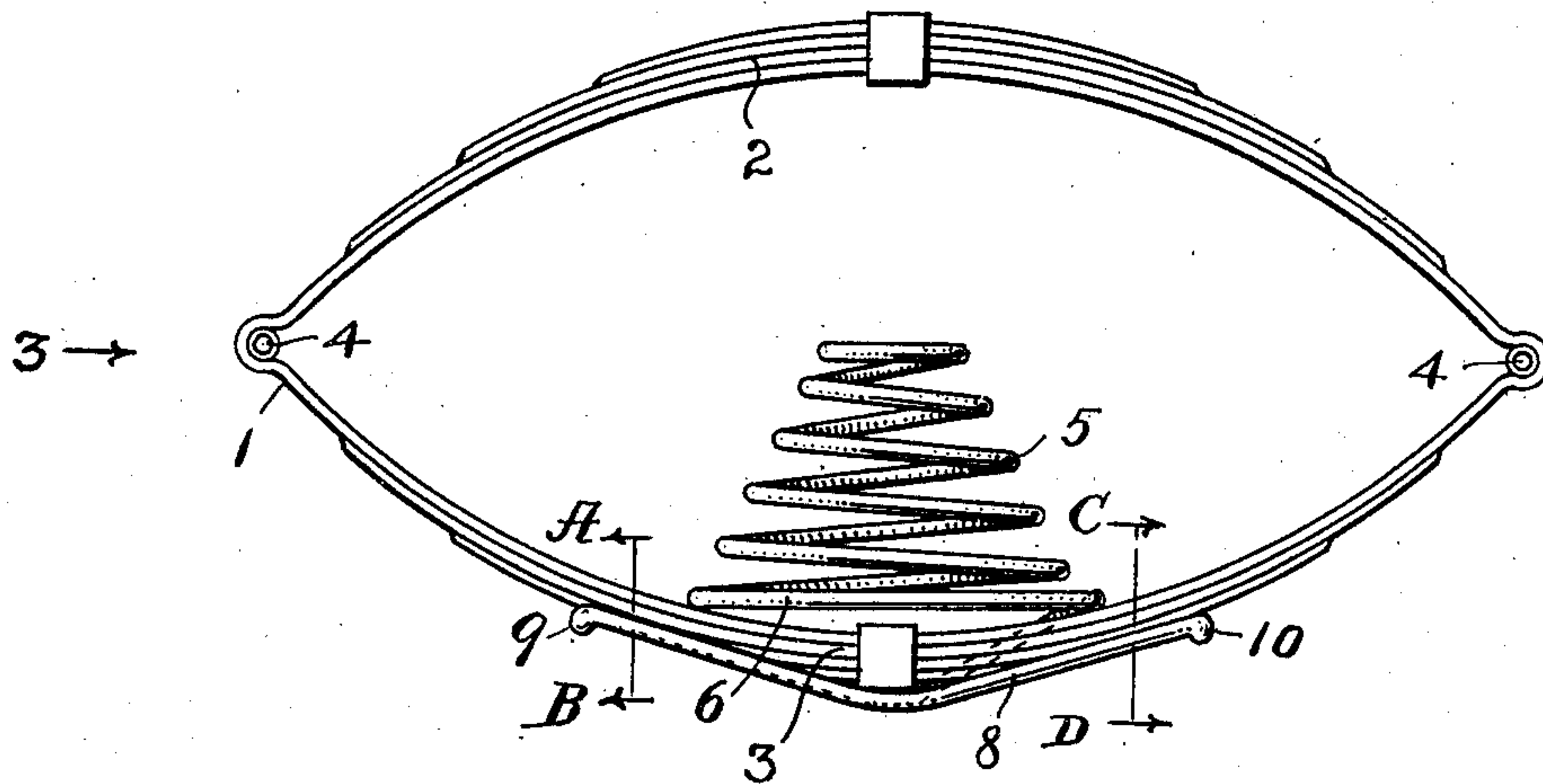


Fig. 2.

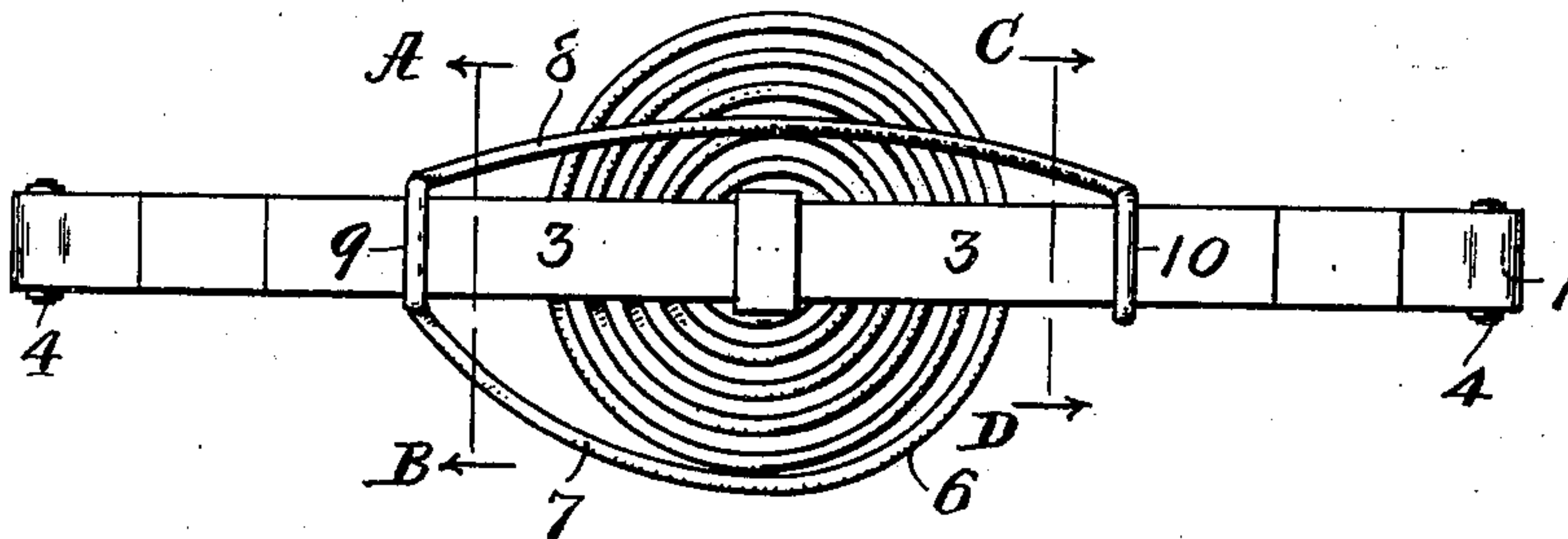


Fig. 4.

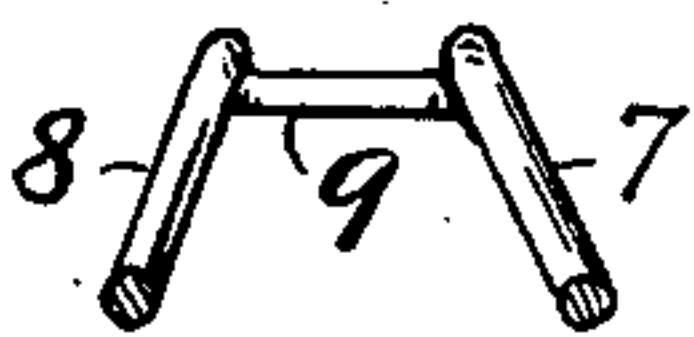
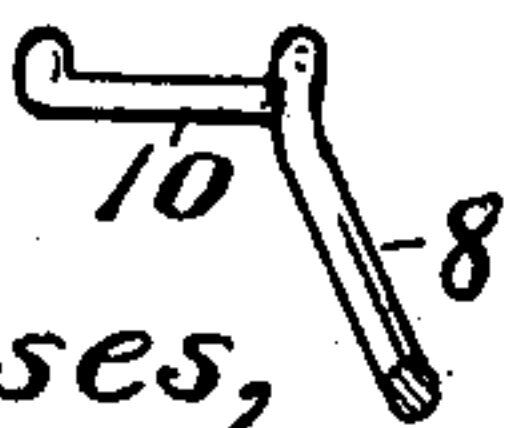
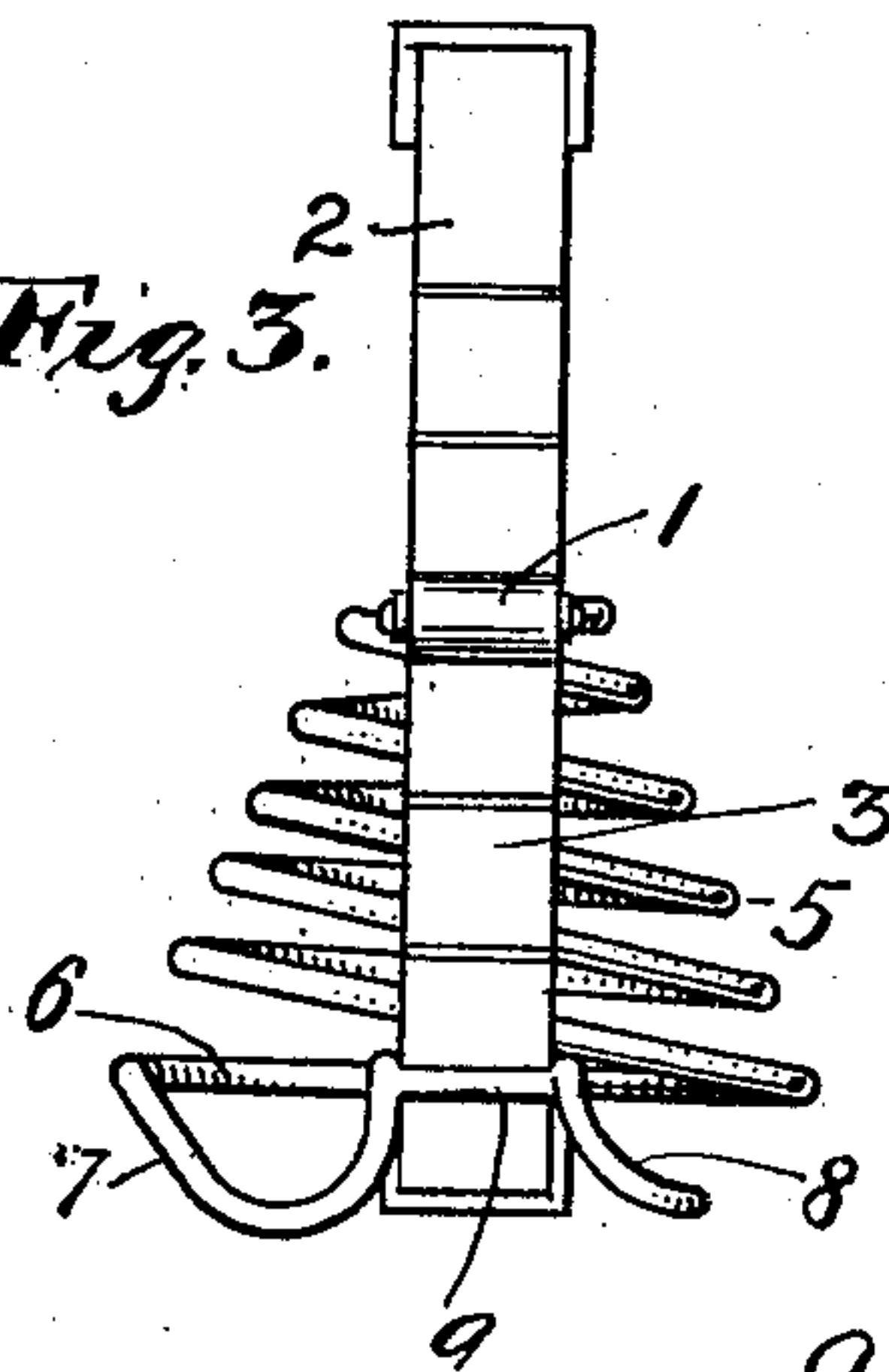


Fig. 5.



Witnesses,
D. W. Barker
S. M. H. Hager.

Fig. 3.



Inventor,
Frank F. Keeler
By
Joseph A. Minturn
Attorney

UNITED STATES PATENT OFFICE.

FRANK F. KEELER, OF INDIANAPOLIS, INDIANA.

SPRING-BUFFER.

SPECIFICATION forming part of Letters Patent No. 734,337, dated July 21, 1903.

Application filed April 1, 1903. Serial No. 150,548. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. KEELER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Spring-Buffers, of which the following is a specification.

My invention relates to certain new and useful improvements in vehicle-springs; and it consists in the use of an auxiliary coiled spring in connection with an elliptic or other vehicle-spring.

The object of my invention is to provide a vehicle-spring that will be sufficiently elastic or yielding under ordinary conditions or light loading to produce the desired effect that vehicle-springs are intended, and when a heavier load is being carried by said spring the same result will be maintained throughout the entire range or deflection of the said spring; also, to provide a simple, durable, and efficient means of securing or fastening said auxiliary spring to said vehicle-spring, and whereby said auxiliary spring is capable of being universally applied to all vehicle-springs of either the elliptic, plate, or leaf type. I attain these objects by means of the form of said auxiliary spring and the means whereby the same is applied and removably secured to said vehicle-spring illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a side elevational view of a vehicle-spring, showing my invention of an auxiliary spring applied thereto. Fig. 2 is an inverted plan view of the same. Fig. 3 is an end elevational view of the same. Fig. 4 is a broken-off detail view of the retaining-arm of the auxiliary spring and showing the spring receiving and retaining recess, said arm broken off at a point indicated by the lines A B, (see Figs. 1 and 2;) and Fig. 5 is a similar view of the retaining-arm of the auxiliary spring, showing the end spring-retaining recess and broken off at a point indicated by the lines C D. (See also Figs. 1 and 2.)

Referring particularly to Figs. 1 and 3 of the drawings, 1 designates a vehicle-spring of the elliptic or double-plate type, having the upper plate member 2 and the lower plate

member 3, both of which members are hinged together at their free ends by suitable bolts 4.

Within the elliptic spring 1 and resting on the bottom member 3 thereof is a conical helix or coiled spring 5, the upper or top smaller end of which latter terminates at an intermediate distance between the top member 2 and the bottom member 3 of the said spring 1, or said coil-spring terminates at some determined distance beneath the top member 2 of said vehicle-spring. The bottom or lower coil 6 of the auxiliary spring 5 is extended or prolonged and bent into shape or otherwise formed to obtain the double spring-retaining arm, which is composed of the single arm member 7, and the return spring-retaining arm 8, formed on the prolonged end of the former single member, and the said arms, owing to their resiliency, are adapted to yieldingly clamp or bear against the bottom side of the lower member 3 of the vehicle-spring 1 to retain said coiled auxiliary spring in position. A retaining hook or recess 9 (see Figs. 4 and 5) is formed at the end of the arm member 7, between the end of the latter and the root of the arm member 8, and a similar retaining recess or hook 10 is formed on the end portion of said arm member 8, and the said recesses or hooks 9 and 10 are provided for the purpose of receiving the bottom member 3 of the vehicle-spring 1 to retain said auxiliary coil-spring 5 in position thereon, and by means of the above-described arrangement of spring retaining and securing means of said auxiliary spring 5 the latter can be readily adapted and applied to any form of plate or elliptic spring and when not required for use may be readily removed. It is clear that when a light load is applied to the vehicle-spring, one that will not deflect said elliptic spring 1 sufficiently to cause its top member to contact with the auxiliary elliptic spring 5, the said elliptic spring 1 will act alone, and having sufficient elasticity will produce the desired effect or result between the load and the vehicle-spring. When a heavier or very heavy load is sustained by the elliptic spring 1, each of the members 2 and 3 thereof are deflected till the top member 2 contacts with the top of the auxiliary spring 5 and bears thereon, the latter cooperating with the former to sustain and carry

the excessive load, which latter would force the top member 2 down upon the bottom member 3 were the auxiliary spring 5 omitted and the elastic or resilient effect of the spring 1
5 would be destroyed. The auxiliary helical or coiled spring is preferably cone-shaped, so that when fully depressed each of the coils thereof will be moved one within the other or they will nest, thereby giving a more extended range of deflection to not only the
10 elliptic spring, but also to the coil-spring 5. Straight coiled or helical springs may also be used in connection with said elliptic spring with equal facility if properly proportioned
15 to meet the superfluous or extra stress of the load, for the reason that springs of the elliptic or double-plate type are not effective when exclusively depressed or till the top and bottom members of such springs nearly contact.
20 Thus a sufficient space is interposed between the top and bottom members of the elliptic spring for the introduction of a straight coiled spring as an auxiliary spring.

Having thus fully described this my invention,
25 tion, what I claim as new and useful, and de-

sire to cover by Letters Patent of the United States therefor, is—

The combination with an elliptic spring, of a coiled or helical spring having a lower clamping-arm, said arm composed of two arm
30 members extending on each side of the bottom member of said elliptic spring, said arm members formed by prolonging the bottom coil of said coiled spring to extend along one
35 side of the bottom member of said elliptic spring then bent under said spring member to form a spring-receiving recess and again bent to extend backwardly on the opposite
40 side of said bottom member and finally bending the end of said backward-extending arm under said bottom member to form a second
spring-receiving recess or hook.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 27th day of March, A. D. 1903.

FRANK F. KEELER. [L. S.]

Witnesses:

ELLA E. SMITH,
THAD. R. BAKER.