

J. P. LEITZELL.

Recoil-Arresters for Vehicle-Springs.

No. 153,353.

Patented July 21, 1874.

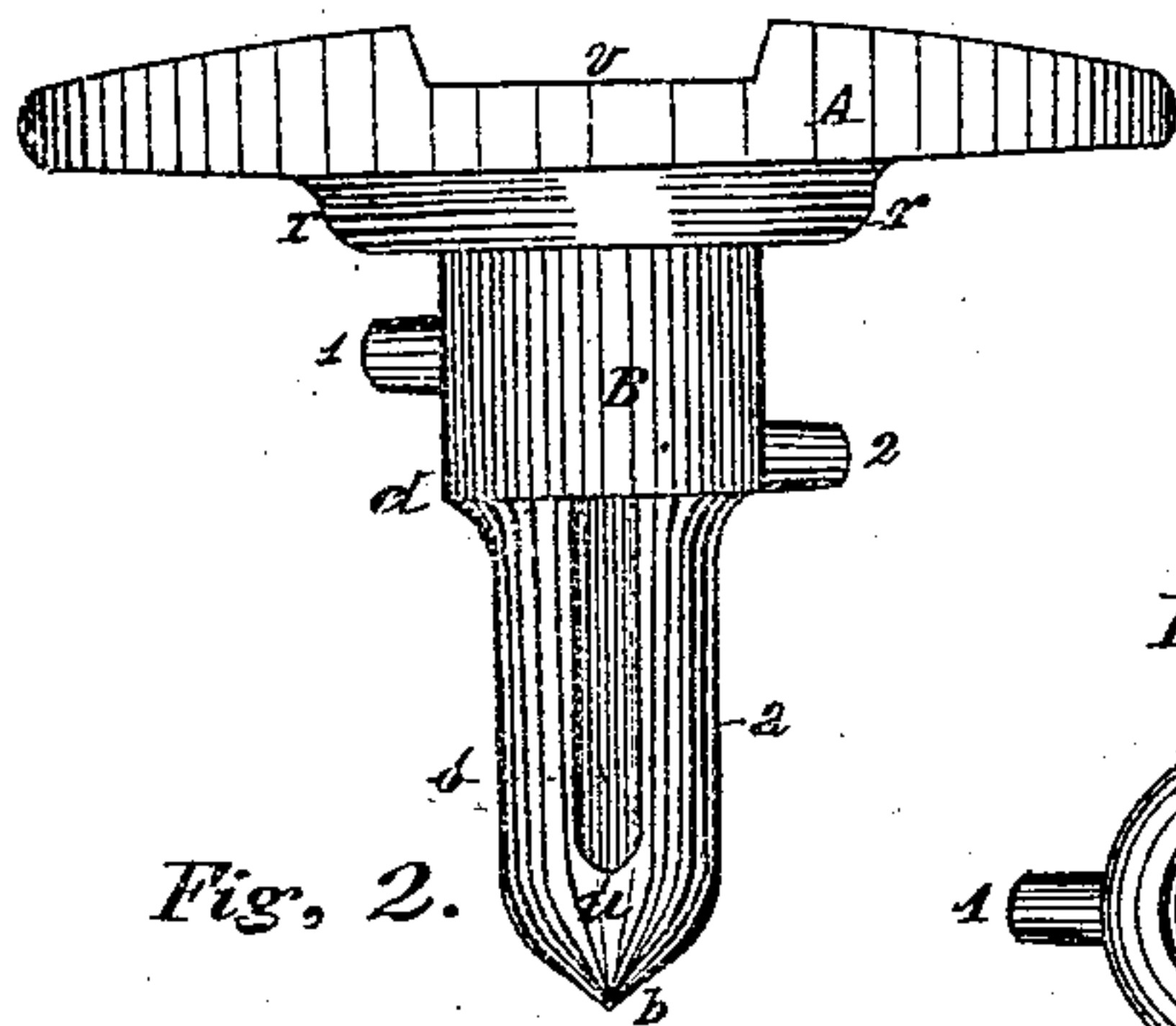


Fig. 2.

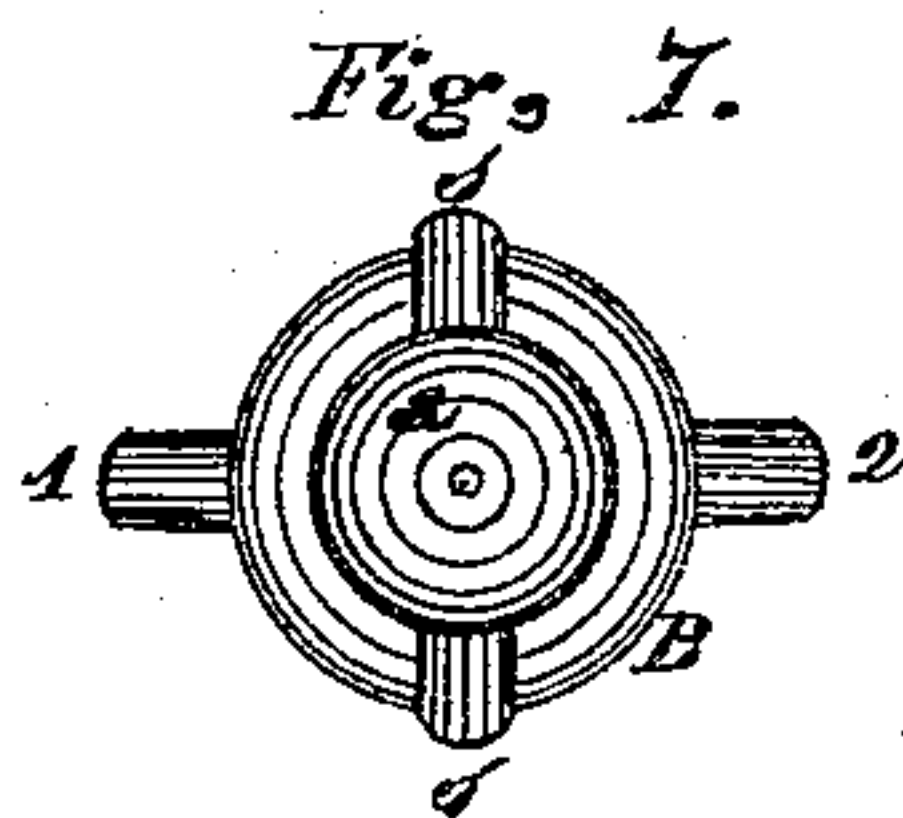


Fig. 7.

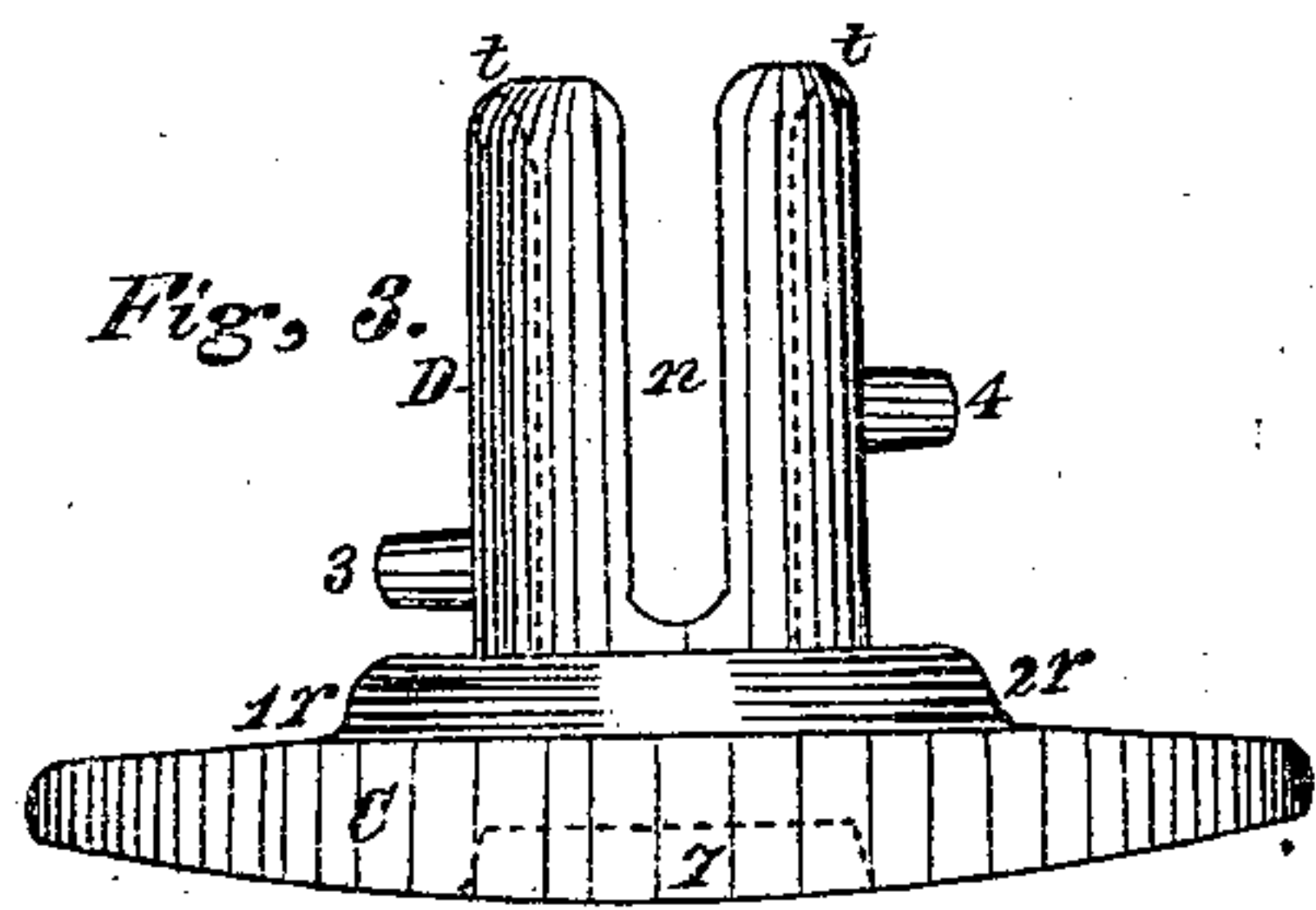


Fig. 3.

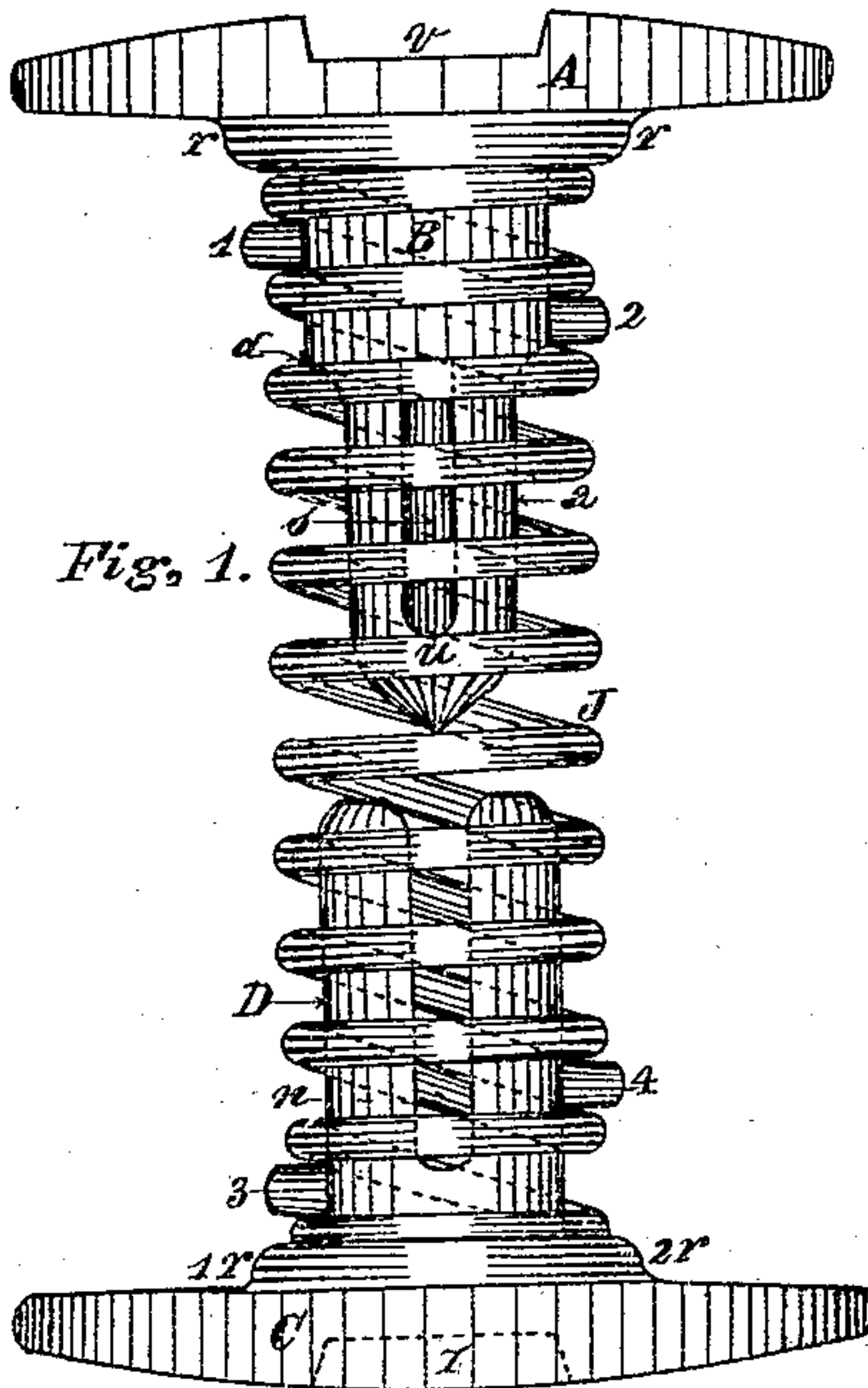


Fig. 1.

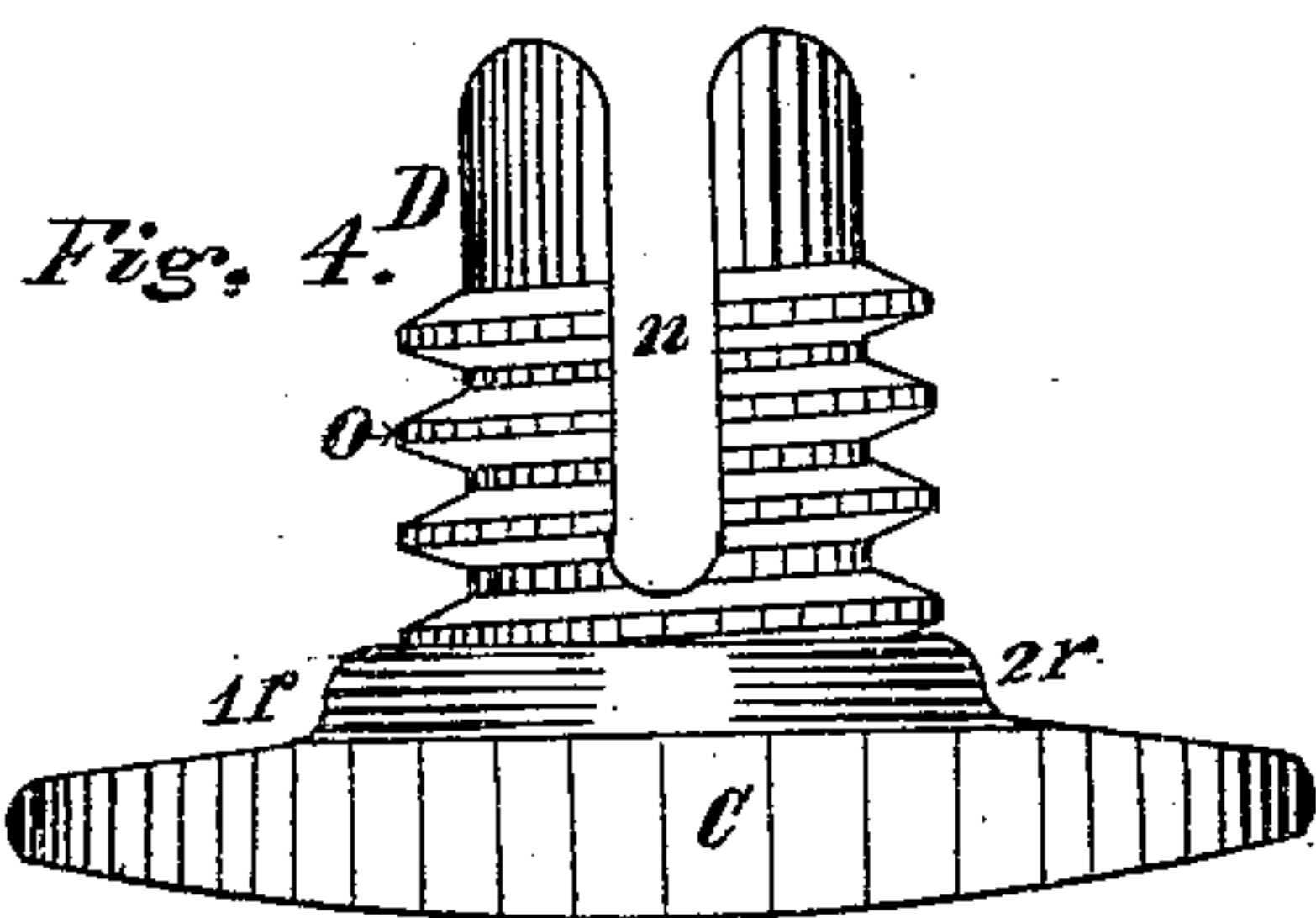


Fig. 4.

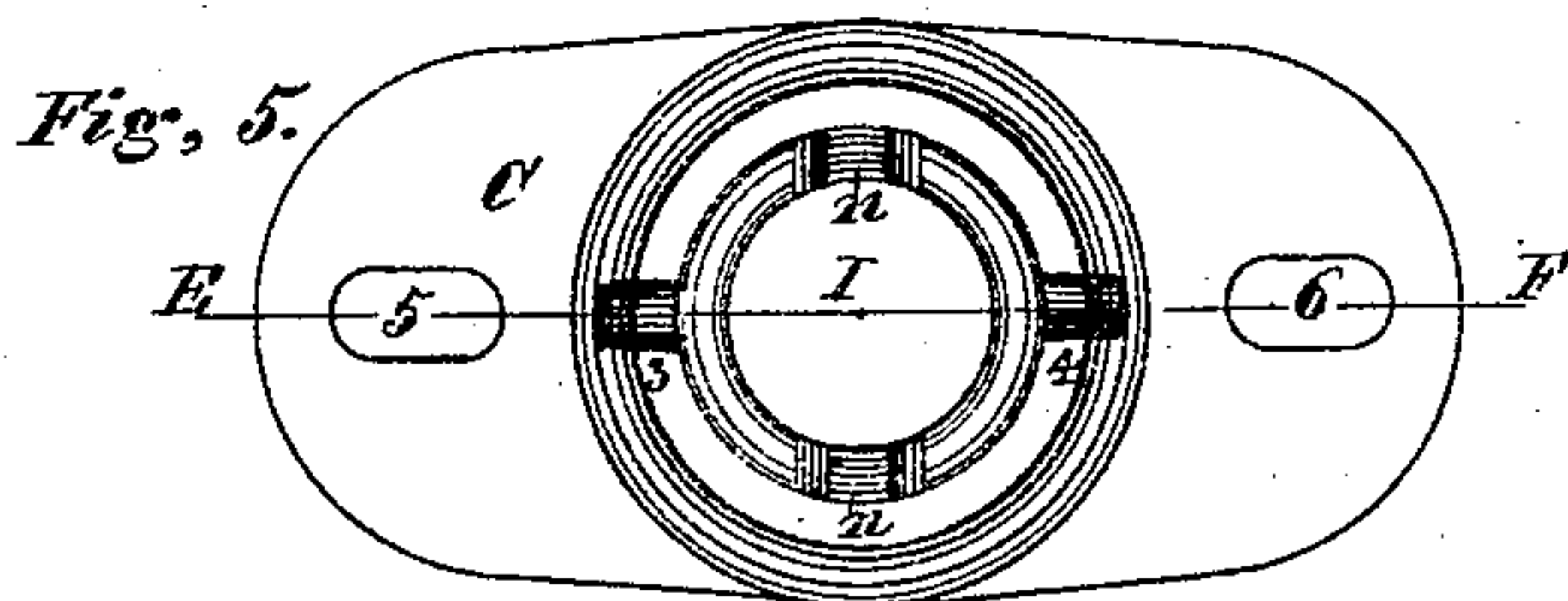


Fig. 5.

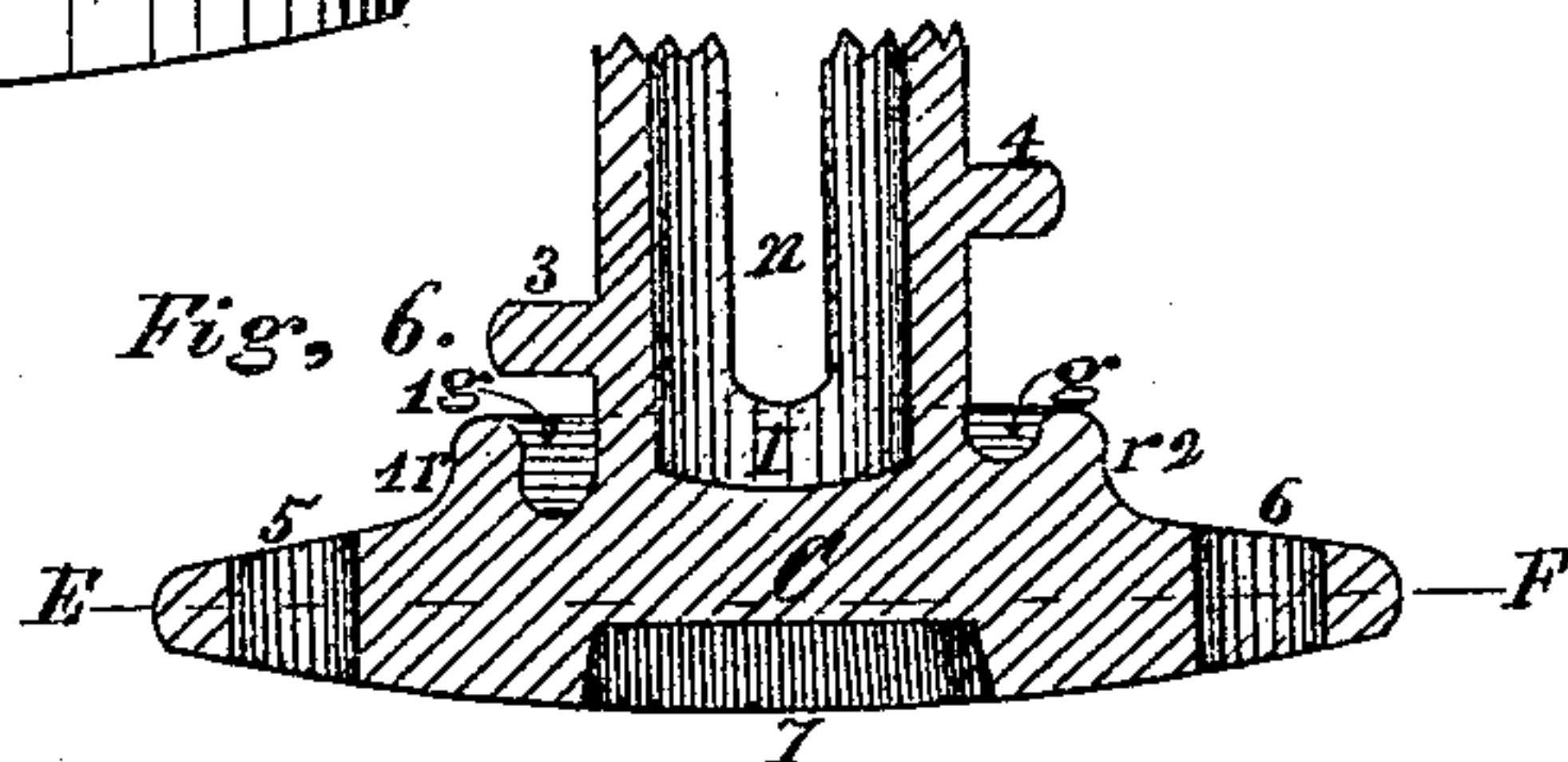


Fig. 6.

Witnesses.

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IMPROVEMENT IN RECOIL-ARRESTERS FOR VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **153,353**, dated July 21, 1874; application filed April 6, 1874.

To all whom it may concern:

Be it known that I, JOHN P. LEITZELL, of the town of Union Deposit, Dauphin county, Pennsylvania, have invented a new and useful Improved Recoil-Arrester for Springs of Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the same, and its manner of operation, reference being made to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

Like letters and figures in the different figures of the drawing represent like parts of the mechanism.

The nature of my invention consists in the peculiar construction of certain parts of the device and their combination with a spiral spring, the said device being intended to be given a position between the upper and lower sets of leaves of an elliptic spring, midway between the ends of the same, and securely fastened thereto; the object being to prevent undue strain upon the elliptic spring, either from the continued pressure of a heavy load or the shock consequent upon the sudden relaxation of pressure by the jolting action of an unequal road-bed, as is hereinafter set forth.

In the drawings, Figure 1 represents a side elevation in perspective of the device ready for insertion in proper position between the piles of leaves of an "elliptic spring." Figs. 2 and 3 represent side elevations in perspective of the "keepers" that retain the spiral spring in position, said spring being removed to more clearly show the parts. Fig. 4 represents a side view in perspective of the lower half of the keeper or spiral-spring retainer, constructed to hold the spring in somewhat different manner from that shown in Fig. 3. Fig. 5 is a top or plan view of the piece shown in Fig. 3. Fig. 6 is a vertical section of the piece shown in Fig. 3, and is taken on the axial line E F. (See Fig. 5.) Fig. 7 is a view of one of the parts.

In all the figures, A represents the base or bearing part of the upper half of the keeper or spiral-spring holder; it is made of a width to correspond to the width of the spring-leaves, and of a proper length to permit the formation of the oblong holes 5 and 6. (See

Fig. 5.) The face that comes in contact with the inner surface of the spring-leaf is somewhat arched to correspond to the curve or arch of the spring to which it is attached. A recess or depression, *v*, is made in its center, considered endwise, and extends across the top face from one side edge to the other. It is intended to receive the head of the bolt that secures the upper pile of spring-leaves together. From the center of the under side a cylindrical stem projects downward. (Shown at B, Figs. 2 and 1.) It is made a suitable diameter to permit the spiral spring J (see Fig. 1) to encircle it and neatly fit it. At a proper point, *d*, Figs. 1 and 2, the cylindrical stem B is reduced in diameter, as shown at *a*, Fig. 1. Said part *a* is made of proper length and thickness, and has two ribs, *s s*, projecting from it directly opposite each other, and continuing throughout its length from the point *u*. (See Figs. 1 and 2.) They are made parallel to each other and to a line drawn through the axis of the stem *a*. (See end view of stem B in Fig. 7.) From the opposite sides of the cylindrical part B the studs 1 and 2 project. They are made round in the body, of a proper diameter and length, and are intended to secure in place the spiral spring J. This is effected by setting the stud 1 nearer the piece A than the stud 2, the distance being such as to allow the spiral curves of the body of the spiral spring J to properly lie upon each side of said studs, as is shown in Fig. 1.

In Fig. 3 the lower piece or portion of the keeper or spiral-spring retainer is shown. The base or lower part C is made the same in form as the upper piece A, so as to fit the elliptic spring, and be attached thereto by bolts through the slotted holes 5 6. (See Fig. 5.) A recessed square hole is formed on or in the curved face of C to receive the bolt-head of the lower pile of spring-leaves. (See 7, Fig. 6.) The cylindrical part D projects centrally from the part C. It is made of suitable diameter and length, and has studs 3 4, similar in form to those on the stem D, Fig. 2.

The part D is perforated with a hole or circular recess, that continues down to the juncture with the base C. (See I, Figs. 5 and 6.) This hole or perforation is of proper diameter to accommodate the projecting ribbed stem *a*

on part B, Fig. 2. The cylindrical part D, Fig. 3, has slots *n n* (see Fig. 5) cut through its walls on opposite sides, and they are made of such relative width to the ribs on stem *a* as to permit them to move freely in them. The upper terminations of the slots *n n* are flared or widened out, so as to permit the ribs *s s* to enter readily. The lower ends of said ribs *s s* are also sloped or tapered somewhat to aid in accomplishing this purpose. The upper termination of the circular cavity I is widened or flared out, as is seen in the dotted lines *t t*, Fig. 3. At the base of the cylindrical part D, and also that of part B, annular ribs *r r 1 r 2 r* are formed upon the face of the parts A and C. These elevations have a grooved recess formed in them of a size proper to receive the diameter of the body of the spiral spring J. As the ends of said spring J are intended to rise against, or bear upon, the bottom of said groove *g g*, (see Fig. 6,) it is made of greater depth on one side than the other, so as to permit the spring ends to set in place without requiring them to be cut square. The deep side of the grooves in both the parts A and C are so arranged with regard to the projecting studs 1 2 and 3 4 as to permit the ends of the spiral spring J to be drawn tightly in place when the ribs *s s* and slots *n n* are opposite each other, as is shown in Fig. 1. In Fig. 4 the studs 3 4 are replaced by a screw-thread, O. This method of fastening the spiral spring J in place is the same in principle to the studs, but may be preferred when great strength is required. The pitch of the thread is such as to allow the body of wire of which the spiral spring is composed to lie between the threads.

When the several parts are secured together, as is herein directed, and the device placed in proper position between the upper and lower halves of an elliptic spring, its operation is as follows: The spiral spring J prevents a collapse of the elliptic spring from undue weight, and as it is rigidly secured at each end or termina-

tion of the wire coil, it secures the elliptic spring from the jar or shock of a recoil that is caused by the passage of the vehicle over obstructions in the roadway. More springs are broken from this violent jumping action on rough roads than from overloading them.

The peculiar form given to the male and female portions of the keeper or spring-retainer (shown in Figs. 2 and 3) gives proper support to the spiral spring J, as it prevents improper lateral sway of the spring, and the form of construction of free ends insures the entrance of the part *a* into the part D as soon as the weight is placed upon the elliptic spring.

The device may be made of brass or malleable iron, preferably of the latter metal.

I am aware that the patented car-spring of P. G. Gardiner, patent dated October 29, 1872, shows a device to prevent breakage from pressure, a spiral spring being employed, it being held by a male and female retainer that keep it in position; but as the ends of said spiral spring are not rigidly secured to the leaves of the elliptic spring, his device does not prevent breakage from recoil. I therefore disclaim any device for arresting recoil of springs of vehicles of which a spiral spring is employed, unless said spring is securely fastened at each of its ends to the male and female spring-retainers B D, shown in Figs. 2 and 3 of the drawing, and as fully described in this specification.

Having given a full, clear, and exact description of my invention, and its manner of operation, what I claim as new of my invention, and desire to secure by Letters Patent of the United States, is—

The spiral spring J, in combination with the spring-retainers B and D, provided with the stud projections 1 2 3 4, as and for the purpose specified.

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Witnesses:

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