

J. G. PUGSLEY.

Car Spring.

No. 39,422.

Patented Aug. 4, 1863.

Fig. 1.

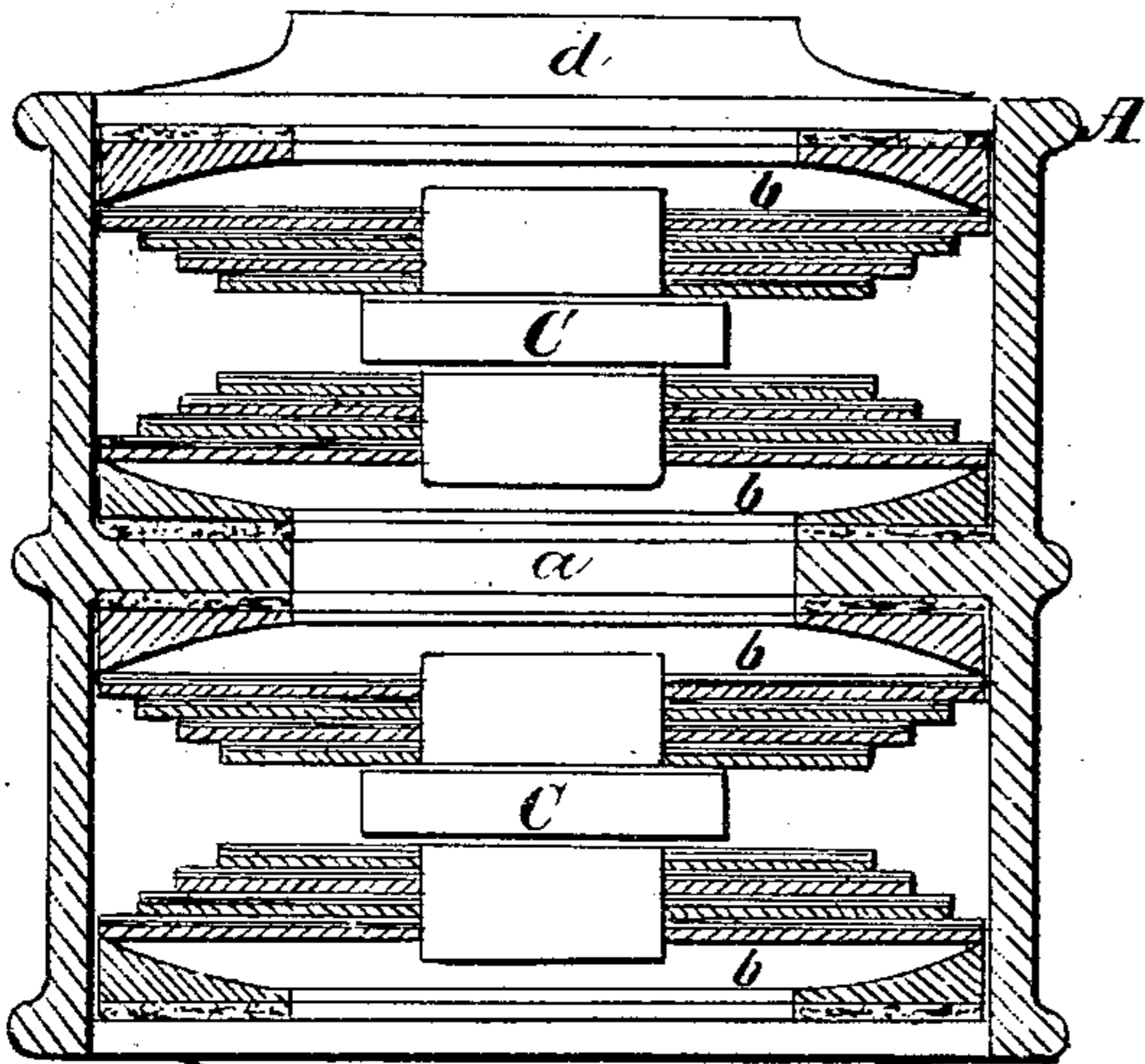


Fig. 4.

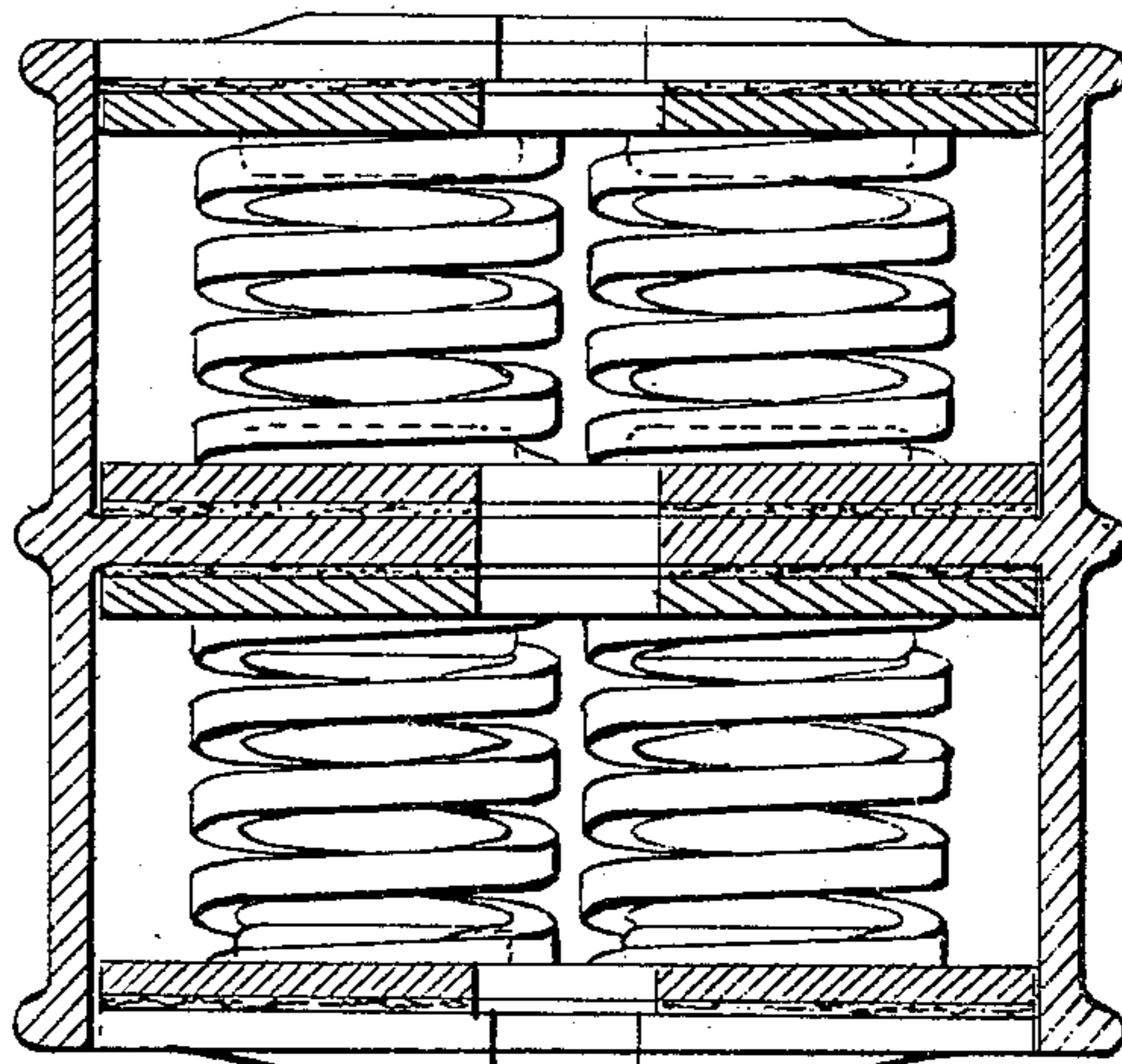


Fig. 2.

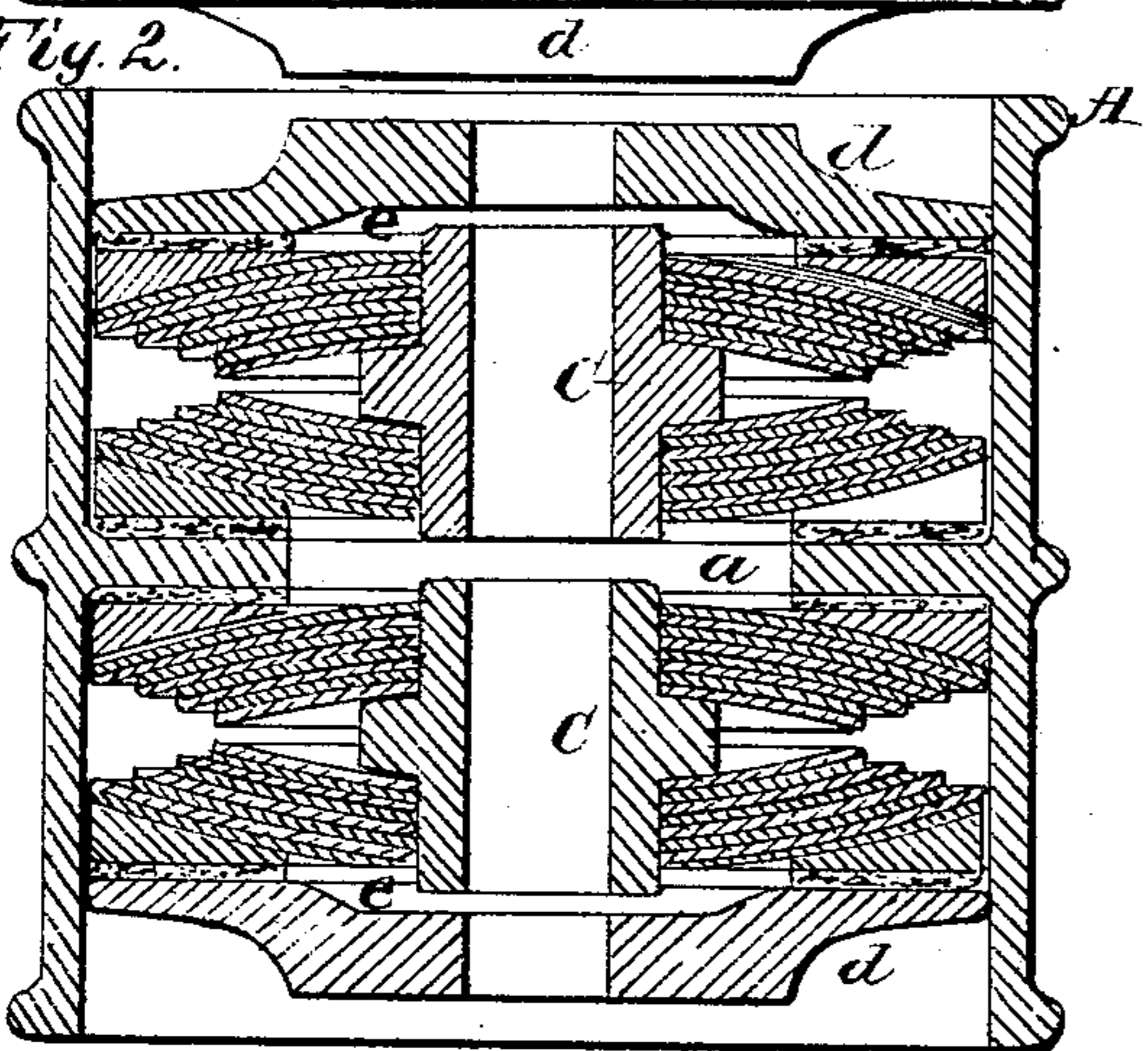


Fig. 5.

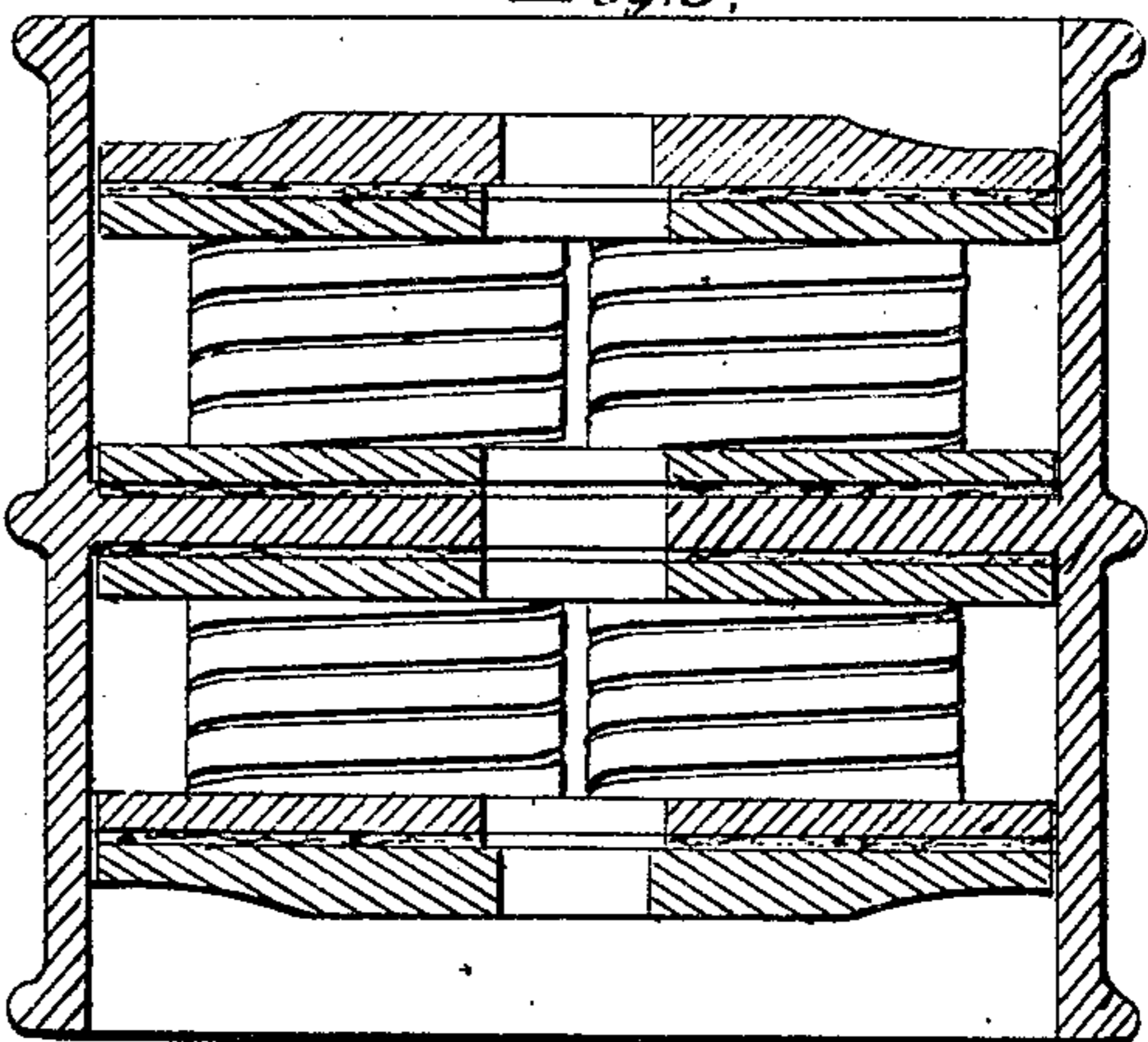


Fig. 3.

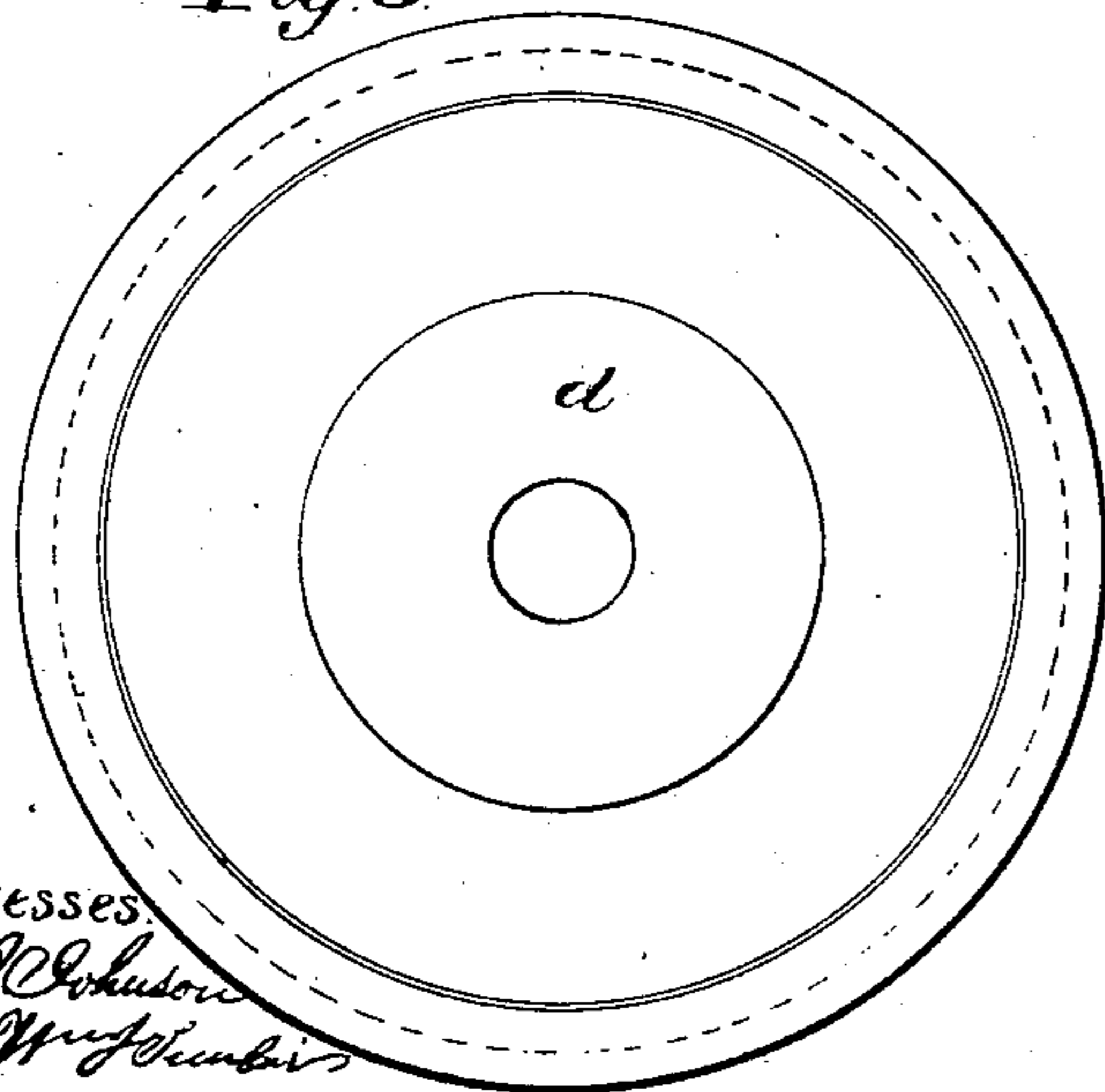
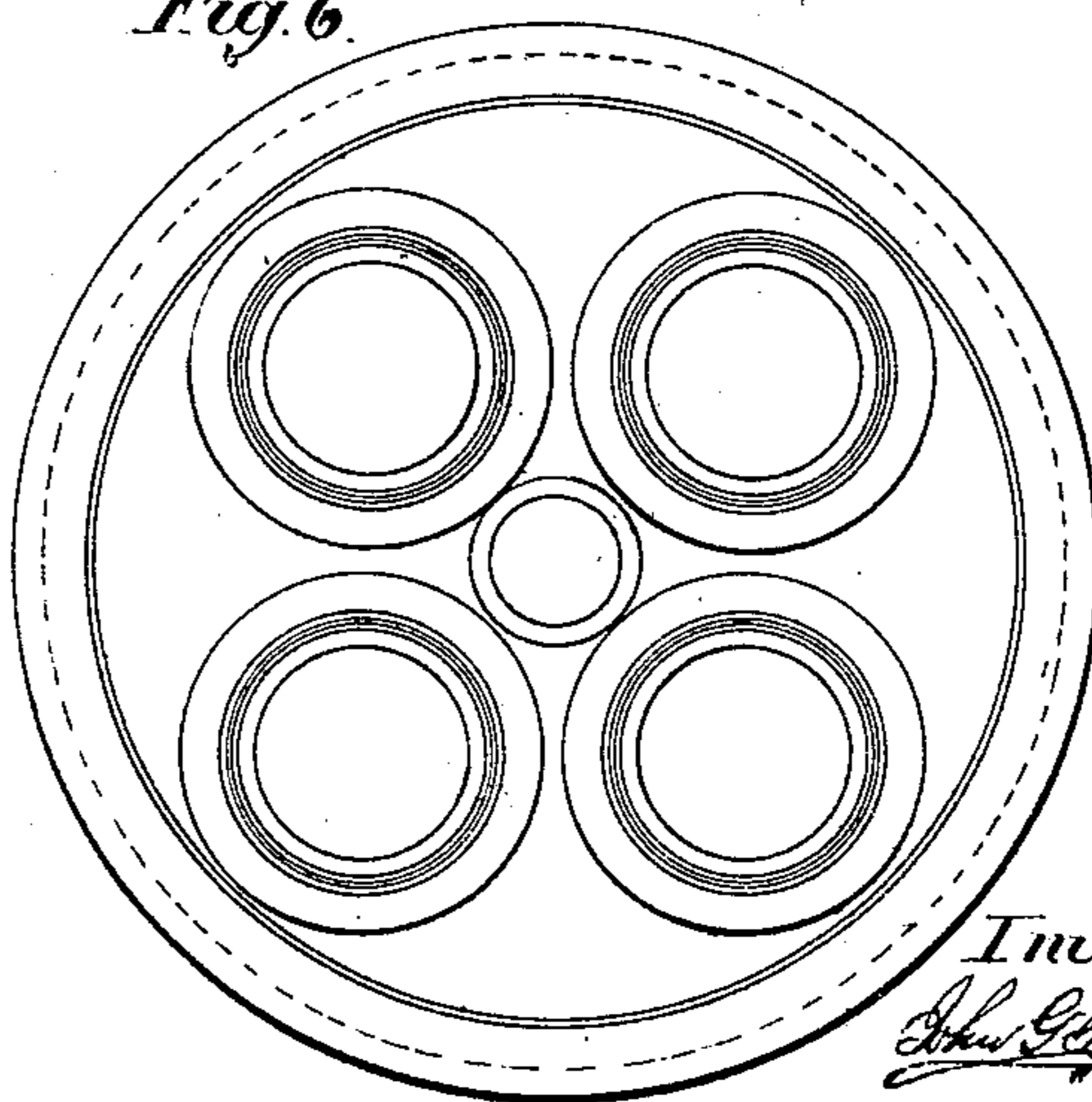


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 39,422, dated August 4, 1863.

To all whom it may concern:

Be it known that I, JOHN G. PUGSLEY, of the city, county, and State of New York, have invented a new and useful Improvement in Car-Springs; and I do declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 is a vertical section of the spring not under pressure. Fig. 2 is a vertical section of the same under pressure. Fig. 3 is a plan or top view of the same. Fig. 4 is a vertical section of my invention when used with spiral springs not under pressure. Fig. 5 is a vertical section of the same under pressure. Fig. 6 is a plan of the same with the top plate removed.

This improvement relates to a mode of mounting compound springs, so as to obtain a uniform action from a series of steel-plate, spiral or other springs, and to limit the yield thereof within safe limits, chiefly for the use of railroad-cars.

It consists, first, of a series of springs, each consisting of thin steel plates of disk form and of graduated sizes, arranged in pairs of a size, so as to form a cone of disks, two of which are placed on a casting called a "distributor," with their apices toward each other; second, of thrust-rings made concave on the side next the spring, at once to allow and to limit the yield thereof; and, third, of a cylindrical casting or spring-case, having a flange projecting inward, on which the rings and springs rest, and toward which they yield from either end, by which all the parts are kept in their proper positions and are defended from extraneous substances.

I make the cylinder A, Fig. 1, of cast iron. The flange *a* projects inward from its center. The rings *b b b b*, I make to fit freely into the cylinder. The flat side of each I make to fit on both sides of the central flange, *a*, and on the inside of the top and bottom plates, to be hereinafter described, respectively. The concave side of the said rings I make of such a curve as will allow the springs to yield to the desired distance and then to sustain the spring by presenting a solid bearing, and thus prevent the springs from being broken by any great weight that may be placed upon them.

I make the distributors *c c* of cylindrical form, having a convex flange projecting outward from its center, the curve whereof is made so as to limit the yield of the springs. The thickness I so adjust as to keep the springs the proper distance apart. A round hole is made through its center to admit of a rod or bolt.

I make the top and bottom plates, *d d*, also to fit freely into the cylinder. The edge I make spherical, so as to move smoothly into the cylinder. In the center I make a round bolt-hole, similar to that described in the distributor. The inside of the plates is made flat, with the recess *e* to receive the end of the distributor.

The springs I make of disks of thin steel plate of graduated diameters, (see Fig. 1,) having a round hole in the center of each to fit on the cylindrical end of the distributors. These I place on the distributors, two or more of a size. Four pairs are shown in Figs. 1 and 2, but I do not wish to limit myself, as more or fewer may be used to meet any required contingency.

I make packing flange-rings of rubber, felt, or other soft and yielding substance for each thrust-ring in the spring. These I place between the rings and the flange and between the rings and the top and bottom plates, to reduce the effect of sharp and sudden blows upon the spring. The plates having been placed upon the distributors, as shown in Figs. 1 and 2, I place a thrust-ring upon the flange of the cylinder, with a packing-ring intervening. I place a spring upon the thrust-ring, the largest disk resting upon the concave side thereof. Upon the spring I place another thrust-ring, with its concave side resting on the largest disk. A packing-ring is placed upon the thrust-ring and the top-plate is put thereon. The cylinder is then turned upside down, and the packing-rings, springs, and bottom plate are put together, as just described, and a bolt is passed through the whole to keep the parts into position. When into position to act, the bottom plate must rest upon a round piece of wood or metal, made small enough to allow the cylinder to descend over it to the distance of the elastic of the spring below the flange. A similar piece must be placed upon the top plate, to allow it to descend into the cylinder

to the extent of the range of the spring above the flange of the cylinder. When a weight is made to rest upon the top plate, the strain is transmitted to the largest steel disk of the first spring and by it to the distributor and second spring, thence to the flange of the cylinder and to the third spring, and through the second distributor to the fourth spring, thence to the bottom plate. It will be readily seen that the weight thus poised upon the largest disks of the four springs the yield of each will be equal, each being alike sensitive to every change of burden until the limit of their resistance is reached and the springs are bent to fit the curves of the rings and distributors when they attain a solid bearing, (softened only by the packing-rings,) which no reasonable addition can fracture.

It will be observed that the cylinder will always retain a central position with regard to the height of the spring throughout all its various degrees of compression.

In most, if not in all, of the compound plate springs now in use the strain is not equally distributed among the springs composing the series. The result is that one of the series is

frequently broken, which eventually destroys the whole.

Having thus described the construction and action of my invention, as exhibited in Figs. 1, 2, and 3, it only remains to say Figs. 4, 5, and 6 exhibit my invention when employed with spiral springs. I also contemplate its use with india-rubber springs.

I do not claim the disk-spring. The same has been used before and is now in use; but

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

1. The use or employment of a cylindrical spring-case having a central flange that sustains the springs on either side and toward which the springs yield.

2. The employment of rings on which the springs rest, having a deadening packing between them and the flange described, and also between the rings and the top and bottom plates.

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Witnesses:

J. JOHNSON,

WM. I. SINCLAIR.