(No Model.) 2 Sheets—Sheet 1.

W. MARRIOTT.

CAR SPRING.

No. 485,553. Patented Nov. 1, 1892.

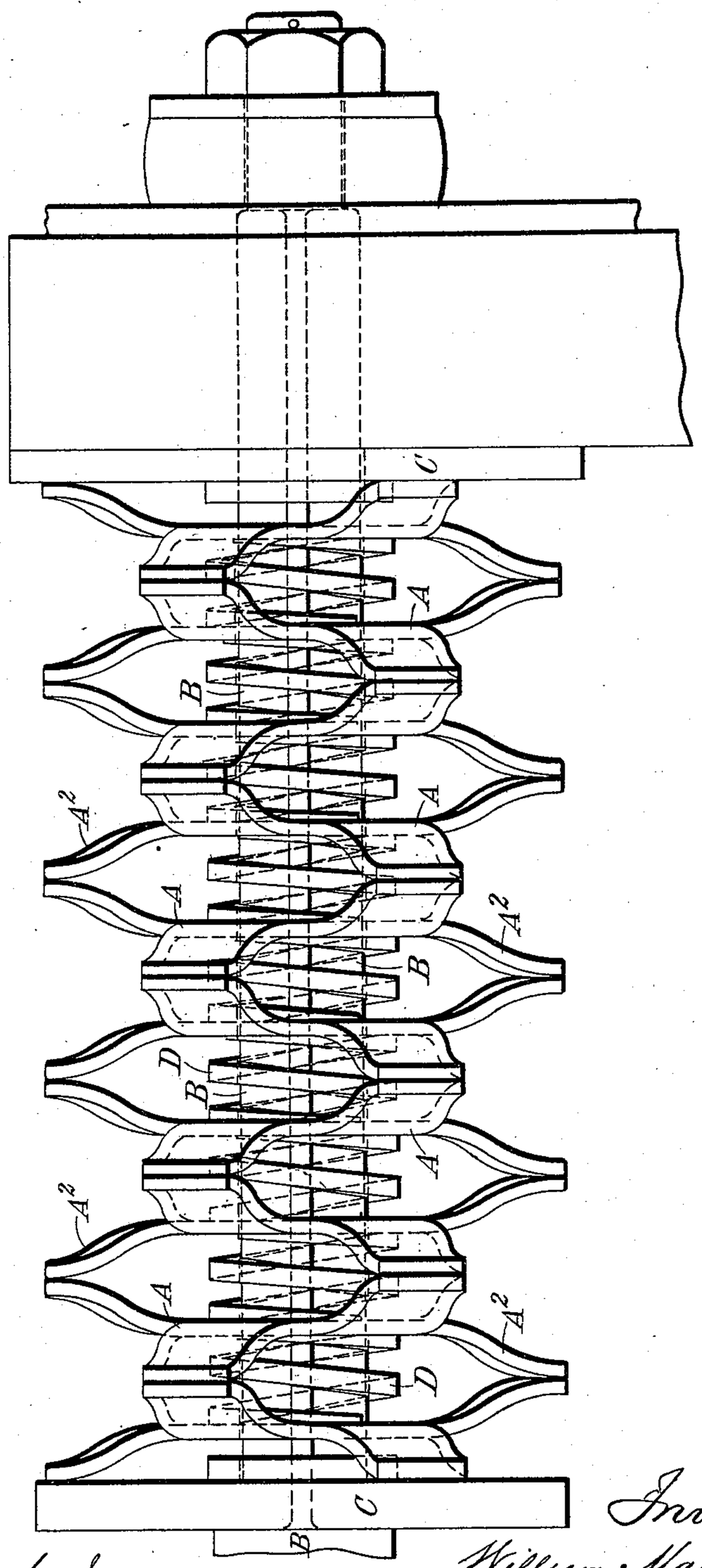

Fig. 1.

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Robert Everett.

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By James L. Norris.
Attorney.

(No Model.) 2 Sheets—Sheet 2.

W. MARRIOTT.

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Fig. 5.

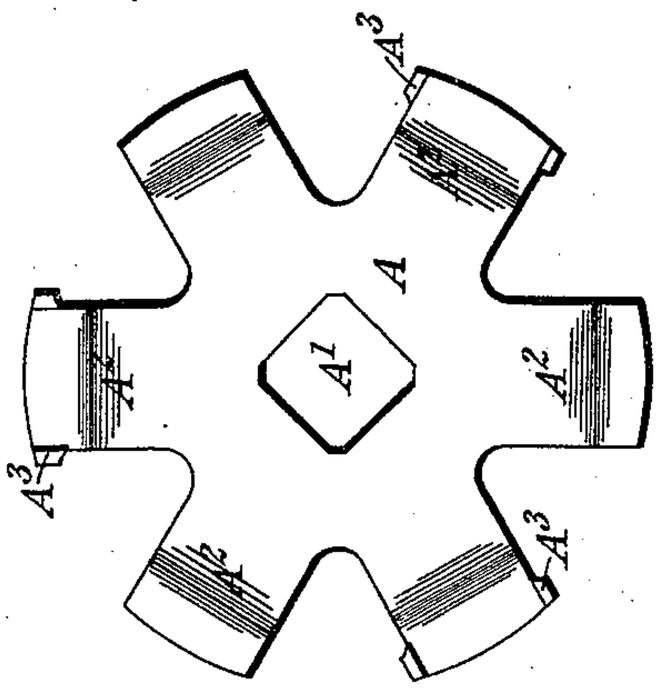


Fig. 7.

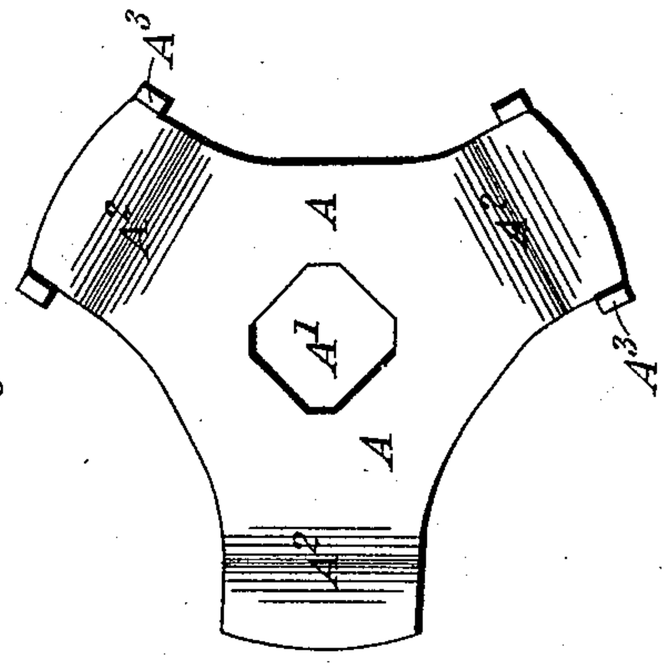


Fig. 2.

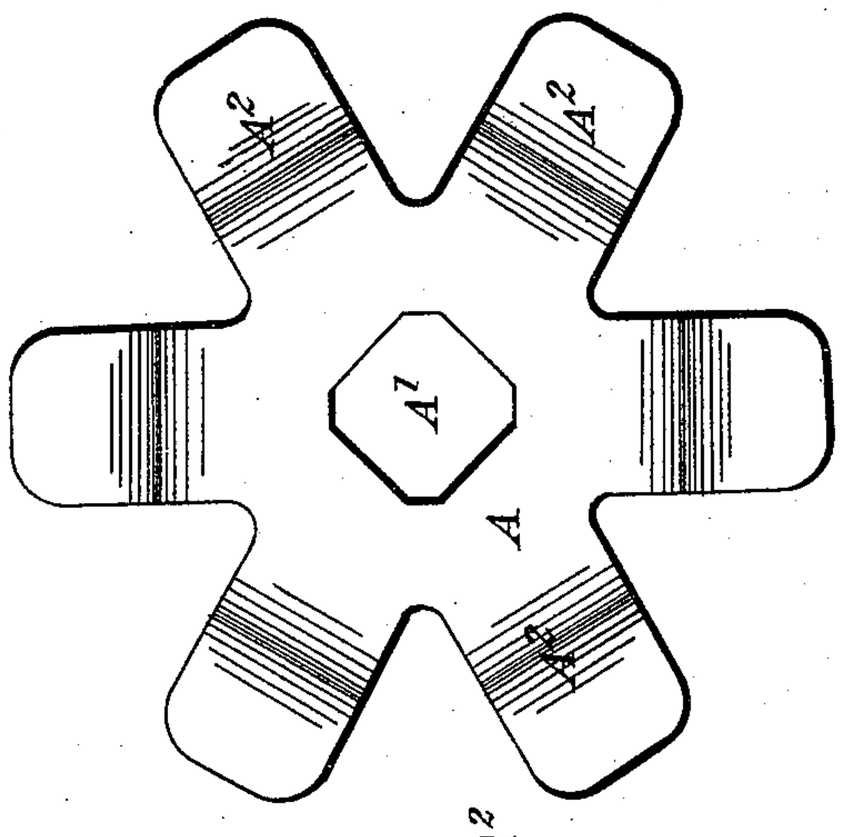


Fig. 3.

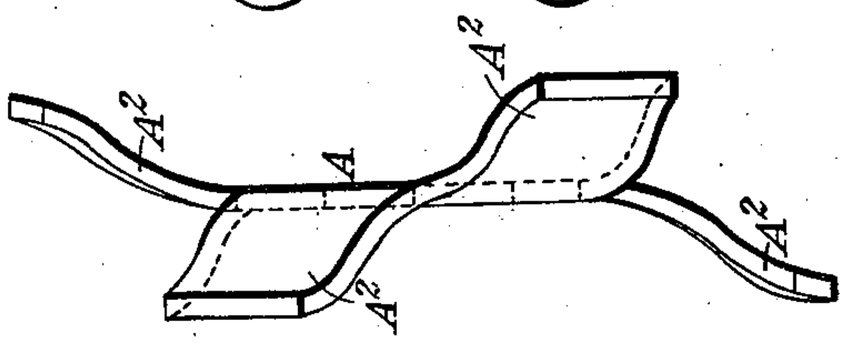


Fig. 4.

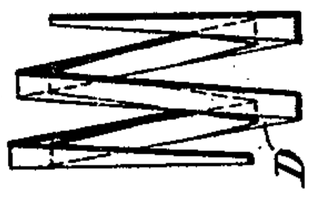
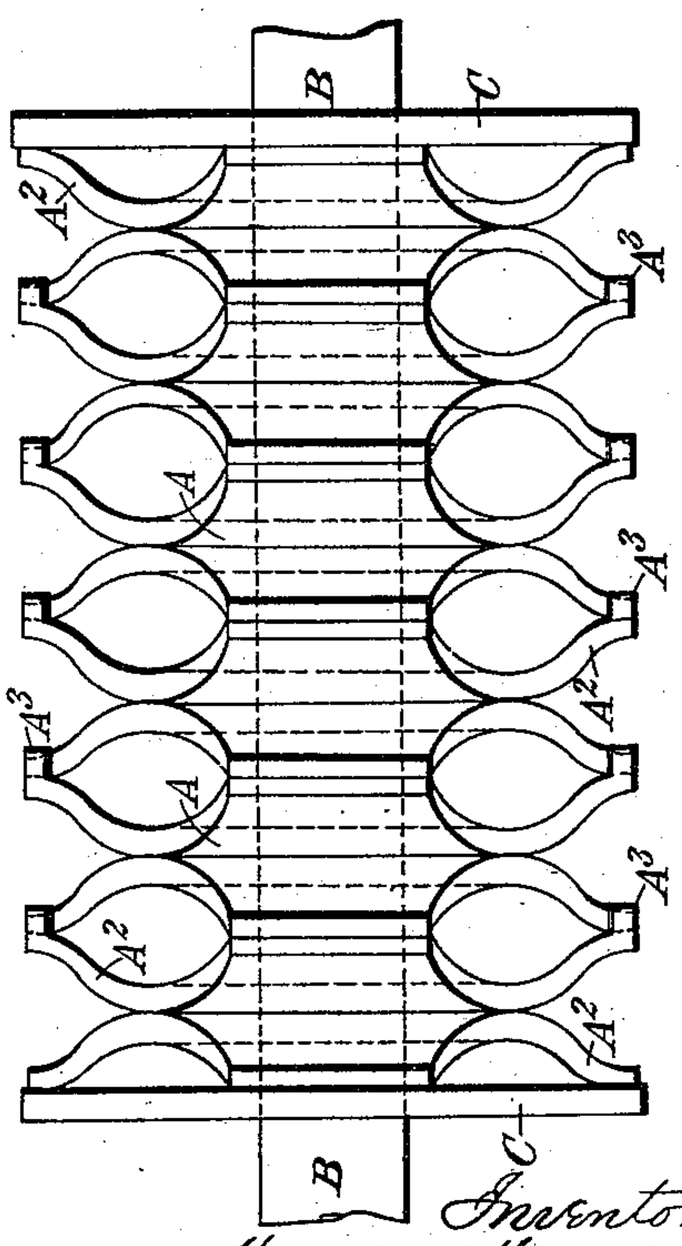


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM MARRIOTT, OF NORFOLK, ENGLAND.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 485,553, dated November 1, 1892.

Application filed June 1, 1892. Serial No. 435,142. (No model.) Patented in England October 25, 1890, No. 17,100.

To all whom it may concern:

Be it known that I, WILLIAM MARRIOTT, civil and mechanical engineer, a subject of the Queen of Great Britain, and a resident of Melton Constable, Norfolk, England, have invented certain new and useful Improvements in Springs, Chiefly Designed for Use in Railway-vehicles, (for which I have obtained a patent in Great Britain, No. 17,100, bearing date October 25, 1890,) of which the following is a specification.

My invention relates to springs which are chiefly designed for use in railway and other buffers and in the under frames of railway-vehicles.

My improved spring comprises disks or plates formed with arms or extensions, which are bent or curved alternately in either direction, so that when the said disks or plates are placed together side by side some of the arms of adjacent disks or plates will touch each other. These contiguous arms are arranged in such a manner that they can slide freely relatively to each other during compression or extension of the spring. In another form or modification of my spring the arms of each disk are bent or curved in the same direction.

In the accompanying drawings I have shown how my said invention may be conveniently and advantageously carried into practice.

Figure 1 is a side elevation of one form of my improved spring. Fig. 2 is a plan, and Fig. 3 an edge view, showing one of the plates or disks hereinafter described. Fig. 4 is a detached view of one of the reinforcing-springs. Fig. 5 shows a slightly-modified form of plate. Fig. 6 is a side elevation of a modified form of spring constructed according to my invention, and Fig. 7 is a side view of one of the plates forming this spring.

Like letters indicate corresponding parts throughout the drawings.

Referring to Figs. 1 to 4, A A are disks or plates having central holes A′, and each of which is provided with six or more even number of arms or extensions A^2. The alternate arms or extensions of each plate are bent or curved in one direction and the remainder in the other direction, so that when a spring is built up of a series of plates, as shown in Fig. 1, the arms or extensions of each plate that are bent or curved in one direction abut against the arms or extensions of the adjoining plate that are bent or curved in the opposite direction. The plates A are strung upon a square, hexagonal, or other suitably-shaped shaft or bar B, which is of the same section as the central holes A′, and the said plates are thereby prevented from turning. In some cases I secure the plates A together and prevent any rotary movement thereof relatively to each other by forming on one of each pair of arms or extensions that abut together clips A^3, as shown in Fig. 5, which when the plates are put together to build up the spring engage with the other arms or extensions of the pairs and prevent separation therof, while at the same time admitting of a slight sliding movement of the arms or extensions relatively to each other during compression or extension of the spring.

C C are end or cover plates having central holes corresponding to the holes A′, and against which the outwardly-bent arms or extensions A^2 of the end plates A bear.

I prefer to place between each of the adjacent disks or plates A a coil or other spring D, so as to lessen the drive or play of the spring. I sometimes employ india-rubber or other elastic washers, or I provide projections or stops upon one or both of the adjacent plates or other suitable means for the like purpose.

It is obvious that I can employ any other convenient means for connecting together the adjacent arms or extensions instead of the hereinbefore-mentioned clips—such as, for instance, a pin, stud, or projection on one arm arranged to work in a suitable slot provided in the other arm or the like.

Instead of threading the hereinbefore-mentioned plates or disks upon a spindle or the like I sometimes inclose them in a suitable box or casing. In the latter case the central holes A′ may be dispensed with.

Figs. 6 and 7 show a modification wherein I form each of the disks or plates A with three or any other convenient number of arms or extensions A^2, all bent or curved in the same direction. In this case in building up the spring I place the disks to face alternately in

opposite directions, so that the arms or extensions A^2 of each plate or disk, excepting the end ones, engage with the arms or extensions A^2 of the next or adjacent plate or disk on one side and the central portion of the said plate or disk with the central portion of the next or adjacent plate or disk on the other side.

My improved spring is much cheaper than rubber and is very durable in hot and variable climates. It possesses the advantages of an ordinary volute spring, with the additional advantage that if one plate breaks the damaged part can be replaced without necessitating the renewal of the whole spring. The plates can be retempered and set up at any time, and the resistance and drive can be increased any desired amount by increasing the number of plates.

What I claim is—

1. A spring built up of stellated plates A, the alternate arms A^2 of which are bent laterally in one direction and the intermediate arms in the opposite direction and arranged to abut against each other, substantially as described.

2. The combination, with the stellated plates A, having their arms A^2 bent laterally in alternate directions, of the central holes A′ in the said plates and the central square or like bar B, on which the plates are strung, substantially as described.

3. The combination of the stellated plates A, having arms A^2 bent laterally in alternate directions, the central bar B, on which the plates are strung, and clips A^3, formed on the arms A^2, substantially as described.

4. The combination of the stellated plates A, having arms A^2 bent laterally in alternate directions and abutting against each other, the central bar B, on which the plates are strung, and the reinforcing intermediate springs D, substantially as described.

I testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM MARRIOTT.

Witnesses:

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Aylsham, Norfolk.

WM. NEWMAN,
Sherringham, Norfolk.