

W. F. CONVERSE.
Car Spring.

No. 56,716.

Patented July 31, 1866.

Fig. 2

Fig. 3

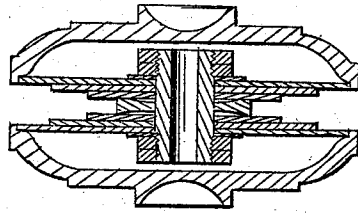
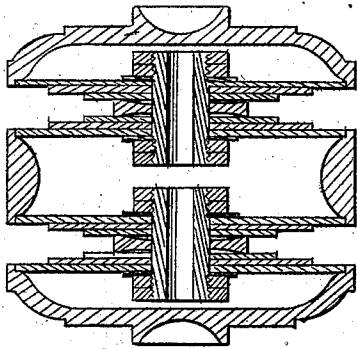
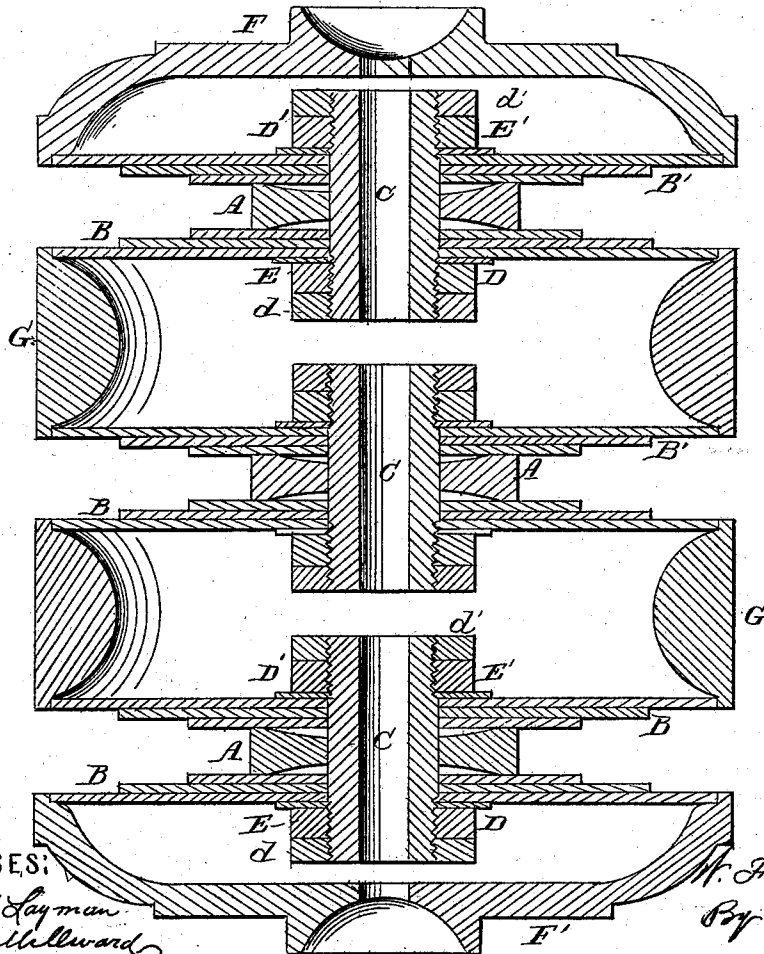


Fig. 1



WITNESSES:

James H. Layman
Frank Hallward

INVENTOR:

W. F. Converse
By Wright Bros
Attys

UNITED STATES PATENT OFFICE.

WILLIAM F. CONVERSE, OF HARRISON, OHIO.

IMPROVED CAR-SPRING.

Specification forming part of Letters Patent No. 56,716, dated July 31, 1866.

To all whom it may concern:

Be it known that I, WILLIAM F. CONVERSE, of Harrison, Hamilton county, and State of Ohio, have invented certain new and useful Improvements in Railroad-Car Springs; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The invention consists in a new and useful method of combining, clamping, and supporting one or more series of springs composed of circular and concentric disks of unequal diameter.

Figure 1 represents a vertical series or stack comprising three distinct sets of double springs of three leaves each, such a series being adapted, by its great range of resilience, for use under a passenger-car. Figs. 2 and 3 represent series of two and of one set respectively.

Each pile of springs B B' consists of a number of distinct annular plates or disks of steel arranged concentrically about a common axis, and with the smaller leaves or plates presented toward each other and made to press firmly against the dished ends of a cylindrical collet, A, which may be of cast-iron, by means of one or more nuts, D d D' d', screwed fast upon the axial bolt C, which bolt serves as a common object of attachment for both sets of nuts, and also serves to hold the plates or disks to center. A thin washer, E E', may be used between the inner nut on each side and the outer leaf or disk.

For the bolt C, I prefer the represented tubular form, and it may, in fact, be made of lap-welded pipe. A double object is accomplished by said tubular form—namely, it permits the introduction of a central rod and serves to reduce the weight. I also prefer, for greater security, to use two nuts at each end of the bolt; but one nut may be made to serve, while the washers E E', although desirable, may be dispensed with.

The springs proper are made to rest wholly by their margins on the points of support and resistance in manner following: With what I call a "single spring," composed of one set only, as shown in Fig. 3, the margins of the springs rest in the rabbets of two similar heads, F F', which heads, when the spring is

in place within the car, bear respectively against the bolster and against the bottom of the pedestal. Bosses provided at the center of said heads occupy suitable sockets in said bolster and pedestal and serve to hold the spring securely in place.

When more than one set of springs are employed I provide a rabbeted ring, G, for each additional set, which ring supports the margins of the springs in the same manner as do the heads F F'. By giving the inner surface of the ring G the represented convex form it may be composed of a single casting.

The provision of the heads or terminating-caps permits the direct contact of the springs proper with the objects of ultimate support and resistance, and affords a protection from the weather.

An essential feature of my spring consists in the means for tightly gripping the annular disks at their inner margins upon the dished or countersunk block or collet, because without such support and confinement the parts immediately around the central aperture, having a much slighter bearing and being subjected to a greater weight than the parts beyond, will suffer a greater strain and deflection, and, becoming stretched and fractured, will sag downward and outward and finally rupture, while the outer margin, undergoing a contractile rather than an expanding action, will be comparatively unaffected, although its large surface and entire disconnection with other parts make it the proper seat of the chief deflective and resilient action.

The collet A is cylindrical both internally and externally, and is of sufficient vertical thickness to secure perfect rigidity and to separate the two adjacent bundles of springs sufficiently to afford room for any possible deflection. The edges of the collet which support the springs should be accurately vertical to the axis, the dish or sink of its central portion at both ends enabling the set of the spring to be taken up after a brief period of active use. The set having been thus taken up, the disks assume a flat or slightly convex form when in place in the car, and retain the same thereafter without alteration.

A number of springs of unequal flexibility may be all brought to an exactly uniform

standard by applying collets of slightly larger diameters to the most flexible springs and collets of slightly smaller diameters to those of greater tension.

Each two consecutive sets of springs being arranged back to back, or with the small disks facing each other and with the collet between them, a perfectly square and even bearing is secured, which would not be the case if the bearing were against the nuts, it being nearly impossible to cut a screw-thread so accurately as to bring the bearing-surface or sole of the nut perfectly true.

By the provision of the separate and rigid collet, of diameter not less than one-third that of the largest disk and of thickness equal to half the play of the spring, and having the described oppositely-dished ends, whose mar-

gins are in planes vertical to the axis in the described combination, with suitable clamping-nuts, I secure any desired tension at the center and devolve the chief resilient action upon the parts of the spring at and near to the margin.

I claim herein as new and of my invention—

The combination of the concave heads F F', double-faced collet A, annular elastic disks B B', and connecting-bolt C, all constructed and arranged to operate as and for the purposes specified.

In testimony of which invention I hereunto set my hand.

WM. F. CONVERSE.

Witnesses:

GEO. H. KNIGHT,
JAMES H. LAYMAN.