2 Sheets--Sheet 1.

C. M. MURCH.

Vehicle-Springs.

No. 149,777. Patented April 14, 1874.

FIG. 1.

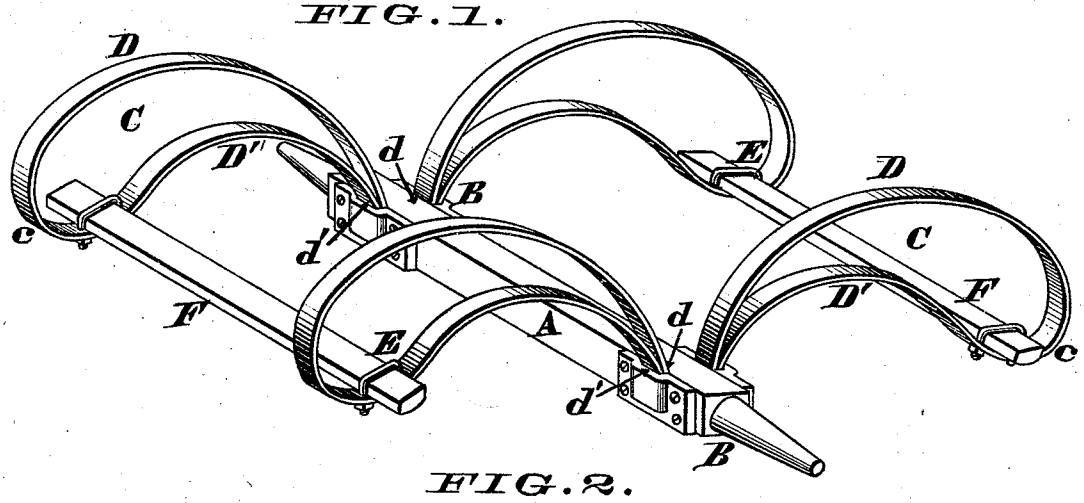


FIG. 2.

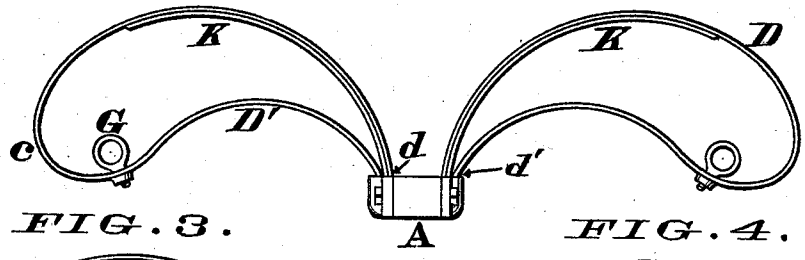


FIG. 3.

FIG. 4.

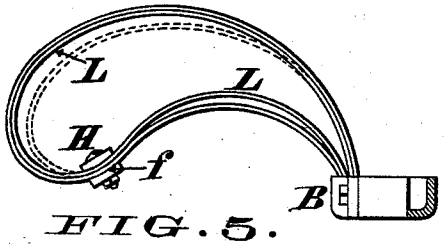


FIG. 5.

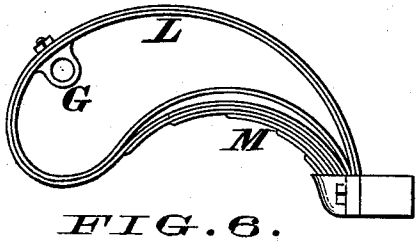


FIG. 6.

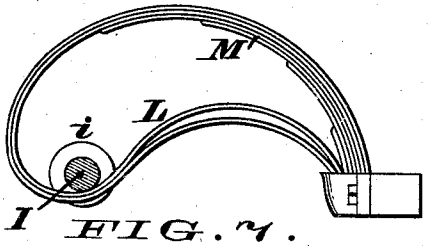


FIG. 7.

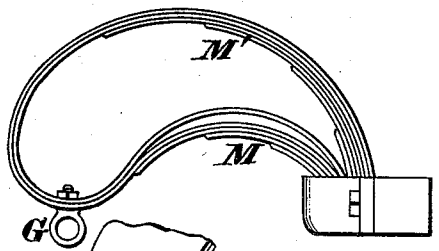
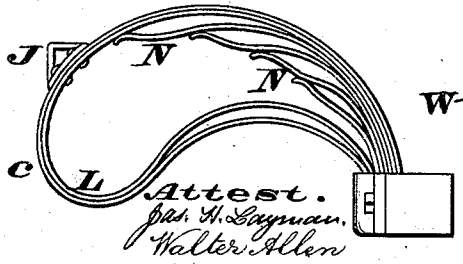
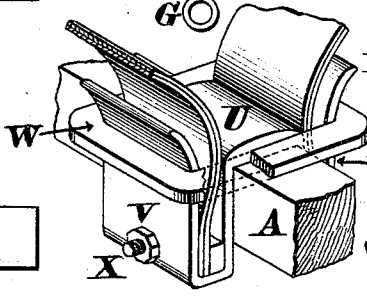


FIG. 13.





Attest.
Jas. H. Layman.
Walter Allen

C. M. Murch
By Knight Bros.
Att'ys.

2 Sheets--Sheet 2.

C. M. MURCH.

Vehicle-Springs.

No. 149,777. Patented April 14, 1874.

FIG. 8

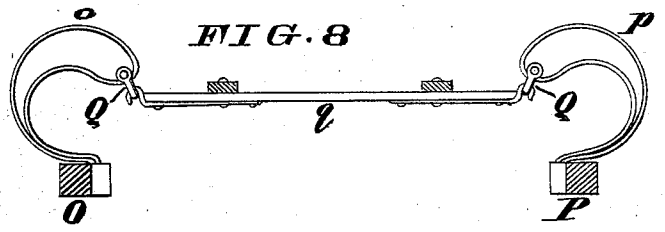


FIG. 9

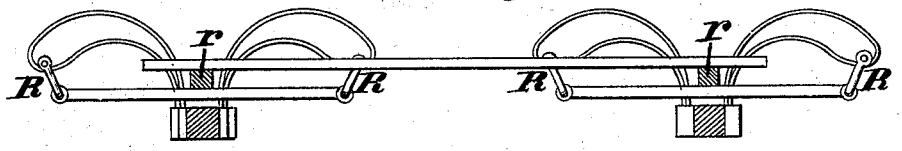


FIG. 10

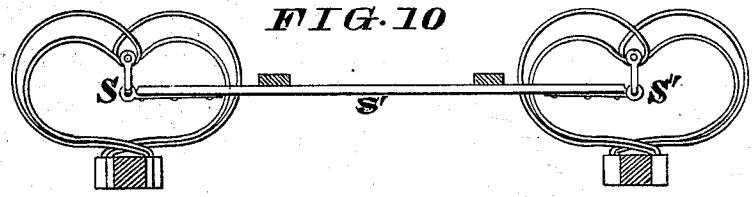


FIG. 11

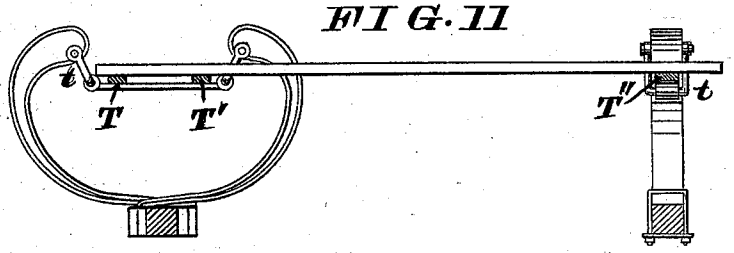
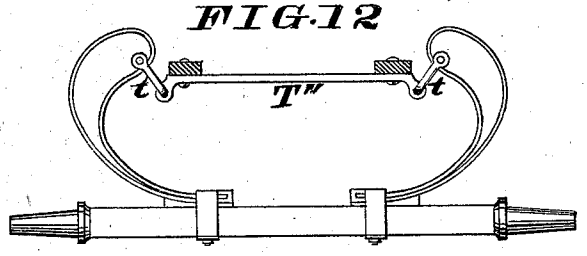


FIG. 12



Attest.
Jno L. Ewin
Walter Allen

Chauncey M. Murch
by Knight Bros
Att'ys

UNITED STATES PATENT OFFICE.

CHAUNCEY M. MURCH, OF CINCINNATI, OHIO.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **149,777**, dated April 14, 1874; application filed February 27, 1874.

To all whom it may concern:

Be it known that I, CHAUNCEY M. MURCH, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Spring for Vehicles, of which the following is a specification:

This invention relates to a peculiarly-formed spring which is to be attached to the axles of vehicles for the purpose of supporting the bodies, beds, or platforms in the usual manner. Said spring, in its simplest form, consists of a single blade, plate, or strip of steel or other resilient material, whose two ends are "clipped" or otherwise rigidly attached to the axle of the vehicle, while the central portion of the spring is free to assume just such a shape as the length of the blade and stiffness of the metal will allow. The result of thus confining the ends of the blade and leaving the other portions thereof free is to produce a spring having a pyriform or pear shape, which combines elasticity with durability and safety in an eminent degree. The supporting-rail, or other member which sustains the body of the carriage, is applied near the midlength of the blade, and, as soon as said blade has been depressed to its proper position by the weight of the bed, it performs all the functions of what might be called a double-C spring, without the friction and uncertainty of action incident to the use of the common or single form of such spring.

Having thus briefly indicated the principal features of my invention, I will now proceed to give a detailed description of the same.

Figure 1 is a perspective view, showing two pairs of the simplest form of my springs, attached to an axle. Figs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 show modifications of the spring, and Fig. 13 is a perspective view of an improved clip for attaching the springs to axles.

A represents the axle-tree of a carriage or other vehicle, having clips B applied to it, which clips or their equivalent devices serve to unite and clamp firmly together the ends *d d'* of the spring C D D'. This spring consists simply of a blade, plate, or strip, C, composed of steel or other suitable material, which, when bent into its proper condition for use, assumes a pyriform or pear shape. As both ends of the blade are confined within the clip B, and the middle portion is allowed to bow or bulge out at *c*, an upper leaf, D, and a lower one, D', are thereby produced. E is a staple or clip for securing the supporting-rail F to the lower leaf D', it being preferred to locate said clip at or near the bowed portion of the spring. Instead of the clip E, a perforated lug or eye, G, may be employed, or the end of the rail may have a kerf, *f*, cut in it, into which kerf the spring is inserted and then secured by a bolt, H, as shown in Fig. 3, or the eye may be applied to the upper leaf of the spring, as represented in Fig. 4. But these fixed lugs or eyes may be dispensed with, and the supporting-bar I be made cylindrical and adapted to play within the bowed portion of the spring, as represented in Fig. 5. In this case the bar I must be provided with collars or flanges *i*, to prevent it becoming detached from the spring. An angle-iron step, J, may be arranged to sustain the supporting-rail, as in Fig. 7. The upper leaf of the spring may be stiffened by applying an auxiliary blade beneath a portion of it, as seen at K in Fig. 2, or this supplemental blade may be carried completely around and within the spring C D D', as shown at L in Fig. 3.

Fig. 4 shows the spring with this supplemental blade fitted within it, and the lower leaf D' stiffened by the application beneath the same of a number of auxiliary leaves, M, which diminish in length in proportion as they are remote from said leaf D, the most distant of the blades M being the smallest.

Fig. 5 shows the manner of stiffening the spring by the application of supplemental blades M', of diverse lengths, beneath the upper leaf D.

Fig. 6 represents these supplemental blades applied both beneath the upper and lower leaves of the spring.

In all the above illustrations, where the supplemental blades have been shown, they are represented as curved, so as to correspond in form with the leaves they are designed to support; but it is evident the shape of said blades may be varied, if desirable. In Fig. 7 these supplemental blades are shown curved at N in a reverse manner to the leaves which they support. These reversely-curved blades add greatly to the sustaining capacity and durability of the spring, without materially increasing its weight.

In Fig. 8, two springs, *o* and *p*, are shown attached to the two axle-trees O P, said springs being bent over the axles in the manner shown, and furnished with links Q, that support the rails or sills *q* of the carriage or other vehicle.

Another modification is represented in Fig. 9, where essentially the same arrangement of spring is seen, as illustrated in Fig. 1, the only difference being that, in the present instance, the springs are furnished with stirrups R to support the transverse rails *r* of the body or bed of the vehicle.

In Fig. 10, each end of each axle-tree is provided with two springs, that are bowed in opposite directions, so as to meet above the axle-tree, and these four pairs of springs support two transverse rails, S S′, having attached to them the sills *s s′* of the wagon-bed.

A further modification is shown in Figs. 11 and 12, wherein four longitudinal and two transverse springs are shown, the longitudinal ones being secured to the rear axle, while the transverse ones are applied to the front axle. These springs are furnished with links *t*, that support transverse bars T T′ T″, to which the sills of the carriage-body may be secured in any approved manner.

It is immaterial whether the spring be arranged in the simple manner shown in Fig. 2, or in any of the more complex systems represented in the other illustrations, as the action is the same in all cases; and it will be readily understood that any weight imposed upon the upper leaf D, and tending to force it down, would be resisted not only by the strength of said upper leaf, but it would also have to overcome the additional stiffness afforded by the lower leaf D′. The lower leaf D′ serves, in fact, as what might be called an elastic tie, tending to draw the curved portion *c* toward the clip B the moment the spring is depressed, thereby performing all the functions of a double-C spring, without its attendant friction and complexity of parts.

Either form or arrangement of springs may be applied to the axle or axles of the vehicle in any suitable manner; but I prefer to employ a clip such as shown in Fig. 13, and it will be seen by referring to this illustration that a saddle, U, is placed upon the axle A, said saddle being provided with two pockets, V V′, into which the ends of the two pairs of springs are inserted.

A yoke, W, surrounds the springs and the upper part of the saddle, while the springs themselves are maintained in proper position within the clip by a bolt, X.

The eyes, stops, or lugs for receiving the sills that sustain the body of the vehicle may be omitted, and in their place a depression can be formed in the lower leaf of the spring, into which depression or loop the supporting-rail or sill may be seated.

I claim as my invention—

1. The pyriform spring C D D′, with rigidly-clamped ends, constructed and combined with a vehicle axle and body-support, substantially as described.

2. The combination of the saddle U, yoke W, and retaining-bolt X, constituting a coupling for securing the spring to the axle, substantially as described.

3. The combination of the pyriform spring C and coupling-clip B with an axle, substantially as set forth, for the purpose specified.

In testimony of which invention I hereunto set my hand.

CHAUNCEY M. MURCH.

Attest:
GEO. H. KNIGHT,
JAMES H. LAYMAN.