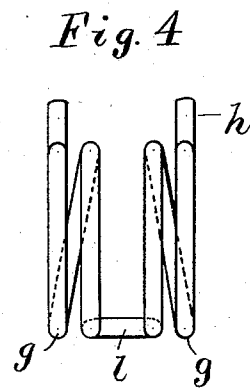
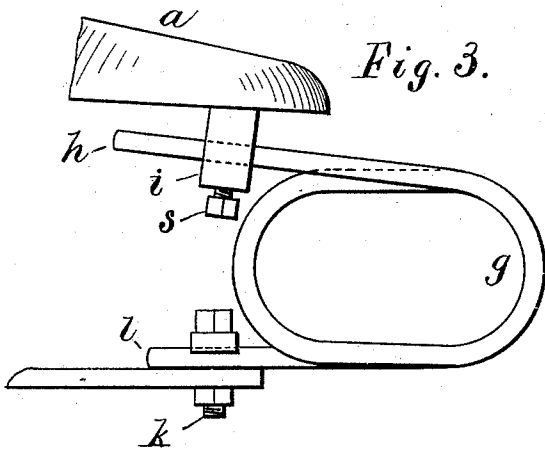
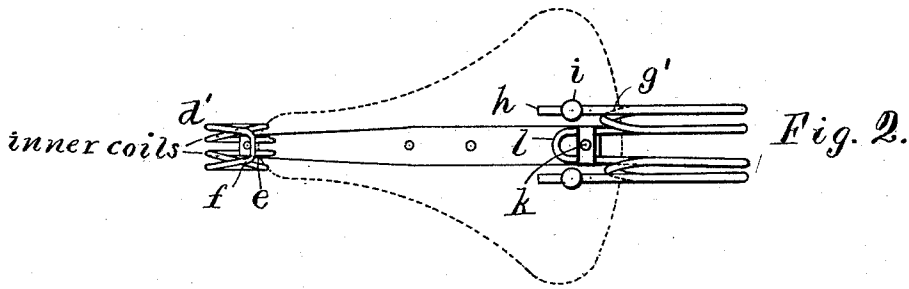
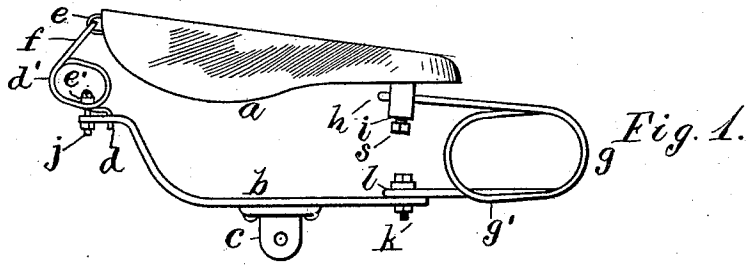


(No Model.)

H. BERGFELS.
BICYCLE SADDLE SPRING.

No. 473,493.

Patented Apr. 26, 1892.



Attest:
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UNITED STATES PATENT OFFICE.

HENRY BERGFELS, OF NEWARK, NEW JERSEY.

BICYCLE-SADDLE SPRING.

SPECIFICATION forming part of Letters Patent No. 473,493, dated April 26, 1892.

Application filed September 14, 1891. Serial No. 405,599. (No model.)

To all whom it may concern:

Be it known that I, HENRY BERGFELS, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Bicycle-Saddle Springs, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in a coiled spring of oval form, with its terminals projected from the longitudinal sides of the spring and attached adjustably to the clamps upon the bicycle-seat. The flattening of the coils stiffens the-wire in the ends of the coil and causes it to bend at certain points in its periphery instead of throughout its entire length. Such bending causes the spring to yield more easily under a slight pressure and to bend through a far greater range before reaching its maximum resistance. By attaching the seat adjustably to the terminals of the spring the resistance of the spring may be varied within a very wide range, and an easy-riding seat thus be secured for either heavy or light weights. The spring may be applied to one or both ends of the saddle and requires in such cases to be adjustable on one end only.

The invention is illustrated with this construction in the annexed drawings, in which—

Figure 1 is a side elevation of the seat and its support. Fig. 2 is a plan of the same with the seat shown in dotted lines to avoid obscuring the springs. Fig. 3 is an enlarged elevation of the rear spring and its attachments, and Fig. 4 is an end view of the spring from the rear side.

a is the bicycle seat or saddle; *b*, the support, provided with pivot-lug *c*, as usual. Springs are shown at the front and rear ends of the saddle, the terminals *d* of the front spring *d'* being inserted through holes in the support *b* and the loop *f* at the opposite end of the spring being inserted in a strap *e* at the front end of the saddle. The rear spring *g* has its upper terminals *h* attached to binding-posts or clamps *i*, attached to the rear end of the saddle, and the loop *l* of the spring is clamped upon the support by bolt *k*. The

weight upon the seat tends to pull both the springs toward the middle of the support, and such tension is resisted in the case of the front spring by a plate *e'* and bolt *j*, the plate being clamped across the inner coils only of the spring to permit the free movement of the outer coils. The inner coils are marked "inner coils" in Fig. 2. The clamps *i* are furnished with set-screws *s*, by which the terminals *h* may be held in any given position in the clamps. In Fig. 1 the clamps are shown applied to the ends of the terminals, thus giving the terminals a greater leverage over the coil and causing a greater yielding of the spring under a given load. Such yield is indicated in Fig. 1 by the depression of the outer coils *g'* below the plane of the support *b*, upon which the loop *l* is secured. To increase the stiffness of the spring, the bolt *k* and set-screws *s* are loosened and the spring is pushed bodily toward the front of the saddle, thus bringing the clamps closer to the coils, as shown in Fig. 3, and thereby diminishing the leverage of the load. The spring, with the same load, is then depressed in a lesser degree, owing to its greater rigidity, which is expressed in Fig. 3 by the elevation of the outer coils *g'* above the plane of the support *b*. The spring is then adjusted to sustain a greater load with the same amount of flexure or elasticity, and is thus adapted to support a heavy rider with the same ease as a light one. Heretofore circular coils have been used in such springs, and in such cases the pressure upon the terminals operates simply to wind up or tighten the coils throughout their entire length. I have discovered that the formation of the coils in oval or flattened shape produces alternate flexible portions along the flat sides of the oval and stiffer portions at the ends of the oval. The spring when under pressure yields chiefly at the junction of the flexible and stiff portions, throwing the coils bodily into the positions shown in Figs. 1 and 3 and producing a degree of movement and flexibility not attainable with the circular coils. I have found by actual test that the range of movement with a given load is more than double in a spring of the

same weight by changing its form in the manner described, and as the rider's weight is thrown principally upon the rear end of the saddle my improvement was designed primarily for application at that point.

I am aware that bicycle-seats have heretofore been supported upon a single-coiled spring, the spring being fixed beneath the center of the seat; but I prefer to apply my invention to the ends of the seat, as it makes the seat more steady, while supporting it with great elasticity. It will be observed in the springs at the front and rear ends of the seat in Fig. 1 that the lateral coils are held out of contact with the adjacent support, so that they may be moved freely past the center coils, as illustrated at *g'* in Figs. 1 and 3. The flexibility of my spring is almost destroyed if the outer coils are in contact with a rigid support, as it is necessary that the coils should be so bent and arranged as to move bodily under pressure. The oval or flattened coil spring may when desired be also applied at the front of the saddle, as shown in the drawings. It is obvious that no adjustment is required for the spring at the front of the saddle if the rear spring be adjustable, as described, be-

cause the load is supported chiefly by the rear spring.

Having thus set forth my invention, what I claim is—

1. A bicycle-seat spring having oval or flattened coils, substantially as herein set forth.

2. The combination, with a bicycle-seat spring having oval or flattened coils and free terminals, of a seat having an independent support at its forward end and clamps at its rear end fitted adjustably to such terminals, substantially as herein set forth.

3. The combination, with a support *b*, of a bicycle-seat spring formed with loop *l*, clamped adjustably upon the support *b* and having oval or flattened coils with free terminals *h*, and the bicycle-seat *a*, supported at its forward end by the oval spring *d'* and having at its rear end clamps fitted adjustably to the terminals *h*, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY BERGFELS.

Witnesses:

THOS. S. CRANE,
HENRY J. MILLER.