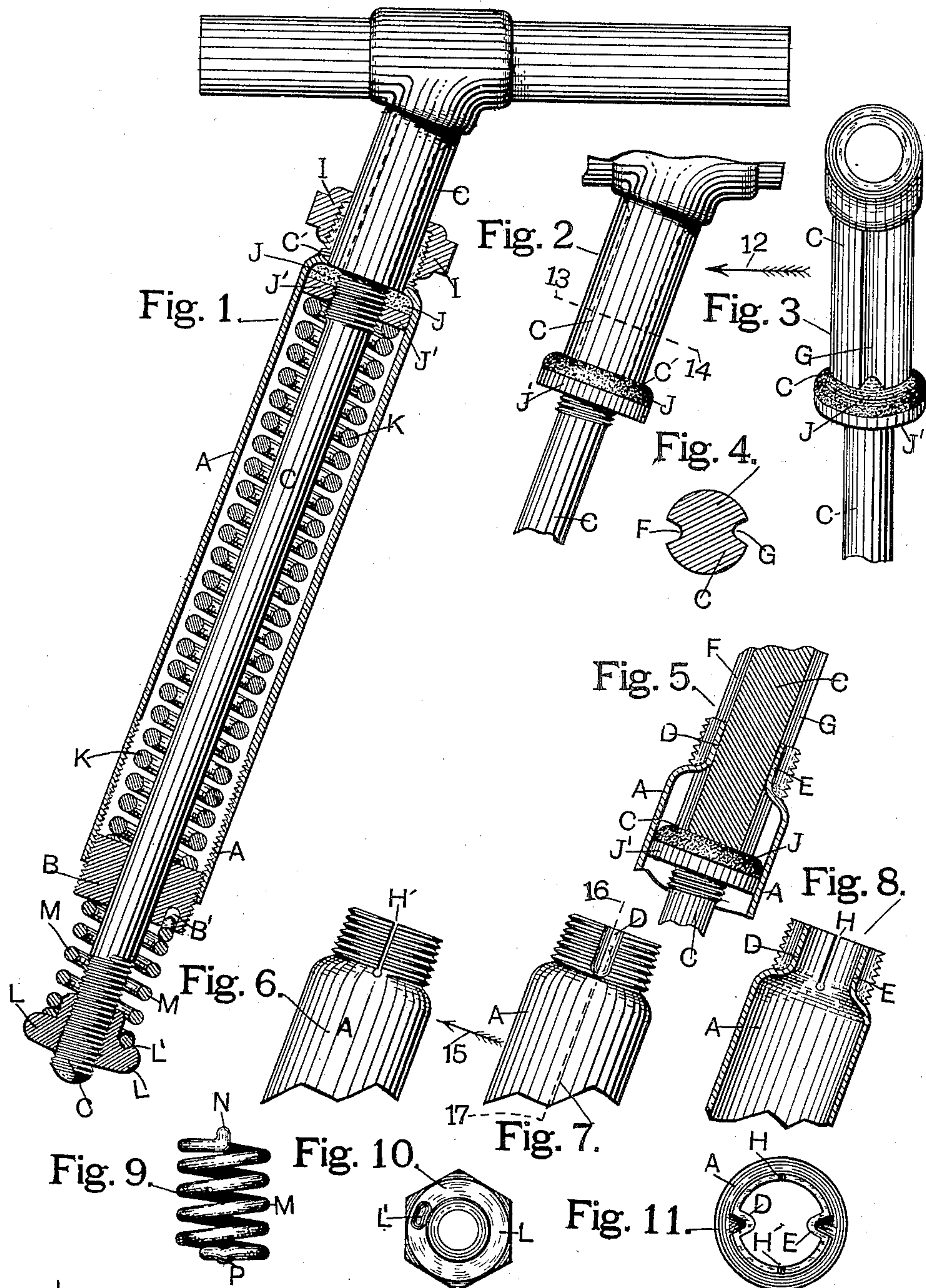


(No Model.)

H. K. BROOKS.
SPRING POST FOR BICYCLES.

No. 599,291

Patented Feb. 15, 1898.



WITNESSES:

H. A. Hale
Wm. Hale

INVENTOR:

Howard K. Brooks.
By his atty.
Oliver Snell

UNITED STATES PATENT OFFICE.

HOWARD K. BROOKS, OF CHICAGO, ILLINOIS.

SPRING-POST FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 599,291, dated February 15, 1898.

Application filed July 31, 1896. Serial No. 601,181. (No model.)

To all whom it may concern:

Be it known that I, HOWARD K. BROOKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Spring Seat-Post for Bicycles, of which the following is a specification.

My invention relates to means for relieving the body of a bicycle-rider from vertically-active vibrations when riding over rough roads; and my object is to improve the device for which a Patent of the United States, No. 559,841, was granted to me May 12, 1896, as is described hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 shows the spring-casing, two springs, and the adjusting-nuts therefor, together with a leather-buffer washer and the retaining-nut therefor and an adjusting nut or cap for the top of the spring-case, all in axial section, a seat-post stem being shown in elevation. Fig. 2 is a side elevation of a portion of the upper part of a seat-post stem to illustrate position of a leather buffer attached thereto. Fig. 3 is a rear elevation of the part shown in Fig. 2, looking in the direction indicated by arrow 12, and showing one of the spline-channels therein. Fig. 4 is a cross-section of the stem shown in Fig. 2 on line 13 14 to show spline-channels. Fig. 5 is an axial section of a portion of the top of the spring-case with the adjusting-cap removed and with the stem having the upper enlarged end portion in axial section through the spline-channels and the lower or reduced portion in elevation in position within the spring-case as it appears when the stem is forced inwardly, and shows the manner of forming integral longitudinal splines which are adapted to slidingly fit in longitudinal channels in the front and rear sides of the stem. Fig. 6 is an elevation of the upper end portion of the spring-case, showing a slit at one side thereof to permit the compression of the end of the case. Fig. 7 is an elevation of the top end of the spring-case, looking in the direction indicated by arrow 15, Fig. 6, and showing the depression to form a spline for one of the channels in the stem. Fig. 8 is an axial section of the top of the spring-case on line 16 17, Fig. 7. Fig. 9 is an elevation of a counter buffer-spring fitted to operate at the lower end of the

device. Fig. 10 is a plan of a lock-nut for adjusting the tension of the spring shown in Fig. 9. Fig. 11 is a plan of the spring-case with the screw-threaded cap and the stem removed to show the oppositely-disposed front and rear splines which slidingly fit the two channels, Fig. 4, in the stem.

Similar letters indicate like parts throughout the several views.

The spring-case A forms the main body of the device, which is adapted in size to take the place of the ordinary rigid seat-post. Case A is internally screw-threaded at the lower end to receive a screw-threaded adjustable annular abutment B. The top portion of case A is reduced in size annularly by swaging it inwardly until its internal diameter is a sliding fit for stem C, and in this operation a shoulder is formed to receive the impact of a buffer-pad attached to stem C, described hereinafter. The swaged top of the case also has the walls thereof again swaged inwardly at opposite sides to form splines D and E integral therewith, which slidingly fit the two oppositely-disposed channels F and G. Midway between the splines D and E are slits H and H in the top portion of the case, which portion is slightly tapered and is screw-threaded exteriorly and fitted with a nut I, through whose top slides stem C. Nut I, when screwed inwardly on the tapered end of case A, serves to close the slits H and H and thus contract the end of the case and bring the splines D and E in close sliding contact with channels F and G. Stem C is axially disposed down through case A and is supported at the upper end by the splines D and E and at the lower end by passing axially through adjustable annular abutment B. The lower portion of the stem is reduced in size below shoulder C, close below which the stem is screw-threaded to receive a leather buffer J against the shoulder, and a screw-threaded metal nut J' to firmly hold the buffer in place to form a shoulder which contracts the upper end of the inside of case A by the pressure from helical spring K, whose lower end rests on abutment B, while the upper end rests against nut J'. Stem C is threaded at the lower end to receive a nut L, between which and abutment B is a contra buffer-spring M, having one end N engaged in a hole B' in

abutment B and the other end portion engaged in a shallow depression L' in nut L, so that the nut is yieldingly held from backing off. It is obvious that by adjusting the tension of spring K by means of abutment B the tension of spring M would be changed, but may be readjusted by means of nut L.

In devising this means for preventing the communication of annoying vertically-operating vibrations to the body of a bicycle-rider I have endeavored to form a structure which is not only neat in appearance, but one which may be easily made by machinery and which is durable, adjustable, smooth, and noiseless in action and which in addition to these desirable features entirely obviates the objectionable sudden termination of upwardly-acting vibrations by the introduction of the contra buffer-spring M and the leather-buffer washer which serve to so gradually ease an upward vibration that its annoying or injurious effect on the body is reduced to a minimum. The size of the splines D and E is such that when made in the ordinary manner, by soldering in, they are very liable to work loose and ruin the whole structure, especially when used for a handle-bar; but when these splines are swaged inwardly and are integral with the case they are as reliable and durable as the other portions of the device.

In practice this device when used as a seat-post is adapted to be secured in the same position, and adjusted for height, the same as the ordinary rigid seat-post.

The spring K is made of a strength to suit a light-weight rider, and its resistance to compression is increased to the desired amount by screwing nut L up into case A.

In riding over very rough roads with a bicycle provided with this device large obstructions cause spring K to be compressed to such an extent that when it is returning to the normal position, Fig. 1, the buffer-collar J on stem C would be brought up against the inside top of the case with great force and a heavy jar were it not for the action of the short contra buffer-spring M, which serves to gradually arrest the upward motion of stem C by being adjusted to such a tension that the impact of the leather buffer J is very light against the top of the case, thus insuring both ease of action and durability.

In adjusting the tension of the contra buffer-spring M, since the top thereof is engaged in the hole in abutment B, which latter is under the strong pressure of spring K and not easily turned, the nut L may be easily turned so as to slide the slight protuberance P at the lower end of spring M out of the shallow notch L' in the nut, and the latter completes a revolution before the protuberance again engages in the notch, which combination serves as a means for locking the nut in some desired position. By screwing the nut I down hard the splines D and E will be forced into the channels with sufficient

frictional contact to firmly hold the stem C from longitudinal movement, thus forming a rigid seat-post.

The shoulder formed by the leather-buffer washer and its retaining-nut may be dispensed with by the use of a spring M of sufficient stiffness to always hold the stem C against the upward pressure of spring K normally in about the position shown in Fig. 1.

I claim as my invention—

1. In a spring seat-post, an outer casing, a spring-actuated seat-stem adapted to slide longitudinally and axially through the casing, longitudinal depressions in the sides of the stem, and splines in the top of the casing adapted to slidingly fit said depressions, the top end of the casing slightly tapered and screw-threaded exteriorly with slits across the threads, and fitted with a conical nut adapted to close the splines into the said depressions in the stem for the purpose described.

2. In a spring seat-post a casing formed by swaging a portion of the top thereof inwardly and forming an annular inner shoulder, and swaging a part of the reduced portion inwardly, forming splines, the reduced portion of the casing screw-threaded, slitted across the threads and provided with a screw-threaded conical nut adapted to close the slits and the reduced top of the case, all for the purpose hereinbefore described.

3. The combination in a spring seat-post, of a casing formed by swaging a part of the top thereof inwardly and forming an annular inner shoulder, swaging a part of the reduced portion inwardly forming splines, a seat-post stem having longitudinal grooves and a collar, said stem disposed axially within the casing, said collar adapted to contact the annular shoulder, and the splines slidingly fitted to the said grooves, the reduced portion of the casing screw-threaded and slitted across the threads, upon which latter a screw-threaded conical nut is mounted which is adapted to close the slits and the reduced portion of the case and the splines upon the stem, substantially as stated.

4. In a spring seat-post in combination with the case A the annular abutment B longitudinally adjustable therein, stem C disposed axially through the case and the said abutment, and terminating in a screw-threaded portion upon which is mounted a nut, a helical spring mounted on the stem and the ends of the spring in engagement with a notch in the abutment and in sliding engagement with a notch in the nut, for the purpose stated.

In testimony that I claim the foregoing I have hereunto set my hand, this 27th day of July, 1896, in the presence of witnesses.

HOWARD K. BROOKS.

Witnesses:

E. J. CARLSON,
OSCAR SNELL.