No. 617,831. Patented Jan. 17, 1899.

C. S. IRISH & P. V. MARKELL.

ADJUSTABLE SEAT POST FOR BICYCLES.

(Application filed Oct. 4, 1898.)

(No Model.) 2 Sheets—Sheet 1.

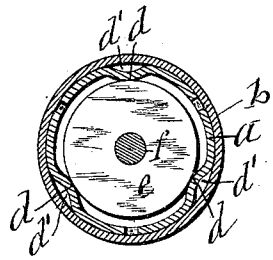


Fig. 3

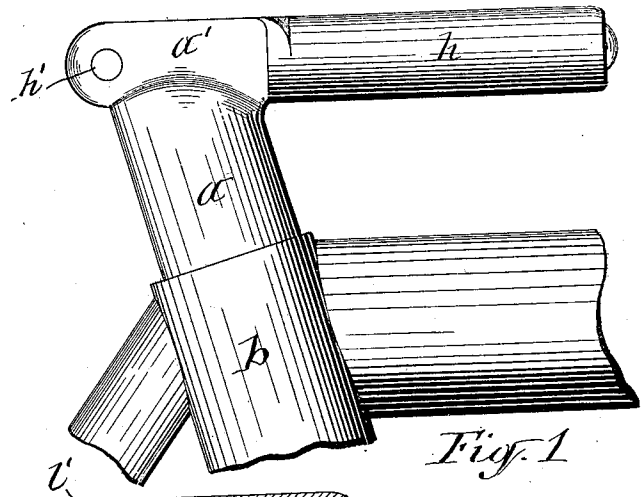


Fig. 1

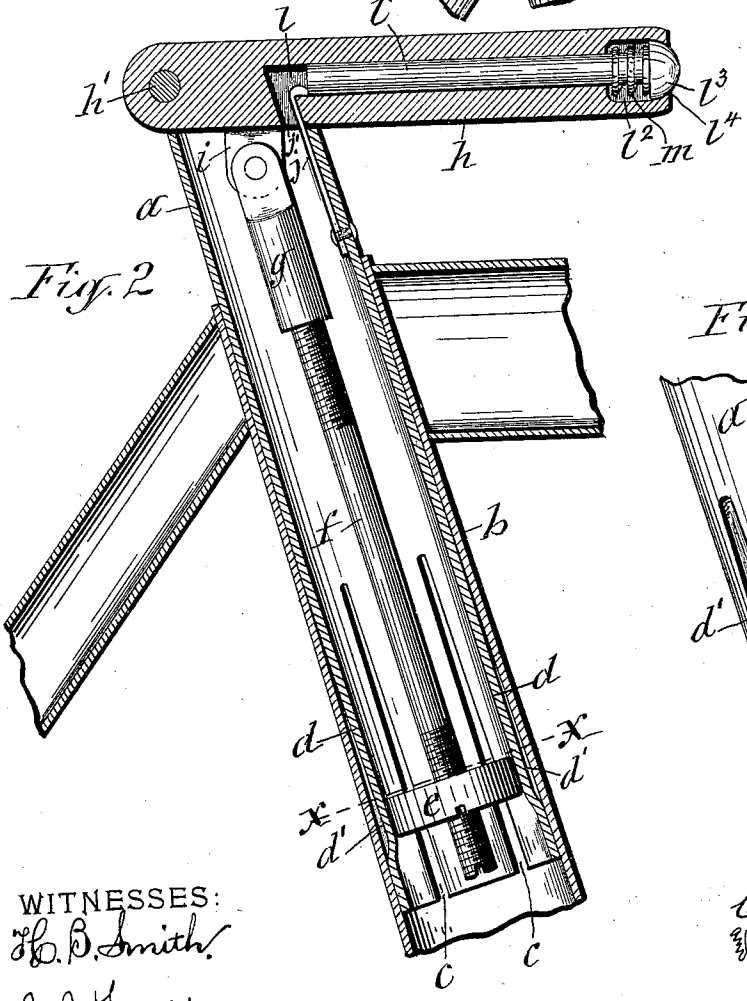
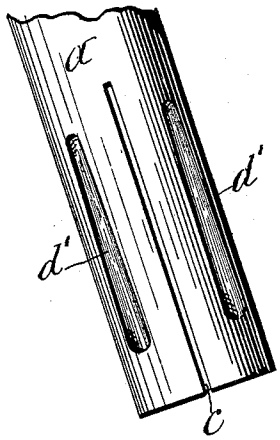


Fig. 2

Fig. 4



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Fig. 5

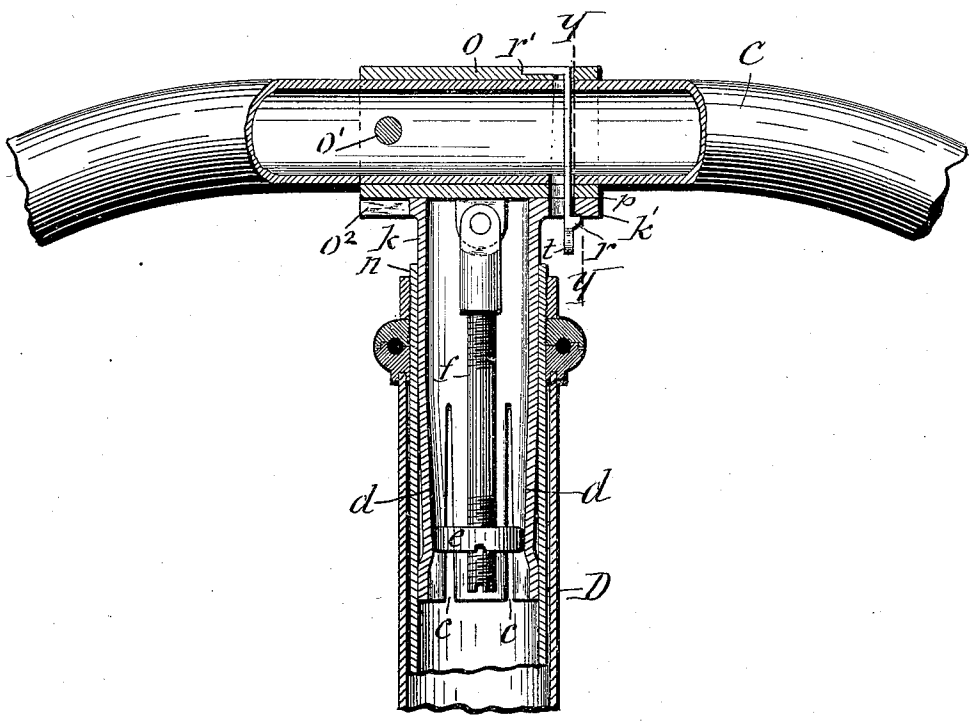
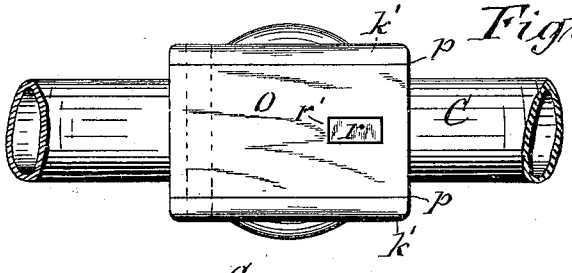


Fig. 6



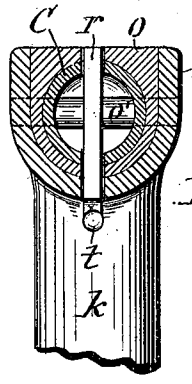


Fig. 7

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UNITED STATES PATENT OFFICE.

CHARLES S. IRISH AND PETER V. MARKELL, OF JORDAN, NEW YORK.

ADJUSTABLE SEAT-POST FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 617,831, dated January 17, 1899.

Application filed October 4, 1898. Serial No. 692,658. (No model.)

To all whom it may concern:

Be it known that we, CHARLES S. IRISH and PETER V. MARKELL, citizens of the United States, and residents of Jordan, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Adjustable Seat-Posts for Bicycles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the adjustable attachment of the seat-post and analogous members to the tubular members of a bicycle-frame.

The object of the invention is to provide an adjustable attachment which shall be efficient in its operation and permit the adjustment to be effected in a most expeditious and convenient manner; and to that end the invention consists in the novel construction and combination of parts hereinafter described, and summed up in the claims.

In the annexed drawings, Figure 1 is a side view of the top portion of a seat-post embodying our invention. Fig. 2 is a vertical longitudinal section of said seat-post and its attachment to the bicycle-frame. Fig. 3 is a transverse section on line X X in Fig. 2. Fig. 4 is a detached side view of the lower end portion of the seat-post. Fig. 5 is a vertical transverse sectional view of our invention applied to the attachment of the handle-bar stem to the fork-stem of a bicycle. Fig. 6 is a top plan view of the same, and Fig. 7 is a vertical transverse section on line Y Y in Fig. 5.

Similar letters of reference indicate corresponding parts.

It is apparent that our invention is applicable to the attachments of both the seat-post and the handle-bar stem.

Figs. 1 to 4, inclusive, illustrate the invention applied to the attachment of the seat-post *a*, which consists of a metal tube inserted into the upper end of the hollow standard *b* of the bicycle-frame. The inner or lower end of said tube is made expansible by longitudinal slits *c c*, extending part way the length of the tube, and by longitudinal upwardly-tapering ribs *d d* on the interior of the tube between the aforesaid slits, against which ribs presses the longitudinally-movable expander *e*. These ribs we form by correspondingly-shaped longitudinal inward depressions *d' d'* made in the exterior of the tube, preferably by means of a suitable die or dies.

The expander *e* consists of an annular plate or collar provided in its center with a screw-threaded eye, by which it is adjustably connected to the correspondingly-screw-threaded lower end of a rod *f*, which is disposed in the axis of the tube *a* and has its upper end also screw-threaded and adjustably secured in a correspondingly-threaded socket in the lower end of a hanger *g*, connected to the seat-supporting arm *h*. This arm is fulcrumed or pivoted at *h'* to one end of a transverse head *a'* formed on the upper end of the tube *a*, which head is provided in its top with a longitudinal groove, in which the arm lies when in its normal position, as shown. The under side of the arm *h* has projecting from it a perforated ear *i*, to which the hanger *g* is hinged or pivotally connected, as shown in Fig. 2 of the drawings.

The adjustable connection of the expander *e* to the rod *f* and the adjustable attachment of said rod to the hanger *g* afford a double adjustment of the expander *e* to insure positive and effective engagement of the same with the ribs *d d* in the sides of the interior of the expansible end of the tube *a*, and thereby effectually expand the same to obtain the requisite frictional hold on the standard *b* to retain the tube or seat-post *a* in its adjusted position.

Said seat-post is adjusted to carry the seat-supporting arm *h* at greater or less elevation by lifting the free end of said arm, which is thereby caused to draw up the expander *e* by means of the rod *f*. This upward movement of the expander allows the lower end of the tube or seat-post *a* to contract and lose its frictional hold on the standard *b*. Said seat-post can then be either lifted or depressed to carry the seat-supporting arm at its desired elevation, and when this is effected the seat-post is fastened in the standard by depressing the free end of the seat-supporting arm, which by means of the rod *f* forces the expander down and causes the same to expand the lower end portion of the tube or seat-post by pressure on the ribs *d d*.

To retain the seat-supporting arm *h* in its

normal position and prevent accidental loosening of the seat-post in the standard, we employ a suitable lock, preferably of the form of a hook-shaped catch *j*, attached to the tube *a* and having its hook end passing through an aperture *j'* in the arm *h* and engaging the inner side of a socket *l* formed in said arm. Said socket extends through the free end of the arm and contains a push-bar *l'* for pushing the hook of the catch *j* out of engagement when desired to release the arm and allow it to be adjusted, as hereinbefore described. The socket *l* is enlarged at the free end of the arm, as shown at l^2, to accommodate a head l^3 on the end of the push-bar. A spiral spring *m*, interposed between the said head and inner end of the enlargement l^2, forces the push-bar back from engagement with the catch *j*. A contraction l^4 of the outer end of the socket enlargement prevents the push-bar from dropping out of the socket. Said contraction is made by upsetting or compressing the outer end of the arm *h* after the push-bar *l'* is inserted into said arm.

In applying our invention to the attachment of the tubular handle-bar stem *k* to the fork-stem *n* we provide the lower end portion of the stem *k* with the longitudinal slits *c c* and intermediate tapering ribs *d d*, substantially like the seat-post *a*, as hereinbefore described, and use in connection therewith the expander *e*, connected to the lower end of the rod *f*, which is connected at its upper end to the tubular arm *o*, pivoted at one end, as shown at *o'*, to a transverse head *k'* formed on the upper end of the handle-bar stem *k*.

C denotes the handle-bar, which is secured in the tubular arm *o*. The head *k'* is formed with a groove *p*, extending through the top of said head and containing the arm *o*, which is thus allowed to be swung on its pivot to move the expander *e* to and from its tube-expanding position in adjusting the arm *o* to a greater or less elevation in the same manner as the seat-supporting arm, as hereinbefore described. Beneath the pivot *o'* the head *k'* has an opening o^2 to permit the arm *o* to be swung on its pivot, as aforesaid.

For locking the arm *o* in its normal position we employ the spring-catch *r*, which is rigidly secured at one end in a countersink *r'* in the top of the arm *o* and passes with its free end down through enlarged passages in the said arm and in the handle-bar and bottom of the head *k* and engages by its hook end the under side of said head, as shown in Fig. 5 of the drawings. The lower protruding end of said catch is provided with a knob or thumb-piece *t*, by which to press the catch out of engagement when desired.

D represents the so-called "head" of the bicycle-frame, in which head the fork-stem *n* is pivoted in the usual and well-known manner.

What we claim as our invention is—

1. In combination with a hollow frame member, an expansible tube in said member, said tube formed in one piece and with a head on its outer end, an arm fulcrumed on said head and an expander disposed inside of the tube and operated by said arm as set forth.

2. In combination with a hollow frame member, an expansible tube in said member and having fixed to its outer end a transverse head grooved in its outer face, an arm pivoted to one end of said head and lying in the groove thereof, an expander disposed inside of the aforesaid tube and a rod connecting said expander to the arm as set forth.

3. In combination with a hollow frame member, an expansible tube in said member and provided with a rigid transverse head on its outer end, an arm fulcrumed on one end of said head, a rod connected longitudinally adjustable to said arm and extending into the aforesaid tube lengthwise thereof, and an expander connected to the inner end of said rod as set forth.

4. In combination with a hollow frame member, an expansible tube in said member and provided with a rigid transverse head on its outer end, an arm fulcrumed on one end of said head, a rod adjustably connected to said arm to extend a greater or less distance into the tube and having its inner end screw-threaded and a tube-expander adjustably connected to the inner end of said arm as set forth.

5. In combination with a hollow frame member, an expansible tube inside of said member slitted longitudinally at its inner end and formed with longitudinal inward depressions in its wall, and an expander in said tube bearing on said depressions as set forth.

6. In combination with a hollow frame member, an expansible tube in said member slitted longitudinally at its inner end and formed with longitudinal inward depressions tapering in depth toward one end, an expander movable longitudinally in said tube and means for forcing said expander onto the aforesaid depressions and thereby expand the tubes as set forth.

7. In combination with a hollow standard, a tubular seat-post inserted in said standard and slitted longitudinally at its inner end and formed with a head on its outer end, a seat-supporting arm pivoted to said head, a rod connected to said arm and extending into the aforesaid seat-post, an expander on the inner end of said rod and a lock retaining the aforesaid arm in its normal position as set forth.

8. In combination with the hollow frame member, an expansible tube in said member and formed at its outer end with a transverse head grooved lengthwise and provided with an aperture through its wall, an arm pivoted to one end of said head and lying in the groove thereof, a catch attached to the said arm and passing through the aforesaid aperture and engaging the exterior of the head, an expander in the tube and a rod connecting said expander to the arm as set forth.

9. In combination with the hollow frame

member, an expansible tube in said member and formed with a transverse head on its outer end, an arm pivoted to one end of said head and provided with a perforated ear projecting toward the axis of the tube, a hanger pivoted to said ear and provided with a screw-threaded socket in its lower end, a rod disposed in the axis of the tube and having its end portions screw-threaded and adjustably secured in the aforesaid hanger and the tube-expanding collar provided with a screw-threaded eye and adjustably connected thereby to the inner end of the aforesaid rod as set forth.

10. In combination with the hollow frame member, an expansible tube in said member and formed with a transverse head on its outer end, an arm pivoted to one end of said head and provided with a longitudinal socket in its opposite end portion and with an aperture in the wall of said socket, a spring-catch attached to the aforesaid tube and extending through said aperture and engaging the inner wall of the socket, and a longitudinally-movable bar in the said socket for throwing the aforesaid catch out of engagement as set forth.

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