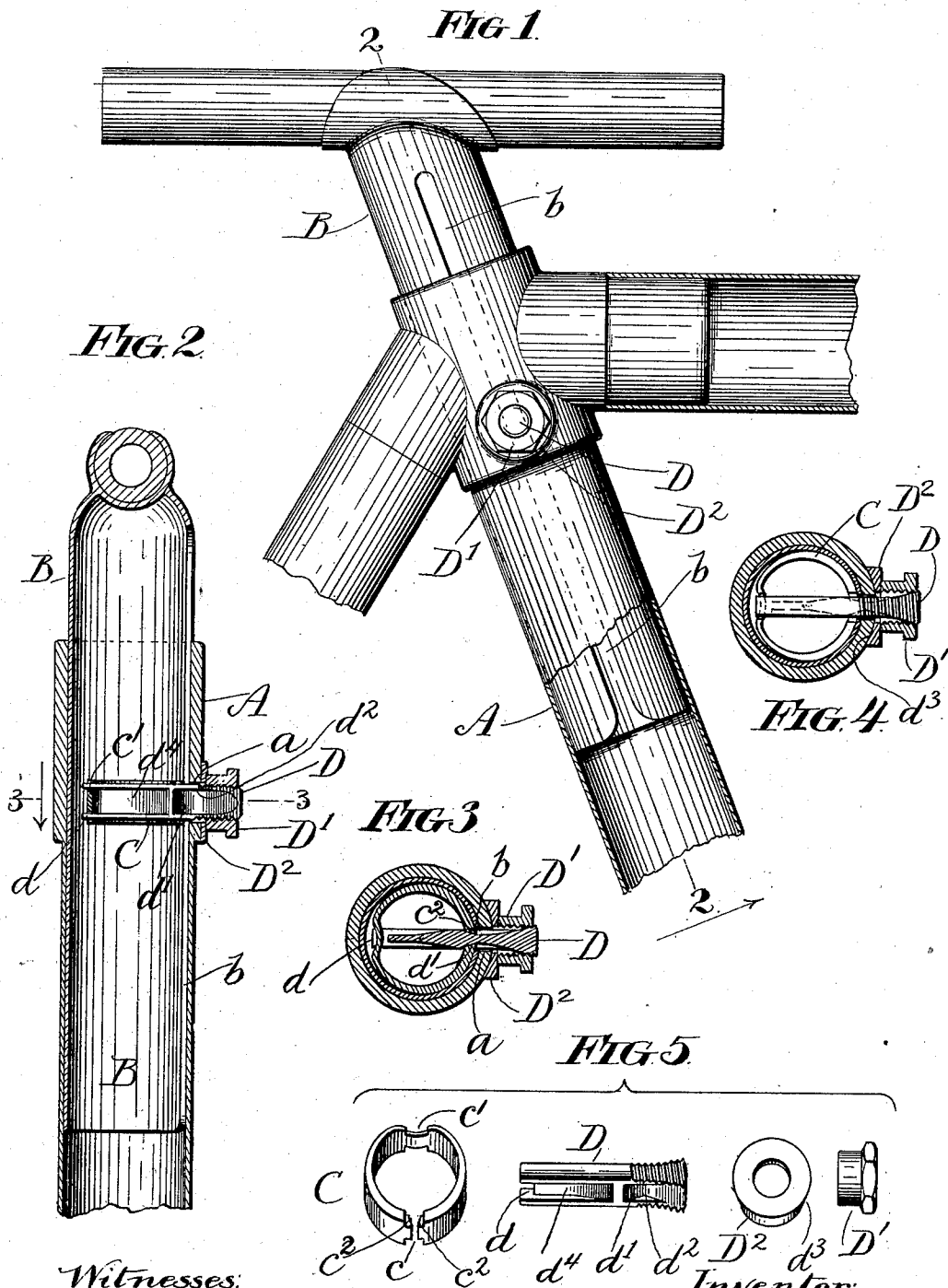


G. L. THOMPSON.

INTERNAL FASTENER FOR TELESCOPING TUBULAR PARTS.

(Application filed Aug. 15, 1898.)

(No Model.)



Witnesses:
J. Halpermy
W. O. Melshu.

Inventor:
 Geo. L. Thompson
 By *Geo. L. Thompson*
 Attys.

UNITED STATES PATENT OFFICE.

GEORGE L. THOMPSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO GEO. L. THOMPSON MANUFACTURING CO., OF SAME PLACE.

INTERNAL FASTENER FOR TELESCOPING TUBULAR PARTS.

SPECIFICATION forming part of Letters Patent No. 670,040, dated March 19, 1901.

Application filed August 15, 1898. Serial No. 688,614. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. THOMPSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Internal Fasteners for Telescoping Tubular Parts, of which the following is a specification.

This invention relates to improvements in internal fasteners for tubular telescoping parts, the particular embodiment of the invention shown being a seat or saddle post fastener for bicycles; but the invention may be otherwise embodied—as, for instance, in securing bicycle handle-bars to the steering-head or the like.

The object of the invention is to provide a device of the character referred to of simple and economical construction, convenient and positive in operation, and not likely to get out of order under severe and long-continued use.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a view with parts in side elevation and parts in axial section of the upper portion of a velocipede-seat-post standard and saddle-post seated therein equipped with a preferred embodiment of my invention. Fig. 2 is an axial section taken on line 2 2 of Fig. 1 in a plane at right angles to the view shown in Fig. 1. Fig. 3 is a transverse sectional view taken on line 3 3 of Fig. 2. Fig. 4 is a similar sectional view showing the operating-bolt, however, in top plan view. Fig. 5 is a detail view showing the several members of the expander separately.

Referring to the drawings, A designates an upper portion of the seat-post standard of a velocipede, and B a saddle-post adapted to be secured therein, said saddle-post being made tubular and arranged to telescope and fit within the upper end portion of the seat-post standard in the usual manner. The saddle-post is provided in one side with a longitudinal slot *b* of a length sufficient to afford the desired extent of adjustment up and down of the saddle-post, and preferably, for conven-

ience of assembling and in order to facilitate the expansion of the saddle-post, although not indispensably, made open at its lower end, or, in other words, extended to the extreme lower end of the saddle-post.

C designates an expanding device arranged within the saddle-post, by means of which the latter may be expanded or forced outwardly into frictional engagement with the interior of the seat-post standard. In the preferred embodiment shown said expanding device consists of a spring-metal ring (preferably of spring-steel) which is cut or made open at one side, as indicated at *c*, and is so conformed as to tend to assume a form slightly smaller in external diameter than the interior diameter of the saddle-post within which it is arranged.

D designates an operating-bolt arranged to extend through an aperture *a* in the seat-post standard, transversely of the latter, through the slot *b* of the saddle-post, and between the ends of the ring C. The inner end of the operating-bolt extends into proximity to the opposite side of the saddle-post and is bifurcated or made yoke-shaped, as indicated at *d*, and the expanding-ring is provided with a reduced portion *c'*, which is deflected inwardly toward the center of the ring and rests between the arms of the yoke *d*, thus serving to hold the expanding-ring against rotation and in transverse position within the saddle-post, but at the same time permitting free expansion and contraction of the ring. The ends *c²* of the expanding-ring, which tend to close together, and therefore clasp the opposite sides of the bolt between them, rest against and have sliding engagement with inwardly-diverging or wedge-shaped surfaces *d'*, whereby said ends will be forced apart and the ring thereby expanded as the bolt is drawn outwardly. The cam-surfaces *d'* are formed within the body of the bolt or depressed below the side surfaces thereof, so as to form grooves *d²*, which serve to hold the ends of the ring in register with the said surfaces. In order to thus draw the bolt outwardly, the outer end thereof is screw-threaded to receive a nut *D'*, which has bearing engagement with a washer *D²*, interposed between the nut and the outer face of the seat-

post standard. The inner face d^3 of the washer is desirably made concave to conform to the cylindrical exterior of the seat-post standard, and in order to prevent rotation of the bolt within its seat that portion of it which passes through the wall of the seat-post standard is flattened or made substantially angular in cross-section and the aperture a correspondingly shaped to receive the same. In order to facilitate the entrance of the bolt between the ends of the ring and into operative engagement with the latter, grooves or channels d^4 of suitable width to receive said ends of the ring are formed in the sides of the bolt, which grooves are made gradually shallower from the extreme inner end of the bolt toward the opposite end thereof until they run out near the grooves d^2 , hereinbefore described.

The parts thus constructed may be assembled by placing the ring inside of the seat-post standard, with its open side in register with the bolt aperture therein, and then passing the end of the bolt through the aperture and forcing it into place between the ends of the ring, the guide-channels in the sides of the bolt serving to direct the yoke of the latter into proper engagement with the reduced portion of the ring. The nut and washer having been placed upon the outer end of the bolt, the saddle-post may now be telescoped into the seat-post standard over the expanding-ring and with its slot straddling the bolt, after which it may be clamped in adjusted position by simply tightening the nut, thereby expanding it into frictional engagement with the interior of the seat-post-standard.

In separating the parts after the saddle-post has been released and removed the nut will be turned down until the bolt has been drawn outward sufficiently to disengage its yoke from the reduced part of the ring, whereupon the side of the ring thus disengaged from the yoke may be tilted downwardly or upwardly, as most convenient, and the clasp-ends thereof slipped laterally out of engagement with the bolt, it being noted that when the bolt has been thus drawn outwardly the ends of the ring will rest in engagement with that part of the bolt between the grooves d^2 and d^4 when the sides of the bolt are smooth.

While I have herein shown a preferred embodiment of the invention, yet it will be obvious that the details may be varied without departing from the spirit of the invention and without the exercise of more than ordinary mechanical skill. It will be further obvious that by means of suitable adaptations the device may be applied to various other uses. I do not, therefore, wish to be limited to the exact details of construction shown, except as made the subject of specific claims.

I claim as my invention—

1. An internal fastener for telescoping tubular parts, comprising a tubular inner member having a longitudinally-slotted wall, an

outer member within which said tubular member is adapted to telescope, an expanding device located within the inner tubular member consisting of a spring-metal annulus open at one side and so constructed as to tend to assume an external size less than the internal measurement of the tubular member within which it is located, and means for expanding said annulus consisting of a bolt arranged to extend transversely between the ends of said open annulus, out through the slot of the inner member, and through a supporting-bearing in the outer member, a yoke upon the inner end of the bolt with which the closed side of the annulus is detachably engaged, a pair of cam-surfaces forming the bottom walls of channels upon opposite sides of the bolt, said cam-surfaces being arranged in inwardly-divergent relation, and with which the ends of the annulus have yielding engagement, guide-channels extending from the inner end of the bolt toward the cam-surfaces for directing the ends of the annulus into engagement with the latter, and a nut threaded upon the outer end of the bolt.

2. An internal fastener for telescoping parts, comprising a tubular inner member having outward-yeildable wall portions, an outer rigid member to receive said inner member, said members being endwisely separable, an expandible device within the inner member, a transverse expander-bolt entering through the sides of the outer and inner members its inner end terminating within the inner member and entirely supporting the expandible device, its outer end extending outside of the outer member, one of said members supporting the bolt independently of the other member whereby the members may be endwisely separated and the bolt and the expandible device be supported in position by one of the members so that said members may be readily telescoped, and operating means on the outer end of the bolt to cause said bolt to expand the device within the inner member.

3. A seat-post fastener comprising a tubular socket, a longitudinally-slotted hollow seat-post fitting therein and removable endwisely therefrom, an expandible device within the seat-post and of less diameter than the internal diameter thereof, an expander-bolt entering through the socket and through the slot in the seat-post, its inner end terminating short of the opposite side of the seat-post and entirely supporting the expandible device its outer end extending without the outer member, and operating means on said outer end to cause said bolt to expand the device within the inner member whereby the seat-post may be removed and the expandible device be supported in position entirely on the expander-bolt and out of contact with the walls of the socket.

4. In a seat-post fastener, the combination of a socket, a tubular seat-post fitting therein and longitudinally slotted on one side and removable endwisely therefrom, an expandible

annulus within the seat-post and of less diameter than the internal diameter of the seat-post said annulus being split or open at one side to form two ends adjacent the slot in the seat-post, a transverse expander-bolt entering through the socket and extending through the slot in the seat-post and between the ends of the annulus its inner end terminating short of the opposite side of the seat-post and having the annulus hung on said inner end the other end of said bolt extending without the socket, means on said outer end to cause the bolt to expand the annulus and means for preventing the ends of the annulus from slipping off the expander-bolt.

5. A seat-post fastener comprising a socket, a tubular seat-post longitudinally slotted on one side and adapted to fit within the socket and be endwisely removable therefrom, an expandible annulus within the seat-post and of less diameter than the internal diameter of the seat-post said annulus being open on

one side to form two ends adjacent the slot in the seat-post, a transverse expander-bolt entering through and having a supporting-bearing in the socket, and extending through the slot in the seat-post and between the two ends of the annulus its inner end terminating short of the opposite side of the seat-post and having a yoke formed on said inner end to receive the closed side of the annulus, the other end of said bolt extending without the socket, means on said outer end to cause the bolt to expand the annulus, and means to prevent the ends of the annulus slipping transversely off the expander-bolt.

In testimony that I claim the foregoing as my invention I affix my signature hereto, in the presence of two subscribing witnesses, this 13th day of August, A. D. 1898.

GEORGE L. THOMPSON.

Witnesses:

HENRY W. CARTER,
J. R. BILLINGS.