

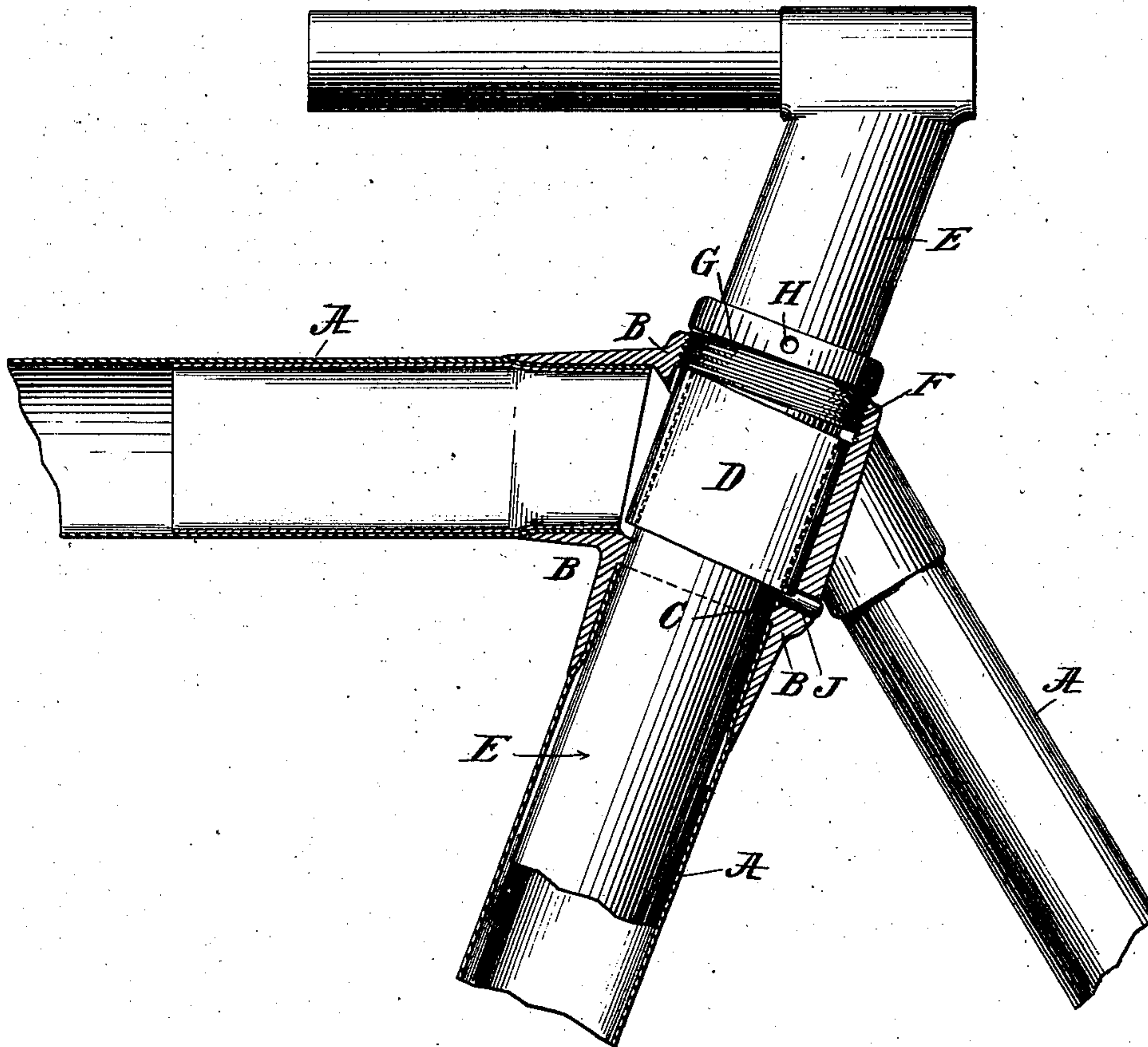
No. 617,329.

Patented Jan. 10, 1899.

L. B. GAYLOR.  
BICYCLE.

(Application filed Nov. 12, 1898.)

(No Model.)



Witnesses  
Edward C. Rouland.  
Edgar B. Mead.

Leonard B. Gaylor  
Inventor  
By his Attorney Phillips Abbott.



# UNITED STATES PATENT OFFICE.

LEONARD B. GAYLOR, OF ERIE, PENNSYLVANIA.

## BICYCLE.

SPECIFICATION forming part of Letters Patent No. 617,329, dated January 10, 1899.

Application filed November 12, 1898. Serial No. 696,229. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD B. GAYLOR, a citizen of the United States, and a resident of Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Bicycles, of which the following is a specification.

My invention relates to improvements in bicycles, and has special relation to so-called "internal clamping devices" for the seat-post. By that I mean devices located within the tubular parts of the structure, whereby they will be hidden from view, the appearance of the bicycle improved, its cost greatly reduced, and the ease with which the seat may be adjusted and its rigidity when in position increased.

Prior to my invention a large number of devices for the purposes stated have been employed; but all of them, so far as I am aware, are more or less unsatisfactory, because in some instances of disfiguring the machine, in others imperfect gripping or holding action, in others lack of durability, and for various other reasons.

By my invention the desired object is attained in a completely satisfactory manner, as I have demonstrated after exhaustive tests, by the employment of but two exceedingly simple and inexpensive parts in addition to those necessarily present as parts of the frame, and by their use the seat-post may be quickly and easily clamped in any desired position and released for adjustment at will.

The drawing hereof illustrates a view, partly in elevation and partly in vertical section, showing my preferred method of embodying the invention in or with the frame of the bicycle. I show so much only of the several parts of the frame and of the seat-post as is necessary to a proper understanding of the invention.

A represents parts of the frame upon which the usual frame connection or forging B is mounted or attached. The forging is bored out about three-sixteenths of an inch (more or less) larger in diameter than the usual hole in which the seat-post is inserted, thus producing the shoulder C. Into this opening is inserted a short tube D, which has an interior diameter quite closely fitting the external diameter of the seat-post E, and the height or length of the tube is at least one-half its

interior diameter, preferably nearly equal to the total diameter, and it is made of relatively thin metal, so that when subjected to the pressure of the clamping-nut it will assume an ovoid form (in cross-section) and its sides will be flattened down against the seat-post, thus greatly increasing the area of frictional contact, and yet upon releasing the pressure of the nut the tube will spring back into its normal form, thus automatically releasing all grip upon the seat-post. This short tube must fit loosely in the hole in the forging, so as to have free lateral movement to the desired extent, and its ends are formed on a slight bevel, for reasons hereinafter explained.

The upper end of the forging B is screw-threaded, preferably but not necessarily on its inner surface, as seen at F, and a correspondingly-threaded clamping-nut G, provided with a wrench-hole H or its equivalent, whereby it may be turned, is adapted to be screwed into the end of the forging. The relative size and arrangement of the parts are such that when they are assembled and the nut partly screwed in it will bear upon the upper arc or part of the tube D, which is supported at its diagonally opposite arc or part by the shoulder C.

The operation of the invention is this: The seat-post is passed through the hollow nut G and through the tube D, which, as stated, it fits somewhat snugly, and is moved up or down until the desired adjustment is attained. Then the nut is screwed down until it impinges upon the upper edge of the tube D, and as soon as this occurs, inasmuch as the tube D is rigidly supported by the shoulder C on the forging, any further screwing down of the nut causes the tube D to exert a most powerful gripping action on the seat-post by reason of the fact that since the tube fits the post with considerable snugness prior to the pressure of the nut as soon as it is applied to the tube the surfaces of the two parts are brought into very great frictional contact, and the area of such contact is very extensive for two reasons: First, the tubular clamp is of such length that it has a large area of contact with the post, and, second, the pressure of the nut upon the edge of the tube tends to force it downwardly and outwardly, and this pressure



being resisted by the shoulder C on the opposite side the downward movement is prevented, and as a result the upper portions of the tube on one side and its lower portions on the other side come into contact with the seat-post, and the resistance of these points of contact to the further movement of the clamping-tube causes it to assume an ovoid form, whereby its lateral sides also are brought forcibly into contact with the sides of the post at right angles to those upon which the tube first makes contact.

It will be seen from the foregoing that when the clamping-nut is screwed down to the desired position the clamping-tube is in close frictional contact with the seat-post and that the area of such contact must necessarily be great, because this contact is not only at the sides where the nut and the shoulder C are, but also throughout nearly the entire circumference of the clamping-tube by reason of its assuming the ovoid form referred to. In this manner great friction is engendered between the clamping-tube and the post, whereby the latter is held with remarkable rigidity and without disfigurement or crushing or distorting action upon either of the parts. This feature is of great consequence in consideration of the fact that the seat-post must be hollow and made of relatively thin metal.

A peculiar feature of my invention is the ease and effectiveness of its operation. By the exercise of an astonishingly small amount of power upon the clamping-nut a seat-post may be clamped so as to hold a very heavy rider, and also the device operates with such effectiveness that a one-third revolution of the clamping-nut will effect the most rigid clamping action and positive release. It will be understood that the action of the release is just the reverse of the clamping action—that is to say, the moment the nut begins to ascend the clamping-tube automatically assumes its normal form, whereby the right and left strains, so to speak, are first relaxed and immediately thereafter, as the nut further ascends, the direct strains at the point of its contact with the clamping-tube and at the point of its support are relaxed. When this takes place, the tube merely encircles the seat-post, free to move slightly in all directions, and through it the seat-post will slide freely.

A highly-polished surface both on the interior of the tube and the exterior of the post will not prevent the rigidity of the holding action, which is purely that of the pressure or frictional contact of the surfaces against each other throughout a considerable area in contradistinction to any indentation or cutting action by the clamp upon the post. Indeed, I prefer to round off the upper and lower edges of my tubular clamp, so as to avoid any possibility of such indenting, tooth-like, or cutting action. Owing to the peculiar form of my clamp and its operation the parts are

practically indestructible and the seat-post permanently maintains its original condition without indentations or distortion.

In order to prevent the tubular clamp from turning, as upon a vertical axis, in case it should have any tendency so to do, I provide certain interlocking surfaces between it and some suitable part of the forging—as, for instance, a notch formed in the tubular clamp and a pin J or equivalent tooth-like part on the forging. This form I have found a desirable one, because it embodies certain mechanical features conducing to its permanence and effectiveness.

It will be obvious to those who are skilled in this art that modifications may be made in the construction and arrangement of the parts without departing from the essentials of the invention, and I therefore do not limit myself to the special constructions shown. Among such possible changes is the following: Instead of the ends of the tubular clamp D being formed on an incline any other construction which will cause it to be supported eccentrically at one part and the pressure of the nut or equivalent device upon it applied eccentrically at another and preferably opposite part will fulfil the object sought.

Having described my invention, I claim—

1. A frictional holding device for a bicycle seat-post, comprising a frame connection or forging provided with external projections to receive the frame-tubes, a short tube made of relatively thin, elastic metal adapted to spring as described, under the pressure of the clamping-nut, having an interior diameter slightly greater than the exterior diameter of the seat-post, and a height or length equal to at least half the diameter of the seat-post, inclosed within a recess in said frame connection and hidden by it, and which embraces the tubular seat-post, said short tube being eccentrically supported at one point, and a threaded nut to apply pressure upon it at another point, for the purposes set forth.

2. In a bicycle, the combination of a frame connection or forging provided with external projections to receive the frame-tubes, a shoulder or recess within the forging, a fixed pin or projection, a hollow tubular seat-post, a short tube, as shown, made of relatively thin, elastic metal adapted to spring under the action of the clamping-nut, embracing the seat-post and having a notch at its lower edge to engage with said pin or projection, and said clamping-nut arranged to apply pressure upon the short tube, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 7th day of November, A. D. 1898.

LEONARD B. GAYLOR.

Witnesses:

PHILLIPS ABBOTT,  
EDGAR R. MEAD.