

(No. Model)

T. H. BOLTE.
BICYCLE FRAME.

No. 583,022.

Patented May 25, 1897.

Fig. 1.

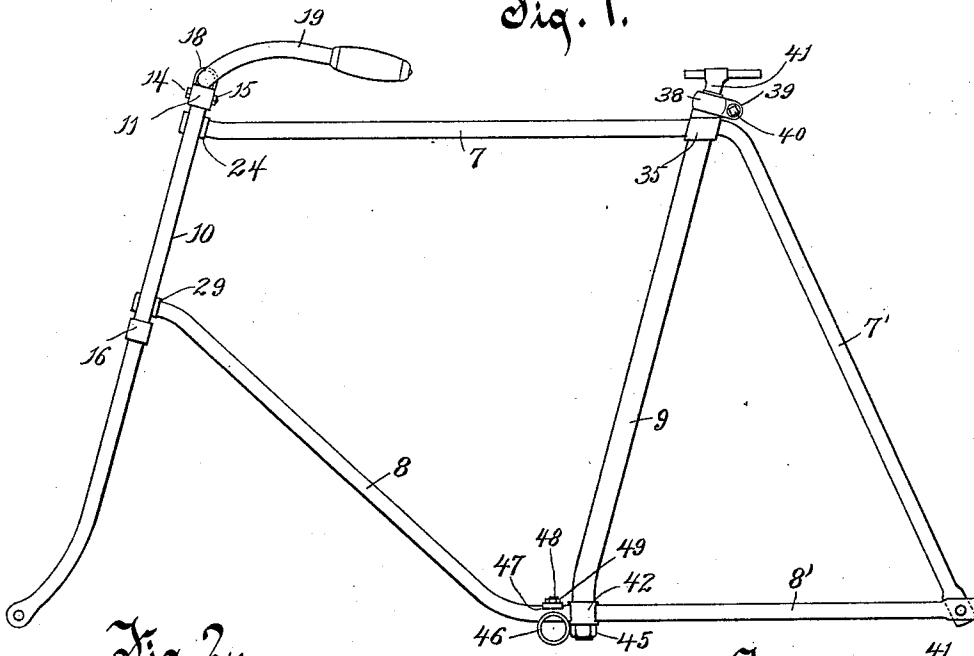


Fig. 2.

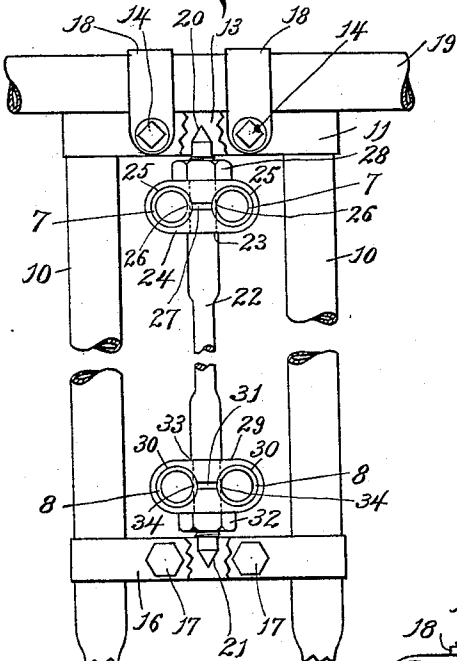


Fig. 5.

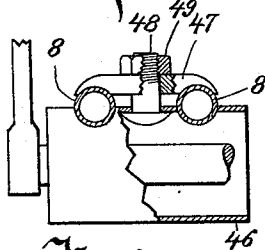


Fig. 4.

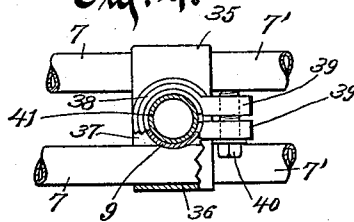


Fig. 6.

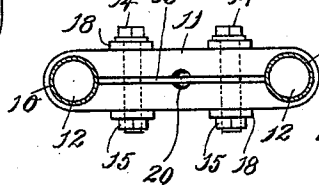
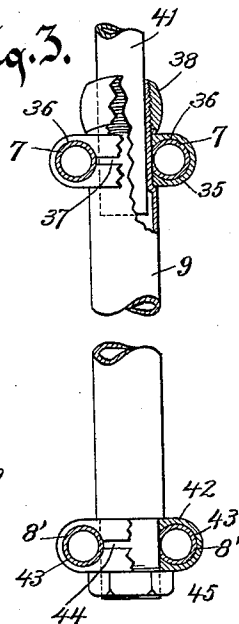


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

THEODORE H. BOLTE, OF KEARNEY, NEBRASKA, ASSIGNOR OF ONE-HALF
TO STEPHEN A. D. HENLINE, OF SAME PLACE.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 583,022, dated May 25, 1897.

Application filed May 20, 1896. Serial No. 592,322. (No model.)

To all whom it may concern:

Be it known that I, THEODORE H. BOLTE, of Kearney, in the county of Buffalo and State of Nebraska, have invented a new and useful Improvement in Bicycle-Frames, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in bicycle-frames.

In the ordinary form of bicycle-frame the several parts thereof are connected together by brazing. As this and the work of reducing the brazed parts to a smooth surface by hand-filing constitute one of the principal costs of construction of the present make of frame it is of course a desideratum to produce a frame in which the necessity of brazing is entirely dispensed with. This it is the object of my invention to accomplish; and with this end in view it consists of the devices and parts or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of the improved frame. Fig. 2 is a front elevation of the head-tubes and allied parts. Fig. 3 is an elevation of the main seat-tube and the clamps on opposite ends thereof, parts being broken away. Fig. 4 is a plan view of Fig. 3 with a part broken away. Fig. 5 is an elevation of the crank-hanger and the clamp above the same, parts being broken away; and Fig. 6 is a plan view of the upper connecting-clamp for the head-tubes.

Referring to the drawings, the numerals 7 7 indicate two top tubes, and 7' 7' the rear fork-tubes, which are advisably a continuation of and in one piece with the top tubes.

There are also two bottom tubes, (indicated by the numerals 8 8.) These tubes are provided with rearward extensions 8' 8', which extend to the lower ends of the rear fork-tubes. These rearward extensions are also advisably a continuation of and in one piece with the bottom tubes 8. The main seat-tube is indicated by the numeral 9.

The head of the bicycle-frame comprises two tubes 10 10. These tubes are connected at their upper ends by means of a clamp 11, which is provided at opposite ends with open-

ings 12 12, through which openings the tubes pass. The clamp is slitted longitudinally from one opening to the other, as indicated at 13. Through this slitted portion pass transverse bolts 14 14, which bolts, when the nuts 15 15 on the ends thereof are screwed up, serve to compress the slitted portion of the clamp together, so as to tightly bind the head-tubes. Connecting intermediate points of the head-tubes is a similar clamp 16, which is also provided with end openings through which the tubes pass and is slotted longitudinally from one opening to the other the same as the upper clamp. Transverse bolts 17 17 compress the slitted portion, and thereby tightly bind the clamp to the tubes. Looped metallic straps 18 18 are secured on the ends of the bolts 14, and said straps serve as a means for securing the handle-bar 19. Each of the clamps 11 and 16 is provided with conical seats 20 and 21, respectively, which seats receive the opposite conical or pointed ends of an intermediate tube 22. This tube is provided near its upper end with a shoulder 23.

The numeral 24 indicates a clamp which is provided with a central opening through which the upper end of the tube 22 passes. This clamp is seated on the upper shoulder 23 and is provided at opposite ends with openings 25 25, which openings are disposed in a horizontal plane, so as to receive therein the forward ends of the top tubes 7 7. These top tubes are cut or slotted at inner points, so as to allow the vertical tube 22 to extend therein. These slots are indicated by the numerals 26 26 and form a lock to prevent the longitudinal withdrawal of the top tubes. The clamp 24 is also slitted from one end opening to the other, as indicated at 27. Turning upon a threaded portion of the rod and adapted to bear against the clamp 24 is a nut 28. This nut, of course, when turned against the clamp has the effect of tightly compressing the forward ends of the tube 7 in the end openings of the clamp. A similar clamp 29 is carried on the tube 22, near the lower end thereof. This clamp is also provided with a central opening for the passage therethrough of the tube 22 and with opposite end openings 30 30, arranged in a horizontal plane and adapted to receive the forward

ends of the bottom tubes 8. This clamp is also slitted longitudinally from one end opening to the other, as indicated at 31. A nut 32 turns on threads formed on the tube 22 and against the under side of the lower clamp 29 and holds said clamp firmly against a shoulder 33, formed on the tube. When this nut is turned up, it is obvious that the tubes 8 are tightly clamped in the openings 30. The inner side of the forward end of each tube 8 is also slotted, as indicated at 34. Diametrically opposite points of the vertical tube 22 fit into these slots, and the tubes 8 are thus locked against longitudinal displacement.

Upon the upper end of the main seat-tube 9 is seated a clamp 35. This clamp is similar in construction to the clamps 24 and 29, being provided with a central opening for the passage therethrough of the main seat-tube and with end openings 36 36, said openings being on a horizontal plane, to permit of the passage of the top tubes 7 7 therethrough. The clamp is also slitted longitudinally from one end opening to the other, as indicated at 37. Above this clamp the main seat-tube is threaded, and turning upon these threads is a nut 38, said nut adapted to bear against the top of the clamp and thereby firmly hold the tubes 7 therein. This nut is provided with projecting lugs 39 39, through registering threaded openings of which a screw-bolt 40 passes. The seat-post 41, as in the ordinary form of construction, telescopes into the upper slitted end of the main seat-tube, and the nut 38 serves to hold said seat-post in adjusted position therein, said nut tightly clamping the slitted portion of the main seat-tube against the seat-post, the adjustment being obtained by means of the screw-bolt 40.

On the lower end of the main seat-tube is a similar clamp 42, said clamp being provided with the end openings 43 43 and the longitudinal slit 44. Through the end openings pass the lower tubes 8', said tubes being firmly held by means of a nut 45, turning on the lower threaded extremity of the main seat-tube against the under side of the clamp. Both the upper tubes 7 7 and the lower tubes 8' 8' may be provided with slots or opposite cut-away portions to let in opposite side points of the main seat-tube 9 and thereby prevent longitudinal movement of the sets of rods 7 7 and 8' 8'. These slots or cut-away portions are similar to the slots 26 and 34 in the forward ends of the tubes 7 and 8. Arranged beneath the tubes 8 8, just in advance of the clamp 42, is the crank-hanger 46. The tubes 8 8 are seated in recesses in the upper portion of this crank-hanger.

The numeral 47 indicates a clamping-bar provided upon its under side at opposite ends with recesses which fit over the tubes 8 8. A bolt 48 extends upwardly from the crank-hanger, the head of this bolt being against the underside of the top surface of the hanger.

This bolt passes through the clamping-bar 47 and its upper extremity is threaded to receive a nut 49. When this nut is turned down, the clamping-bar is brought firmly against the tubes 8. It will be noticed that by the arrangement of the head-tubes 10 herein shown and described said head-tubes turn on the rod 22, so as to effect the proper guiding of the bicycle, the front wheel of the machine being carried at the lower ends of the tubes 10.

By the improved construction adopted by me there is not a single brazed joint in the entire structure. The improved clamp connects the several parts of the frame as permanently and securely as can possibly be effected by the art of brazing, and as the frame does not enter the fire all danger of burning the tubes is avoided. As previously stated, the principal cost in the present makes of bicycles resides in the work of brazing the several parts together. This is entirely avoided by me, and I am therefore able to put a superior machine on the market at a minimum of cost, the estimate of the saving in labor, gas, spelter, brazing compound, files, &c., being from sixty to seventy per cent.

Another advantage possessed by my invention is in the employment of double tubes throughout, whereby greater strength is secured without materially adding to the weight.

Although I have herein shown and described the frame as composed of double tubing, yet I do not wish to be thereby understood as restricting myself specifically thereto, as any construction employing at any portion of the frame merely a single tube instead of the two tubes shown by me I would consider fairly within the spirit and scope of my invention—as, for instance, using two rear tubes 7' or 8', but only one top tube 7 or one lower tube 8.

What I claim as my invention is—

1. The combination, of head-tubes, transverse connections for said tubes, curved metallic straps having their ends secured to the upper connection, a handle-bar secured in said straps, a vertical tube or rod turning in said transverse connections, and top and bottom tubes of the bicycle-frame secured to the vertical tube.

2. The combination, of head-tubes, transverse connections for said tubes, a vertical tube or rod turning in said connections, a clamp provided with a central opening through which the vertical rod or tube passes, and provided with end openings arranged on a horizontal plane, said openings connected by a longitudinal slit, a nut turning on the rod or tube against the clamp, and bicycle-frame tubes having their forward ends fitting in the end openings of the clamp.

3. The combination, of head-tubes, transverse connections for said tubes, a vertical tube or rod turning in said connections, clamps provided with central openings through which the vertical rod or tube passes, and provided with opposite end openings arranged on a

a horizontal plane, said openings connected by longitudinal slits, nuts turning on the rod or tube against the clamps, top tubes of the bicycle-frame having their forward ends fitting in the end openings of the upper clamp, and bottom tubes of the bicycle-frame having their forward ends fitting in the end openings of the lower clamp.

In testimony whereof I affix my signature in presence of witnesses.

THEODORE H. BOLTE.

Witnesses:

S. A. D. HENLINE,
J. C. EVANS,
CHAS. REILLY.