No. 649,580. Patented May 15, 1900.

E. G. LATTA.

VELOCIPEDE.

(Application filed Dec. 19, 1899.)

(No Model.) 2 Sheets—Sheet 1.

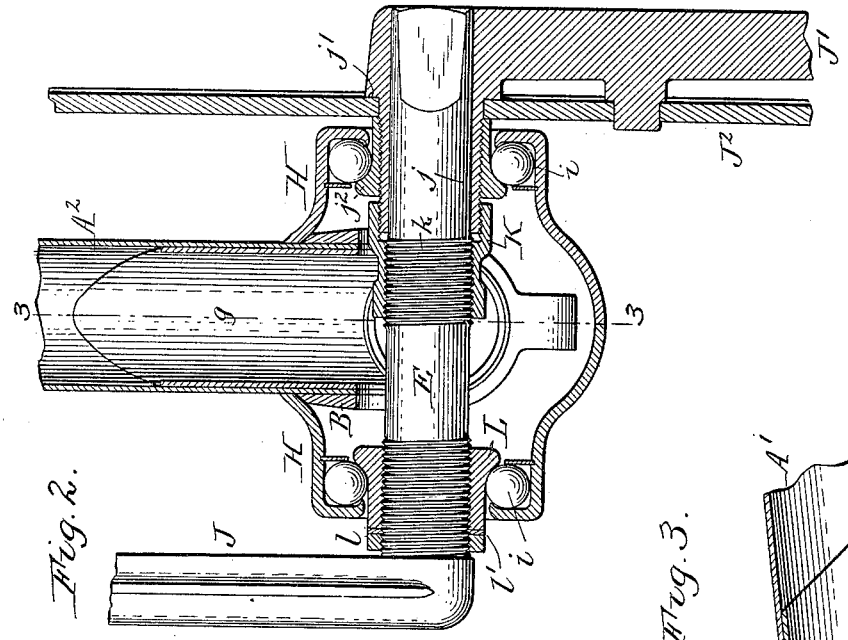

Fig. 2.

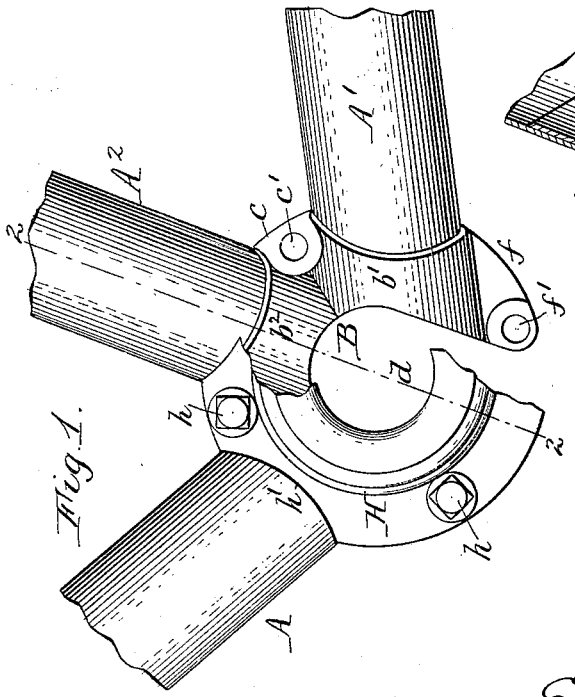

Fig. 1.

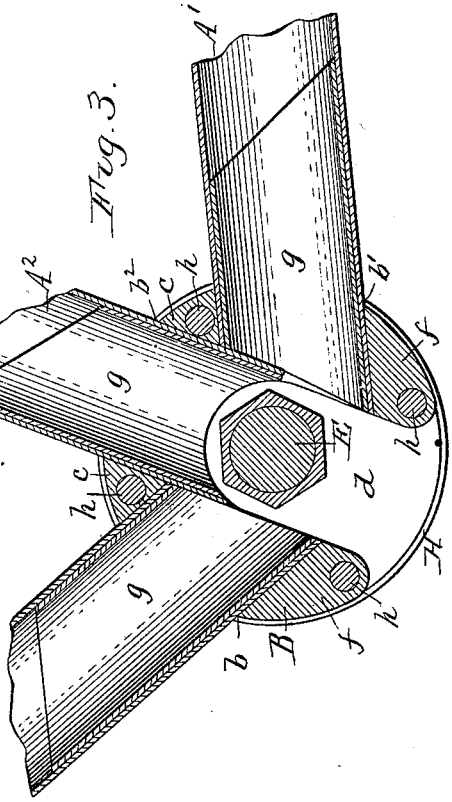

Fig. 3.

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Fig. 4.

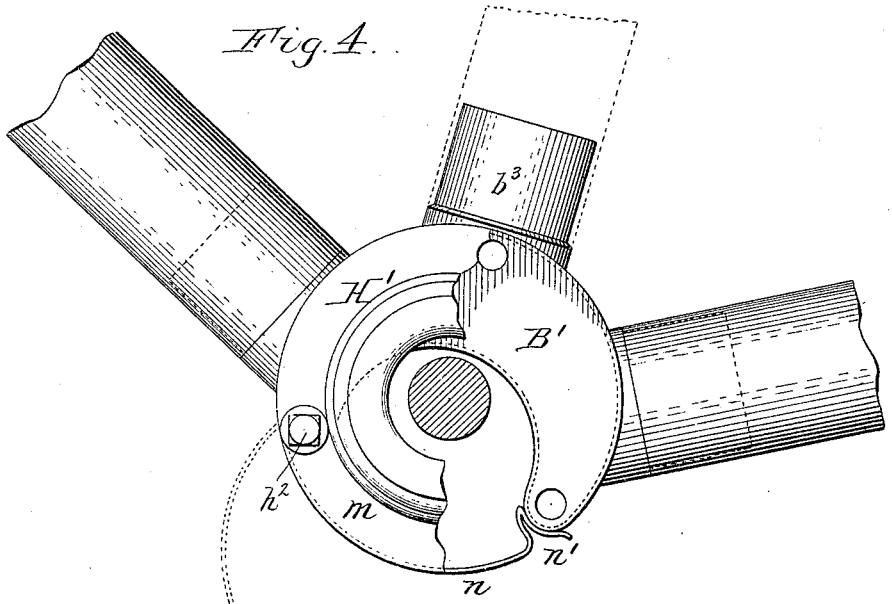


Fig. 5.

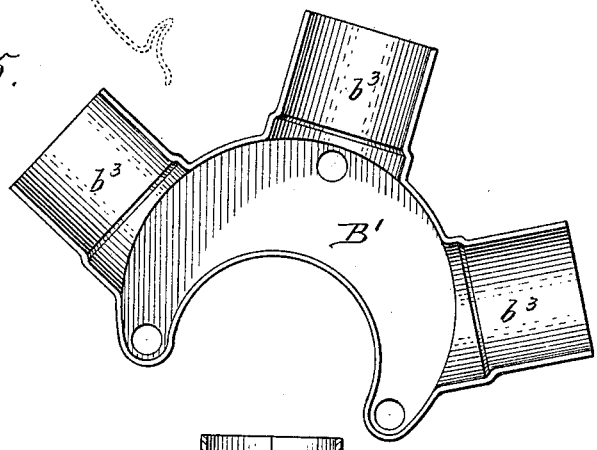
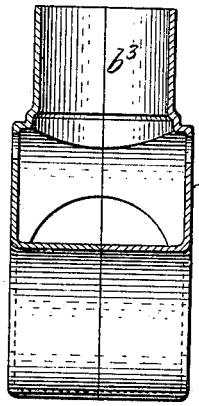


Fig. 6.



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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 649,580, dated May 15, 1900.

Application filed December 19, 1899. Serial No. 740,886. (No model.)

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Friendship, in the county of Allegany and State of New York, have invented new and useful Improvements in Velocipede-Frames, of which the following is a specification.

The principal objects of my invention are to produce a velocipede-frame which may be finished complete before any part of the driving-gear is applied to the machine and to so construct the crank-shaft hanger that it covers that portion of the frame or reach connected to the upright member of the frame, so as to conceal the joint between those members and save the cost of finishing that part of the frame.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of the lower portion of a velocipede-frame, the crank-shaft being omitted and a portion of the hanger broken away to expose the union between the frame members. Fig. 2 is a transverse section in line 2 2, Fig. 1, with the crank-shaft in place. Fig. 3 is a vertical longitudinal section in line 3 3, Fig. 2. Fig. 4 is a view similar to Fig. 1, showing a modified construction of the union. Fig. 5 is an inside view of one of the halves or sections of said union. Fig. 6 is a detached transverse section taken centrally through the same.

Like letters of reference refer to like parts in the several figures.

A A′ are the usual reach members, and A^2 is the upright member, of the frame. The lower ends of these frame-tubes are rigidly connected together by a union or connecting piece B, which in the construction shown in Figs. 1, 2, and 3 consists of a forging having three openings or sockets $b\,b'\,b^2$, arranged at the proper angles to receive the several frame members. These sockets are connected above the reach members A A′ by webs *c*, having bolt-holes *c*′. The union B is provided in its central portion with an opening or recess *d*, which extends upwardly from the lower edge of the same and which is adapted to receive the crank-shaft E laterally or sidewise. Each of the reach-sockets $b\,b'$ is provided on its under side with a web or ear *f*, having a bolt-hole *f*′.

The several frame members may be provided with tubular reinforcements *g*, as shown, or the reinforcements may be omitted and the members made of heavier tubing, if desired. The several tubes may be pinned and brazed to the union B in a common manner; but, if desired, the parts may be brazed together by the immersion method, the open construction of the union and the inner ends of its sockets being well adapted to that method.

The crank-shaft hanger is composed of two similar tubular sections or halves H H, applied to opposite sides of the union B. These sections consist of cups, preferably of steel, the inner ends or bases of which bear against opposite sides of the union B and are rigidly secured thereto by transverse bolts, screws, or rivets *h* passing through the marginal portions of the cups and the perforated webs *c* and *f* of the union. The inner ends of the cups H are sufficiently large in diameter to cover and conceal the joints between the frame members A A′ A^2 and their sockets b b' b^2, and the sections are provided in their inner edges with concave recesses *h*′, which receive the adjacent portions of the frame members and are curved to conform to the same. This construction avoids the necessity of removing the spelter from the union after brazing the parts together and saves the cost of finishing the concealed portion of the frame. The enlarged bases of the hanger-sections insure a strong and stiff connection between the same and the union. The reduced outer ends of the cup-shaped hanger-sections are preferably turned inwardly to form bearing cases or cups for the balls *i*. The two parts of the hanger are alike and interchangeable and but a single set of dies is therefore required for making both parts.

If desired, separate bearing cups or cases may be arranged in the ends of the hanger, in which case said cups face outwardly.

The left-hand crank J is preferably formed integral with or permanently secured to the crank-shaft, while the other crank J′ is removably secured to the opposite end of the shaft and provided with a comparatively-long hub or sleeve *j*, which receives the shaft.

J^2 is the sprocket or driving-wheel, which is fitted upon the crank-hub *j* and clamped against a shoulder *j*′ thereof by the fixed

bearing-cone j^2, which engages with said hub by a screw-thread, as shown in Fig. 2. The adjacent end of the crank-shaft is angular or flat-sided, and the boss of the detachable crank is provided with a correspondingly-shaped opening to compel said crank and the shaft to turn together. K is a coupling sleeve or nut arranged on the central portion of the crank-shaft and engaging with the externally-screw-threaded crank-hub j and with an external screw-thread k of the shaft, the outer end of this sleeve being enlarged to receive the screw-threaded crank-hub. The screw-thread of the crank-hub and the screw-thread k of the shaft are of differential pitch, so that upon turning the coupling-sleeve and holding the shaft or holding the sleeve and turning the shaft by means of its permanent crank the detachable crank is drawn inwardly on the shaft or forced off the same, according to the direction in which the sleeve or the shaft is turned. This sleeve is flat-sided or otherwise constructed so that it can be turned or held from turning by a wrench or other device.

L is an adjustable cone mounted on the left-hand end of the shaft and extending outwardly through the adjacent hanger-cup H, so that it can be turned for adjusting the bearings. This cone may be locked in place by the usual lock-nut l and washer l'.

In order to assemble the parts, the sprocket-wheel is first placed upon the hub of the detachable crank. The balls are next placed in the cups of the two hanger-sections H and confined by ball-retainers of any suitable or well-known construction. One of the hanger-sections is then passed over the hub of the detachable crank and secured thereon by screwing the corresponding bearing-cone j^2 upon the crank-hub and the other hanger-section is passed over the crank-shaft and held thereon by screwing the adjustable cone L into place. The shaft and the detachable crank are next connected by the coupling-sleeve K, but not drawn fully together, by starting the screw-threads of the sleeve, after which the shaft is passed sidewise into the opening of the union B, the inner ends of the cupped sections H of the hanger being at the same time slipped over the union, so as to bring the bolt-holes c' and f' of the sections into register with those of the webs c and f. The coupling-sleeve is now held against turning by a wedge or special wrench passed upwardly into the recessed union between the lower portions of the loose hanger-sections, and the shaft and the detachable crank are drawn home by turning the permanent crank until the detachable crank is tightly secured upon the shaft. The two parts of the hanger are finally secured to the union B by the bolts h. When the parts are all in place, all joints and openings are closed, the only parts exposed to view being the two hanger sections or cups, the several frame-tubes radiating therefrom, the fastening-bolts h, and the cranks and the sprocket-wheel. This construction of the frame, hanger, and crank-shaft permits the frame to be finished and enameled and the hanger to be nickel-plated before applying the hanger to the frame. It also affords the advantage of not requiring the frame to be placed in the nickel solution for nickel-plating the hanger.

In the modified construction of my invention shown in Figs. 4, 5, and 6 the union B′ is provided with shouldered projecting thimbles b^3, to which the frame-tubes are connected by flush joints. The union is crescent-shaped and composed of two similar hollow cups or sections stamped from sheet metal and meeting in a vertical joint arranged lengthwise of the union, as shown in Fig. 6. Each half of the union is formed with three half-thimbles, as shown in Fig. 5, and upon bringing the two sections of the union together, with their open sides facing each other, they form a crescent-shaped box or union with three projecting thimbles. This union is provided at its center and ends with holes for the passage of the bolts h^2, which fasten the hanger-sections H′ to the union. In this case the hanger-sections instead of meeting in the center of the velocipede-frame are provided at their inner ends with flanges m, which simply bear against the flat sides of the union B′. This construction leaves an opening between the ends of the union, which may be closed by a suitable cap or trap-door n. This door preferably consists of a plate of spring-steel of the proper width to extend across said opening. This plate is pivoted at its front end upon the front bolt h^2, and provided at its opposite end with a catch n', which interlocks with the lower rear end of the union, as shown by full lines in Fig. 4. When this door is in the open position shown by dotted lines, access can be had to the coupling-sleeve of the crank-shaft and the bearings for oiling the same.

I claim as my invention—

1. The combination with a velocipede-frame having jointed members, of a crank-shaft hanger composed of two sections secured to the frame and constructed to cover the joints between the frame members, substantially as set forth.

2. The combination with a velocipede-frame, of a crank-shaft hanger composed of two tubular sections applied to opposite sides of the frame, and fastenings for securing said sections to the frame, substantially as set forth.

3. The combination with the meeting members of a velocipede-frame, of a union connecting said members and provided with an opening adapted to receive the crank-shaft, and a hanger composed of two sections secured to the frame and constructed to cover and conceal the union, substantially as set forth.

4. The combination with the meeting members of a velocipede-frame, of a union having

sockets which receive said members and provided in its lower side with an opening adapted to receive a crank-shaft, a hanger composed of two sections applied to opposite sides of said union, the union and the hanger-sections being provided with registering bolt-holes, and transverse fastening-bolts passing through said bolt-holes, substantially as set forth.

5. The combination with a velocipede-frame, of a two-part crank-shaft hanger composed of cup-shaped sections extending outwardly from opposite sides of the frame and detachably secured thereto, substantially as set forth.

6. The combination with a velocipede-frame, of a crank-shaft hanger composed of two comparatively-short tubular sections applied to opposite sides of the frame, the outer ends of said sections supporting the bearings of the crank-shaft, and their inner ends being enlarged and meeting at the center of the velocipede-frame, substantially as set forth.

Witness my hand this 2d day of December, 1899.

EMMIT G. LATTA.

Witnesses:
CHAS. J. RICE,
H. L. BLOSSOM.