

APPLICATION FILED FEB. 19, 1918,

Patented Dec. 17, 1918.

3 SHEETS—SHEET 1.

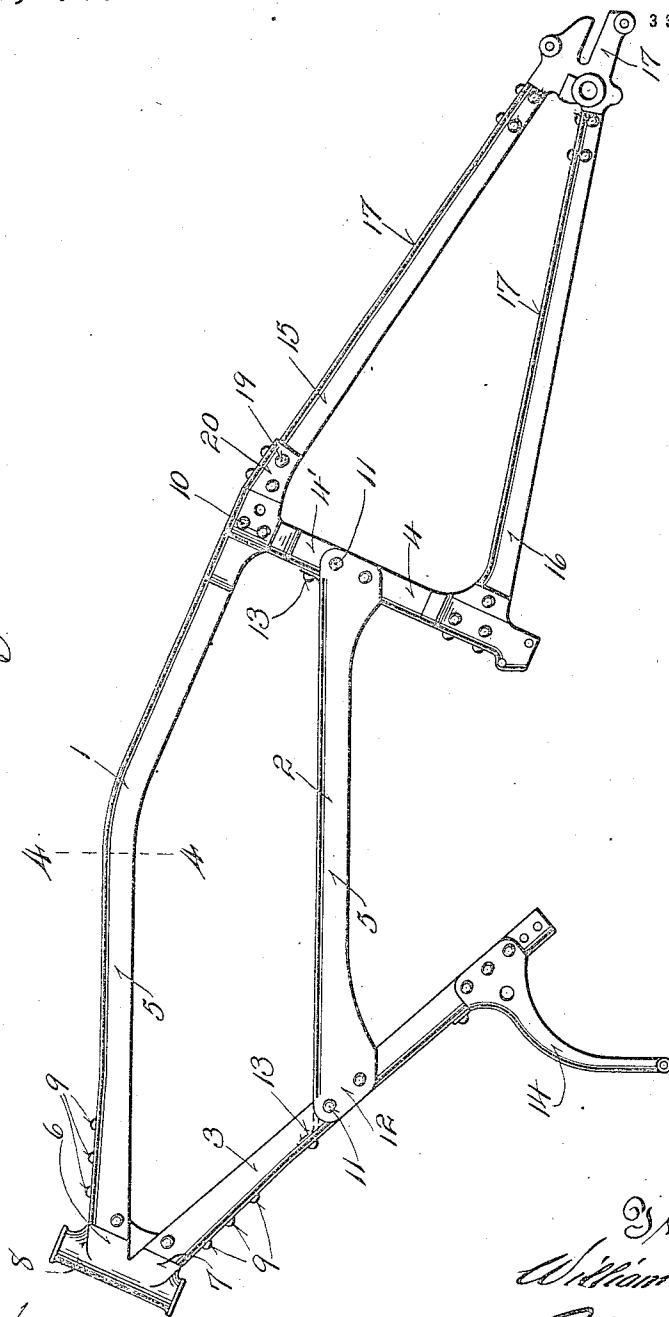


Fig. 1.

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Edward Young

Chorney

W. S. HARLEY.
CYCLE FRAME.
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1,287,979.

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3 SHEETS—SHEET 2.

Fig. 2.

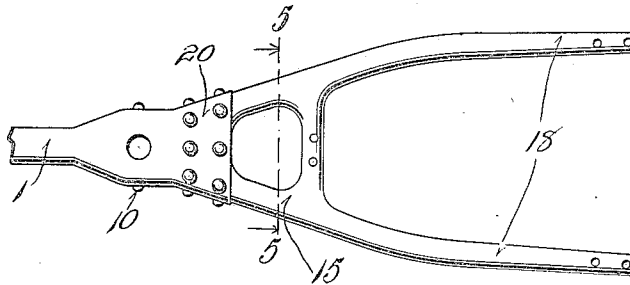


Fig. 3.

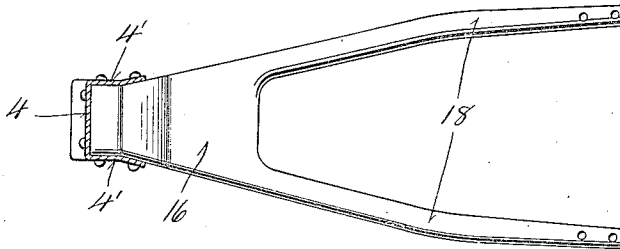


Fig. 4.

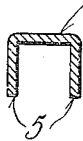
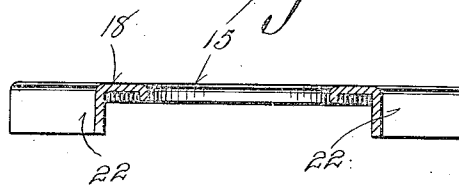


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

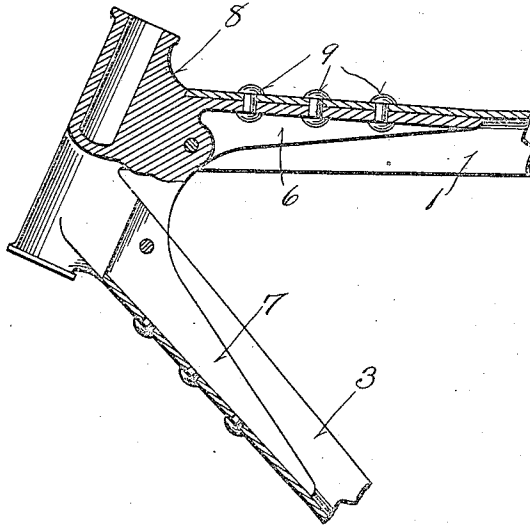


Fig. 7.

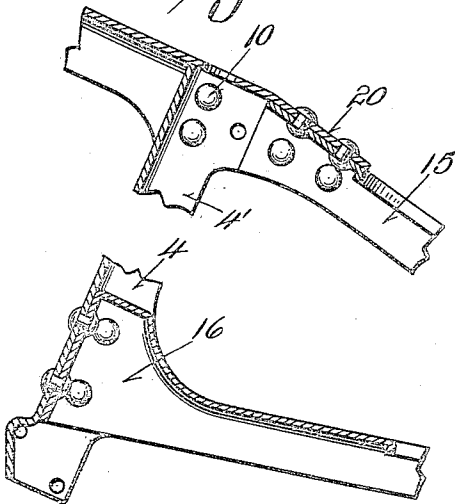
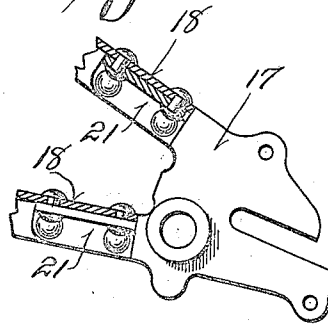


Fig. 8.



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UNITED STATES PATENT OFFICE.

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CYCLE-FRAME.

1,287,979.

Specification of Letter Patent.

Patented Dec. 17, 1918.

Application filed February 19, 1918. Serial No. 218,078.

To all whom it may concern:

Be it known that I, WILLIAM S. HARLEY, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Cycle-Frames; and I do hereby declare that the following is a full, clear, and exact description thereof.

My present invention relates to a new, useful and inexpensive manner of constructing motor and other cycle frames.

In the formation of the usual tubular frames it is necessary to use a high grade steel for drawing the tubes. Furthermore such steel must necessarily be of good temper and when the drawing is complete is comparatively brittle. For these reasons it is impractical to connect the sections of tubing by any means except welding, brazing or soldering. In other words when the parts are riveted or bolted together crystallization takes place with a consequent deterioration and the eventual cracking of the metal.

It is the object of the present invention therefore to provide an arrangement for utilizing cheaper materials and a less expensive manner of connecting the several parts which go to make up the complete cycle frame. I have found that a much lower grade of steel than that necessary for drawing tubing can be advantageously used in the formation of cycle frames by bending the same into angle bars and riveting or bolting the several bars together.

With this general object in view the invention resides in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed and shown in the drawings, in which:

Figure 1 represents a side elevational view of a motorcycle frame constructed in accordance with the present invention.

Fig. 2 is a plan view of the upper rear fork of the frame.

Fig. 3 is a similar view of the lower rear fork, the seat mast to which it is connected being in section.

Fig. 4 is a detail transverse sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a similar view on the line 5—5 of Fig. 2.

Fig. 6 is a detail longitudinal sectional

view through the steering head cluster bracket illustrating the manner of connecting the upper reach bar and the head bar thereto.

Fig. 7 is a similar view of the seat mast and the upper and lower rear fork bars, and

Fig. 8 is a side elevational view of one of the axle plates with portions of the upper and lower fork bars secured thereto, these last mentioned parts being in section.

The frame illustrated is adapted to be used with an engine of the type shown in my co-pending application Serial No. 192,114 filed Sept. 19, 1917, but it is obvious that any type of motorcycle or bicycle frame may be manufactured by the method to be herein- after particularly set forth.

All the parts of this frame are constructed of sheet metal of as light a gage as it is practical to make such structure. As usual in frames of this general character the main portion includes an upper reach bar 1, the forward portion of which is horizontal while the rear portion inclines downwardly, a lower reach bar 2 positioned horizontally and parallel to the forward portion of the upper reach bar, a downwardly and rearwardly inclined head bar 3 and a downwardly and forwardly inclined seat mast 4. All of these parts are in the form of channel bars, that is to say they are U-shaped in cross section as shown in Fig. 4. Both of the reach bars are positioned so that the flanges 5 depend downwardly to prevent the collection or accumulation of dust and other materials therein.

The forward ends of the upper reach bar 1 and the head bar 3 are secured respectively to the upper and lower arms 6 and 7 which extend rearwardly from a steering head cluster bracket. Rivets 9 preferably are used to secure said bars to the bracket. The rear end of the upper reach bar 1 is riveted to the flanges 4' of the seat mast 4 at the upper end thereof. The rivets 10 which secure these parts together extend through the flanges 5 of the reach bar as well as through the flanges 4' of the seat mast.

The intermediate portions of the head and the seat mast are braced by the lower reach bar 2, the flanges 5 of the latter being secured to the flanges of the other two parts by means of bolts or rivets 11, preferably the latter. The end portions of the flanges

5 of the reach bar 2 are increased in width as shown at 12 to provide additional attaching space, and if necessary or advisable the ends of the base portion of the reach bar may be secured to the similar parts of the head bar and seat mast as shown at 13.

The lower ends of the head bar and seat mast are adapted to have an engine hung therebetween as shown in Fig. 1 of the above mentioned co-pending application; this completes the bracing of the main portion of the frame. The head bar is also adapted to have a foot board hanger 14 riveted thereto, this hanger being stamped from sheet metal and in cross section is substantially U-shaped as the other main portion of the frame heretofore described.

The rear end of my improved frame is also constructed of sheet metal and includes upper and lower fork members 15 and 16 respectively and a pair of axle plates 17. These axle plates and the steering head cluster bracket are the only parts of the illustrated frame which are not formed of sheet metal; they are preferably cast. The fork members 15 and 16 are each stamped from a single sheet of material, and each is substantially V-shaped having arms 18 between which the rear wheel is designed to rotate.

The apex of the upper fork member 15 is secured by the rivets 19 to a rearwardly extending U-shaped attaching portion 20 formed integrally with the rear end of the upper reach bar 1. The similar part of the lower fork member is riveted between the flanges 4 of the seat mast adjacent the lower end thereof. The corresponding arms 18 are attached to the diverging arms 21 of the axle plates 17. Although the upper reach bar and the upper fork member are illustrated as being formed of two parts, it is obvious that the same might readily be stamped from a single sheet of metal.

In order to strengthen the upper and lower fork members their outer edge portions are bent downwardly to provide flanges 22. Thus in cross sectional view as shown in Fig. 5 the arms 18 are substantially inverted L-shaped.

A frame constructed in this manner will be considerably stronger than the usual tubular frame and may be manufactured at a fraction of the cost. Furthermore an angle metal frame will be lighter than the usual type, and when used with the light weight power plant illustrated in the above mentioned co-pending application, a very light motorcycle will result.

I claim:—

1. A cycle frame including a steering head having a pair of spaced laterally extending arms, a reach bar and a head bar, each formed of a channeled member, the forward ends of said reach bar and head bar each

straddling one of the arms of said steering head and secured thereto, and a seat mast secured to the rear end of said reach bar.

2. A cycle frame including a steering head having a pair of spaced laterally extending arms, an upper reach bar and a head bar, each formed of a channeled member, the forward ends of said reach bar and head bar each straddling one of the arms of said steering head and secured thereto, a seat mast secured to the rear end of said reach bar, and a lower reach bar formed of a channeled member, the opposite end portions of the side flanges thereof being straddled over the similar flanges of the head bar and seat mast respectively and secured thereto.

3. A cycle frame including a steering head, an upper reach bar and a head bar, each formed of a channeled member and having its forward end secured to said steering head, a seat mast formed of a channeled bar and having its upper end secured between the rear end portions of the side flanges of said upper reach bar, and a lower reach bar formed of a channeled member, the opposite end portions of the side flanges thereof being straddled over the similar flanges of the head bar and the seat mast respectively and secured thereto, the opposite end portions of the base of said lower reach bar being bent laterally and secured to the base portions of the head bar and seat mast.

4. A cycle frame including an upper reach bar, a head bar and a seat mast secured to the opposite ends of said upper reach bar, a lower reach bar having its opposite ends secured intermediate the ends of the head bar and the seat mast, each of said parts being formed of a channeled bar, upper and lower fork members each formed from a single sheet of material and comprising a substantially V-shaped plate, the apices of said plates being secured to the seat mast, and a pair of axle plates, the free ends of the corresponding arms of said fork members being secured in spaced relation to each of said axle plates.

5. A cycle frame including an upper reach bar, a head bar and a seat mast secured to opposite ends of said upper reach bar, a lower reach bar having its opposite ends secured intermediate the ends of the head bar and seat mast, each of said parts being formed of channeled bars, and upper and lower fork members each formed from a single sheet of material and comprising a substantially V-shaped plate, the outer edge portions of said plate being bent downwardly, the apices of said plates being secured to the seat mast, the free ends of the corresponding arms of said fork members being secured together.

6. A cycle frame including a reach bar formed of a channeled member, the side

flanges at the rear end thereof being spread laterally to form an enlarged pocket, a head bar and a seat mast secured adjacent the opposite ends of said reach bar, and upper 5 and lower fork members each being substantially V-shaped, the apex of the upper fork member being disposed and secured in said pocket of the reach bar, the apex of the lower fork member being secured to the seat 10 mast, the free ends of the corresponding arms of said fork members being secured together.

7. A cycle frame including a reach bar, a head bar and a seat mast secured to opposite ends of said reach bar, the reach bar 15 and seat mast being formed of channeled bars, the side flanges thereof at the rear end

of the reach bar and the lower end of the seat mast being spaced laterally to form enlarged pockets, and upper and lower fork 20 members, each being substantially V-shaped, the apex of the upper fork member being disposed and secured in said pocket in the end of the reach bar, the apex of the lower fork member being secured between the 25 flanges of the pocket in said seat mast, the free ends of the corresponding arms of said fork members being secured together.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, 30 in the county of Milwaukee, and State of Wisconsin.

WILLIAM S. HARLEY.