

C. O. HEDSTROM.
MOTOR CYCLE FRAME.
APPLICATION FILED APR. 2, 1909.

932,546.

Patented Aug. 31, 1909.
2 SHEETS—SHEET 1.

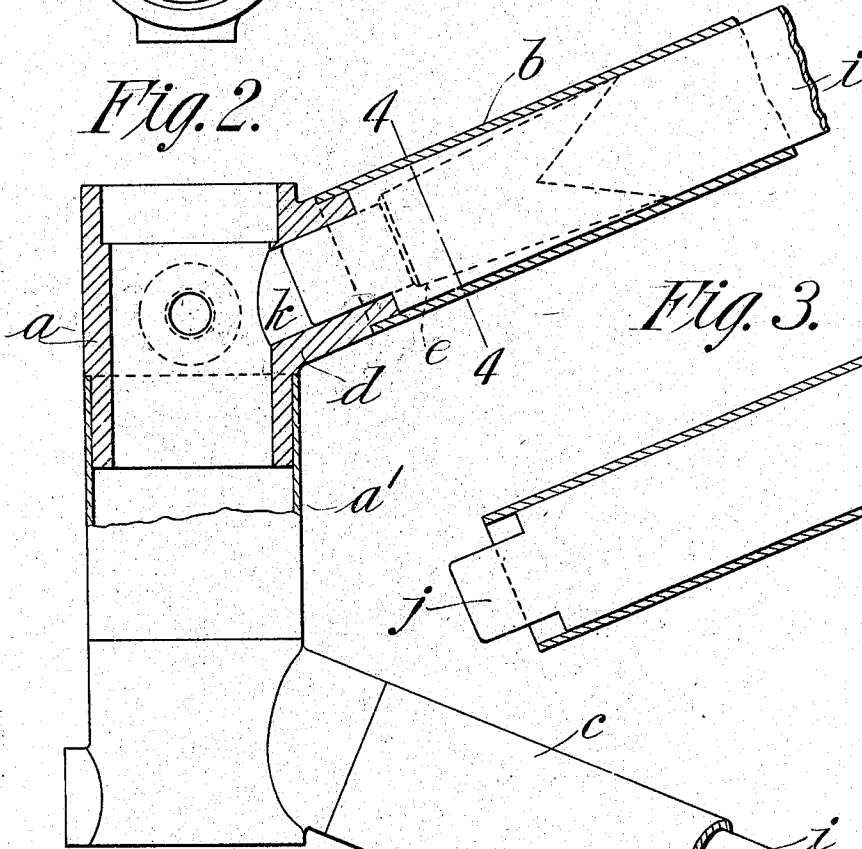
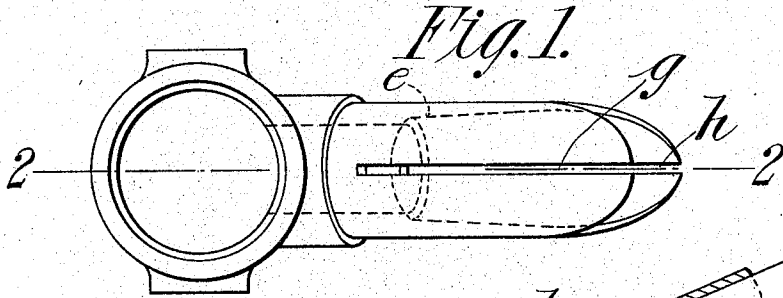


Fig. 4.

WITNESSES:
H. L. Sprague
Harry W. Brown.

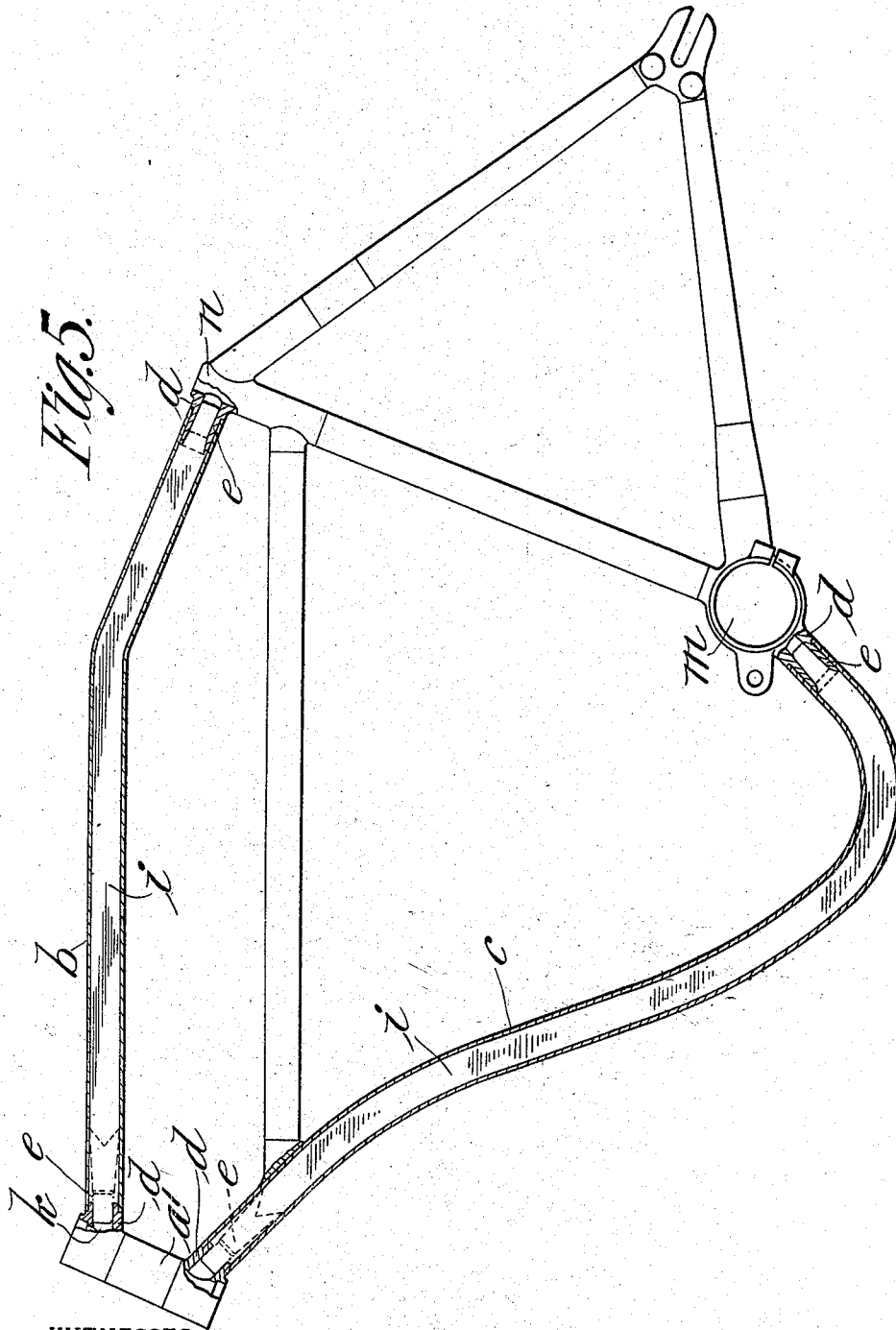
INVENTOR.
Carl O. Hedstrom
BY *Chapin Ho*
ATTORNEY.

C. O. HEDSTROM.
MOTOR CYCLE FRAME.
APPLICATION FILED APR. 2, 1909.

932,546.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 2.



WITNESSES:

H. L. Sprague

Harry W. Brown

INVENTOR.

Carl O. Hedstrom

BY

Chapin

ATTORNEY.

UNITED STATES PATENT OFFICE.

CARL O. HEDSTROM, OF SPRINGFIELD, MASSACHUSETTS.

MOTOR-CYCLE FRAME.

932,546.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed April 2, 1909. Serial No. 487,462.

To all whom it may concern:

Be it known that I, CARL O. HEDSTROM, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Motor-Cycle Frames, of which the following is a specification.

This invention relates to improvements in motor vehicle frames and particularly to the frames employed in motor cycles.

The object of the invention is to so construct such a frame, and especially the joint portion thereof that connects the brace-bars to the steering-head and crank-hanger elements of the frame that it will be more rigidly made than those now in common practice, it being understood that the general outline of the frame is of the usual "diamond" shape.

It has been determined by actual use and experiments that the frames as now constructed in this class of vehicles are not strong enough to properly withstand the combined weight of the rider and the propelling motor; such excessive weight producing more or less deflection or bending of the various parts of the frame; and when the vehicle is driven at a high rate of speed this deflection, combined with the weight and the high speed, produces a vibratory motion that sooner or later causes the frame to break or give way in or near the joint connection of the steering-head and crank-hanger parts of the frame.

Broadly stated, the invention consists in strengthening or reinforcing the frame by the use of a longitudinally arranged plate in the various tubes or brace members, which plate is brazed into supplemental stubs or short pieces of tubing that accurately fit the interior of the outer tubes, whereby when the whole structure is brazed together, these longitudinal ribs or plates serve to greatly strengthen the frame, both as to longitudinal and transverse strains.

In the drawings forming part of this application,—Figure 1 is a detailed plan view of the steering-head of the frame showing the integral tubular or stub portion in place and also showing the outer tube removed, and the longitudinal slits in the stub for receiving the bracing plate. Fig. 2 is a longitudinal partial sectional view on the line 2—2, Fig. 1, through the steering-head and the upper brace-bar of the frame; also show-

ing a portion of the lower brace-bar and the manner of attaching the plate to the steering-head member. Fig. 3 is a detail longitudinal sectional view through the axis of one of the brace-bars illustrating the bracing web or plate in position. Fig. 4 is a transverse sectional view on the line 4—4, Fig. 2, this view clearly showing the manner in which the bracing web or plate is secured to the inner tubular stub. Fig. 5 is a general view of the motor cycle frame showing the upper brace bar and the lower or forward brace-bar in section, and the stiffening plate or brace in place.

Referring to the drawings in detail, *a* designates the tubular forged portion of the steering-head proper, to which the upper and lower tubular member *b* and *c* are secured by means of the short tubular member *a'*.

d designates an integral thickened tubular portion of the forging *a* that is extended so as to form the stub or arm member *e* to which the tube *b* is secured. This stub member is longitudinally slitted in the axial plane thereof in both its upper and lower portions, as shown at *g* and *h* in Fig. 1.

i designates a stiffening plate member that is vertically located in a plane passing through the axis of the tubular members *b* and *c*. This plate enters the slits *g* and *h* of the stub member *e*, as shown in Figs. 2 and 3. The reduced inner end *j* of the plate *i* enters the opening *k* of the thickened tubular portion *d*.

It should be stated that the tubular member *c*, although shown in outline in Fig. 2, is internally constructed the same as the tubular member *b* which is shown in section. The plate *i* is inserted in the tubular members *b* and *c* by slightly compressing the sides of the members in a transverse direction, after which the whole is brazed together in the usual manner, that is, by immersing the frame in a bath of molten spelter. This construction, wherein the bracing plate *i* is rigidly secured to the upper and lower portions of the tubular members *b* and *c*, by brazing serves to greatly strengthen the entire frame and especially the steering-head portion thereof.

It will be readily seen that the upper and lower tubular members *b* and *c* will resist longitudinal and transverse strains to a greater extent, before giving way, than if these plates were omitted. On account of

the somewhat lengthened dimensions of the stub *e* and the slits *g* and *h*, therein, and into which the plates *i* are secured by brazing, it is evident that the tubular brace members *b* and *c* are securely connected to the steering-head *a* of the frame. The insertion of the bracing plates *i*, while greatly increasing the strength of the frame, adds very little weight to the frame as a whole.

A particular feature of my invention upon which the novelty depends is in the very rigid manner of connecting the brace-bars to the steering-head or to the crank-hanger without any danger of the brace-bars breaking or coming apart at these connecting points. A further important feature of my invention consists in extending the brace-plate *i* from the steering-head to the saddle-post in the upper tube or bar *b* of the frame, and in extending the brace-plate *i* from the steering-head to the crank-hanger casing *m*.

It is understood that the same means are employed for connecting the brace-plate in the saddle-post *n* and crank-hanger parts of the frame as are employed in connecting the brace-plate to the steering-head, which is clearly shown in Figs. 1, 2, and 3, and as already explained in connection with these figures. The brace-plate *i* is brazed throughout its length by means of its upper and lower edges to the tubular portions *b* and *c* of the frame.

What I claim, is:—

1. A vehicle-frame construction including tubular members a stub element provided with longitudinal slits therein, and a bracing plate located in the slits of the stub.
2. A vehicle-frame construction including tubular members and a stub element provided with longitudinal slits therein, and a bracing plate located in the slits of the stub, said bracing plate being arranged substantially in the plane of the axis of the tubes.
3. A motor vehicle frame including a steering-head element and a member integral therewith and provided with a slitted portion and having an opening therethrough, a tubular bar adapted to be secured to said slitted portion, a bracing plate provided with a reduced end portion for entering the opening in the slitted portion and also the slitted portion of the stub member, said plate being secured in position by brazing.
4. As an improvement in vehicle frames in combination with the steering-head portion of the frame, a tubular element having a hollow arm portion integral therewith and slitted for a portion of its length, a tubular brace member engaging the arm portion, a plate member located within the brace mem-

ber and engaging the slitted portion of the slotted arm, whereby when the plate-member is brazed to the brace member and said slotted arm, the tubular brace member will be secured to the steering portion of the frame.

5. The combination with the steering-head, saddle-post, and crank-hanger of a motor vehicle frame, brace-plates connecting said head, post, and hanger members, and means for attaching the brace-plates to said members, the attaching means including slitted tubular stub-members having integral portions extending into the head, saddle, and hanger members for receiving the ends of the brace-plates, substantially as described.

6. A motor-vehicle frame having in combination with the steering-head and saddle-post thereof, a brace-plate connecting said head and post, and means, including a slotted tubular stub-member for attaching the brace-plate to the head and post, substantially as described.

7. The combination with the steering-head of a motor vehicle frame, a tubular member *a* having an integral slotted stub-member *e*, and a brace-plate *i* entering said slotted portion of said stub-member, substantially as described.

8. The combination with the tubular members connecting the steering-head, saddle-post, and crank-hanger of a motor-vehicle frame, brace plates connecting said head, post, and hanger members, and arranged in a vertical plane, said plates being brazed throughout their length to said tubular members, substantially as described.

9. The combination, in a motor vehicle frame, with the steering-head thereof, a member *a* having a slotted tubular portion *e*, integral with said member, a brace-plate engaging the slotted tubular portion, and a tube member inclosing the brace-plate and the slotted tubular portion, the brace-plate being secured to the tube member, substantially as described.

10. The combination with a tubular frame structure having a steering-head, saddle-post, and crank-hanger portion, a slotted tubular member connected to said head, post, and hanger members, brace-plates extending between the said slotted tubular members, and means for securing the same thereto, substantially as described.

CARL O. HEDSTROM.

Witnesses:

K. I. CLEMONS,
H. W. BOWEN.