(No Model.)

S. B. HILL.

BICYCLE FRAME.

No. 594,136. Patented Nov. 23, 1897.

Fig. 1.

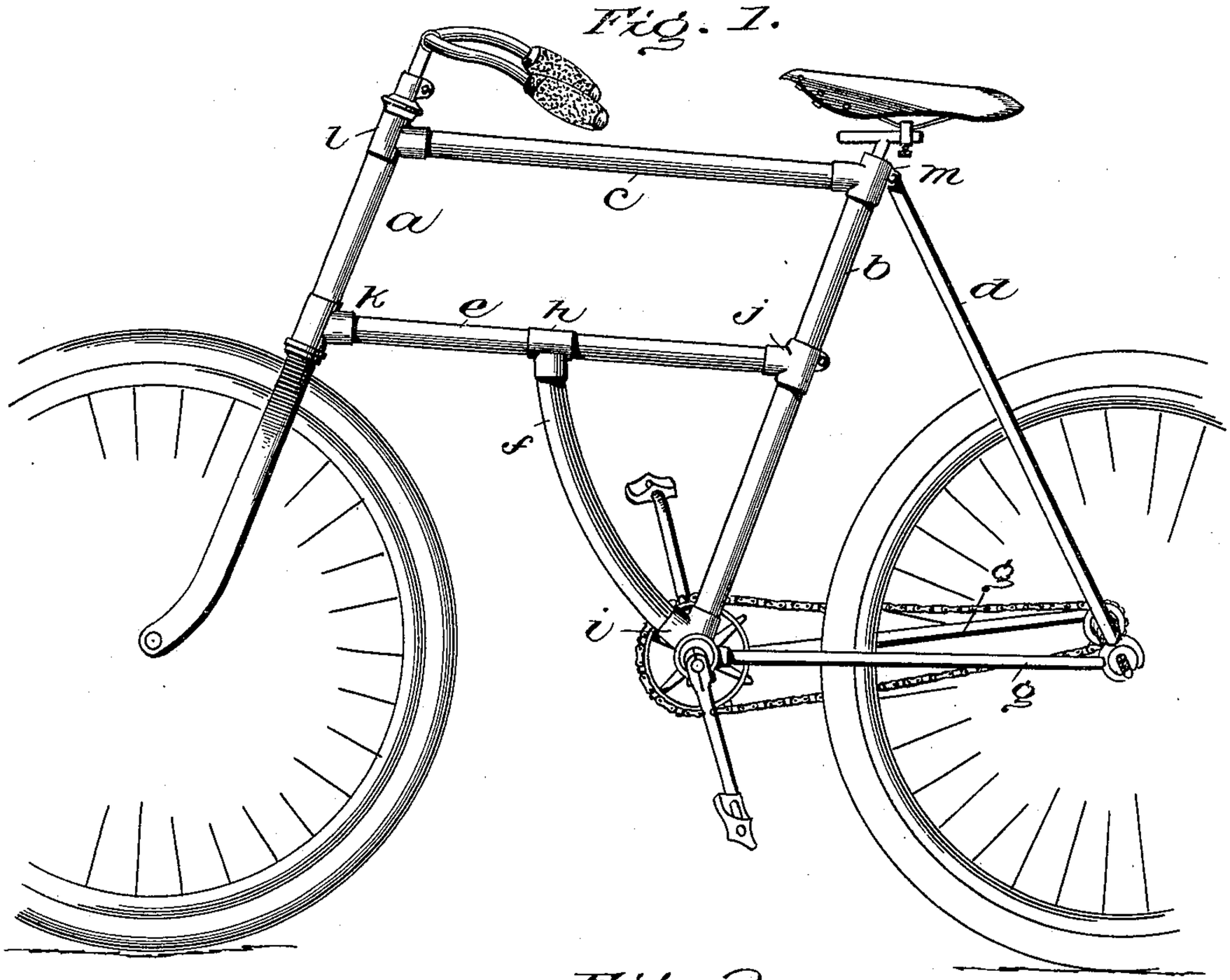
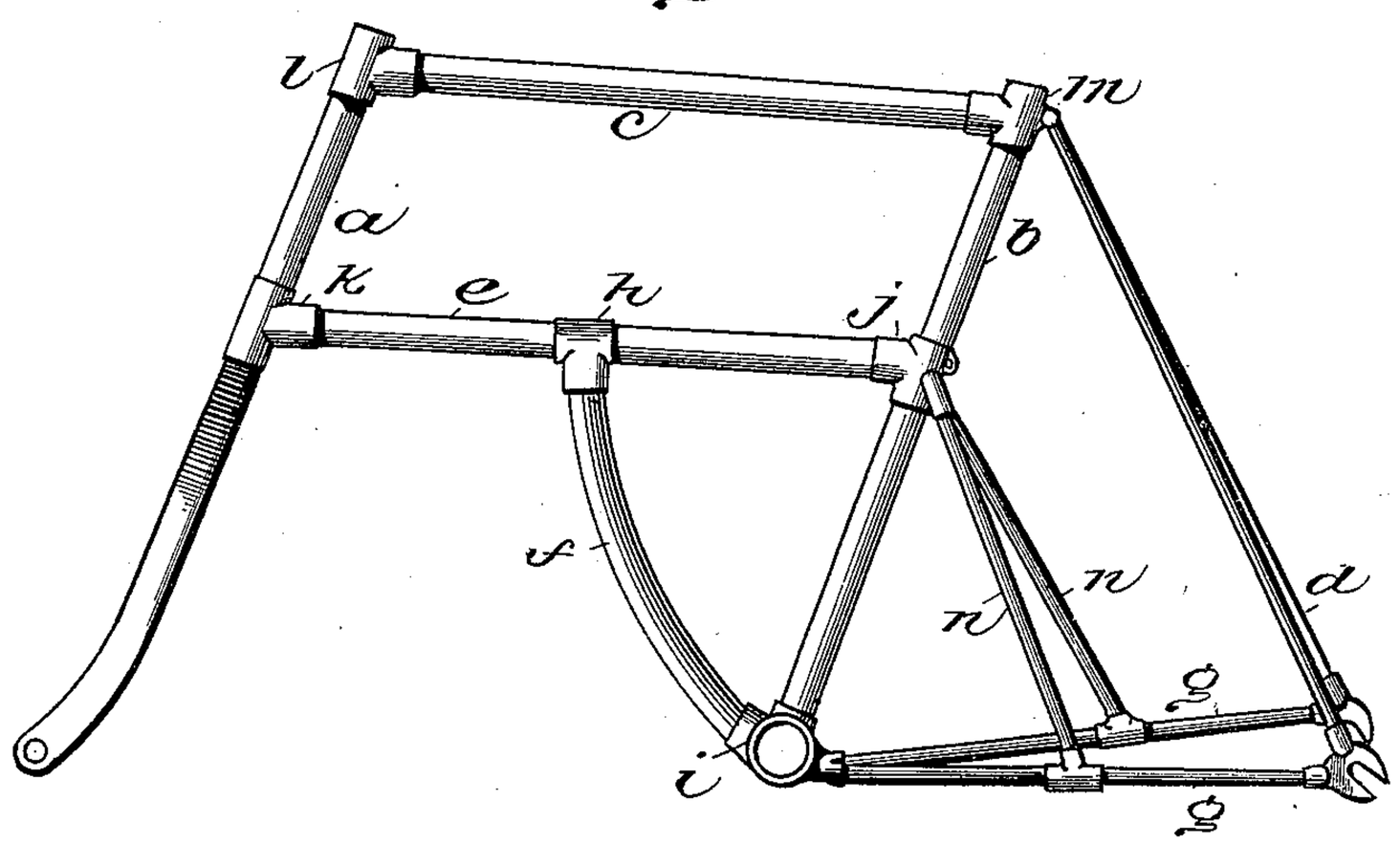


Fig. 2.



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BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 594,136, dated November 23, 1897.

Application filed January 11, 1897. Serial No. 618,786. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER B. HILL, a citizen of the United States of America, residing in Chicopee, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Bicycle-Frames, of which the following is a specification, reference being had to the accompanying drawings and letters of reference marked thereon.

In the drawings like letters of reference indicate like parts.

Figure 1 is a side view of a complete wheel illustrating my invention, and Fig. 2 is a like view of a frame embodying a modification or addition to the same.

In detail, *a* indicates the head; *b*, the rear main bar; *c*, the top bar; *d*, the rear top braces; *e*, the lower main bar; *f*, a strengthening-bar; *g*, the lower rear bars, and *h*, *i*, *j*, *k*, *l*, and *m* brackets.

The construction of my improved frame will be readily understood on reference to the drawings, wherein I show a frame having the head, a front bar and main rear bar *b* arranged substantially parallel to each other, and the top and bottom bars *c* and *e* also substantially parallel to each other. The upper and lower rear bars or braces *d* and *g* may be of the usual form of construction. The strengthening-brace *f* extends from the crank-bracket to a bracket *h*, mounted approximately midway between the ends of the bar *e*. This construction leaves a large area between the bars *a*, *b*, *c*, and *e* unobstructed and of approximately rectangular shape in vertical plane, wherein a luggage-carrier of large capacity and rectangular form may be carried and supported. A luggage-carrier of rectangular form can be placed in the forward space of an ordinary diamond-type frame; but it cannot be conveniently held immovable therein, for while the front lower corner of such rectangular carrier will be in juxtaposition to the forward end of the lower bar of such a frame the rear lower end of such a carrier will be at a considerable distance therefrom. Thus it cannot be conveniently secured thereto; but the present form of frame permits a rectangular carrier to be placed in the space between the horizontal and upright parallel bars, so as to be firmly secured to both of the horizontal bars. A further advantage is that the present form of frame is very useful for a military bicycle, for the luggage-bar *e* is so situated and directed that a weapon can be secured thereto so as to extend, if necessary, over the front wheel and be entirely out of the way when the bicycle is being ridden, but in a position to be quickly seized when a stoppage is made. For both of these reasons the form of frame herein described is particularly valuable. Moreover, this construction of frame enables me to produce a stronger frame than is produced by the diamond type of frame, while the material is so placed and arranged that great strength is had at the places subjected to the greatest strain.

In the ordinary diamond-type frame it is found in cases of collision that there is a tendency of the lower front bar of the frame corresponding to the bar *e* in the frame which I have herewith disclosed to bend upward, and it is this element of weakness in the ordinary diamond type of bicycle-frame that it is one of the objects of my invention to remove. The weakest part of a bar subjected to a bending action is the middle point, and, as shown in the drawings, I provide a brace to the bar *e* midway thereof, said brace extending from the bracket *i*, containing the crank-axle. Furthermore the bar *e* is connected approximately to the middle point of the main post *b*. Thus the weakest points of the two bars *e* and *b* are both strengthened by braces from other points. While a straight brace or bar *f* will serve to give the requisite strength at this point of the structure, thus accomplishing the object of my invention in this respect, I prefer to employ a brace curved forwardly, as shown, thus giving to the frame greater elasticity and at the same time the requisite strength. It will be seen that a brace curved oppositely to the direction shown in the drawings will accomplish the desired object, but I prefer to curve this brace in the direction shown in the drawings.

To still further strengthen the frame, in some instances I employ supplementary rear braces *n*, extending from the bar *b* and attached to it between its ends, preferably a short distance above the center, downwardly

to the lower rear bars, and attached to them between their ends and, by preference, about midway.

I prefer to unite the bars or braces by the employment of brackets in the common manner.

Having therefore described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bicycle-frame, the combination of the front and rear bars *a* and *b*, the upper bar *c*, the lower bar *e* extending from the lower end of the front bar *a* to substantially the middle point of the rear bar *b*, and the bar *f* extending from the lower end of the bar *b* to substantially the middle point of the bar *e*, said bars having suitable connections at their points of juncture.

2. In a bicycle-frame, the combination of the front and rear bars *a* and *b*, the upper bar *c*, the lower bar *e* extending from the lower end of the front bar *e* to substantially the middle point of the rear bar *b*, the bar *f* extending from the lower end of the bar *b* to substantially the middle point of the bar *e*, said bars having suitable connections at their points of junction, the rear top braces *d* extending from the top of the bar *b* to the shaft of the rear wheel, the lower rear bars *g* extending from the crank-axle back to said shaft, and the rear braces *n* extending from the junction of the bars *e* and *b* to substantially the middle point of the rear braces *g*.

3. In a bicycle-frame, the combination of the front and rear parallel bars *a*, *b*, the upper and lower parallel horizontal bars *c*, *e*, the four forming a parallelogram in which a rectangular luggage-carrier can be snugly carried and effectively secured, and a brace extending from the lower bar *e* to a point on the bar *b* outside said space, substantially as described.

4. In a bicycle-frame, the combination of front and rear bars *a* and *b*, the upper and lower parallel bars *c*, *e*, and the curved brace *f* extending from an intermediate point in the lower bar *e* to the lower portion of the rear bar *b*, substantially as described.

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