No. 644,788. Patented Mar. 6, 1900.

G. H. WILLIAMS.

FRAMEWORK FOR BICYCLES.

(Application filed Sept. 5, 1899.)

(No Model.)

FIG. I

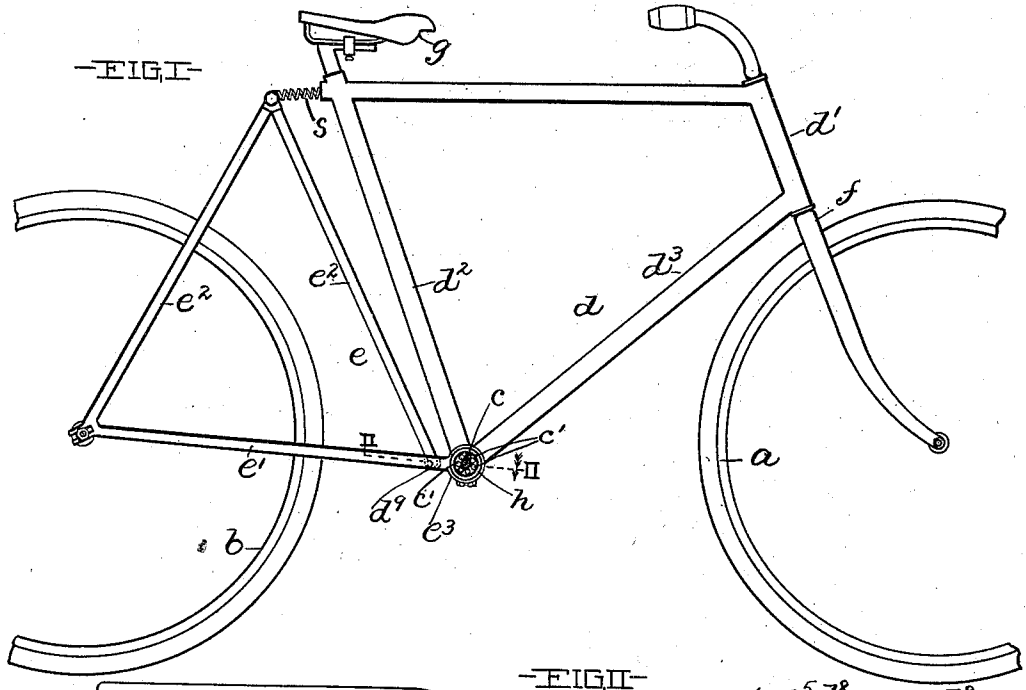


FIG. II

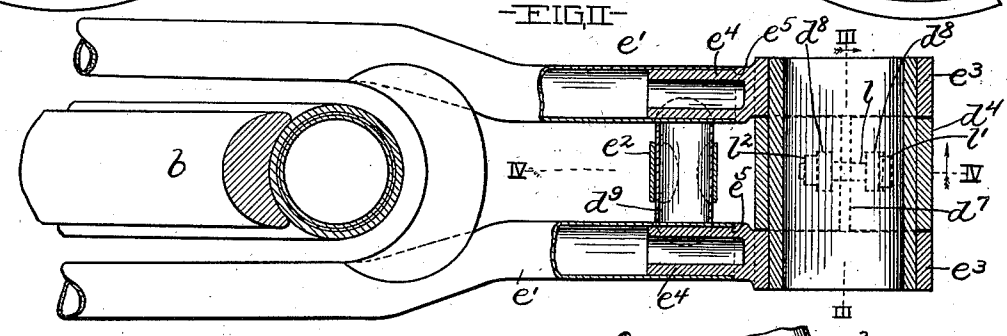


FIG. III

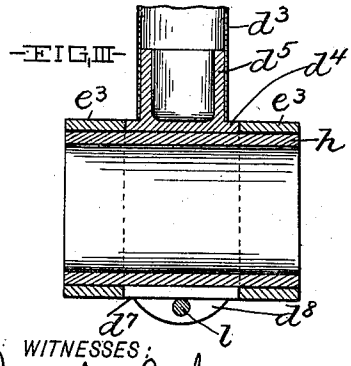
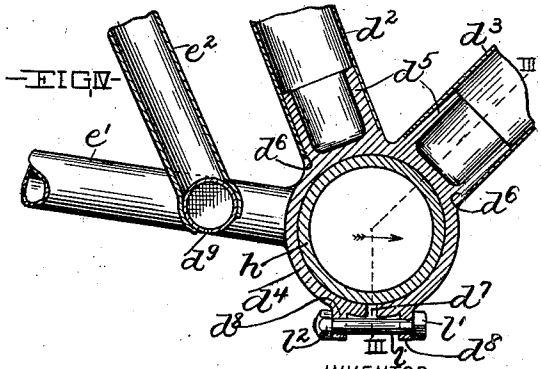


FIG. IV



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FRAMEWORK FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 644,788, dated March 6, 1900.

Application filed September 5, 1899. Serial No. 729,508. (No model.)

To all whom it may concern:

Be it known that I, GURDON H. WILLIAMS, residing at South Brooklyn, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Framework for Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in bicycle-frames, and more especially to an improved hinge connection between the two wheel-connecting sections of the framework of a bicycle.

The object of the invention is to provide a hinge connection between the frame-sections that will accommodate the reception, within the endwise-removable hollow cylindrical pintle of the said hinge connection, of the pedal-shaft and the antifriction balls or bearings surrounding the said shaft and that will accommodate with great facility the separation of the aforesaid frames upon the removal of the aforesaid pintle.

With this object in view and to the end of rendering the connection between the two frame-sections light, durable, and inexpensive my invention consists in certain peculiarities of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a bicycle having its framework composed of two sections united together at the operating-shaft by means of a hinge connection embodying my invention. In this figure the operating-shaft is shown in section. Fig. II is a top plan in section on line II II, Fig. I; but in Fig. II the operating-shaft and antifriction-balls are removed. Fig. III is an upright section on line III III, Figs. II and IV, looking forwardly. Fig. IV is a vertical section on line IV IV, Fig. II. The parts illustrated in Figs. II, III, and IV are shown on a larger scale than the corresponding parts are drawn in Fig. I.

Referring to the drawings, *a* designates the forward wheel of a bicycle; *b*, the rear or driven wheel; *c*, the operating-shaft; and *d* and *e* are two sections of the framework, arranged the one forward of the other and hinged together at the bottom of the machine. The forward frame-section *d* is connected in the usual manner with the forward wheel. The rear frame-section *e* is connected in the usual manner with the rear or driven wheel. The forward frame-section extends somewhat over the forward wheel, and is there provided with the ordinary bearing *d'* for the steering-fork *f*, that forms the connection between the said frame-section and the forward wheel.

The frame-section *d* comprises two tubular bars d^2 and d^3, that extend and diverge upwardly from the hinge connection between the two frame-sections. The rear bar d^2 of the forward frame-section carries the saddle *g* of the machine, and the forward bar d^3 of the said frame-section connects at its forward end with the bearing for the steering-fork. The said bars d^2 and d^3 are arranged in the same vertical plane longitudinally of the machine.

The rear frame-section *e* comprises two tubular bars *e' e'*, extending from the hinge connection between the two frame-sections rearwardly to the axis of the rear wheel and arranged at opposite sides, respectively, of the said wheel, and the bars *e'* are connected together in any approved manner and are connected with any suitable number of upwardly extending and converging bars e^2, that are connected at their upper ends by any approved form of spring connection *s* with the top of the forward frame-section *d*.

The present invention consists in the peculiarities of the construction of the hinge connection between the two frame-sections at the operating-shaft, and comprises the ordinary tubular cylinder *h*, that contains the operating-shaft *c* and the antifriction-balls *c'*, interposed between the exterior of the said shaft and the internal surface of the said cylinder. Member *h* is arranged, therefore, horizontally and parallel with the axis of the rear wheel. Upon the inner end of each of the tubular bars *e'* of the rear frame-section is formed an eye e^3. The two eyes e^3 and e^3 of the different bars *e'* and *e'*, respectively, loosely but snugly embrace opposite ends, respectively, of the cylinder *h*. The connection between each bar *e'* and its eye e^3 consists, preferably, of a horizontal cylindrical lug e^4, formed upon and projecting rear-

wardly from the eye and embraced by the inner end of the connected bar e', that is brazed to the lug and abuts against the external annular shoulder e^5, formed upon the inner end portion of the said lug. A split sleeve or collar d^4 is formed upon the lower ends of the two bars d^2 and d^3 of the forward frame-section d. Sleeve or collar d^4 embraces the cylinder h and is interposed snugly between the two eyes e^3 of the rear frame-section. The connection between each of the bars d^2 and d^3 and the sleeve or collar d^4 consists, preferably, of a hollow cylindrical lug d^5, that is formed upon the collar or sleeve and arranged in line with and embraced by the respective bar that is brazed to the lug and abuts against an external annular shoulder d^6, formed upon the inner end of the lug. The collar or sleeve d^4 is split, as at d^7, preferably centrally of the bottom of the cylinder h, and has two depending ears d^8 d^8, arranged at opposite sides, respectively, of the split and engaged by a bolt l, that extends through the ears, with its head l' engaging the outer side of one of the ears, and a nut l^2, mounted upon the bolt's shank at the outer side of the other ear. Upon tightening the said nut the collar or sleeve is caused to tightly embrace and become fixed upon the cylinder h.

By the construction hereinbefore described the two frame-sections d and e are capable of tilting vertically independently of each other, are readily assembled, and as quickly and conveniently separated for repairs or other purposes. In fact, all that is required to separate the two frame-sections at the hinge connection between them is to loosen the nut upon the bolt of the split sleeve or collar, whereupon the cylinder h, with its contents, can be removed endwise, and the collar or sleeve d^4 of the forward frame-section can then be removed from between the eyes e^3 e^3 of the rear frame-section. The two parallel bars e' of the rear frame-section are connected together at the rear of and near the sleeve or collar d^4 of the forward frame-section by a horizontal cross-bar d^9, to which the inner upright bar e^2 of the rear frame-section is attached. By this construction it is obvious that the eyes e^3 of the rear frame-section can only be displaced or separated from the collar or sleeve d^4 of the forward frame-section in the manner that is hereinbefore indicated and involves the loosening of the said sleeve or collar and the endwise removability of the cylinder h.

What I claim is—

1. The combination with the operating-shaft-containing cylinder of a bicycle, and the machine's framework composed of a forward section comprising the two upwardly extending and diverging tubular bars d^2 and d^3, and the rear section comprising the two tubular bars e' e' extending rearwardly from the aforesaid cylinder and any suitable number of upwardly extending and converging bars e^2, and a spring connection between the upper ends of the two frame-sections: of a sleeve or collar releasably fixed upon the central portion of the aforesaid cylinder and having two hollow lugs arranged in line with the different aforesaid diverging bars, respectively, of the forward frame-section, and annular external shoulders formed upon the said lugs and engaged by the said bars; two eyes mounted upon the aforesaid cylinder at opposite ends, respectively, of the aforesaid sleeve or collar and having two hollow lugs projecting rearwardly from the different eyes, respectively, and embraced by the different aforesaid rearwardly-extending bars, respectively, of the rear frame-section, and annular shoulders formed upon the inner ends of the said last-mentioned lugs and engaged by the said rearwardly-extending bars.

2. The combination with the operating-shaft-containing cylinder of a bicycle, and the machine's framework composed of a forward section and a rear section, and a hinge connection between the said frame-section and comprising the aforesaid cylinder: of a split collar or sleeve formed upon the forward frame-section and embracing the aforesaid cylinder, which sleeve or collar has the split formed in its lower portion and is provided with two depending ears arranged at opposite sides, respectively, of the split; a bolt extending through the said ears and having its head arranged at the outer side of one of the ears, a nut mounted upon the bolt's shank at the other side of the other ear, and two eyes formed upon the rear frame-section and embracing the aforesaid cylinder, at opposite ends, respectively, of the aforesaid sleeve or collar, substantially as shown, for the purpose specified.

3. The combination with the cylinder h; the forward frame-section d comprising the upwardly-diverging tubular bars d^2 and d^3; the rear frame-section e comprising the bars e' and e', extending rearwardly from opposite ends, respectively, of the aforesaid cylinder, and the upwardly-converging bars e^2, and a spring connection between the upper ends of the two frame-sections: of the split sleeve or collar d^4 having the hollow lugs d^5 d^5 and the shoulders d^6; the bolt l; the nut l^2, and the eyes e^3 having the hollow lugs e^4 and the shoulders e^5, all arranged and operating substantially as shown, for the purpose specified.

Signed by me at Cleveland, Ohio, this 8th day of August, 1899.

GURDON H. WILLIAMS.

Witnesses:
C. H. DORER,
A. H. PARRATT.