(No Model.) 3 Sheets—Sheet 1.

R. FELSCHE.

MACHINE FOR COMPOSING BICYCLE FRAMES.

No. 602,844. Patented Apr. 26, 1898.

Fig. 1

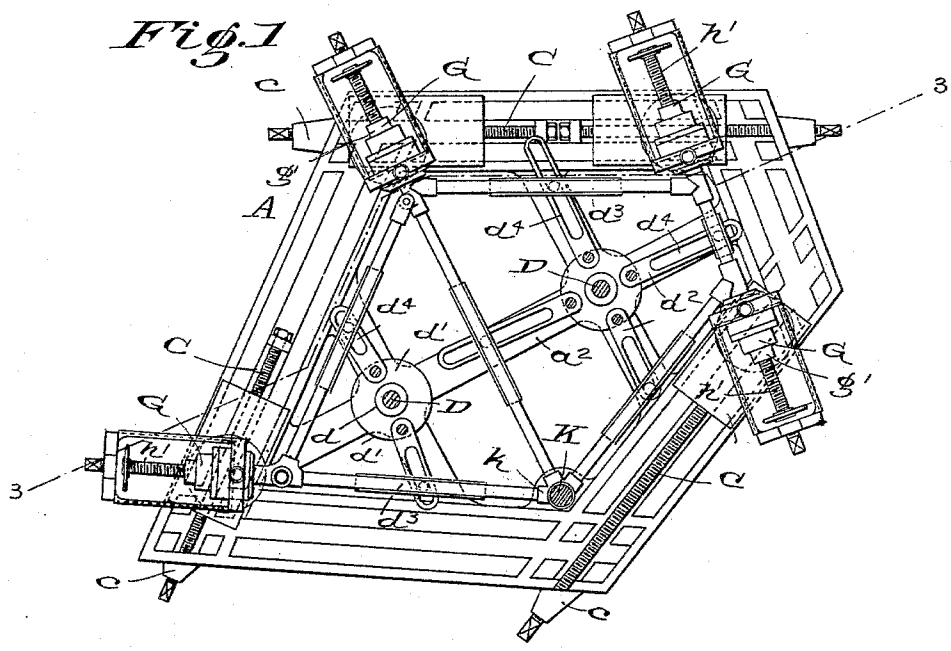


Fig. 3

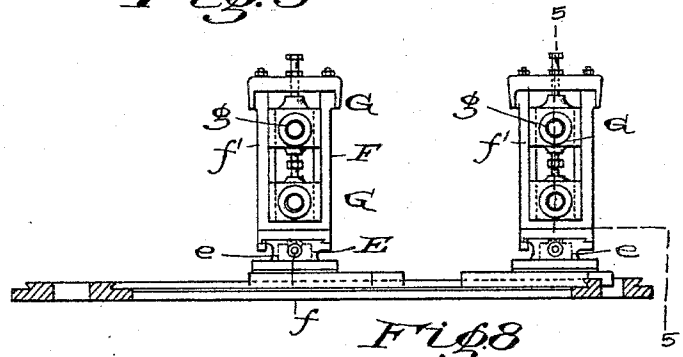


Fig. 8

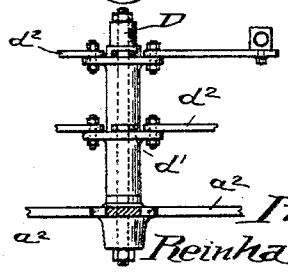
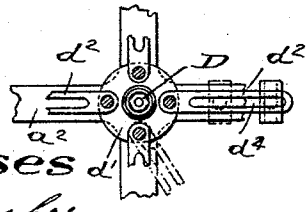


Fig. 7



Witnesses
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R. FELSCHE.

MACHINE FOR COMPOSING BICYCLE FRAMES.

No. 602,844. Patented Apr. 26, 1898.

Fig. 2

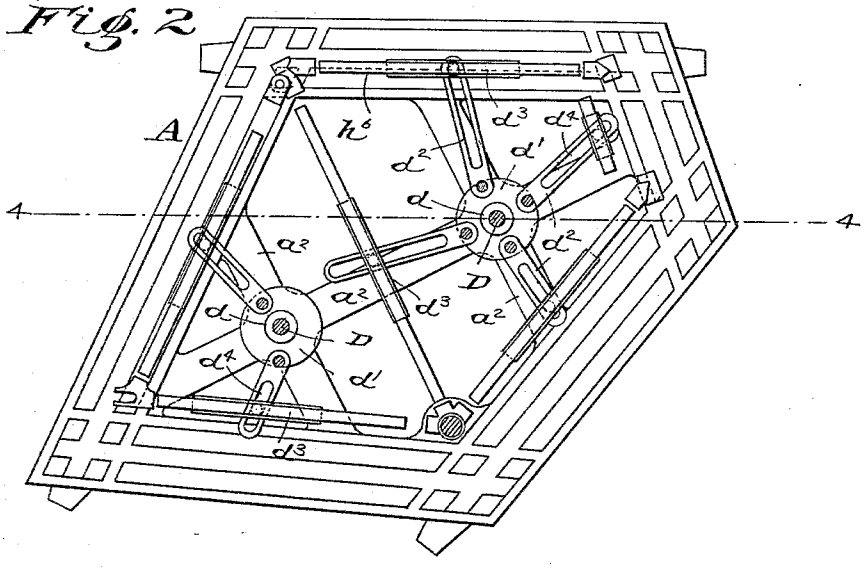


Fig. 4

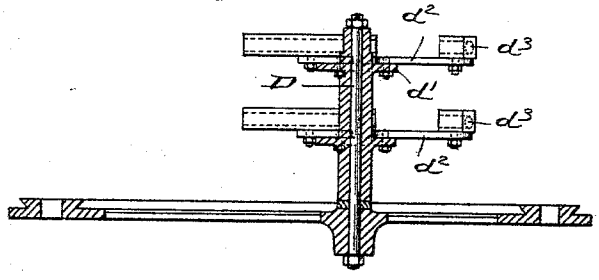
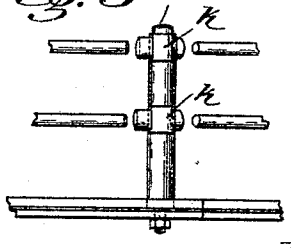


Fig. 9 K



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R. FELSCHE.

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Fig. 5

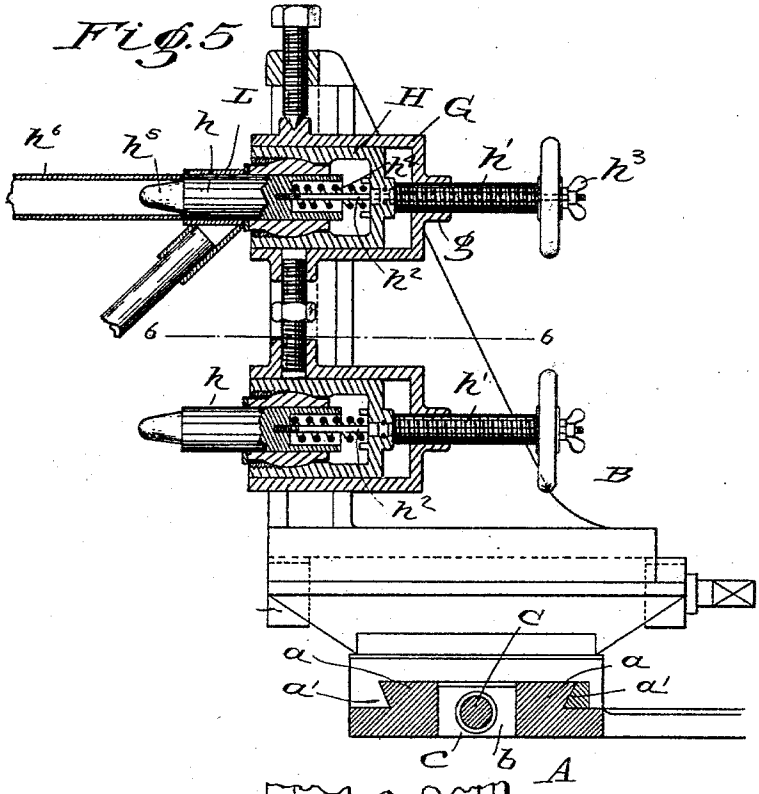
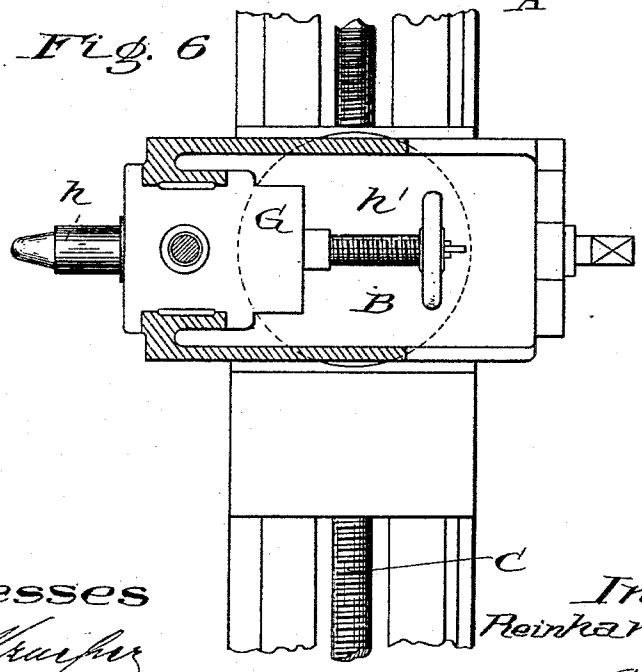


Fig. 6



Witnesses
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UNITED STATES PATENT OFFICE.

REINHARD FELSCHE, OF MAGDEBURG, GERMANY.

MACHINE FOR COMPOSING BICYCLE-FRAMES.

SPECIFICATION forming part of Letters Patent No. 602,844, dated April 26, 1898.

Application filed July 26, 1897. Serial No. 646,055. (No model.)

To all whom it may concern:

Be it known that I, REINHARD FELSCHE, a citizen of the Kingdom of Prussia, and a resident of Magdeburg, Neustadt, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Machines for Composing Bicycle-Frames, of which the following is a specification.

My invention relates to a machine for constructing bicycle-frames, and has particular reference to the means for assembling the several sections of tubing of a bicycle-frame to the fittings or sockets.

The object of the invention is to provide suitable adjustable clamps or holders for the separate parts of the frame and means for moving the same, whereby the several parts of the frame are brought together and assembled.

The invention therefore consists in the parts and combination of parts as are shown in the drawings, described in the specification, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of a complete machine, a bicycle-frame being contained thereon in an assembled and finished condition. Fig. 2 is a like view illustrating the position of the several parts of the frame prior to being assembled. Fig. 3 is a sectional view, the section being taken at a point indicated by the line 3 3, Fig. 1. Fig. 4 is a sectional view, the section being taken at a point indicated by the line 4 4, Fig. 2. Fig. 5 is a sectional view, the section being taken at a point indicated by the line 5 5, Fig. 3. Fig. 6 is a sectional plan view, the section being taken at a point indicated by the line 6 6, Fig. 5. Fig. 7 is a plan view, and Fig. 8 is a side elevation, of a portion of the bed-frame, illustrating more especially the details of construction of the holders for the tubing of the bicycle-frame. Fig. 9 is a detail of the hub-supporting spindle.

A designates a base-plate having a contour similar to the contour of a bicycle-frame, the plate comprising longitudinal ribs a, which form a skeleton plate of great strength. Ribs a are formed with inclined outer edges, as shown at a', Fig. 5, upon which are secured longitudinally-moving carriages B. Upon the carriages B the clamps for the bicycle-fittings are movably secured. Revolving in suitable bearings c, projecting upwardly from the bed-plate, are screw-rods C, which pass through suitable internally-screw-threaded bosses or projections b, depending from the carriage B. Rods C are arranged longitudinally of the several sides of the base-plate and adjust the carriages B to the points necessary to position the several fittings in their proper relation to the frame.

Connecting the sides of the base-plate are cross-pieces a^2, thereby forming a bearing in which are secured standards D. Upon each of these standards is arranged a sleeve d, having flanges d' projecting radially therefrom, to which are pivotally secured arms d^2, having secured upon their outer ends sleeves d^3, which carry the frame-tubing, as shown in Fig. 1. Sleeves d^3 are adjustable longitudinally of the arms d^2, the arms having slots d^4, through which pass pins carried by the sleeves, whereby the tubing may be held in any desired position over the bed-plate.

Revolubly secured upon a circular boss e, projecting upwardly from each carriage B, Fig. 3, is a plate E, upon which is movably secured the fitting clamp or carrier F. Clamp F moves in a suitable guideway upon the plate E, a screw-rod f, journaled in a bearing upon the plate, moving the clamp longitudinally. The part or clamp F, it will thus be seen, has an adjustment longitudinally of the bed-plate and has a lateral and a rotary adjustment with relation to the carriage. Arranged upon the inner face of each side of the clamp-frame are vertical ways f', in which slide suitable guides upon a frame G, whereby frame G, which carries the fitting-clamp, has a vertical adjustment with reference to the bed-plate. Frame G has a circular orifice g therein, and secured within said orifice and having a longitudinal movement therein is a frame H. Frame H carries the fitting-pin h and is movable longitudinally within frame G by means of a screw-rod h', screwing through an extension g' in frame G and bearing against frame H, and the fitting-pin h is adjustable longitudinally within the frame H by means of a rod h^2, secured thereto and extending through a central orifice in the rod h' and having a thumb-nut h^3 screwed thereon. Interposed between the pin h and the outer wall of the frame G is a coiled spring h^4, which exerts a normal pressure upon the fitting-pin to hold it projected.

Fitting-pin h is provided with a reduced conical outer end h^3, the purpose of which is to guide and center the end of the pin within the tubing h^6, and consequently the ends of the tubing within the sockets of the fittings. By adjusting the pin h longitudinally with reference to the frame H by means of screw-rod h^2 I regulate the distance the end of the tubing extends into the fittings.

K designates a standard extending upwardly from the bed-plate, upon which the crank-fitting k is secured. (See Fig. 9.)

From the foregoing description the operation will be readily apparent, the tubing being secured in the sleeves d^3, the fittings L upon the fitting-pins h, and the crank-fitting k upon the standard K, as shown in Fig. 2, the several screw-rods h' are revolved and the fittings are brought forward toward the ends of the tubing and are forced therein, the ends of the tubing adjacent to the crank-fitting are forced therein, and the frame is formed complete, as shown in Fig. 1. By reversing the revolution of screw-rods the pins are withdrawn from the fittings and the frame can be removed from the machine.

As shown in the drawings, the standards, &c., are of sufficient length to receive two sets of fitting-clamps and tube-sleeves. I wish it understood, however, that, if desired, one frame may be assembled at a time by the employment of one set of clamps and pins, or, if desired, the standards, &c., may be lengthened and as many frames may be assembled upon one machine simultaneously as may be desired.

By means of the adjustments of the several parts frames of different sizes may be assembled upon the machine. In order, however, to adapt the machine to assemble frames of different shapes and angles, I may instead of forming the bed-plate of one piece, as shown, hinge the sides to each other, providing suitable adjusting means, whereby frames of any desired shape or size may be assembled without departing from the spirit of my invention.

If desired, instead of utilizing the screw h' to actuate the fitting-pin h I may project the same by hydraulic pressure.

What I claim as new, and desire to secure by Letters Patent, is—

1. A machine for constructing bicycle-frames comprising a base-plate, tubing-sleeves and fitting-clamps adjustably secured thereon and means for moving the clamps, substantially as described.

2. A machine for constructing bicycle-frames comprising a base-plate having ways upon the upper side, carriages sliding upon the ways and means for adjusting the same longitudinally of the sides of the base-plate, fitting-clamps adjustably secured upon the carriages, and tubing-sleeves adjustably secured upon the base-plate, substantially as described.

3. A machine for constructing bicycle-frames comprising a base-plate, ways upon the upper side thereof, carriages sliding upon the ways, fitting-clamps adjustably secured upon the carriages, standards projecting upwardly from the base-plate, disks secured upon the standards, arms pivotally secured to and projecting radially from the disks, and tubing-sleeves adjustably secured to the arms, substantially as described.

4. A machine for constructing bicycle-frames comprising a base-plate; ways upon the upper side thereof, carriages sliding upon the ways, a plate revolubly secured upon each carriage, a clamp slidingly secured upon the plate, a frame vertically adjustable in the clamp-frame, a pin arranged in the frame normally held in a projected position, a sleeve in which the pin moves and means for projecting the same independent of the pin, substantially as described.

5. A machine for constructing bicycle-frames comprising a base-plate, a stationary standard extending upwardly therefrom to receive the crank-hanger, standards projecting upwardly therefrom carrying tubing-sleeves adjustable in relation thereto, and fitting-clamps movable upon the base-plate and means for moving the same, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

REINHARD FELSCHE.

Witnesses:
BOTHO HERRMANN,
WILLIAM EGGELING.