No. 622,526. Patented Apr. 4, 1899.

F. H. NIES & W. DUNN.

BICYCLE FRAME AND GEAR CASE.

(Application filed Nov. 9, 1896.)

(No Model.)

Fig. 1,

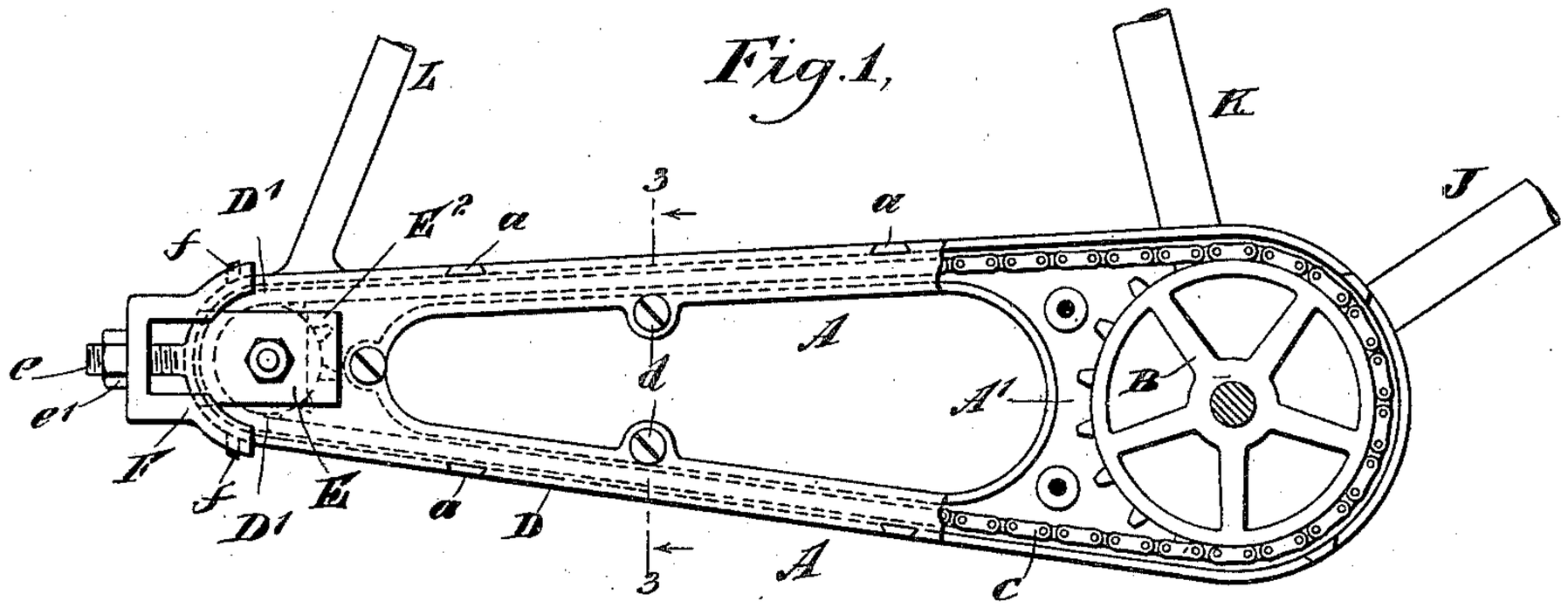


Fig. 2.

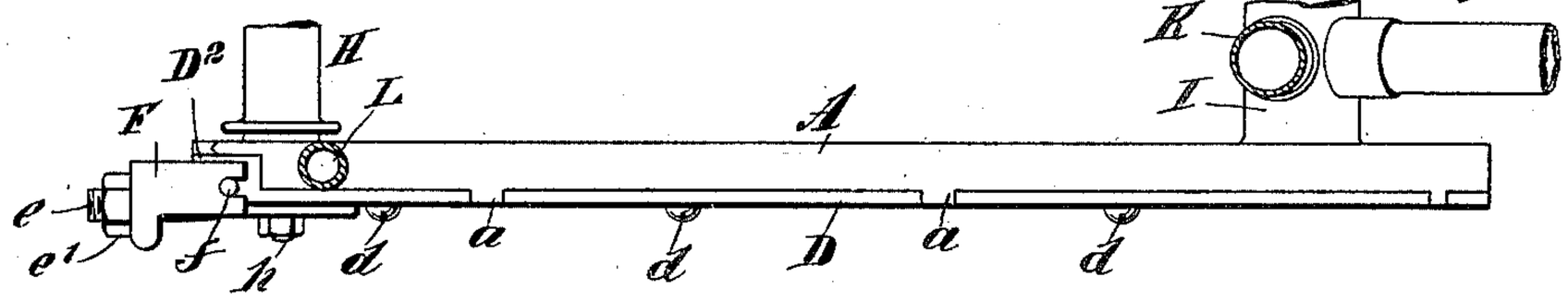


Fig. 4,

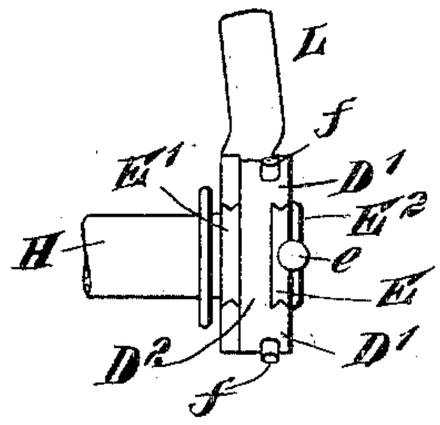


Fig. 3,

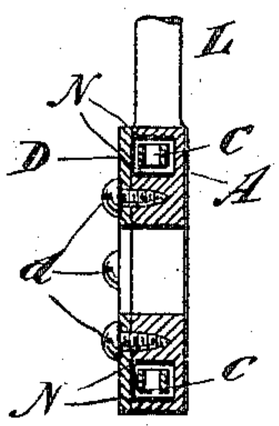
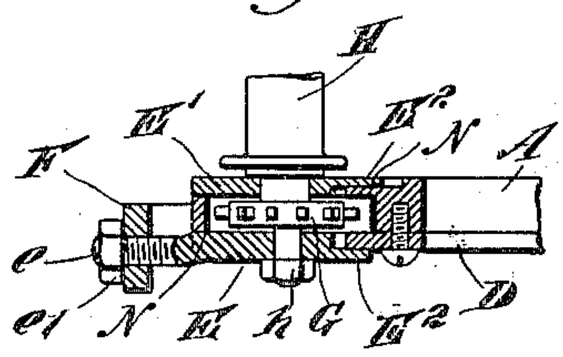


Fig. 5.



WITNESSES:

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FREDERICK H. NIES AND WILLIAM DUNN, OF NEW YORK, N. Y.

BICYCLE FRAME AND GEAR-CASE.

SPECIFICATION forming part of Letters Patent No. 622,526, dated April 4, 1899.

Application filed November 9, 1896. Serial No. 611,538. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK H. NIES, of New York, (Brooklyn,) in the county of Kings, and WILLIAM DUNN, a subject of the Queen of Great Britain, at present residing at New York city, in the county of New York, State of New York, have invented a new and Improved Bicycle Frame and Gear-Case, of which the following is a full, clear, and exact description.

The invention will be fully described hereinafter and the features of novelty pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a portion of the bicycle-frame, showing our improvements attached thereto. Fig. 2 is a top plan view of the same. Fig. 3 is a cross-section upon the line 3 3 of Fig. 1. Fig. 4 is a rear end view of our device with the yoke for adjusting the rear axle removed, and Fig. 5 is a longitudinal central section through the rear end of our device.

The object of our invention is to provide means for protecting the gearing or power-transmitting mechanism from dust and dirt and at the same time prevent the clothing of the wearer from coming in contact therewith. Another object is to so shape this means that it may either be built as a part of the frame and used as a substitute for one of the frame-braces or built separately and substituted for said brace on machines already built.

In the drawings, J represents the forward diagonal member of the frame, K the vertical tube receiving the saddle-post, and L one of the rear seat-braces. These are the same as in the usual form of bicycle-frames. The usual frame-brace connecting the crank-hanger with the rear axle of the bicycle is discarded on one side and our device substituted therefor. It thus serves the double purpose of forming a part of the frame and a covering for the chain and is in a form which combines strength and lightness and also presents a handsome and light appearance. By the term "frame-braces" as used herein is meant the tubes connecting the crank-hanger with the axle of the rear wheel.

Back of the main sprocket-wheel B and attached to the crank-hanger I is fixed a plate A, which extends back and surrounds the rear sprocket-wheel G. This plate has a broad flat portion A′ immediately in the rear of the main sprocket-wheel B. The outer edges of this plate are turned up or flanged, so as to mainly inclose the wheel and sprocket-chain C. The central portion of the plate may be left solid, if desired. We have, however, shown this central portion as cut out and flanged in the same direction as the outer edge of the plate. This forms the central portions of the plate into U-shaped bars, through which the two sides of the chain pass. This plate may be secured to the crank-hanger and to the seat-brace L by brazing, by screws, or in any suitable manner. The front or open side of this plate is covered by a plate D, which is cut to fit the outline of the plate A.

The plate A has small projections *a*, which may be made dovetailed, as shown in the drawings, and which fit corresponding notches in the cover-plate D. This serves to lock the two plates securely together and to utilize the strength of the cover-plate D, as well as of the plate A, in resisting the strain of the rider's weight. The cover-plate D is secured to the plate A by screws *d*. The rear end of the case is provided with a slot opening to the rear and adapted to receive the two slides E and E′, and the edges of this slot and of the slides are grooved, so that the slides cannot be moved sidewise, the slides furnishing a support for the axle H of the rear wheel. The slide E has a bolt *e* projecting from the rear end thereof and passing through a hole in a yoke F, which latter bears upon the rear end of the gear-case A. This yoke is held in position upon the case by means of slots in the ends of the yoke, which embrace the pins *f* upon the case. The bolt *e* is provided with a nut *e′*, by which the adjustment may be made as desired. The front end of each of these slides E and E′ is provided with a flange E^2, which projects over the outer surface of the case, being in close contact therewith. As the slides are drawn to the rear the

flange continues to cover the opening of the slot in the case. This prevents any opening through which dust may enter the interior of the case. The rear end of the cover-plate D is flanged over, as shown at D^2, so as to embrace the rear open end of the casing. This flange is sufficiently large to entirely embrace the rear sprocket-wheel G. It bears against the rear ends of the main plate A of the casing. It will be readily seen that a casing of this form may be used where gear-wheels are used to transmit the power instead of a sprocket-chain. In such a case the central portion of the casing would not be cut out, as shown in the drawings, but would be left solid.

The material of which this case is formed need not be very heavy to furnish all the strength necessary as a part of the bicycle-frame. In consequence the weight added to the machine thereby would be very small. The advantages due to decrease in friction by reason of the perfect lubrication which may be given to the chain and wheels will be considerable.

In the form shown in the drawings this gear-case will be pleasing in outline and present a handsome appearance. We do not wish to be limited to the exact form of constructing this gear-case shown in the drawings. The manner of attaching the different parts thereof to each other and to the frame may be indefinitely varied.

To prevent rattling of the chain against the sides of the casing, the same may be lined with leather, felt, or any suitable fabric, as indicated at N in Fig. 3. This will also serve as an oil-retainer to insure constant lubrication without having any drip. The body of this lining will act as a reservoir to hold enough oil to insure efficient lubrication for a lengthy period.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a bicycle, the combination of a frame-brace hollowed to form a gear-case and having a slot in its rear end, a slide engaging the edges of said slot and supporting the wheel-axle, said slide having forward end flanges embracing the sides of the chain-case, and means for adjusting the slide in said slot, substantially as shown and described.

2. In a bicycle or like machine, a frame having a longitudinal slideway, a slide carrying the rear-wheel axle and mounted to move in said slideway, a yoke arranged in the rear of said slide and bearing against the end of the frame, and an adjusting device connecting the slide to the yoke, substantially as described.

3. In a bicycle or the like, the combination of the gear-case forming a brace for the frame and provided with a longitudinal slot extending through to its rear end, a slide carrying the rear-wheel axle and mounted to move in said slideway, a yoke separate from the frame and arranged in the rear of the slide, with its members bearing against the frame at each side of said slot, and an adjusting device connecting the slide to the yoke, substantially as described.

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