(No Model.)

H. J. BUELL.

GEAR CASE FOR BICYCLES.

No. 588,394. Patented Aug. 17, 1897.

Fig. 1.

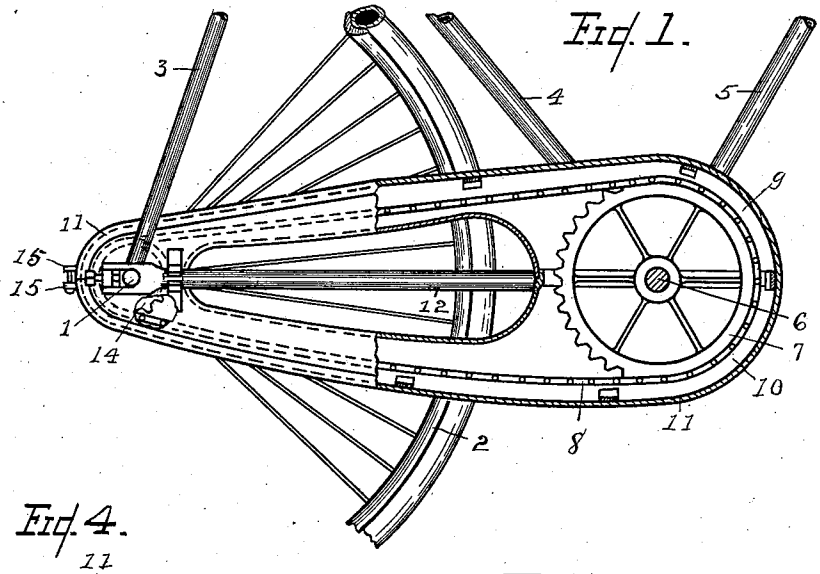


Fig. 4.

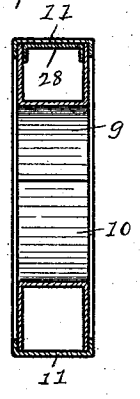


Fig. 2.

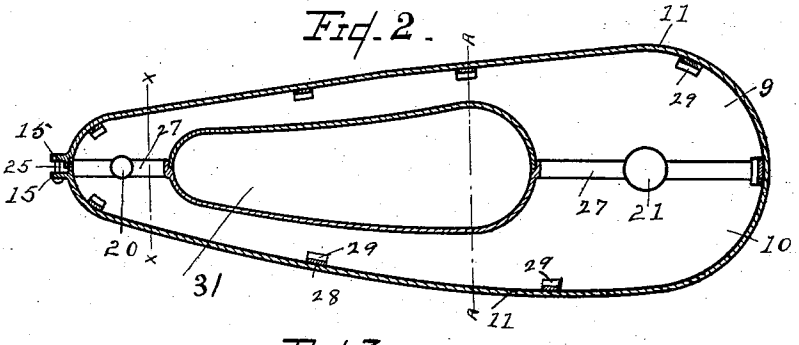


Fig. 3.

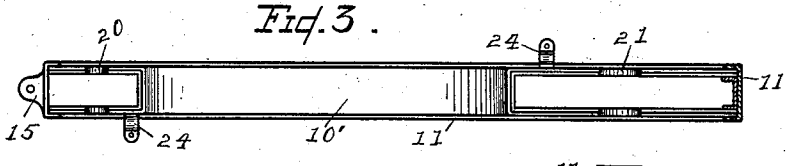


Fig. 5.

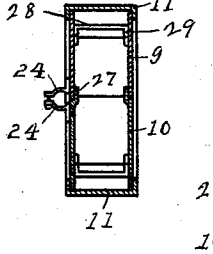


Fig. 7.

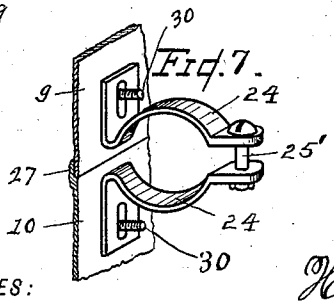


Fig. 8.

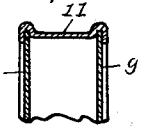
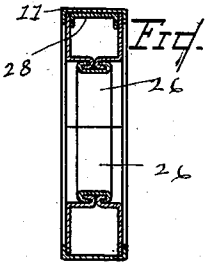


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY J. BUELL, OF FORT WAYNE, INDIANA, ASSIGNOR TO LOUIS A. CENTLIVRE, OF SAME PLACE.

GEAR-CASE FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 588,394, dated August 17, 1897.

Application filed April 7, 1897. Serial No. 631,084. (No model.)

To all whom it may concern:

Be it known that I, HARRY J. BUELL, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Gear-Cases for Cycles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in dust-proof cases or shields for the chain driving-gear of bicycles or other cycles.

It is well known that the driving-gear of bicycles and other cycles is so located relative to the supporting-wheels as to collect and retain dust and mud when in use unless securely inclosed, thereby unavoidably impairing the efficiency, security, and ease of operation of the vehicle by increasing the friction of the driving-gear and subjecting it to increased wear.

The object, therefore, of my invention is to provide a two-part detachable case or shield for the driving-gear of cycles of simple and economical construction, having a clamping-closer upon its perimeter adapted to rigidly and securely bind the case-sections together, the said case or shield being conveniently removed or replaced in position.

My invention comprises a light, neat, and substantial two-part gear-case of sheet-aluminium or other suitable material, having a peripheral dust-proof closer adapted to bind the separable sections together, the said case having an extended longitudinal opening in the center thereof for the twofold purpose of lessening the weight thereof and to admit the horizontal brace-rod between the supporting-wheels.

Similar reference-numerals of the drawings indicate similar parts throughout the several views.

Figure 1 is a side view of my improvement, partly in section, in position for use, showing the relative arrangement of the inclosed driving-gear. Fig. 2 is a detail of the same in longitudinal central section, showing the arrangement of the interlocking edges and of the transverse stays or braces for the outer edges thereof. Fig. 3 is a detail plan view of the lower case-section, showing the relative arrangement of the means for securing it to the vehicle-frame. Fig. 4 is a transverse section on the line A A of Fig. 2, showing the overlapping flanges of the peripheral closer and also the inner transverse bridges or braces fixed thereon. Fig. 5 is a transverse section on the line *x x* of Fig. 2. Fig. 6 is a cross-section of a modified form of my invention. Fig. 7 is a detail of the means for securing my improvement in position. Fig. 8 is a detail of a modified form of the closer in cross-section.

My improved gear-case is preferably stamped or pressed from sheet-aluminium of sufficient thickness to give the case firmness and durability and at the same time preserve the greatest degree of lightness possible and is formed of two approximately equal parts or sections 9 and 10, substantially identical in construction and outline, the lower section 10 preferably having its lower side slightly convex to permit a limited amount of slack in the driving-chain 8 without liability of friction or rattling contact therewith.

My improved case is bisected by a longitudinal line substantially midway of the upper and lower sides thereof, each section being adapted to be pressed or stamped from a single sheet of aluminium. Their parallel sides are so arranged as to provide a space of sufficient width to contain with proper clearance the cycle driving-gear, comprising the sprocket-wheel 7 on the crank-shaft 6, the small sprocket-wheel 14 on the rear axle 1, and the driving-chain 8, connecting said sprocket-wheels, Fig. 1. The said parallel sides of each case-section are united upon their inner edges by an integral transverse portion 10′, Figs. 2, 3, and 4. A modified construction is shown in Fig. 6, in which the said portion 10′ is in two equal parts by a longitudinal severance, but firmly secured together by an interlocking sheet-metal strip 26, which is then pressed or rolled into a compact form.

The meeting edges of the case-sections are

adapted for an interlocking union by means of an inner flange 27, which may be upon either the upper or the lower case-section.

When the case-sections 9 and 10 are united, with their meeting edges thus interlocked, they are rigidly secured together by the peripheral closer 11, formed of a single piece of aluminium or other sheet metal.

The closer 11 is adapted to form an interlocking union with the free outer and parallel edges of said case-sections and has its ends rigidly connected by a proper holding-screw 25, Figs. 1 and 2.

The closer 11 may be variously constructed without departing from the scope of my invention. As shown in Figs. 4 and 5, the said closer is provided with opposite lateral flanges adapted to fit over and tightly embrace the said outer free edges of said sections and may be provided upon its inner face with a series of transverse braces 28, having upon their opposite ends upright flanges 29. The braces 28 are rigidly fixed to said closer by rivets or otherwise, Fig. 5, and serve to securely brace the outer edges of the case against inward lateral pressure. The case-sections thus united and surmounted by said interlocking peripheral closer form a strong, firm, and dust-proof case. Instead of employing the said braces I prefer to construct the said closer as shown in Fig. 8. In this modified form the closer is provided upon its inner face and immediately adjacent to the said lateral flanges with channels or grooves adapted to snugly receive and contain the said free edges of said case-sections. This is the preferred construction. The meeting ends of the said closer are each provided with a rearwardly-projecting lug 15, having a vertical screw-threaded perforation therein adapted to receive a screw or bolt 25, by means of which the said closer can be properly adjusted and securely tightened in its interlocking engagement with the outer edges of said case-sections. The said case-sections at the junction of their meeting edges are provided with suitable lateral openings 20 and 21, the former for the axle 1 of the rear wheel 2 and the latter for the hub or journal of the crank-shaft 6. When the said gear-case is placed in position, the tubular brace-rod 12 will pass diagonally through the opening 31 in the said closer 11, the rear end of said case being arranged between the rear wheel 2 and the seat-supporting rod 3 and the outer end thereof being arranged between the frame-sections 4 and 5 and the pedal-crank. The said gear-case thus arranged is rigidly secured to the said rod 12, near the extremities thereof, by the two-part clips 24, identical in construction, or other proper manner. The said clips, Fig. 7, have their base vertically slotted to receive the screws 30, fixed in the sides of said sections, as shown, whereby the clamp-sections have a limited vertical adjustment to tightly fit and embrace the said rod 12. They are then rigidly secured in position on said screws by proper holding-nuts, (not shown,) and they are firmly clamped together on said rod by the screw 25'.

Referring now to the preferred form of construction, the manner of placing my improvement in position for use and of detaching the same is briefly stated as follows: The operator places the case-sections over the said sprocket-wheels and driving-chain with their meeting edges interlocked, as described, and with the rod 12 passing diagonally through the opening 31 in said case. The closer 11 is then sprung into position upon the free outer edges of said sections and is firmly drawn together and rigidly secured by the screw 25. The two-part case is then rigidly fixed to the rod 12 by the said clips, as described. The driving-gear will thus be securely inclosed in a dust-proof case.

It is obvious that to remove the gear-case it is only necessary to remove the screw 25, the peripheral closer 11, and the screws 25', when the two sections can readily be detached.

It is also obvious that access to the driving-gear for oiling or other purposes may be secured by simply removing the said closer without detaching the interlocking case-sections from their position on said rod 12.

I do not hereby limit myself to the precise construction shown, as my improvement may be variously modified in details without departing from the spirit of my invention, which consists in providing a two-part dust-proof gear-case whose interlocking sections are closed and rigidly clamped together by a peripheral closer.

Having thus described my invention and the manner of employing the same, what I desire to secure by Letters Patent is—

1. A dust-proof gear-case for cycles comprising two separable interlocking sections, each section formed of a single piece of sheet metal as shown; an interlocking peripheral closer formed of a single piece of sheet metal folded upon itself, and adapted to form an interlocking union with the outer edges of said sections and to firmly clamp said sections together, as described; and means for detachably securing said case-sections to the cycle-frame.

2. In a dust-proof gear-case for cycles the combination of the separable interlocking sections 9 and 10, constructed as described; a peripheral closer 11 folded upon itself, adapted to close the outer and open faces of the said case-sections by an interlocking engagement with the sides thereof, and to rigidly clamp the said sections together, substantially as described.

Signed by me, at Fort Wayne, State of Indiana, this 3d day of April, A. D. 1897.

HARRY J. BUELL.

Witnesses:
JOHN D. RENICK,
BESSIE L. WILSON.