

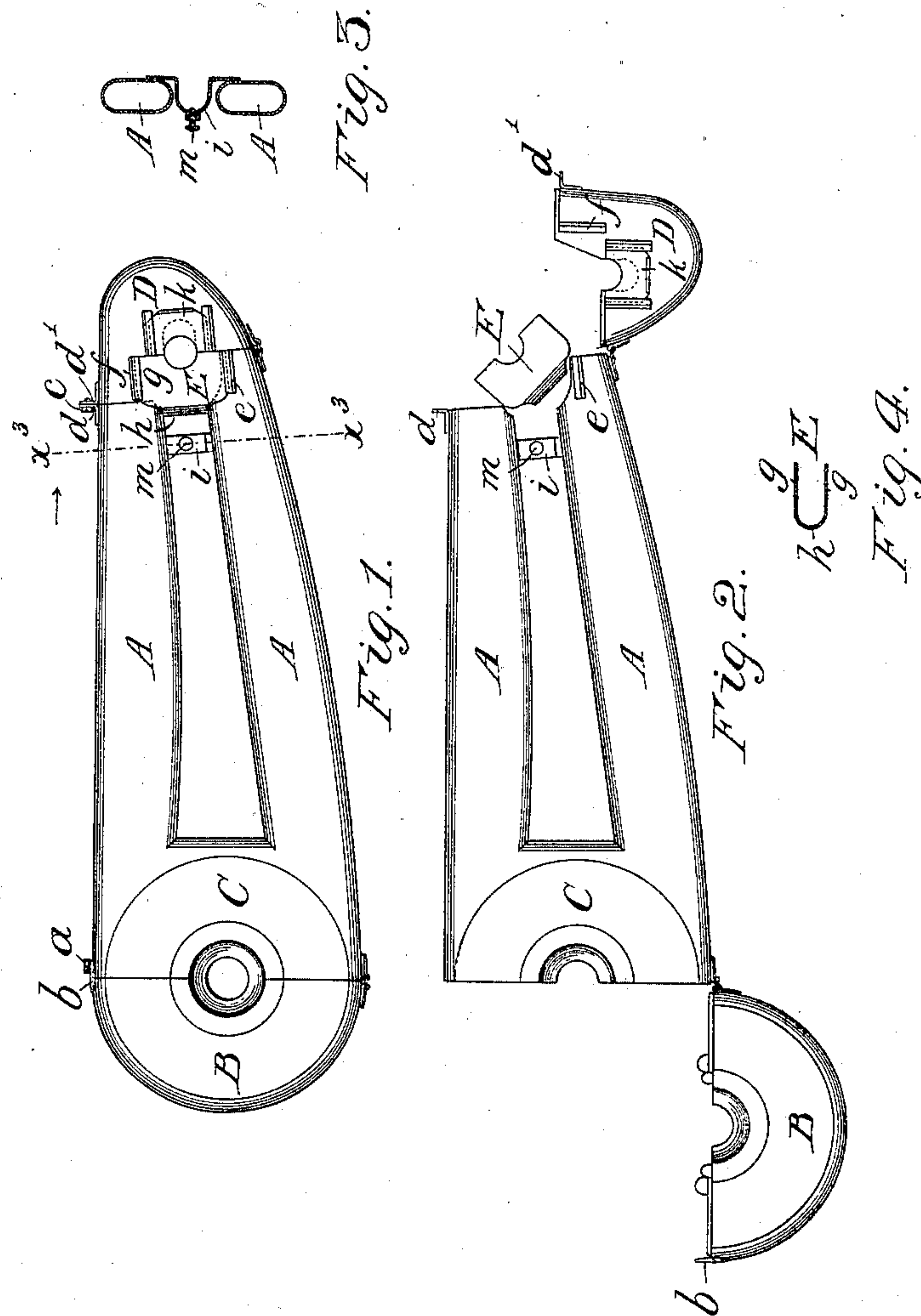
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W. H. & B. H. JONES.
GEAR CASE FOR CYCLES.

(Application filed Dec. 29, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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GEAR-CASE FOR CYCLES.

SPECIFICATION forming part of Letters Patent No. 613,152, dated October 25, 1898.

Application filed December 29, 1897. Serial No. 664,415. (No model.) Patented in England September 10, 1896, No. 19,990.

To all whom it may concern:

Be it known that we, WILLIAM HALL JONES and BENJAMIN HIGHFIELD JONES, subjects of the Queen of Great Britain, residing at Wolverhampton, in the county of Stafford, England, have invented certain new and useful Improvements in Gear-Cases for Cycles, (for which a patent has been granted in Great Britain, No. 19,990, dated September 10, 1896,) of which the following is a specification.

This invention relates to that class of gear-cases for cycles in which the main lengths of the portions of the driving-chain extending between the sprocket-wheels pass, respectively, through upper and lower tubes which join together the portions of the case which inclose the sprocket-wheels; and the special object of the invention is improved means for enabling the case to be put in place upon the cycle, with the backstay passing through the opening which is bounded by the upper and lower tubes and the two ends of the case, and to be readily removed therefrom.

A gear-case constructed according to this invention is illustrated in the accompanying drawings, wherein—

Figure 1 is an elevation of the outer side of the case, showing the same closed up as when in position upon a cycle. Fig. 2 is a similar view, but showing the ends of the case open to enable it to be placed in position upon or removed from a cycle and representing the U-piece, hereinafter described, as in the position it assumes when being removed from the case or replaced therein. Fig. 3 is a transverse section in the plane of the line x^3 of Fig. 1, looking toward the forward end of the case, the portions beyond the plane being omitted to avoid confusion. Fig. 4 is a sectional plan taken through the middle of the U-piece, hereinafter described.

A A are tubular members through which the upper and lower lengths of the driving-chain pass. They extend between and connect the members of the case, which respectively inclose and surround the sprocket-wheels. The outer section B of the part of the case which surrounds the driving sprocket-wheel is divided from the other section thereof, preferably at or about the vertical line passing through the center of the opening through

which the driving-axle passes, and such other section C is integral with or fixed to the tubular members A of the case. The section B is hinged at its lower edge to the lower edge of the section C, so that it may be opened out therefrom, as shown in Fig. 2, or may be closed up thereagainst, as shown in Fig. 1, and when closed up it is secured in place by a screw *a*, which is passed for the purpose through a projecting tongue *b* of the section B and is screwed into a nut soldered on the inside of the section C. The hinder end D of the case is divided from the tubular members A, and preferably in the manner shown—that is to say, in a manner which leaves the lower tubular member considerably longer than the upper—this arrangement being permissible in consequence of the lower tubular member not having to be passed across the front edge of the upper backstay as the case is removed from or placed upon the cycle. The member D is hinged at its lower edge to the lower edge of the hinder end of the lower tubular member, so that it may be opened out, as shown in Fig. 2, or closed up, as shown in Fig. 1. When the member D is closed up, it may be held in such position by means of a screw *c*, which passes through the upward portion of an angle-piece *d*, fixed to the upper tubular member A, and is screwed into the upward portion of a corresponding angle-piece *d'*, fixed to the upper forward edge of the member D. A longitudinal guide *e* is fixed at each side of the exterior of the lower tubular member A, and a corresponding guide *f* is fixed to each outside face of the member D, and when the member D is closed up, as shown in Fig. 1, the guides *f* are parallel with the guides *e*. A U-piece E, which when the case is properly closed up in position covers in a portion of the forward side of the driven sprocket-wheel, is formed with its two sides *g* of a depth which adapts them to be engaged with the guides *e f* when the hinder end of the case is closed up, as shown in Fig. 1, and with its yoke *h* shaped to fit neatly between the upper and lower tubular members A, thus completely closing in the forward end of the space which is bounded by the two tubular members A and the two sides *g* of the U-

piece. When the hinder member D of the case is closed up, the guides *f* are engaged with the upper edges of the sides *g* of the U-piece. The hinder edges of the U-piece are
 5 formed with semicircular notches to fit around the forward side of the hind axle and hub, respectively.

When the case is to be removed from a cycle, the ends B and D are opened out, as seen
 10 in Fig. 2. The driving-chain is then disconnected and the hind axle drawn back, so as to allow of the removal of the U-piece E. The U-piece is then moved into the position shown in Fig. 2, and may thus be readily
 15 moved clear of the driven sprocket-wheel and removed from the case. The hinder portion of the case may then be moved out side-wise clear of the cycle, and the forward portion of the case may then be drawn away from
 20 the driving sprocket-wheel, thus clearing the entire case from the cycle.

The hinder part of the case is conveniently fixed to the stay by means of a yoke *i*, which is fixed to the tubular members A of the case
 25 and passes around the outside of the stay. A set-screw *m* is screwed through the crown of the yoke, and its inner end bears against the stay and thus draws the outer face of the hinder end of the case against the framing
 30 of the cycle and holds it firmly thereagainst.

The section B and member D are displaceable, and it is not essential to this invention how this is effected. One way of effecting it is by hinging them, as herein shown.

35 Plates *k* of the ordinary character for the purpose may be carried in guides at the opposite sides of the member D of the case to fit up around the rear side of the hind axle and hub, respectively.

40 It will be noted that the gear-case herein described opens only at its ends and must be moved sidewise to the left in order to free it from the driving sprocket-wheel.

By the term "housing" as herein used with
 45 reference to the members or parts B, D, and E is meant inclosing at both inner and outer faces.

Having thus described our invention, we claim—

50 1. A gear-case for a cycle comprising two tubular members connected at their front ends by a housing for the rear part of the driving sprocket-wheel, which housing is closed at its front end by a displaceable section for
 55 housing the front portion of the said sprocket-wheel, and closed at their rear ends by dis-

placeable parts which house substantially the whole of the driven sprocket-wheel, said displaceable parts comprising a member, D, which houses the upper, lower and rear portions of said wheel, and a piece or member, E, which houses the front portion of said wheel, whereby, when these parts are displaced the gear-case may be moved laterally at its rear end for disengaging it from the
 60 driven sprocket-wheel. 65

2. A gear-case for a cycle, comprising two tubular members for the chain connected together at their front ends, a displaceable member D, which houses the upper, lower
 70 and rear portions of the driven sprocket-wheel, and a U-shaped housing E, between the said tubular members and housing the front portion of the driven sprocket-wheel, whereby when the members D and E are displaced the whole of the driven sprocket-wheel is exposed, for the purpose specified. 75

3. In a gear-case for a cycle, the combination with the two tubular members for housing the chain, connected together at their
 80 front ends, of a displaceable rear member D, which closes the rear ends of the said tubular members and houses the upper, lower and rear parts of the driven sprocket-wheel, and the displaceable piece E, having a U
 85 shape and a form to fit about said tubular members and overlap the member D, said piece or member E housing the front portion of the driven sprocket-wheel, substantially as set forth. 90

4. In a gear-case for a cycle, the combination with the two tubular members A, connected by the half-housing C for the driving sprocket-wheel, the displaceable section B, which houses the front half of the said
 95 sprocket-wheel, the displaceable member D, which closes the rear ends of the tubular members A and incloses the upper, lower and rear portions of the driven sprocket-wheel, and the displaceable U-shaped member E, which houses the front portion of the driven sprocket-wheel, substantially as and for the purposes set forth. 100

In witness whereof we have hereunto signed our names in the presence of two subscribing
 105 witnesses.

WILLIAM HALL JONES.

BENJAMIN HIGHFIELD JONES.

Witnesses:

STEPHEN WATKINS,
 ROBERT M. LISTER.