

UNITED STATES PATENT OFFICE.

FREDERICK H. LINCOLN, OF PHILADELPHIA, PENNSYLVANIA.

GEAR-CASING.

No. 808,995.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK H. LINCOLN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gear-Casings, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to gear-casings, and has for its object the production of a casing which will effectually protect the inclosed gears from dust and flying particles, will permit of perfect lubrication, will be easy to secure in position about the gears, and, finally, will be efficient and durable under rough usage. Such a casing is well adapted for use on the gearing of electric motors such as those employed on electrically-driven vehicles; but I do not limit myself to such application.

Briefly stated, my invention comprises a resilient steel shield covering one or both edges of the gears and supported upon rigid side pieces, with side panels formed of canvas or the like, which may be treated so that it will be oil-proof and which is riveted to the rigid side pieces and also to the spring-frame. Where the gears are to be completely incased, I duplicate the foregoing construction, making the entire casing in two halves, with flanges and bolts to secure them together.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a casing embodying the invention. Fig. 2 is a section on the line *xx* thereof. Fig. 3 is an end view. Fig. 4 is a side view of a modification, and Fig. 5 is a section thereof.

Referring to the drawings, A is a resilient band or frame-piece, preferably of spring-steel, formed up approximately in the shape of the outline of the gears to be protected and secured at its ends to the transverse members *b b'* of the side frame B. This frame is rigid, preferably of cast-iron, formed with two semicircular members *b² b³*, intended to receive the shafts of the gears. The end members *b b'* of the rigid frame are provided with lugs or ears *b⁸* and *b⁹*, respectively, to receive the bolts *b¹⁰ b¹¹*.

The sides of the casing C are formed of flexible material, and that which I find the best adapted to this purpose in practice is canvas which has been treated in such manner as to

render it impervious to oil. I form side panels of this material and rivet them upon the plates all around. In order to secure a tight joint between the canvas and the steel shield A, I turn over the edge *c* of the canvas C, as shown at *b⁷* in Figs. 1 and 2, and secure it upon the steel plate by rivets *b⁵*, which preferably pass through both the canvas and a clamping-strip *b⁶*, placed on the inside thereof. The edge *c'* of the canvas C is not turned under, but may be similarly confined by a clamping-strip *b⁷⁰*, as indicated in Fig. 2. The rivets may of course be placed rather closely together and each headed up over a metal washer, or the rivet-heads themselves may be made very broad in order to obviate the necessity for the clamping-strip.

In Figs. 4 and 5 I show the edges of the canvas turned outwardly instead of inwardly for riveting to the steel shield. In some cases such construction is desirable, and in any case it is desirable to have the riveting on the flat of the band A, because if this is flanged it has a tendency to destroy its resilience.

The combination thus set forth I find in practice to be more efficient, simpler to manufacture, and more durable than any other of which I am aware. The parts exposed to wear or to hard usage and the parts which perform the important function of shielding the gears are of steel, as they should be. The side panels are of impervious flexible material, which performs the triple function of retaining the shields in shape, covering in the inclosed space from dust and moisture, and retaining the lubricating-oil within the casing.

It will be understood that the foregoing description relates to one half of the casing only, but as the two halves are duplicates the same description applies to both. The bolts *b¹⁰* and *b¹¹* passing through the lugs or ears *b⁸* and *b⁹* secure the upper and lower portions of the casing together.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

A gear-casing comprising upper and lower integral side frames having semicircular registering portions, upper and lower exposed curved spring-metal bands connected at their ends to the ends of said side frames and forming the top and bottom of the casing, means for connecting the side frames so that the

semicircular portions form circular apertures
for the shafts, flexible side panels, each hav-
ing its outer edge secured to and within the
edge of the corresponding resilient band and
5 its inner edge secured upon its side frame, and
rivets securing the panels to the spring-metal
bands.

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

FREDERICK H. LINCOLN.

Witnesses:

RUSSELL E. BAUM,
PETER J. BARKER.