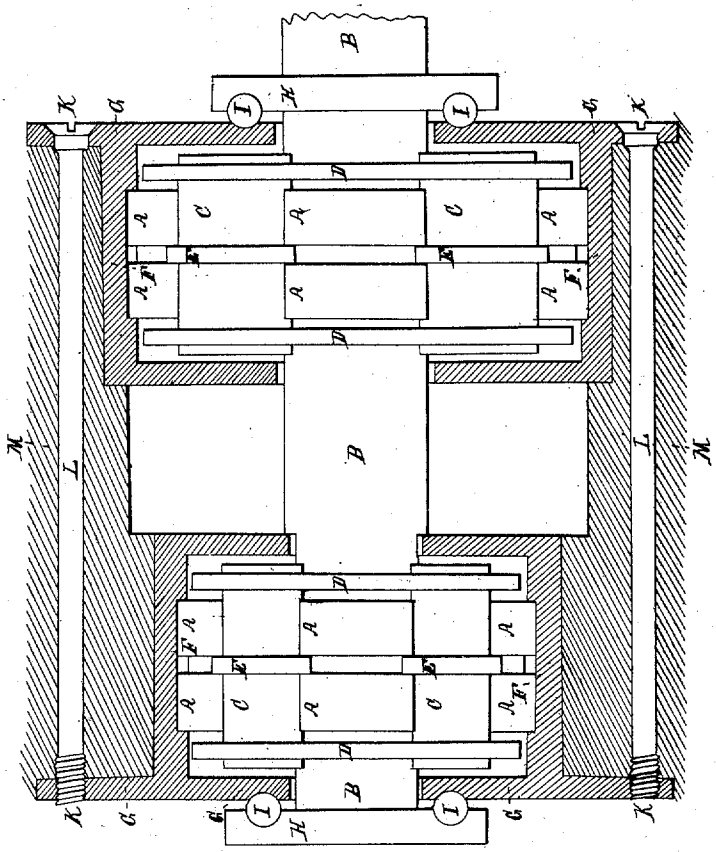
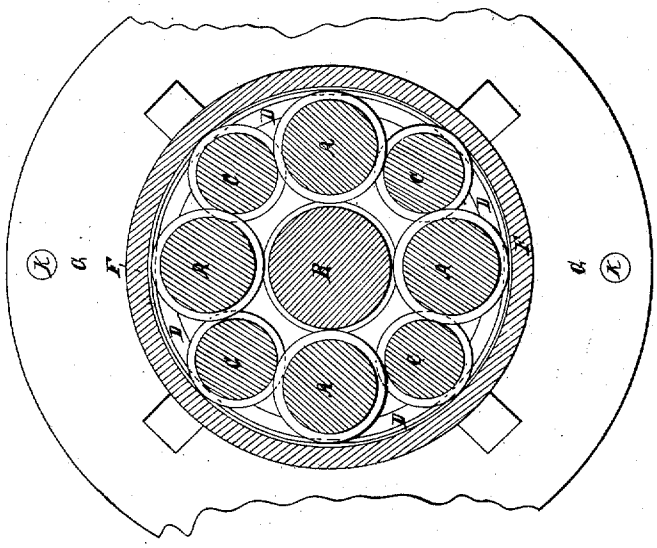
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E. FISK & J. C. GREEN.

ANTIFRICTION BOX FOR HUBS AND ROTARY BEARINGS OF MACHINERY.

Patented Nov. 14, 1835.





THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Nov. 14, 1835

Nov. 14, 1835 91.

Ezra Fisk and Joseph C. Green

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The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Ezra Fisk and Joseph C. Green themselves of their improvement in the Anti-friction box for Hubs and Rotary bearings of Machinery.

To all to whom these presents shall come

Be it known that we Ezra Fisk and Joseph C. Green both of Fayette in the County of Kennebec and State of Maine have invented a new and useful Anti-friction box to be applied and used in the hubs of Carriage Wheels, and in the Rotary bearings of Machinery and that the following is a full and exact description of the construction and operation of said box as invented by us

The combination of friction rollers as we exhibit in number constitute the bases of this box. the size of the rollers may be various according to their application and use. There are four primary rollers of equal diameters which are placed in the four quarter sections of a circle leaving a central space between them sufficient to accommodate the size of the axle or shaft which is designed to work in the box. There are also four secondary rollers of equal diameters the diameters varying so as to adapt them to the size of the primary rollers. These occupy the spaces between the primary rollers, and their horizontal thickness must exceed that of the primary sufficient to receive a Metallic ring or collar on each side of the primary rollers. The secondary rollers and collars are connected by making grooves on the periphery of the rollers corresponding to the horizontal thickness of the collars. To prevent the collars from coming in contact with the sides of the primary rollers, the space between the grooves on the secondary rollers must exceed the horizontal thickness of the primary, about one eighth of an inch, and to prevent any

any horizontal movement of the secondary rollers. suitable tongues are made on their peripheries at the centre of their horizontal thickness, fitted to work in corresponding grooves in the periphery of the primary rollers. This combination of rollers is enclosed by a metallic hoop of sufficient strength having regard to the pressure or load to be sustained. On each side of the combination of rollers is a circular piece of plate of some suitable kind of metal exactly fitted to the inside of the enclosing hoop and confined to their places by any suitable kind of fastening. Thro' these plates at the centre, are round perforations the diameter of which must exceed that of the axle or shaft about one fourth of an inch, in the inner surface of the enclosing hoop is a groove one eighth of an inch deep the width corresponding to the horizontal thickness of the primary rollers, the edges of which work in the groove. When a shaft is inserted in the box the primary rollers have a peripheral bearing both on the axle and the enclosing hoop. The secondary rollers have also a peripheral bearing both on the curvature of the collars and the periphery of the primary rollers. The space between the plates and the rollers should be one eighth of an inch on each side. All the component parts of the box should be made of some suitable kind of metal having regard to the degree of strength and allowance required. When the size of the axle and the enclosing hoop are determined the diameter of the primary rollers must be such as precisely fill the space between the axle and the enclosing hoop. The secondary rollers must not be so large as to bring their collars in contact with the enclosing hoop. The foregoing is a general description both of the exterior and interior structure of the box. We have stated no specific materials to be employed in its construction

tion for they may be various according as fancy or judgment shall dictate. and no claim is given to specific dimensions of the component parts of the box for they must necessarily be various according to the application and use of the box.

The above specified mode of combining the rollers is such that in their application and use all the bearings are spherical consequently the operation of all the parts is entirely on the roller principles. To relieve friction on the shoulder of the axle, at the inward end of the hub a metallic collar is fitted on the axle with a groove in that side of it which comes in contact with the collar. by placing in the groove a ball of some suitable kind of hard metal, the collar and ball is fitted on the axle tree at the outward end of the hub. these collars with the balls are not considered as a necessary appendage of the box, the box may be used with or without them at pleasure.

may the hub and the end of the hub is prevented from coming

In the application of the above specified antifriction box to the wheels of a single horse ——————— waggon or chaise the following dimensions are considered convenient. The enclosing loop may be made of cast iron or any suitable composition of metals five inches diameter inside and of suitable thickness say half an inch, and about four inches in width. The plate or side of the box which comes next to the hub should be cast with the loop

The extension of the hoop on the hub may be one inch and its thickness at its termination on the hub may be reduced to one fourth of an inch. Countersunk perforations half an inch diameter are made through the plate at the four quarter sections of a circle about half an inch from the inside of the hoop and corresponding perforations are made through the length of the hub

The box is confined to each end of the hub by screw pins

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iron bolts thro' the perforations in the plates and bush with heads on one end of the bolts. counter sunk in the plate of the inside box and a screw on the other ends of the bolts. fitted to screw into the perforations made in the plate of the outside box. The diameter of the box attached to the outward end of the bush may be about three fourths of an inch less than the box on the inward end of the bush. To render the connexion between the box and bush more permanent. three are on the side of the plates which come in contact with the ends of the bush and in the intervening spaces between the above described perforations, projections one inch in length and half an inch rise the projection being fitted into corresponding excavations made in the ends of the bush on lines drawn from the circumference towards the centre. The diameter of the axle for a bush, of above stated dimensions may be one inch and three fourths.— the diameter of the primary pillion will then be about one inch and five eighths, and the diameter of the secondary pillion about and an inch and one eighth. The collars which enclose the secondary pillion may be one fourth of an inch thro' each way. The box on the outward end of the bush being three fourths of an inch (or more at pleasure) less than the box on the inward end of the bush, the outward end of the axle will be proportionably smaller — than at the shoulder.

The collar which forms the shoulder of the axle of the bush and encases a friction ball, may project about one inch from the surface of the axle and the ball may be half an inch diameter, the collar and ball at the other end of the bush must be proportionably smaller. To prepare the above described box to be used as a bearing for any rotary shaft it is only necessary to make such additions to the enclosing box as will answer the purpose for fastening according to the

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ring and raising the collars on the staple or shaft together with the balls

Witnesses

Humphrey Hughes — Ezra Smith

Charles Green — Joseph C Green

2 sh. 6 d.
1 Jan 1857

(1826 words)

(Drawing)

(2)