No. 630,463. Patented Aug. 8, 1899.

M. MATTHEWS.

PEDAL AND PEDAL BEARING.

(Application filed Feb. 17, 1898.)

(No Model.)



Fig. 8.

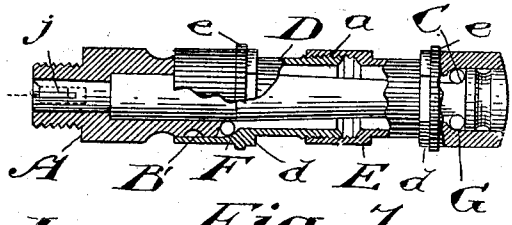


Fig. 7.

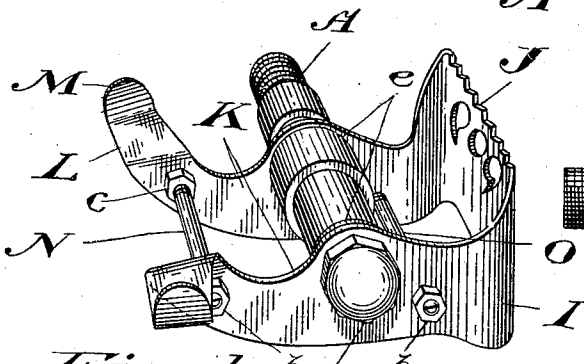


Fig. 1.

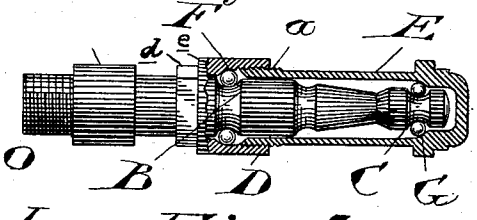


Fig. 3.

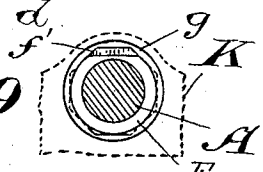


Fig. 9

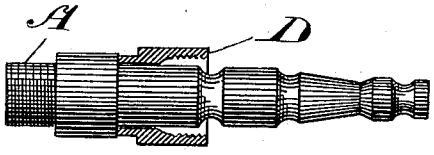


Fig. 4.

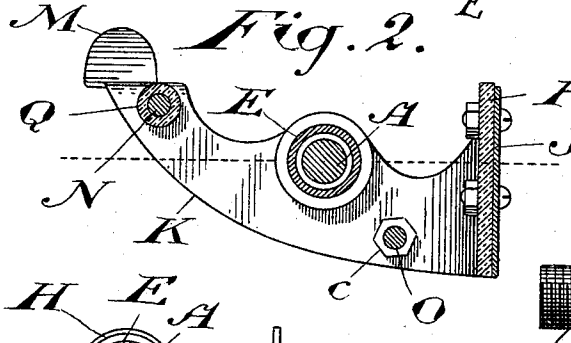


Fig. 2.

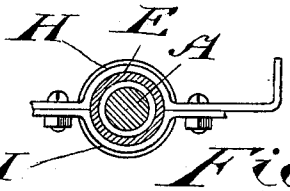


Fig. 5.

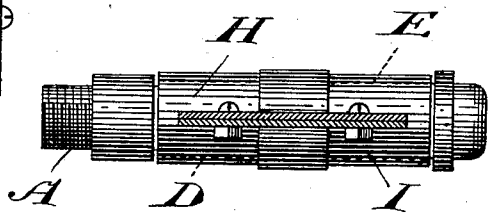


Fig. 6.

Witnesses

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

UNITED STATES PATENT OFFICE.

MARMADUKE MATTHEWS, OF BRACONDALE, CANADA, ASSIGNOR OF ONE-HALF TO ALEXANDER JARDINE AND AGNES JARDINE, OF SAME PLACE.

PEDAL AND PEDAL-BEARING.

SPECIFICATION forming part of Letters Patent No. 630,463, dated August 8, 1899.

Application filed February 17, 1898. Serial No. 670,652. (No model.)

To all whom it may concern:

Be it known that I, MARMADUKE MATTHEWS, of the village of Bracondale, in the county of York and Province of Ontario, Canada, have invented a certain new and Improved Pedal and Pedal-Bearing, of which the following is a specification.

My invention relates to certain improvements in a pedal described in my application, Serial No. 602,882, filed August 12, 1896, and has for its object to make the pedal stronger, neater, and adjustable in width and to provide it with a simple and efficient bearing and a secure lock for the bearing adjustment.

With this object in view my invention consists of a pedal-spindle and a casing formed in two parts screwed together, so that the ball-bearings between the casing and spindle may be adjusted by adjusting the casing, which may be held as moved by the pedal-plate. The pedal is formed of a metal plate bent to form a rearward flange, two sides and forward flanges or gripping-pieces, which form a toe-clip. The sides of the pedal are held together and are shaped to engage the casing, substantially as hereinafter more specifically described and then definitely claimed.

Figure 1 is a perspective view of my improved pedal and bearing. Fig. 2 is a cross-section of the same provided with rubber treads. Fig. 3 is a longitudinal section of the bearing. Fig. 4 is an elevation of the spindle, showing the inner half of the casing slid back to enable the balls to be put in position. Fig. 5 is a cross-section with the plate-pedal, as shown in the application hereinbefore referred to, connected to it. Fig. 6 is a sectional front elevation of the same. Fig. 7 is a sectional elevation of a modified construction of the bearings. Fig. 8 is a perspective view of a modification of the end of a part of the casing. Fig. 9 is a perspective view of another modification of the same.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the pedal-spindle, which may be connected to the crank in any suitable manner. Upon this spindle are formed the cones B and C.

The casing of the bearing is formed in two parts D and E, which are screwed together centrally, as shown at *a*. Upon the parts of the casing are formed the cups F and G, which form, with the cones B and C, recesses for two sets of balls, as shown.

From the construction shown it is evident that by revolving one part of the casing with regard to the other the bearings may be accurately adjusted.

In order to lock the bearing, I may use any desired means. I prefer, however, to lock the parts with the aid of the pedal, as hereinafter described.

It will be observed on reference to Figs. 3 and 4 that the least diameter of the part D of the casing is made greater than the greatest diameter of either of the cones or the body of the spindle. Thus the part D of the casing may be slipped into position over the outer end of the spindle while the latter is still secured to the crank. It may also be slid backward, as shown in Fig. 4, so that the balls may be slipped into position upon the cone B. The inner diameter of the part E of the casing is of course greater than any portion of the body of the spindle, though the cone end may be of any shape or construction desired to complete the ball-race at that end of the bearing.

It will be observed that the construction and the proportion of parts I have adopted enable me to make a complete bearing in three pieces, which has not heretofore been accomplished.

In Figs. 1 and 2 the construction of the pedal is clearly shown. It consists of the plate I, bent to form a rearward flange or cross-bar J, two sides K, and outwardly-turned foot-rests L at the outer end of each side piece, and a flange or gripping-piece M at the outer side of each foot-rest. Immediately below the foot-rest L, I connect the two sides of the pedal by means of a cross-bar or bolt N, provided with a nut *b*, so that it will hold the sides of the pedal from spreading. Nuts or collars *c* are also preferably provided on the cross-bar on the inner side of the sides of the pedal, so as to hold the said sides from being pressed together. A similar cross-bar

O may be provided to the rear of the spindle A. It will be noted that the ends of the cross-bars are split, so that they may be caused to have a spring-pressure on the end nuts to hold them in position.

It will be seen that the ends of the parts D and E of the casing have polygonal portions *d* formed thereon. In the sides K of the pedal similarly-shaped holes are formed, which engage these polygonal portions, as shown in Fig. 1, and thus securely hold the parts of the casing from turning upon one another. At the same time a firm support is afforded the pedal. It will be noticed that behind each polygonal portion *d* is a shoulder *e*, against which the sides of the pedal are securely tightened by the cross-bars N and O. Instead of forming the polygonal portions *d* of an integral portion of the parts of the casing I may use a separate washer *f*. (See Fig. 8.) The end of the casing is in this case turned round, with a flat side at one portion of its periphery. The polygonal washer *f* has a similarly-shaped hole formed therein and is provided with a shoulder *g*, against which the sides of the pedal will press to retain it in position.

In Fig. 9, instead of using the complete washer *f* shown in Fig. 8 I use a key *f'*, and in this Fig. 9 the casing is shown round, but with a flattened side, and the frame K is shown with an octagonal hole in dotted lines, so that the casing touches each side of the octagonal opening except where the casing is flattened, and between this flattened portion of the casing and that one of the octagonal sides of said opening with which the flattened portion coincides the said key *f'* is inserted, and the two parts are thus held together. Of course it is easily seen that if the bearing has to be adjusted the key is taken out and the parts rotated with respect to each other and the key again inserted. This key *f'* is thus the equivalent of the washer shown in Fig. 8, although it merely engages with one side of the opening instead of all of them.

It should be observed that when I use the word "polygonal" I intend it to refer to regular serrations of any shape. It is also evident that the casing need not be made with completely polygonal portions. (See Fig. 9.) All that is essential is that the sides and casing be so shaped that they will engage with one another in a number of different positions to permit of and secure the adjustment of the casing.

In Fig. 2 it will be seen that the gripping-pieces M are farther from the spindle A than the rearward flange J, so that they will grip the sole of the foot toward the toe, and thus act as a toe-clip. In order to balance the pedal, it is so constructed that the greater portion of the metal therein is below the center of the spindle and at the same time the rearward flange is made deep to increase the weight of the metal to the rear of the spindle. From this construction and proportion of the parts the pedal when not engaged with the rider's foot lies with a forward and upward inclination ready to be engaged by the rider's foot. In this Fig. 2 it will further be noticed that I have provided the rearward flange J with a rubber tread P, securely bolted thereto. A piece of rubber tubing Q is placed upon the cross-bar N to serve a similar purpose. As the cross-bar thus serves for the foot to rest upon, the foot-rests L are not essential, though the gripping-pieces M are still necessary to retain the foot in position.

In Figs. 5 and 6 my bearing is shown as used in the pedal described in the application above referred to. As shown, the parts of the casing are clamped between the plates H and I, and thus held securely as adjusted.

In Fig. 7 I show the bearing as arranged to be tightened by unscrewing one part of the casing from the other, whereas in Fig. 3 the bearing is tightened by screwing one part of the casing upon the other. In this figure the cones B and C upon the spindle face inwardly instead of outwardly toward the ends and the cups F and G face outwardly. The polygonal portions *d* of the casing are shown so arranged that the sides of the pedal are placed upon them from the inside instead of from the outside, as shown in Figs. 1 and 3. This construction necessitates one of the cones being made removable. The cone B' is bored and counterbored to receive the shouldered end of the spindle A. The end of this spindle is split at *j* and expanded by means of a small screw *k*, so as to securely jam the cone and spindle together, the bore of the cone being slightly tightened at the end. It will be observed that the principle of operation in this construction is the same in that the adjustment is effected by screwing the parts of the divided casing upon one another, which parts are held as adjusted by means of the side pieces of the pedal.

When it is desired to adjust the bearing, the cross-bars holding the sides of the pedal together are loosened and one of the sides spring from engagement with its half of the casing, which may then be revolved to adjust the bearing, after which the pedal side and casing are again engaged in a new position and the cross-bars again secured.

What I claim as my invention is—

1. In a pedal, a plate bent to form a rearward flange, two sides for attachment to a casing, two outwardly-turned foot-rests at the forward ends of the sides, and a flange at the side of each foot-rest, substantially as and for the purpose specified.

2. In a pedal, a plate bent to form a rearward flange, two sides for attachment to a casing, two outwardly-turned foot-rests at the forward ends of the sides and a flange at the side of each foot-rest, in combination with a cross-bar extending from side to side of the pedal and provided with nuts whereby the

sides of the pedal may be adjusted closer together or farther apart, substantially as and for the purpose specified.

3. In a pedal, a plate bent to form a rearward flange, two sides for attachment to a casing, two outwardly-turned foot-rests at the forward ends of the sides, and a flange at the side of each foot-rest, in combination with a cross-bar adjustably secured to each side of the pedal near the front, and a cross-bar adjustably secured to each side of the pedal toward the rear whereby the said sides of the pedal may be spread for adjustment, substantially as and for the purpose specified.

4. In a pedal, a spindle, a casing formed in two parts screwed together, ball-bearings located between each part of the casing and the spindle, so that by screwing or unscrewing the said parts, the bearings may be adjusted, in combination with a pedal-frame adapted to engage the two parts of the casing to hold them from rotating, the said frame being constructed and arranged to spread apart and release said two parts, whereby the latter may be adjusted, substantially as and for the purpose specified.

5. In a pedal, a spindle, a casing formed in two parts screwed together, and ball-bearings located between each part of the casing and the spindle, so that by screwing or unscrewing the said parts, the bearings may be adjusted, in combination with a pedal having two sides so connected that they may be released and spread apart and provided with holes adapted to fit removably upon portions of the halves of the aforesaid casing, the parts being shaped to engage with one another in a number of different positions, and provided with means for preventing the said sides from rotating on the parts of said casing, substantially as and for the purpose specified.

6. In a pedal, a spindle; a casing formed in two parts screwed together, and each provided with a portion adapted to engage a suitably-shaped hole in the side of the pedal, and backed by a shoulder; and ball-bearings between each part of the casing and the spindle, in combination with a pedal comprising a rearward flange or cross-bar and two side pieces provided with holes adapted to engage the portions of the halves of the aforesaid casing in a number of different positions; and a removable or releasable cross-bar connecting the said sides, substantially as and for the purpose specified.

7. In a pedal, the combination of a spindle provided with two cones facing the ends of the spindle, a casing formed in two parts screwed together, each part being formed with a cup to complete with the said cones, races for two sets of balls, the inner or crank side of said casing being larger than and screwed on the outside of its companion part whereby the said spindle may be made larger and heavier at its inner end, and a pedal-frame locking said parts when adjusted, the said two-part casing and pedal-frame being constructed to positively engage with each other to form the locking parts, substantially as described.

Toronto, Canada, February 12, 1898.

MARMADUKE MATTHEWS.

In presence of—
J. EDW. MAYBEE,
A. J. COLBOURNE.