No. 895,449. PATENTED AUG. 11, 1908.

J. P. GILMOUR.

COAL MINING MACHINE.

APPLICATION FILED FEB. 7, 1908.

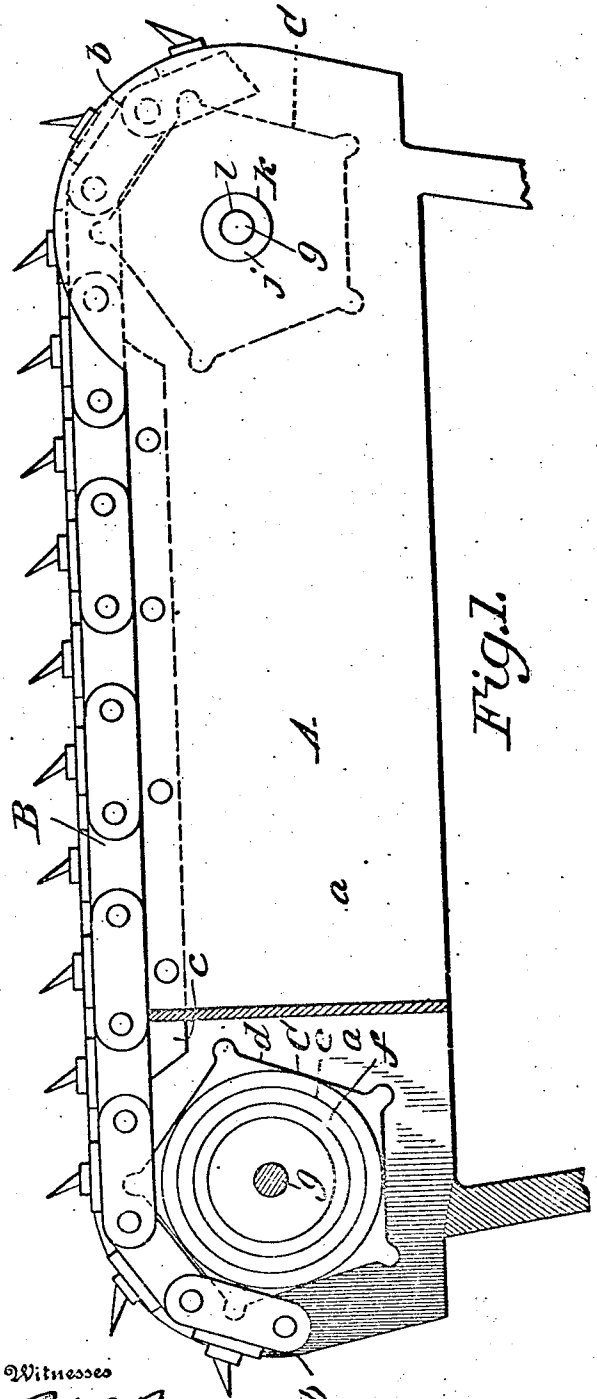


Fig. 1.

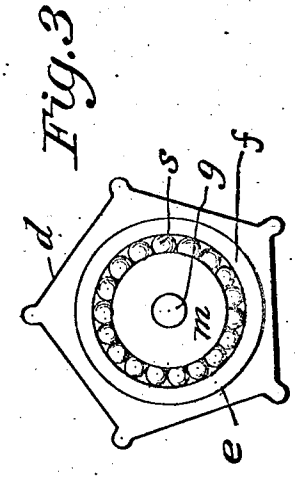


Fig. 3.

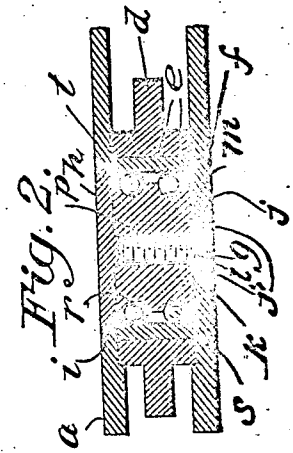


Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN P. GILMOUR, OF TERRE HAUTE, INDIANA.

COAL-MINING MACHINE.

No. 895,449. Specification of Letters Patent. Patented Aug. 11, 1908.

Application filed February 7, 1908. Serial No. 414,723.

To all whom it may concern:

Be it known that I, JOHN P. GILMOUR, citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Coal-Mining Machines, of which the following is a specification.

My invention pertains to coal mining machines and more particularly to the cutter-heads thereof; and it has for its object to provide a cutter-head embodying simple, practical and efficient anti-friction bearings for supporting a cutter chain incidental to the passage of the same over the ends of the head, this with a view of preventing undue wear of the parts and saving power in the operation of the machine.

With the foregoing in mind the novelty, utility and practical advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a view, partly in side elevation and partly in section, of the cutter-head constituting the best practical embodiment of my invention known to me. Fig. 2 is a transverse section taken through one of the anti-friction bearings of the head, with the cutter chain omitted. Fig. 3 is a detail view showing the relative arrangement of one of the wheels of my improvements, the removable ring therein, the circumferentially grooved journal and one circular series of anti-friction balls.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which:

A is the frame of the cutter-head, which is preferably, though not necessarily, made up of side plates *a* having circular enlargements *b* at their ends, and a longitudinally disposed bar *c* fixed between the side plates in position to hold the cutter chain against rearward sagging and to its work.

B is the cutter chain, which is preferably of the conventional construction, though it may be of any other construction compatible with the purpose of my invention without involving departure from the scope of same as defined in the claims appended. It will also be understood by reference to Fig. 1 that the chain B is adapted to pass around the frame A in the ordinary well known manner.

C C are the anti-friction bearings for the cutter chain, which are arranged between the side plates of the frame A at the ends thereof. These bearings are identical in construction and therefore a detailed description of the one shown in Fig. 2 will suffice to impart a definite understanding of both. The said bearing, Fig. 2, comprises a sprocket or other suitable wheel *d* having a circular or other suitable bore *e*, a metallic ring *f* arranged in the said bore of the wheel and designed when worn to be removed and replaced by a new ring with a view of prolonging the usefulness of the wheel, a threaded bolt *g* disposed transversely in the frame and having a cap-plate *h* at one end, which plate is arranged in an opening *i* in one side plate of the frame and has its edge beveled correspondingly to the wall of the opening so that the cap-plate is flush with or countersunk in said side plate of the frame, a disk *j* threaded in a direction opposite to the bolt and engaging a correspondingly threaded opening *k* in the other side plate of the frame and having a central threaded aperture *l* which receives the bolt *g* and serves to hold the same against casual movement or displacement, a journal *m* having a central threaded aperture *p* which receives the bolt *g*, and also having one or more, preferably two, parallel circumferential grooves *r*, anti-friction balls *s* arranged in circular series in the said grooves and interposed between the journal and the wear ring *f* and annular dust-excluding washers *t*, of felt or other material suitable to the purpose interposed between the wear ring and the journal and arranged at the outer sides of the two series of anti-friction balls.

By virtue of the combination of the exteriorly threaded disk *j* with one side plate of the frame A and the bolt *g*, it will be manifest that when the disk *j* is turned out of the threaded aperture in the side plate and off the bolt *g* all of the parts of the bearing may be readily removed from the frame; the disk *j* being preferably provided in its outer side with sockets *j'* to permit of a spanner wrench or other implement being engaged therewith. It will also be gathered from the foregoing that rotation of the wheel *d* as the cutter chain passes over the same is attended by little or no friction, and consequently my novel bearing serves to materially prolong the period of usefulness of the machine as a whole, and at the same time saves considerable power in the operation of the machine. It will further be noted that notwithstand-

ing the practical advantages hereinbefore ascribed to my novel cutter-head, the same is simple and inexpensive in construction and does not materially increase the cost of a coal mining machine.

The threads in the plate *a* and in the disk *j* are of the same pitch but are oppositely disposed, as before stated, and hence it will be observed that when the disk *j* is turned toward the right in the plate *a* it will draw the bolt *g* in a direction away from the other plate *a*, while when disk *j* is turned toward the left. it will move the bolt *g* toward such other plate.

In assembling the parts of my improvements, the sprocket wheel *d* and the ring *f* therein are arranged between the frame plates *a*, after which the bolt *g* with the journal *m* thereon, the balls *s* in the grooves *r* of the journal and the washers *t* on the journal are placed in the ring *f*. With this done, the disk *j* is turned into the threaded aperture of the plate *a*, whereupon the bolt *g* and the cap plate *h* will be drawn in the opposite direction and the said cap plate will be tightly seated in the opening *i*.

As before stated, the construction herein illustrated and described constitutes the best practical embodiment of my invention of which I am cognizant, but I would have it understood that in the future practice of the invention such changes in the form, construction and relative arrangemet of parts may be made as fairly fall within the scope of my invention as defined in the claims appended.

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

1. In a cutter-head, the combination with a frame comprising side plates one of which is provided with an opening having an inwardly beveled wall and the other of which is provided with a threaded opening, of a bolt disposed transversely in the frame and threaded oppositely to the threaded opening in one frame plate and having a cap or head occupying the opening in the other frame plate and having its edge beveled correspondingly to the wall of the latter opening, an exteriorly threaded disk arranged in the threaded opening of the frame plate and having a threaded aperture receiving the threaded bolt, an interiorly threaded journal mounted on the threaded bolt and disposed between the frame plates, a wheel surrounding the said journal, and a cutter chain passed over the wheel.

2. In a cutter-head, the combination with a frame comprising side plates one of which is provided with an opening having an inwardly beveled wall and the other of which is provided with a threaded opening, of a bolt disposed transversely in the frame and threaded oppositely to the threaded opening in one frame plate and having a cap or head occupying the opening in the outer frame plate and beveled correspondingly to the wall of the latter opening, an exteriorly threaded disk arranged in the threaded opening of the frame plate and having a threaded aperture receiving the bolt, an interiorly threaded journal mounted on the bolt and disposed between the frame plates, and having circumferential grooves, a wheel in which is a wear ring surrounding the journal, annular dust-excluding washers surrounding the journal and interposed between the same and the wear plate, and a cutter chain passed over the wheel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN P. GILMOUR.

Witnesses:
W. L. HOLDAWAY,
L. G. HUGHES.