

Oct. 11, 1927.

1,645,004

M. P. HOLMES

CONTROLLING MECHANISM

Filed Dec. 20, 1923

Fig. 1.

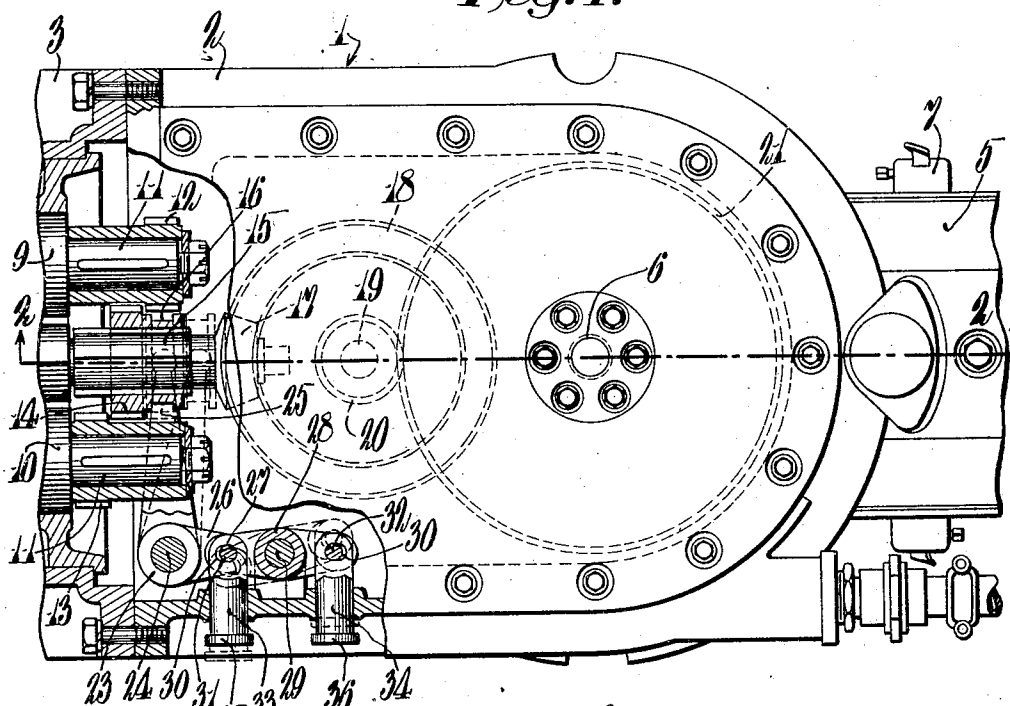
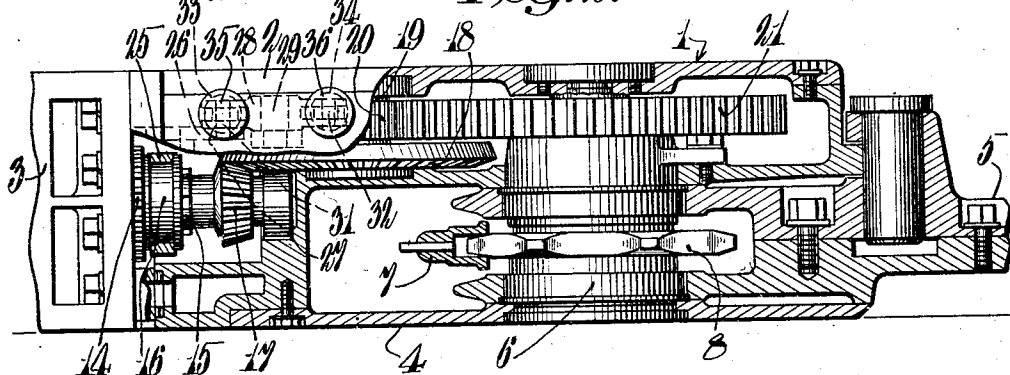


Fig. 2.



Inventor:
Morris P. Holmes.
by *Trace L. [Signature]*
Att'y.

UNITED STATES PATENT OFFICE.

MORRIS P. HOLMES, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS.

CONTROLLING MECHANISM.

Application filed December 20, 1923. Serial No. 681,892.

My invention relates to controlling mechanisms.

An object of my invention is to provide an improved controlling mechanism. Another object of my invention is to provide an improved clutch controlling mechanism for a mining machine. A further object of my invention is to provide an improved clutch controlling mechanism for the cutting mechanism on a coal mining machine of the self-propelled type. A still further object of my invention is to provide an improved clutch controlling mechanism for a cutter chain drive sprocket on a coal mining machine of the flexibly fed, low vein, longwall type whereby the adjustment of the clutch is greatly facilitated, especially when the machine is operating in close quarters as in a narrow seam. These and other objects and advantages of my improved mechanism will, however, hereinafter more fully appear.

In the accompanying drawings I have shown for purposes of illustration one form which my invention may assume in practice.

In these drawings,—

Fig. 1 is a plan elevation, partially in section, of the cutting end of a mining machine in which an illustrative form of my invention is incorporated.

Fig. 2 is a central longitudinal sectional view taken substantially on line 2—2 of Fig. 1, the view being partially in side elevation.

In this illustrative form of my invention I have shown a mining machine of a standard, self-propelled, low vein, longwall type, generally designated 1, provided with a longitudinally extending frame 2, which includes a motor section 3, slidable on its bottom 4 on the mine bottom relative to a flexible feeding member (not shown) in a well known manner. Herein, a cutter bar 5 is pivoted at 6 on the machine frame 2 and is encircled by an endless cutter bit carrying cutter chain 7. A cutter chain drive sprocket 8 is rotatable on a vertical axis within the frame 2, this sprocket being driven from the motor 3, which herein, for instance, is of the well known fluid pressure actuated type including a pair of intermeshing toothed rotors (not shown). These rotors are provided with longitudinally extending shafts 9 and 10 rotating in parallel planes

each having reduced end portions 11 and having keyed thereto identical but reversely disposed sleeved pinions 12 and 13. Selectively cooperating with these pinions 12, 13 is an adjustable pinion 14 splined on a longitudinally extending shaft 15 disposed between and parallel with the rotor shafts and suitably journaled on the machine frame 2. As illustrated, this pinion 14 also has a clutch shipper ring 16 formed thereon and is adapted to be engaged by improved controlling mechanism, hereinafter described. Herein, it will be observed that a bevel pinion 17 is suitably secured to the shaft 15 and disposed below and meshing with a bevel gear 18 rotatable on a vertical axis 19 within the machine frame. A spur pinion 20 is suitably secured to and rotatable with the gear 18 and meshes with a spur gear 21, this gear being suitably rigidly secured to the cutter chain drive sprocket 8.

In my improved construction it will be observed that a clutch shipper member 23 is pivoted at 24 on a vertical axis on the machine frame. This member is in the form of a bell-crank provided with projecting arms 25 and 26. Of these, the former is bifurcated and engages the clutch shipper ring 16 while the latter is pivotally connected, as at 27, to a rocker member 28. Herein, this rocker member 28 is pivoted at 29 intermediate its ends on the machine frame 2 and is slotted as at 30 at its ends, with which slots pins 31 and 32 engage, said pins forming pivotal connections for transversely extending members 33 and 34 which have operating portions or handles 35 and 36.

In the operation of my improved mechanism it will be observed that when it is desired to adjust the position of the pinion 14 it is only necessary for the operator to kick, push by hand, or hit with a jack pipe or other tool, one or the other of the operating members 35 and 36 moving the same inwardly, thereby causing the rocker member 28 to swing the clutch shipper member 23 about its pivot 24. This operation causes the controlling pinion 14 to selectively cooperate with the pinions 12 and 13 to connect the cutter chain drive sprocket 8 with the rotor shafts 9 and 10 and thereby rotate the same in opposite directions without reversing the motor. Herein, it will further be observed that by moving the members

33, 34 into an intermediate position the rotation of the cutter chain sprocket will be discontinued.

As a result of my improvement it will be noted that a controlling mechanism of extremely simple, compact, and rugged character is produced which may be expeditiously operated in close quarters in a narrow seam of coal either by the foot or hand of the operator or by a jack pipe or other tool and which may be manufactured at a minimum of expense. It will further be noted that by means of my invention an improved controlling mechanism for a mining machine cutter chain clutch is provided which is arranged within the extreme lateral limits of the machine, thereby eliminating projecting controlling levers or the like, a feature of especial advantage in narrow seams of coal. These and other advantages of my invention will be clearly apparent to those skilled in the art.

While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form of the same is used for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a controlling mechanism, a shiftable member operative to connect driving driven elements, and means to operate said member including a pivoted bell crank having an arm thereof directly connected to said member and a plurality of oppositely reciprocable operating members one of which is directly connected to said bell crank.

2. In a mining machine having a flange, a motor, a cutter chain drive sprocket driven thereby, and means to connect said sprocket in driving relation with said motor including a clutch and a plurality of oppositely reciprocating operating members therefor disposed behind said flange and within the lateral limits of the machine.

3. In a mining machine having a recess, a motor, a cutter chain drive sprocket driven thereby, and means to connect said sprocket

in driving relation with said motor including a clutch and a plurality of alternatively manually operable operating members therefor arranged within said recess and the lateral limits of the machine.

4. In a mining machine, a motor, a cutter chain drive sprocket driven thereby, and means to connect said sprocket in driving relation with said motor including a clutch and a plurality of oppositely reciprocable members arranged within the lateral limits of the machine.

5. In a mining machine, driving and driven elements, a shiftable member to connect the same, and means for effecting shifting thereof including reciprocable buttons so connected that as one is depressed the other is advanced disposed adjacent the surface of said machine and a single rigid member directly connected to said shiftable member and to one of said buttons.

6. In a mining machine, driving and driven elements, a shiftable member to connect the same, and means for effecting said shifting including a plurality of reciprocable manually movable operating members so connected that as one is depressed the other is advanced and disposed within a recess projecting inwardly from the surface of said mining machine.

7. In a mining machine, driving and driven elements, a shiftable member to connect the same, and means for effecting said shifting including a plurality of reciprocable manually movable operating members so connected that as one is depressed the other is advanced and disposed within a recess projecting inwardly from the surface of said mining machine, both of said latter reciprocable members being adapted to have their outer ends wholly disposed within said recess.

8. In a mining machine, driving and driven elements, a shiftable member to connect the same, and means for effecting shifting thereof including a plurality of oppositely reciprocal buttons disposed adjacent the side of said machine to permit the same to be kicked or hammered for actuation thereof.

In testimony whereof I affix my signature.

MORRIS P. HOLMES.

CERTIFICATE OF CORRECTION.

Patent No. 1,645,004.

Granted October 11, 1927, to

MORRIS P. HOLMES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 36, claim 1, before the word "driven" insert the word "and"; same page, line 70, claim 5, before the word "disposed" insert the word "and", and line 99, claim 8, for the word "reciprocal" read "reciprocable"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of November, A. D. 1927.

Seal.

M. J. Moore,
Acting Commissioner of Patents.