

Dec. 12, 1933.

N. H. PREBLE

1,938,720

OVERLOAD RELIEF FOR CONVEYER SYSTEMS

Filed July 28, 1930

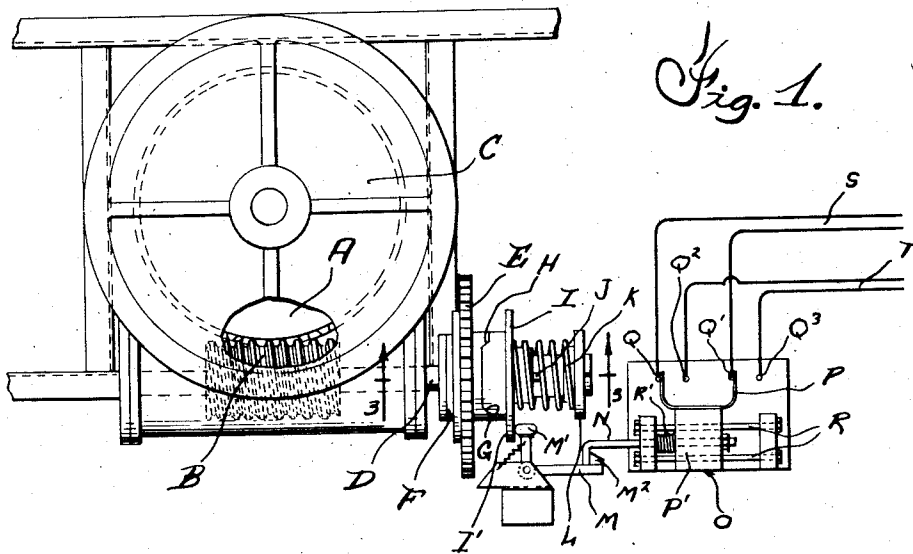


Fig. 1.

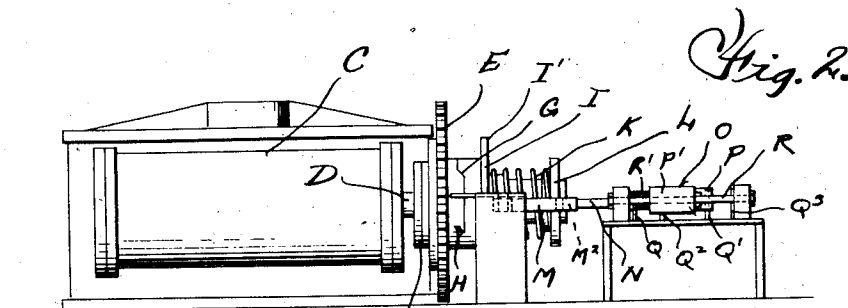


Fig. 2.

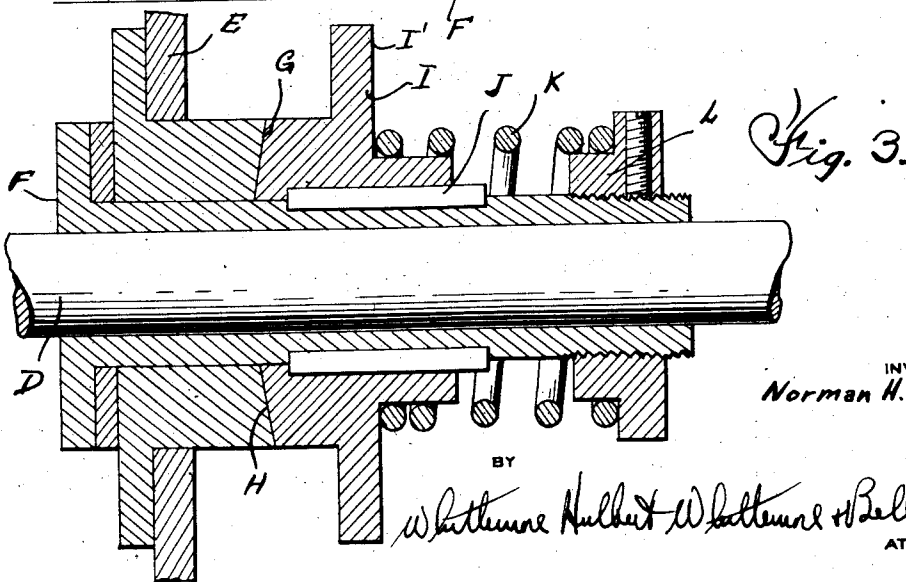


Fig. 3.

INVENTOR
Norman H. Preble

BY
Whittemore Hulbert Whittemore & Belknap
ATTORNEYS

UNITED STATES PATENT OFFICE

1,938,720

OVERLOAD RELIEF FOR CONVEYER SYSTEMS

Norman H. Preble, Detroit, Mich., assignor to
Mechanical Handling Systems, Incorporated,
Detroit, Mich., a corporation of Michigan

Application July 28, 1930. Serial No. 471,324

3 Claims. (Cl. 192—116.5)

The invention relates to conveyer systems and consists in the novel construction of overload relief for preventing over-stressing or breakage as hereinafter set forth.

5 In the drawing:

Figure 1 is a plan view of the overload relief mechanism;

Figure 2 is a side elevation thereof;

10 Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1.

My relief device may be applied at any suitable point in the power transmission to the conveyer system but as specifically illustrated it is arranged in connection with a worm gearing 15 which drives the conveyer chain. Thus as shown in Figure 1, A is the worm gear and B is the worm for actuating the same, these parts being enclosed in a suitable housing C. D is the worm shaft and E is a sprocket wheel mounted 20 on said shaft and forming the driving means therefor.

The sprocket wheel E is rotatively mounted upon a sleeve F keyed on the shaft D and is normally coupled to said sleeve by a clutch. 25 This clutch is formed by a cam face G on the hub of the sprocket E and a correspondingly cam face H upon a collar I longitudinally slidable upon said sleeve and spined thereto as indicated at J. The collar I is normally under 30 the pressure of a spring K having an adjustable abutment L threaded upon the sleeve F. Thus by adjusting this collar I the spring may be suitably tensioned so that under normal loads the cams H and G will remain in engagement 35 and will thereby couple the sprocket E to the shaft D. If, however, the mechanism is overloaded the torque resistance of the sprocket E will cause the cam G to ride over the cam H preventing independent movement of the sprocket 40 wheel E.

To stop further movement of the drive mechanism upon the declutching of the sprocket E, there is arranged an electric switch which is actuated by the movement of the collar I. As 45 shown, a bell crank lever M has a roller M' on one arm thereof which bears against a flange I' on the collar I. The other arm of the bell crank M is provided with a detent M' which is normally in engagement with a hooked arm N 50 of an electric switch O. This switch may be of any suitable construction but is shown as comprising a movable bridge contact member P normally connecting the contacts Q and Q'. The insulator base P' of this movable contact 55 member is slidably mounted upon guides R and

is under the tension of a spring R' tending to move the bridge away from the contacts Q and Q' and into engagement with contacts Q', Q''. This movement is normally prevented by the hooked member N engaging the detent M' but 60 whenever the cam G in cooperation with the cam H forces the collar I against the tension of the spring K the detent M' will be disengaged from the hooked member N permitting the spring R' to move the bridge contact P breaking 65 the electric circuit S and establishing an electric circuit T. The circuit S is connected by a suitable relay (not shown) to a power switch which controls the motor or other driving means for the sprocket E while the circuit T when 70 established operates an indicator which shows the operation of the overload relief. Thus the attendant can correct the abnormal condition whereupon the mechanism may be again started to perform its normal functions. 75

What I claim as my invention is:

1. In a device of the class described, the combination with driving and driven members, of a clutch establishing an operative connection between the driving and driven members and automatically movable to disengage the said members upon overloading the system, an electric circuit for transmitting power to the driving member, a switch for controlling the electric circuit, resilient means for normally urging said switch to its inoperative position wherein said circuit is open, a bell crank lever having one arm detachably engaging the switch to hold the same in its operative position against the action of said resilient means and having the other arm positioned 90 to be actuated by the clutch upon movement of the latter to disconnect the driving and driven members for disengaging the first-mentioned arm from the switch and thereby permit movement of the latter to its inoperative position. 95

2. In a conveyer system, the combination with driving and driven members, of a clutch establishing a driving connection between the members and automatically operable to disengage the members upon overloading the system, an electric circuit for transmitting power to the driving member, a second electric circuit for actuating a device to indicate the overload condition of the system, a switch for controlling both of said circuits, means normally holding said switch in a position wherein the same functions to close the first mentioned circuit, yieldable means tending to urge said switch to close said second circuit, and means controlled by the operation of said clutch members for actuating said first 110

named means to permit operation of said yieldable means.

3. In a conveyer system, the combination with driving and driven members, of a clutch establishing a driving connection between the members and automatically operable to disengage the members upon overloading the system, an electric circuit for transmitting power to the driving member, an auxiliary electric circuit in the system, a switch movable in one direction to close said first mentioned circuit and movable in an-

other direction to open the latter circuit and close the auxiliary circuit, means normally retaining said switch in a position wherein the first circuit is closed, yieldable means tending to urge the switch to a position wherein said auxiliary circuit is closed, and means automatically operable upon disengagement of the clutch members for actuating the first named means to permit the operation of said yieldable means.

NORMAN H. PREBLE.

15

20

25

30

35

40

45

50

55

60

65

70

75

80

85

90

95

100

105

110

115

120

125

130

135

140

145

150