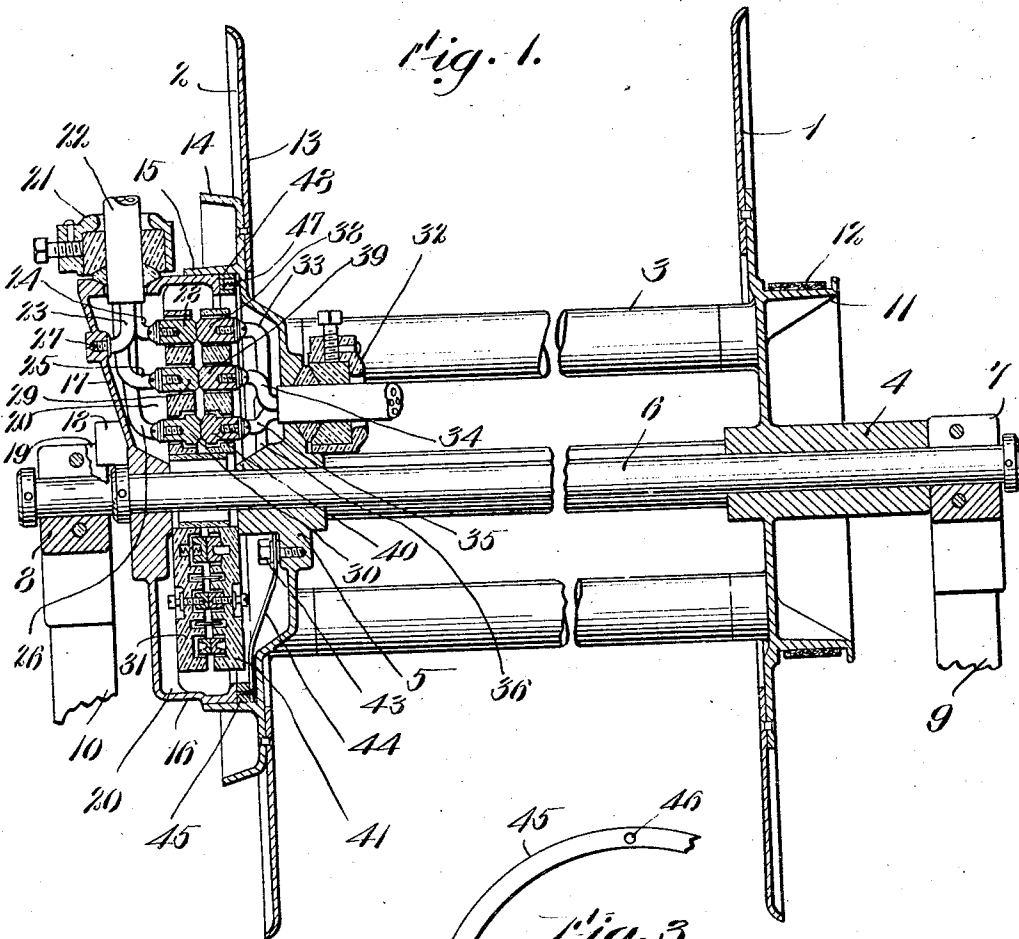
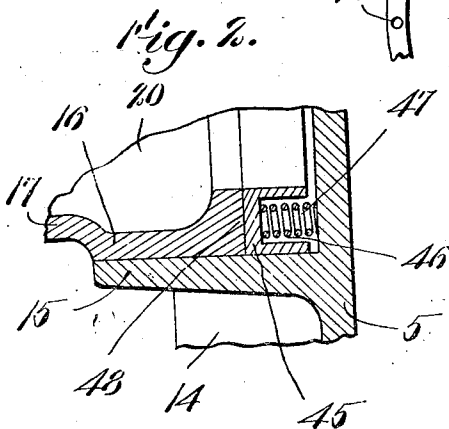
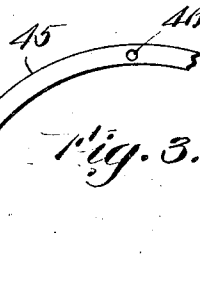
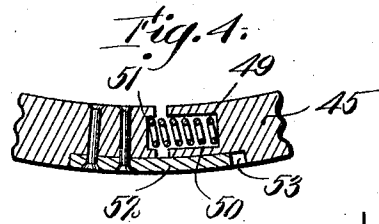


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1,689,098

C. W. WYMAN
GROUNDING MECHANISM
Filed March 24, 1924



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UNITED STATES PATENT OFFICE.

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GROUNDING MECHANISM.

Application filed March 24, 1924. Serial No. 701,596.

My invention relates to grounding mechanisms and particularly to grounding mechanisms for use in connection with mining machinery.

5 An object of my invention is to provide an improved grounding mechanism. Another object of my invention is to provide an improved combined grounding and current conducting mechanism. A still further object of my invention is to provide an improved
10 grounding and current conducting mechanism for use in connection with cable reels. These and other objects and advantages of my improved construction will hereinafter more
15 fully appear.

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

20 In these drawings,—

Fig. 1 is a central vertical section through a reel provided with my improved mechanism in its illustrative form.

Fig. 2 is an enlarged detail section.

25 Fig. 3 is a fragmentary elevational view of a portion of the mechanism.

Fig. 4 is a detail sectional view showing a modification.

As described in my Patent 1,407,120, it is
30 important to provide means for preventing the operator of a mining machine from receiving a shock arising from the contact of the operator with the machine frame should there be a grounding of any of the power wires of the machine. For the purpose of preventing
35 this occurring, means is provided not only for conducting the current to the machine from the reel and from some external source to the reel, but also a ground wire is laid from the machine to the reel and also from the reel
40 back to the mouth of the entry where a connection to the track may be made for the purpose of providing an effectual ground, it being evident that in view of the use of wooden
45 tracks in the room, some such provision as this is essential.

In this illustrative form I have shown my improved mechanism associated with a cable reel which is adapted to be mounted upon a
50 mining machine truck or which may even be mounted upon a trailer truck as indicated in the patent referred to. This reel comprises a pair of heads 1 and 2 which are connected to each other by a series of members 3 about

which an electric cable is wound and which
55 support the cable and, further, the heads of the reel are mounted by suitable sleeves 4 and 5 upon a shaft 6 which is journaled as indicated at 7 and 8 in suitable standards 9 and 10 which may be supported in any suitable way,
60 either upon a mining machine truck or upon a special reel truck. The reel is adapted to be driven by driving pulley 11 and belt connection 12 associated with the head 1. The head
2 is of a built up construction including the
65 main flange 13 and a second portion 14 which has formed thereon a projecting annular flange 15. This latter cooperates with a flange 16 upon a housing member 17, which is held
70 against rotation by the interengagement of a boss 18 with a notch 19 in the standard 8, to form a casing having within it a chamber 20. To one side of this chamber there is secured a
suitable attachment 21 through which a cable
75 22, herein containing four separate wires 23, 24, 25 and 26, enters, this cable leading to a mining machine. One of these wires 23 is secured as at 27 to the casing so that the mining
80 machine, on which the other end of wire 23 is grounded, may be grounded through this wire to the metallic track in the main entry. The connections 24, 25, 26 which are connected to the machine at their remote ends are secured
as indicated to rings 28, 29 and 30 which are resiliently mounted in an insulating disc 31
85 held in a suitable manner (not shown) to the stationary portion of the casing 16. The extremity of the cable wound upon the reel passes through a suitable connection 32 and it also includes four leads, these being respectively
90 numbered 33, 34, 35, 36 and the leads 33, 34 and 35 are connected to rings which cooperate with rings 28, 29 and 30, but which are numbered respectively 38, 39 and 40, these
95 rings being similarly supported in a disc of insulating material 41 secured in non-rotative relation to the reel head 2. The lead 36 is grounded to the reel as at 43 by means of the screw shown and further there is extended a
100 connection 44 from this point to a circular contact member 45 which is loosely held by a pair of screws mounted in openings in this member to the reel head member 14 while in other oppositely disposed openings 46, springs
47 are provided which force the contact member 45 over into contact with an annular shoulder 48 at the end of the member 16.
105

From the description given the mode of op-

eration of this mechanism will be readily apparent. It will be evident that by the wires 24, 25, 26 within the cable 22, power may be conducted to a three-phase motor on the mining machine while the wire 23 which is connected at its other end on the machine serves to ground the machine on the housing 16. The wires 33, 34, 35 within the cable which is wound upon the reel serve to conduct current to the reel from some suitable source and by the intercoaction of the contacts 28 and 38, 29 and 39, and 30 and 40, respectively, the circuit between the power lines in the entry and the machine is maintained notwithstanding rotation of the reel. The connection 36 which is grounded at the end of the cable in the entry, to the track rails or in some other suitable manner, by the connection 44 and the co-operation of the contact member 45 with the shoulder 48 provides a more perfect electrical contact notwithstanding rotation of the reel and so cuts down resistance in the ground circuit. By reason of all these connections being enclosed in a single head, the entire mechanism is readily accessible by simply dismounting the reel and withdrawing the cover member 17.

In Fig. 4 there is shown a different form which the ring 45 can assume. Therein a spring 49 is placed in sockets 50, 51 in the ends of the ring and serves to expand the ring into tight engagement with the inner surface of the flange 15. A filler piece 52 is secured to one end of the ring and cooperates with a notch 53 in the opposite end. The same means is used in this form as in the one previously described to hold the ring against the member 16. This construction has as its function the more effectual sealing of the chamber 20 so as to prevent possible ignition of mine gases as a result of sparking or arcing in the chamber.

While I have in this application specifically described one form and a modification which my invention may assume in practice, it will be understood that these forms of the same are shown 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 mining apparatus, a reel, a stationary member coaxial therewith, said reel and member having portions cooperating to form a housing whose opposite end walls are respectively provided by said member and by said reel and whose peripheral wall is in part provided by both said member and said reel, a plurality of pairs of cooperating contacts operative whether said reel is stationary or rotating to maintain electrical circuits and enclosed in said housing, and means rotating with said reel and engaging said stationary

member for maintaining electrical connection of low resistance between them.

2. In a mining apparatus, a reel, a cable leading from a source of power and from a ground thereto, a cable leading to a mining machine motor and to a ground on the frame of a mining machine, and connections between said cables all at one end of said reel including a plurality of sets of contacting conductor rings and coaxial ground connections.

3. In a mining apparatus, a reel, a cable leading from a source of power and from a ground thereto, a cable leading to a mining machine motor and to a ground on the frame of a mining machine, and connections between said cables all at one end of said reel including a plurality of sets of contacting conductor rings and coaxial ground connections including a stationary ring and resiliently mounted rotating ring cooperating therewith.

4. In a mining apparatus, a reel, a cable leading from a source of power and from a ground thereto, a cable leading to a mining machine motor and to a ground on the frame of a mining machine, and connections between said cables all at one end of said reel including a plurality of sets of contacting conductor rings and concentric ground connections including a stationary ring and a resiliently mounted rotating ring cooperating therewith and arranged outside said conductor rings.

5. In a mining apparatus, a reel, a stationary member coaxial therewith, said reel and member having portions cooperating to form a housing, a plurality of pairs of contacts cooperating on rotation of said reel to maintain electrical circuits housed in said chamber, and means rotating with said reel and engaging said stationary member for maintaining electrical connection of low resistance between them and operating to seal the joint between said portions forming a housing.

6. In an electric cable reeling apparatus, a reel, a cable containing a plurality of conductors attached to said reel and adapted to be wound thereon, a stationary member, said reel and member having portions cooperating to form a housing, a cable leading from said stationary member having a plurality of conductors one of which is electrically connected to said stationary member while the others are insulated therefrom, a contact member carried by said reel and electrically connected to one of the conductors in the cable leading to the reel, yielding means providing an electrical connection between said contact member and said stationary member, and other means in said housing for electrically connecting each of the remaining conductors of one cable to a corresponding conductor in the other cable, all of said connections being closed independently of the movement of said reel.

In testimony whereof I affix my signature.
CHARLES W. WYMAN.