

R. A. SCHOENBERG.

PULL SOCKET.

APPLICATION FILED APR. 27, 1910.

973,982.

Patented Oct. 25, 1910.

2 SHEETS-SHEET 1.

Fig. 1.

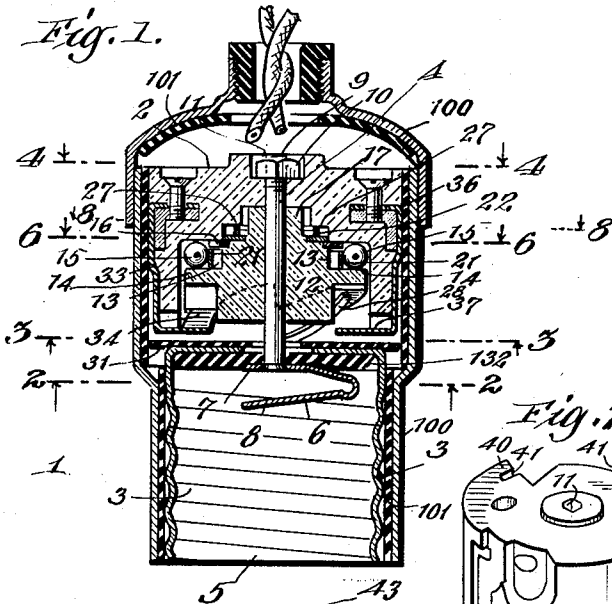


Fig. 2.

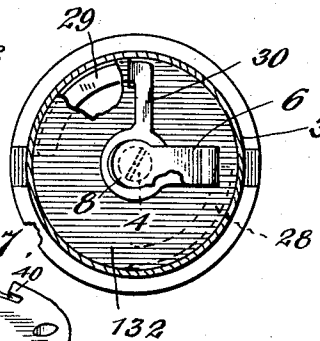


Fig. 3.

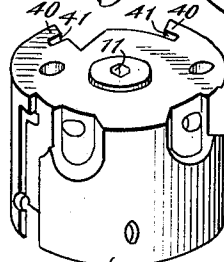


Fig. 4.

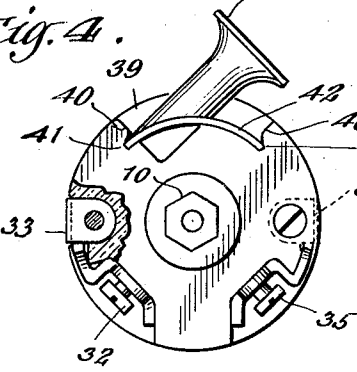


Fig. 5.

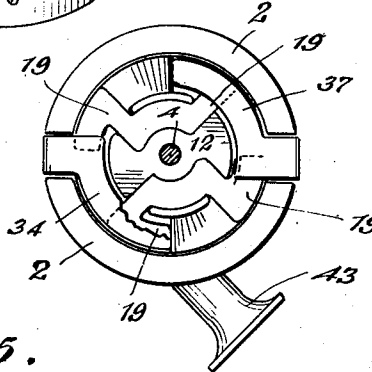


Fig. 6.

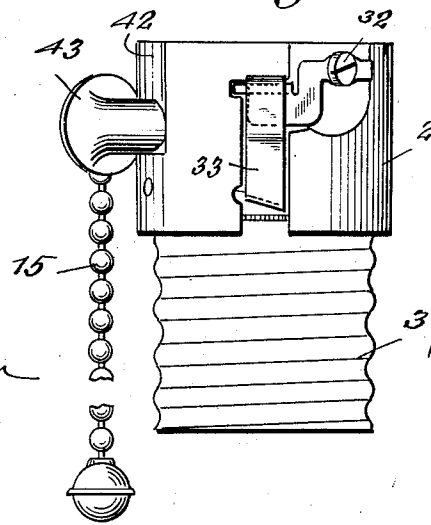
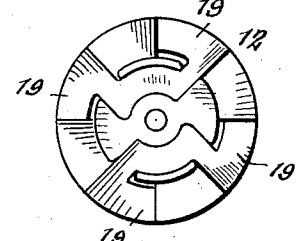


Fig. 7.



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2 SHEETS-SHEET 2.

Fig. 6.

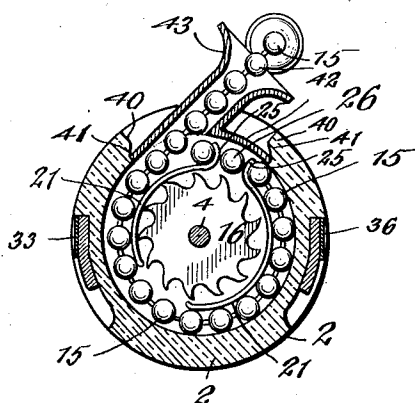


Fig. 13.

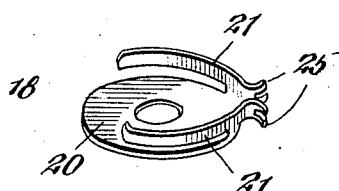


Fig. 8.

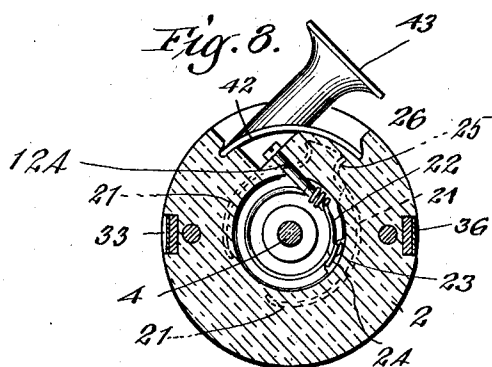


Fig. 12.

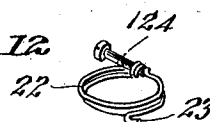


Fig. 11.

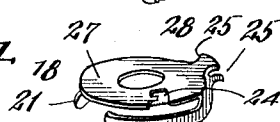


Fig. 14.

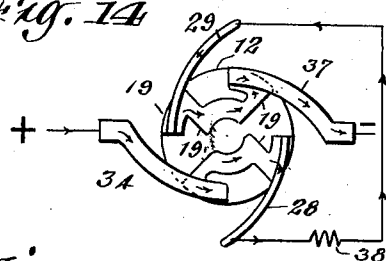


Fig. 10.

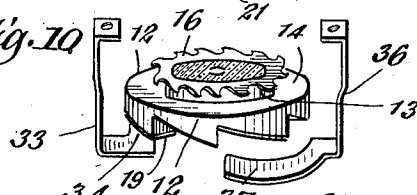


Fig. 9.

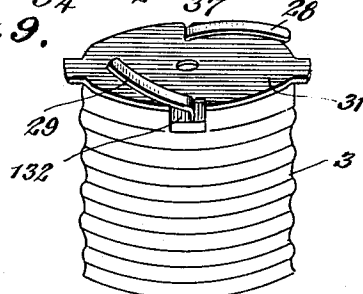


Fig. 15.

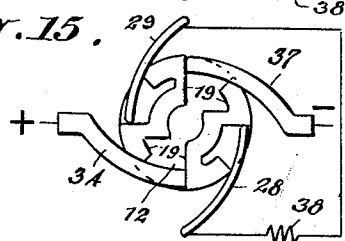
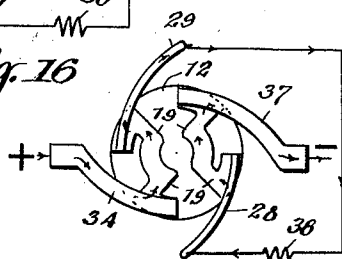


Fig. 16.



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PULL-SOCKET.

973,982.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed April 27, 1910. Serial No. 557,943.

To all whom it may concern:

Be it known that I, RALPH A. SCHOENBERG, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Pull-Sockets, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

In one aspect of my invention, its simplest form is a mechanical movement and is an improvement upon U. S. Patent 921,969, patented May 18, 1909, on an application filed by M. J. Flynn. While I have shown my invention applied to operate an electric switch in a pull socket, it is to be understood that in its broadest form, it is, as noted, a mechanical movement and an improvement upon said Patent 921,969, that it is adapted for universal application and is not to be limited to the particular use, which for purposes of illustration I have here shown.

Certain other features of my invention, relating more particularly to the pull socket, will be described more in detail in the specification and pointed out in the claims.

In the accompanying drawings showing an illustrative embodiment of this invention and in which the same reference numerals refer to similar parts in the several figures,—Figure 1 is a vertical section taken through my pull socket; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1, looking up in the direction of the arrows; Fig. 3 is a horizontal section on the line 3—3 of Fig. 1 looking up in the direction of the arrows; Fig. 4 is a plan view substantially on the line 4—4 of Fig. 1 looking down in the direction of the arrows; a portion of the figure being broken away for purposes of better illustration; Fig. 5 is a side elevation of my pull socket, it being understood that in this figure the inclosed casing and insulation which is usually fiber is omitted for the purposes of better illustration; Fig. 6 is a horizontal section substantially on the line 6—6 of Fig. 1; Fig. 7 is a detail perspective view of the one piece insulating casing or receptacle in which the operating parts of my pull socket are completely housed and protected; Fig. 8 is a horizontal section substantially on line 8—8 of Fig. 1; Fig. 9 is a perspective view of the screw shell contact with

its wipers or spring contacts; Fig. 10 is a detail perspective view of a portion of the mechanism with the contacts arranged in position to show their coöperation with the contact plates carried by the driven member; Fig. 11 is a perspective view of the chain rail or carrier; Fig. 12 is a perspective view of the preferred form of tension member to retract the chain and chain rail or carrier; but not the driven member, or the gear wheel which in the form shown is a portion of it; Figs. 9, 10, 11 and 12 are arranged in juxtaposition so as to clearly show the manner of assembling the different parts of the internal mechanism of my pull socket; Fig. 13 is a perspective view of the chain rail or carrier; Fig. 14 is a diagrammatic view showing the passage of the current in my double pole socket; Fig. 15 is a diagrammatic view of the wipers or contact plates and the position that they assume on the lower surface of the driven member when the pull socket is in the position to cut off the current, which is the position of the parts immediately succeeding that shown in Fig. 14; Fig. 16 is a diagrammatic view of the contacts or wipers showing the passage of the current when the parts are in the next position immediately following that shown in Fig. 15 by which it will be seen, in the form shown, that the polarity of the double pole socket is changed; and Fig. 17 is a plan view of the driven member reversed showing the preferred arrangement of the connecting conducting plates.

In the illustrative embodiments of my invention shown in the drawing, 1 is a pull socket consisting essentially of the shell contact 3 and a one piece insulating casing or receptacle 2 (Figs. 1, 5 and 7) which holds and completely surrounds and protects the internal mechanism of the pull socket. In the form of my invention shown the casing or receptacle 2 and the shell contact 3 are secured together by a single metallic arbor or axle 4. The end 9 of this metallic arbor or axle 4 is preferably screw threaded and coöperates with a nut 10 which is preferably seated in a recess 11 in the upper portion of the insulating casing or receptacle 2. Through the mouth 5 of the side or shell contacts 3 I insert a center spring contact 6 having two arms 7 and 8, the former being held securely in place by the head of the metallic arbor or axle 4, while the latter end

8 is left free to be bent so as to permit the ready assembling of the parts.

Between the screw shell contact 3 and located within the hollow interior of the one piece insulating casing or receptacle 2 are coöperating portions of my mechanical movement applied to a pull socket. Both the casing or receptacle 2 and the shell contact 3 are surrounded by the usual housing 100 and insulation 101.

Mounted on the metallic axle or arbor 4 and within and completely protected by the insulating casing or receptacle 2 I mount rotatably a driven member 12 which is preferably formed of some suitable insulating material. This driven member 12 has its under-surface provided with a plurality of inclines or cams which abruptly terminate and form what may be termed for the purpose of this specification "hills" and "valleys." The upper surface of the driven member is provided with two reduced hubs 13 and 17 of different diameters. The reduced hub 13 forms on the driven member 12 a cylindrical revolving shelf 14 upon which a portion of the driving member 15, which will be hereinafter described in detail, rests. The driven member 12 is also provided with a friction engaging member 16 secured to the driven member in any suitable manner. This friction member 16 is preferably, though not necessarily, formed as a wheel provided with suitable teeth or projections to coöperate with the driving member 15 as will be more fully hereinafter described. For the purposes of economy in manufacture I preferably make this friction member 16 in the form of a metallic gear wheel preferably stamped, for the sake of cheapness in manufacture, from sheet metal and secured in any suitable manner to the insulating driven member 12.

On the smaller hub 17 I mount a portion of the chain rail or carrier 18. The particular form of chain rail or carrier which I have shown and preferably, though not necessarily, use is provided with a portion which extends down and substantially rests upon the shelf 14.

Various numbers of hills and valleys may be used on the underside of the driven member 12. Simply for purposes of illustration I have shown, but it is to be understood that my invention is not to be limited to this or any particular number or form, eight such hills and valleys and mount on some of them conducting plates. As shown I have mounted two conducting plates 19, 19 in a peculiar manner. Each of these plates 19, 19 has portions which snugly fit on two of the hills and valleys, leaving between them one hill and valley blank, or without a conducting member. (Figs. 14, 16 and 17.) It will therefore be seen that every other hill and valley is provided with a conducting

member and that two of the conducting members are connected together, which in the form shown makes my pull socket, with the other mechanism hereinafter described, a double pole socket, but of course it is to be understood that a single pole socket may be used if desired. For many purposes, however, a double pole socket is much more advantageous as it multiplies the number of contacts for the current and permits the making and breaking of a current of higher voltage without danger to the internal mechanism of the socket.

Mounted upon the smaller hub or reduced portion 17 of the driven member 12 is a member for retracting the flexible driving member 15. This member may be formed in various ways. I have however found in practice that a member such as 18 (Figs. 1, 11 and 13) and which I term a chain rail or carrier, performs very satisfactorily the requisite function of holding one end of the chain or driving member 15 free and distinct from the rotating contact plate which as here shown is the driven member 12. This chain rail or carrier 18 is preferably, though not necessarily stamped out of one piece of metal having a body member 20 (Fig. 13) and preferably, though not necessarily, one or two tension members 21, 21 which normally contact with the flexible driving member 15 and serve to substantially press it normally out of engagement with the teeth of the gear wheel 16, so that the chain rail 18, together with the flexible driving member 15, can readily be retracted after pressure is removed from the flexible driving member or chain to permit the parts to again assume their normal position and be in readiness to operate the switch mechanism upon the next succeeding pull upon the chain or flexible driving member 15. It is of course to be distinctly understood that this retracting movement of the chain rail or carrier and the driving member 15 is entirely free from the driven member which is not retracted but continually revolves on the metallic arbor or axle 4, step by step, as the current is switched on or off by successive pulls upon the driving member 15. It is immaterial how this carrier or chain rail 18, together with the driving member 15, is retracted provided that the gear wheel or friction member 16 with which the chain contacts is not moved. I have found in practice that a very efficient manner of retracting the chain carrier or chain rail is by means of a tension member 22 (Figs. 12 and 8) which is preferably in the form of a spring having one of its ends 23 taking behind a lug 24 on the chain carrier 18, Fig. 11, its other end being preferably coiled to form a screw thread (Figs. 8 and 12) and to coöperate with the threads upon a screw 124 which passes through an

opening in the shell or casing 2. It is obvious that by screwing the screw 124 the tension of the coil spring 22 increases or decreases. This adjustment is desirable though not essential to insure a quick and efficient return of the driving member 15 with its chain rail or carrier after it has operated the driven member 12 one step in its revolution.

On the upper portion of the one piece insulating casing or receptacle 2 I provide an opening 39 having cut away shoulders 40, 40, Fig. 4 to form guides or seats 41, 41 for a segmental shaped member 42 which forms the base or supporting member for the horn 43 through which the driving member 15 passes. This segmental shaped member 42 is preferably formed of metal and may or may not be formed integral with the horn 43. Preferably the horn 43 is secured to it in any suitable manner and I have found in practice that an efficient manner of securing the member 42 in the seats or guides 41 is by forming this member 42 of spring material and contracting it permitting it to spring into its operative position so that the resiliency of the member 42 will tend to keep it seated in the guides or sockets 41. The interior of the member 42 serves also to guide the flexible driving member. This driving member to which power is applied is preferably in the form of a chain such as I have shown by way of example and designated 15, though, of course, it is to be understood that any other suitable flexible driving member may be used. One end of this driving member 15 is detachably secured to the chain rail or carrier in any suitable manner. By way of example I have provided the chain rail or carrier with ears 25, 25 which are preferably, though not necessarily, formed integral with the body member 20 and bent up so as to receive one of the balls or spheres 26 between them (Fig. 6). It will be readily seen that this is a very efficient, easy and quick method of detachably connecting the flexible driving member with the chain rail.

In the particular form of my invention illustrated, the tension members 21, 21 rest substantially upon the shelf 14, as noted, and nearer the axis of the driven member 12 than the driving member 15. A pull upon the chain or driving member 15, one end of which substantially encircles the gear wheel 16, will cause the ears 25, 25 and the chain rail or carrier 18 to rotate. Pressure upon this flexible driving member or chain 15 however tends to cause it to describe a smaller circle than that which it occupies in Fig. 6. This contraction of the driving member 15 into a circle of smaller diameter is against the spring action of the tension members 21, 21 if they be used, which is my preferred construction. When the pressure

upon the driving member 15 has sufficiently reduced the diameter of the circle within which the driving member normally lies, such as shown in Fig. 6, the balls or spheres of the driving member 15 will bind, contact or bite on the side of the teeth of the gear wheel 16. Further pressure upon the driving member 15 will then cause the gear wheel 16, together with the driven member 15, to move with it which will impart to the driven member 12 a partial rotation. This movement in the use to which my invention is here put will cause the switch mechanism within the pull socket to be operated either to make or break the circuit as the case may be. This partial rotation of the chain carrier 18 is performed against the action of the spring 22, Fig. 12, the lug 24 of the chain rail or carrier contacting with the end 23 of the spring 22 so that a partial revolution of the chain carrier 18 tends to store up power in the tension member 22, the amount of which, as previously noted, can be regulated in the preferred construction by means of the screw 124. This tension member or spring 22 preferably surrounds the reduced hub 17 of the driven member 12 and rests on the shoulders 27 on the interior of the casing or receptacle 2.

By releasing the pressure upon the driving member 15 the action above referred to is partially reversed, it, of course, being distinctly understood that the driven member 12 with its friction or gear wheel 16 and its contact plates 19, 19 is never reversed. The tension member 22 will then use its stored up energy and retract the chain rail or carrier 18, with its flexible driving member 15 to their original position, the balls or spheres of the chain slipping by the teeth of the gear wheel 16, and not operating the same on this retraction of the parts. To assist this operation I may, though not necessary, use one or more tension members such as 21—21 which serve to yieldingly press the flexible driving member outwardly and away from the teeth of the gear wheels 16. It is to be understood, however, that my device will operate successfully without such tension members for the balls of the chains will readily slip by the teeth of the gear wheels 16.

In adapting my mechanical movement to operate the switch mechanism of a pull socket various forms of contacts may be used. Preferably I use my mechanical movement to make a double pole pull socket which will now be described.

In the form of my invention here illustrated I have shown by way of example the under-surface of my driven member 12 provided with the plurality of hills and valleys as noted and connecting plates 19, 19 which have been previously described. Coöperating with these plates I preferably provide

four yielding spring contacts or wipers. Fastened to the screw shell 3 (Fig. 9) I secure in any suitable manner a spring contact 28 and also extend through the screw contact 3 a spring contact or wiper 29 which connects with the end 7 of the center contact plate 6 by means of a connecting member 30 (Fig. 2). This spring contact is insulated from the screw contact 3 by means of a fiber washer or other suitable insulation 31 (Fig. 9) which preferably lies on the exterior of the screw shell contact, a similar insulating washer 132 being located upon the interior of the shell contact. It will therefore be seen that there are two spring contacts or wipers 28—29 associated with the screw contact 3.

The binding post 32 (Fig. 1) is connected in any suitable manner with the conducting wiper 33 which has a bent end 34 extending into the path of the contact plates 19, 19 carried by the driven member 12. The other binding post 35 is similarly connected with a contact 36 having a bent arm 37 which forms a spring contact or wiper and is also in the path of the plates 19, 19 carried on the hills and valleys of the driven member 12. By this arrangement of four flexible contacts or wipers, with the particular form of connecting plates 19, 19 carried by the driven member 12, I obtain a double pole socket and one which, as previously noted, is of marked advantage in that it permits a higher current to be switched on or off than a single pole one without the danger of arcing or burning out the interior mechanism and consequently such a pull socket can obtain a much higher rating by the Board of Underwriters which pass upon and control the installation of all electrical appliances in this country.

Not only is my pull socket a double pole socket, but in addition thereto in the form as here shown, but to which my invention is not to be limited, it is a pull socket of reversible polarity. This perhaps will be most clearly seen in Figs. 14, 15 and 16, which are diagrammatic views showing the path of the current in the different positions of the wipers or spring contacts. In Fig. 14 for instance the wipers or flexible contacts are shown in their operative position in contact with the connecting plates 19, 19, the current flowing in the direction of the arrows from the positive to the negative binding post and through the resistance 38 which may obviously be a lamp, motor, electrolytic bath, or any other consuming device. When the parts are in the position shown in Fig. 14 and it is desired to cut off the current a pull upon the driving member 15 will, in the manner previously described at length, partially rotate the driven member 12 upon the metallic axle or arbor 4, and bring the wipers into contact with the bare

or non-conducting portions of the hills and valleys upon the driven member 12 and consequently no current will pass through the consuming device 38. This is the position as shown in Fig. 15. The next pull upon the driving member 15 will give the driven member 12 another partial rotation and bring the wipers and contact plates 19, 19 into the position shown diagrammatically in Fig. 16 wherein it will be seen that the current is now reversed through the consuming device 38 and consequently the polarity is changed or reversed which is a marked advantage in many situations. While I preferably use a double pole switch and, further, one of reversible polarity, it is to be distinctly understood, however, that my invention is not to be limited to this construction though it is the preferred form.

Having thus described this invention in connection with several illustrative embodiments thereof, to the details of which I do not desire to be limited, what is claimed as new and what it is desired to secure by Letters Patent is set forth in the appended claims.

1. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member and a chain rail or carrier connected to the driving member and means to retract the chain rail and driving member.

2. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member, a chain rail or carrier connected to the driving member, means to retract the chain rail and driving member, and means tending to prevent the driving member engaging with the engaging surface of the driven member upon the retraction of the chain rail or carrier and the driving member.

3. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member, a chain rail or carrier connected to the driving member, and adjustable means to retract the chain rail and driving member.

4. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member, a chain rail or carrier connected to the driving member, and a spring for retracting the chain rail and driving member.

5. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates

tates, a flexible driving member adapted to contact directly with the driven member, a chain rail or carrier connected to the driving member, and an adjustable spring for retracting the chain rail and driving member.

6. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member to operate it, a chain rail or carrier connected to the driving member, an adjusting screw, a spring, one end of the spring engaging with the carrier and the other end connected to the adjusting screw.

7. In a mechanical movement the combination of a rotating driven member, an axle or arbor upon which the member rotates, a flexible driving member adapted to contact directly with the driven member, a chain rail or carrier connected to the driving member, a screw and a spring, one end of the spring being coiled to cooperate with the threads of the screw to adjust the tension of the spring.

8. A mechanical movement having a rotatable driven member, an axle or arbor on which the member is mounted, a friction member connected to the driven member, a flexible driving member adapted to directly contact with the friction member, a chain carrier or rail connected to the driving member, one or more springs carried by the chain rail or carrier to normally keep the driving member from engagement with the friction member mounted on the driven member, and means to retract the driving member and chain rail or carrier.

9. A mechanical movement having a rotatable driven member, an axle or arbor on which the member is mounted, a friction member connected to the driven member, a flexible driving member adapted to directly contact with the friction member, a chain carrier or rail connected to the driving member, an integral spring or springs carried by the chain rail or carrier to normally keep the driving member from engagement with the friction member mounted on the driven member, and means to retract the driving member and chain rail or carrier.

10. A chain rail or carrier for a mechanical movement comprising a body member, and one or more integral spring tension members adapted to contact and cooperate with a chain.

11. A chain rail or carrier for a mechanical movement comprising a body member, one or more integral spring tension members adapted to contact and cooperate with a flexible driving member, said chain, rail or carrier being provided with fastening means to cooperate with a flexible driving member.

12. A chain rail or carrier for a mechanical movement comprising a body member, one or more integral spring tension members adapted to contact and cooperate with a chain, and one or more ears struck up from the body member.

13. A chain rail or carrier for a mechanical movement comprising a body member, one or more integral spring tension members adapted to contact and cooperate with a chain, one or more ears and an integral lug struck up from the body member.

14. A chain rail or carrier for a mechanical movement comprising a body member, one or more tension members adapted to contact and cooperate with a flexible driving member, and provided with means to cooperate with and detachably secure a flexible driving member.

15. In a pull socket for an electric consuming device comprising in combination fixed spring contacts, means to make a double pole double make and double break electrical connection between the fixed spring contacts and the consuming device and to reverse the polarity of the consuming device.

16. In a pull socket the combination of binding posts, separate center and side contacts and means to make a double pole double make and double break electrical connection between the center and side contacts and to reverse the polarity of the side and center contacts.

17. In a pull socket the combination of a one piece insulating casing or receptacle/entirely closed except at the bottom to confine entirely within the closed receptacle all possible sparks and thereby protect the operator from any danger due to arcing, a switch mechanism mounted in and protected by the one piece insulating casing or receptacle, a screw shell contact closing the bottom of the one piece insulating casing or receptacle and means to connect the screw shell and insulating casing or receptacle together.

18. In a pull socket the combination of a one piece insulating casing or receptacle, operating mechanism to make and break the electrical connection mounted within and protected by the one piece casing or receptacle, a screw shell contact mounted beneath and closing the bottom of the insulating casing or receptacle, and a single axially arranged connecting member connecting the screw shell with the insulating casing or receptacle said axially arranged member adapted to cooperate with the operating mechanism.

19. In a pull socket the combination of a one piece insulating casing or receptacle, a driven member mounted within the casing or receptacle, a screw shell contact closing the bottom of the insulating casing or receptacle, a metallic arbor or axle connecting the screw shell with the insulating casing or

receptacle, said driven member being mounted upon said axle or arbor, and means to give the driven member intermittent rotary movement.

- 5 20. In a pull socket the combination of a single integral insulating casing or receptacle, an insulating driven member mounted within and protected by the insulating casing or receptacle, a screw shell contact closing the bottom of the insulating casing or receptacle, a metallic axle or arbor securing the screw shell contact to the insulating casing or receptacle, contact plates carried by the driven member, spring contacts adapted to bear upon the driven member and hold it in its operative position, and means to give the driven member a step by step rotation.

- 20 21. In a pull socket the combination of a single one piece insulating casing or receptacle, a driven member provided with hills and valleys mounted within the insulating casing or receptacle, conducting plates carried on some of the hills and valleys of the driven member, yielding spring contacts or wipers adapted to bear upon the hills and valleys and hold the driven member in its proper position upon the axle or arbor, a screw shell or side contact closing the bottom of the one piece insulating casing or receptacle, a metallic arbor or axle passing through the driven member and securing the side or screw contact to the one piece insulating casing or receptacle, and a flexible driving member adapted to give a step by step rotation to the driven member.

22. In a pull socket the combination of a single one piece insulating casing or receptacle, a driven member provided with hills and valleys mounted within the insulating casing or receptacle, conducting plates carried on some of the hills and valleys of the driven member, yielding spring contacts or wipers adapted to bear upon the hills and valleys and hold the driven member in its proper position upon the axle or arbor, a screw shell or side contact closing the bottom of the one piece insulating casing or receptacle, a metallic arbor or axle passing through the driven member and securing the side or screw shell contact to the one piece insulating casing or receptacle, a flexible driving member adapted to give a step by step rotation to the driven member, a chain rail or carrier connected to the driven member, and means to retract the chain rail and driving member without retracting the driven member.

23. In a pull socket the combination of a single one piece insulating casing or receptacle, an insulating driven member provided with hills and valleys mounted within the insulating casing or receptacle, conducting plates carried on some of the hills and valleys of the driven member, yielding spring

contacts or wipers adapted to bear upon the hills and valleys and hold the driven member in its proper position upon the axle or arbor, a screw shell or side contact closing the bottom of the one piece insulating casing or receptacle, a metallic arbor or axle passing through the driven member and securing the side or screw shell contact to the one piece insulating casing or receptacle, a flexible driving member adapted to give a step by step rotation to the driven member, a chain rail or carrier connected to the driven member, means to retract the chain rail and driving member without retracting the driven member, a friction member carried by the driven member and adapted to contact directly with the flexible driving member, and yielding means normally acting to prevent the flexible driving member contacting with said friction member.

24. In a pull socket the combination of a single insulating casing or receptacle, a screw shell contact closing the bottom of said casing or receptacle, an insulating driven member provided with hills and valleys mounted within the casing or receptacle, a metallic arbor or axle passing through said driven member and connecting the screw shell and the said casing or receptacle, a plurality of spring contacts or wipers acting upon said hills and valleys of the driven member, and means including said plurality of flexible contact members or wipers to form a double pole connection between the center and side contacts.

25. In a pull socket the combination of a single insulating casing or receptacle, a screw shell contact closing the bottom of said casing or receptacle, a driven member provided with hills and valleys mounted within the casing or receptacle, a metallic arbor or axle passing through said driven member and connecting the screw shell and the said casing or receptacle, a plurality of spring contacts or wipers acting upon said hills and valleys of the driven member, and means including said plurality of flexible contact members or wipers forming a double pole connection between the center and side contacts and means to reverse the polarity of the consuming device.

26. In a pull socket the combination of a horn and spring means to connect it to the socket.

27. In a pull socket the combination of an insulating member provided with a cut-away portion on its periphery and a segmental member carrying a guiding member or horn adapted to fit in and fill said cut away portion.

28. In a pull socket the combination of a circular insulating member provided with a cut-away portion having under-cut shoulders and a segmental member carrying a guiding member or horn adapted to cooperate

ate with said under-cut shoulders and be held thereby.

29. In a pull socket the combination of a circular insulating member provided with a cut-away portion having undercut shoulders and a resilient segmental member carrying a guiding member or horn adapted to be yieldingly held by said undercut shoulders.

30. In a pull socket the combination of a one piece insulating casing or receptacle, a screw shell contact closing the bottom of said casing or receptacle, a rotary insulated driven member mounted on a metallic arbor or axle, a metallic arbor or axle connecting the receptacle and screw shell, a metallic gear wheel connected to and moving with the insulating driven member, a flexible driving member adapted to contact directly with the teeth of the gear wheel to rotate the driven member, and means to retract the driving member.

31. In a pull socket the combination of a one piece insulating casing or receptacle, a screw shell contact closing the bottom of said casing or receptacle, a rotary insulated driven member mounted on a metallic arbor or axle, a metallic arbor or axle connecting the receptacle and screw shell, a metallic gear wheel connected to and moving with the insulating driven member, a flexible driving member adapted to contact directly with the teeth of the gear wheel to rotate the driven member, a chain rail or carrier and means to retract the said chain rail or carrier and flexible driving member.

32. In a pull socket the combination of a one piece insulating casing or receptacle, a driven member mounted within the casing or receptacle, a screw shell contact closing the bottom of the insulating casing or receptacle, an arbor or axle connecting the screw shell with the insulating casing or receptacle, said driven member being mounted

upon said axle or arbor, and means to give the driven member intermittent rotary movement.

33. In a pull socket the combination of an operating mechanism to make and break the electrical connection, a one piece insulating casing or receptacle inclosing said operating mechanism, a screw shell contact, a metallic arbor or axle connecting the screw shell contact with the casing or receptacle, and a bent spring center contact mounted within the shell contact and having one arm held by the arbor or axle and the other free and adapted to be bent out of the way to assemble the axle and arbor with the other parts of the mechanism and then be bent back over the other arm to form a center spring contact.

34. In a pull socket the combination of a casing or receptacle provided with a cut away portion on its periphery, a flexible driving member connected to a chain rail, a driven member, a chain rail, a removable member adapted to fit in and fill the cut away portion of the casing or receptacle and assist in holding the flexible driving member on the chain rail.

35. In a pull socket the combination of a casing or receptacle provided with a cut away portion on its periphery, a flexible driving member connected to a chain rail, a driven member, a chain rail, a removable member adapted to fit in and fill the cut away portion of the casing or receptacle and assist in holding the flexible driving member on the chain rail, said removable member being provided with a horn through which the flexible driving member passes.

RALPH A. SCHOENBERG.

Witnesses:

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