

D. D. GORDON.
ELECTRIC SWITCH MECHANISM.
APPLICATION FILED SEPT. 18, 1916.

1,228,906.

Patented June 5, 1917.

2 SHEETS—SHEET 1.

Fig. 2.

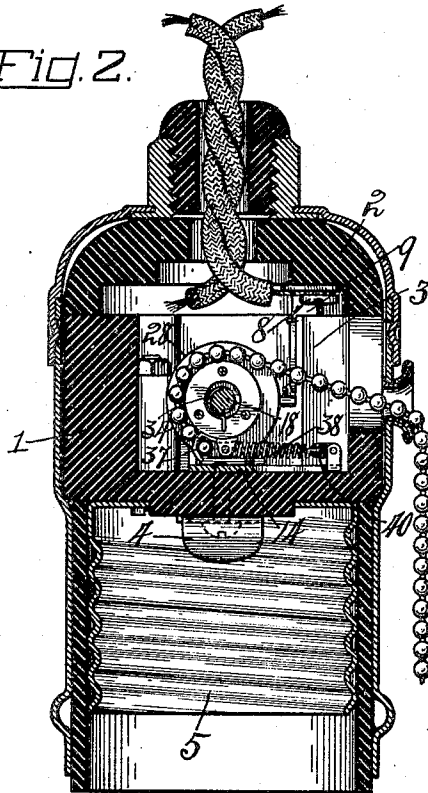


Fig. 1.

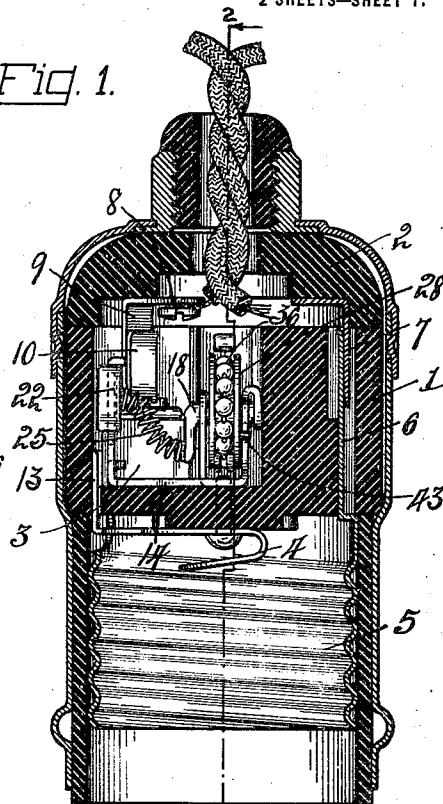


Fig. 4.

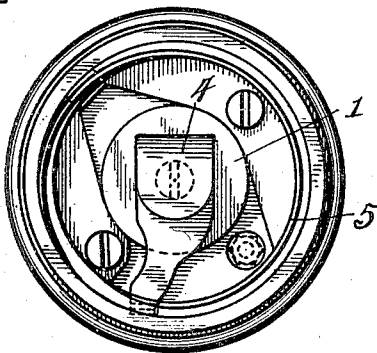
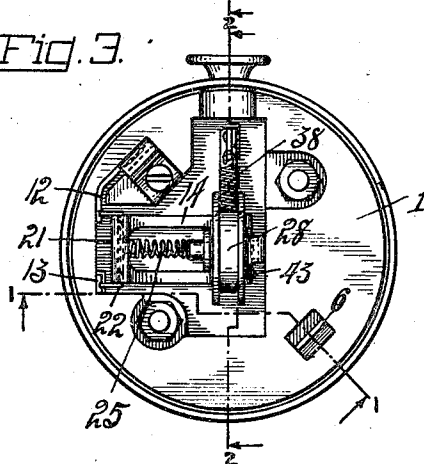


Fig. 3.



INVENTOR
David D. Gordon.
By Curn, Curn & Crompton,
His attys.

D. D. GORDON.
ELECTRIC SWITCH MECHANISM.
APPLICATION FILED SEPT. 18, 1916.

1,228,906.

Patented June 5, 1917.

2 SHEETS—SHEET 2.

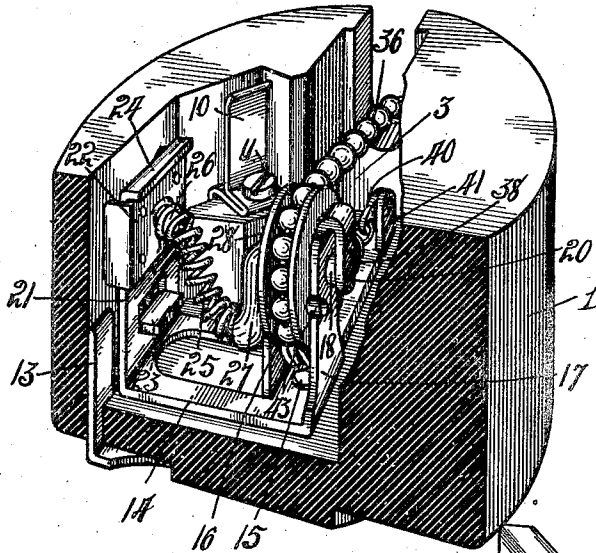


Fig. 5.

Fig. 6.

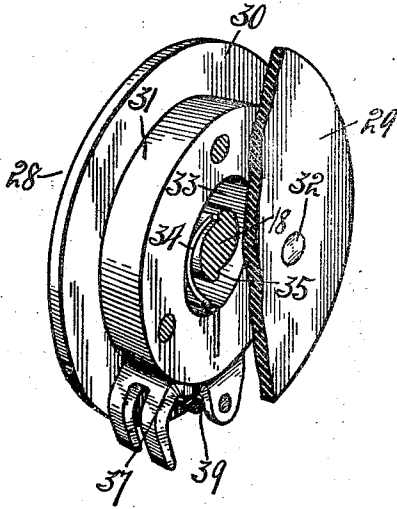


Fig. 7.

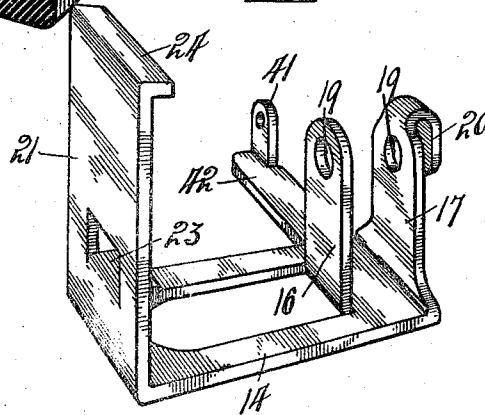
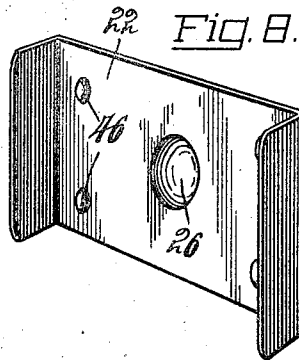


Fig. 8.



INVENTOR
David D. Gordon,
By Owen, Owen & Crampton,
his attys.

UNITED STATES PATENT OFFICE.

DAVID D. GORDON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE YOST ELECTRIC MANUFACTURING COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

ELECTRIC-SWITCH MECHANISM.

1,228,906.

Specification of Letters Patent.

Patented June 5, 1917.

Application filed September 18, 1916. Serial No. 120,780.

To all whom it may concern:

Be it known that I, DAVID D. GORDON, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Electric-Switch Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to electric switches, and particularly to those of the pull-chain type.

The object of my invention is the provision of an improved switch of the character described, which is strong, simple and durable in its construction, is capable of being easily and quickly assembled, and is admirably adapted for use in electric lamp sockets.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of an electric lamp socket embodying the invention with parts in full. Fig. 2 is a section on the lines 2—2 in Fig. 1. Fig. 3 is an inner end view of the body portion of the socket with the switch mounted therein. Fig. 4 is a view of the lamp receiving end of the socket. Fig. 5 is an enlarged sectional view of the switch carrying insulating block of the socket with parts broken away and with the switch mounted in position therein. Fig. 6 is an enlarged perspective view of the chain spool and ratchet means of the switch. Fig. 7 is an enlarged perspective view of the switch frame, and Fig. 8 is an enlarged perspective view of the bridging member of the switch.

Referring to the drawings, 1 designates the insulating body of an electric lamp socket, said body cooperating with the removable insulating cap member 2 to form the interior switch receiving well or chamber 3. A center contact 4 and a screw-shell

5, forming the side contact of the socket, are secured to the outer end of the insulating block or body 1 in the customary or any suitable manner. The shell 5 is shown as having a finger 6 extending inward therefrom through a registering opening in the insulating body 1 and into position to make contact with the contact finger or part 7, which is carried by the cap member 2 and connected to one of a set of terminal binding posts 8 (one only being shown) secured to said cap member, as is well understood in the art. The other terminal post 8 has a contact finger 9 projecting therefrom into the well or chamber 3 of the body 1 in position to make contact with a conductor part 10 when the body and cap members 1 and 2 are in assembled relation, said part 10 being fixedly mounted within the well 3, as by a screw 11, and having one end or portion forming a contact part 12 within one side of the well 3 adjacent to its bottom and in transversely spaced relation to a contact part 13, which is in electrical connection with the center contact 4, as best shown in Fig. 1.

The switch mechanism embodying my present invention, as illustrated in the drawings, includes a frame 14 of U-form with the crown part thereof seating on and secured to the bottom of the well 3 by a screw 15, which, in the present instance, is the same screw that screws the center contact 4 to the insulating block 1. A tongue 16 is struck up from the crown portion of the frame 14 in adjacent parallel relation to the leg 17 of the frame to cooperate therewith to form spaced bearing standards for the crank-shaft 18, which is journaled in axially registering openings 19, 19 in said standards. The upper end of the standard 17 is provided with a tongue 20, which is bent outward and downward in position to form an abutment for the outer end of the shaft 18 to receive the outer end thrust thereof.

The other leg 21 of the frame 14 is disposed adjacent to the contacts 12 and 13 and forms a guide for directing the reciprocatory contact making and breaking movements of a bridging-piece 22, the movements of which are limited by stop flanges 23 and 24, which are struck inward from or other-

wise suitably formed on said leg adjacent to its upper and lower ends. The bridging-piece 22 is U-shaped to adapt it to straddle the frame leg 21 at the inner side thereof and to have its legs or side flanges project in position to make respective contact with the contacts 12 and 13 when the bridging-piece is at one end of its stroke, the lower in the present instance. The bridging-piece 22 is slidably held to the frame leg or guide 21 by a coiled compression spring 25, which spring has one end in outward thrust contact with the inner side of said bridging-piece, in engagement with a centrally disposed stud 26 thereon, which is received within the end of the spring. The other end of the spring 25 is in outward thrust contact with the wrist-pin portion of a crank-arm 27 on the inner end of the shaft 18, with the wrist-pin projecting within the spring. The throw of the crank wrist-pin, when revolved, is greater than the permissible reciprocatory movement of the bridging-piece 22, so that the crank 27 and spring 25 will cooperate to effect a snap switch movement of the bridging-piece 22 first in one direction and then the other upon a shifting movement of the shaft 18, a shifting movement being imparted to the bridging-piece at each half revolution of the crank, as is apparent by reference to Fig. 5.

Mounted on the shaft 18 between the standards 16 and 17 is a spool 28 of insulating material, which spool, in the present instance, comprises the two outer disks 29 and 30 and the inner spacing disk 31 of smaller diameter, said three disks being rigidly secured together by rivets 32 or in any other suitable manner. The center disk 31 has its central shaft receiving opening 33 larger than the diameter of the shaft 18 to permit the mounting of a spring pawl 34 within said opening for successive engagement with a pair of diametrically opposed teeth 35 on the registering portion of the shaft 18 when the spool 28 is rotated, thus causing rotation to be imparted in one direction to the shaft from the rotation of the spool. The shaft turning movements of the spool 28 are actuated by a pull-chain 36, which engages a hooked finger 37 on the periphery of the center disk 31 of the spool and extends partially around said disk and thence outward from the chamber 3 through an opening in a side wall thereof. A coiled contractile spring 38 is attached at one end to a cross-pin 39 on the member 37 and extends therefrom around the spool in the opposite direction from the chain 36 and attaches at its outer end to an insulating link 40, which is in turn anchored to a finger 41, which rises from an arm 42 projecting transversely from the portion of the frame crown disposed between the standards 16 and 17. The movements of the spool 28 in

either direction are limited by extending an end of one of the rivets 32 thereof to have stop contact with the leg 17 at each end of a predetermined rotary stroke of said rivet.

The frictional contact of the bridging-piece 22 with the guide 21 is limited by providing a plurality of lugs 46 on the inner side of the bridging-piece for engagement with the guide. It is evident that the engagement of the spring 25 with the bridging-piece not only controls the shifting movements thereof but also yieldingly retains the bridging-piece in contact with the contacts 12 and 13 when moved into circuit bridging position.

It is evident that I have provided a simple, efficient and compact switch mechanism, which is operable by successive forward movements of the ratchet spool 28 from normal position to impart snap switch movements to the bridging-piece 22 first in one direction and then in the other, and that the bridging-piece is held in sliding engagement with the guide 21 by the action alone of the spring 25, thereby facilitating the assembly of the switch parts and also permitting the bridging-piece to have yielding contact with the contacts 12 and 13.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications without departing from the spirit of the invention as defined in the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a switch of the class described, a pair of spaced contacts, a bridging-piece of U-form shiftable into and out of bridging connection with said contacts, a guide for said bridging-piece and with which it has sliding contact, and means having a revoluble member and a coiled compression spring connecting said member and bridging-piece and operable to impart successive shifting movements in reverse directions to said bridging-piece and to yieldingly hold the bridging-piece to said guide.

2. In a switch of the class described, a pair of spaced contacts, a guide disposed between said contacts, a bridging-piece straddling said guide and shiftable into and out of position to have contact with said contacts, a coiled compression spring projecting from said bridging-piece in opposition to the guide, and means for compressing said spring in opposition to said bridging-piece and to exert an orbital movement to the outer end of the spring with respect to the bridging-piece to impart snap switch shifting movements to said bridging-piece into and out of engagement with said contacts.

3. In an electric socket, a pair of spaced

contacts, a stationary guide, a bridging-piece straddling said guide and slidably shiftable thereon into and out of bridging connection with said contacts, a coiled compression spring bearing at one end against said bridging-piece to exert a yielding pressure thereon in one direction, and means for receiving the opposite end thrust of said spring and movable to shift the engaged end of the spring a predetermined distance lengthwise of said guide whereby the spring is caused to shift the bridging-piece in first one and then the opposite direction on said guide.

4. In an electric socket, electrical contacts spaced transversely of said socket, a movable bridging-piece for said contacts, means guiding said bridging-piece for sliding movements longitudinally of the socket to and from contact position, a coiled compression spring bearing at one end against said bridging-piece to exert a yielding pressure thereon in one direction transversely of the socket, and means for receiving the opposite end thrust of said spring and movable to shift the engaged end of the spring a predetermined distance lengthwise of said socket and effect a shifting of the bridging-piece in first one and then the opposite direction on said guide means.

5. In an electric socket, a pair of spaced contacts, a frame having a standard rising from one end thereof and forming a guide adjacent to said contacts and having spaced standards rising from a different part thereof, a bridging-piece guided by said first standard for reciprocatory movements into and out of circuit connecting relation to said contacts, a shaft journaled in said spaced standards and having a crank at one end, and a coiled compression spring connecting said crank and bridging-piece and operable by a turning of the shaft to impart successive snap shifting movements to the bridging-piece.

6. In an electric socket, a pair of spaced contacts, a frame having three standards extending therefrom longitudinally of the socket with one of said standards adjacent to said contacts and forming a guide, a shaft journaled in said other two standards, a bridging-piece guided for shifting movements by said guide standard, a coiled compression spring projecting from said bridging-piece transversely of the guide standard, and means receiving the end thrust of said spring opposed to said bridging-piece and operable by a rotation of said shaft to impart quick shifting movements to said bridging-piece first in one and then the opposite direction lengthwise of said socket.

7. In an electric socket, a pair of spaced contacts, a guide member adjacent to said contacts, a bridging-piece in sliding engage-

ment with said guide member and having parts coacting therewith to prevent relative lateral movements of the bridging-piece with respect to the guide member, said bridging-piece having a centrally disposed outwardly projecting boss, a coiled compression spring having one end fitted over said boss, and means engaging the opposite end of said spring and operable to cause said spring to impart snap shifting movements to the bridging-piece to successively move it longitudinally of the socket into and out of contact bridging position.

8. In an electric socket, a pair of spaced contacts, a guide adjacent to said contacts and extending longitudinally of said socket, a bridging-piece shiftable on said guide lengthwise of the socket into and out of bridging relation to said contacts, a coiled compression spring in end-thrust engagement with said bridging-piece in opposition to said guide, and means receiving the end-thrust of said spring in opposition to said bridging-piece and shiftable lengthwise of the socket upon a turning of said member to move said spring to effect successive reverse shifting movements to said bridging-piece.

9. In a switch of the class described, a pair of spaced contacts, a frame having a standard rising from one end thereof and forming a guide adjacent to said contacts and having spaced standards rising from a different part thereof, a bridging-piece guided by said first standard for reciprocatory movements into and out of circuit connecting relation to said contacts, a shaft journaled in said spaced standards and having a crank at one end, a coiled compression spring connecting said crank and bridging-piece and operable by a turning of the shaft to impart successive snap shifting movements to the bridging-piece, and means operable to impart successive predetermined rotary movements to said shaft.

10. In a switch of the class described, a pair of spaced contacts, a frame having three standards rising therefrom one adjacent to said contacts and forming a guide and the other two forming bearing standards, a shaft journaled in said bearing standards and having a crank-arm, a bridging-piece guided for shifting movement by said guide standard, flanges projecting in longitudinally spaced relation from said guide standard to limit the movements of said bridging-piece, a spring member connecting said bridging-piece and crank-arm and acting to exert a thrust against said bridging-piece to retain it in sliding engagement with said guide standard and operable by turning movements of said crank to impart quick shifting movements to said bridging-piece first in one and then the opposite direction, said means operable to im-

part successive predetermined rotary movements to said shaft.

11. In a switch of the class described, a pair of spaced contacts, a frame having a guide standard rising therefrom adjacent to said contacts and provided with stop flanges in longitudinally spaced relation, a bridging member straddling said guide and guided for shifting movements thereon between said stop flanges to place its legs into and out of respective circuit bridging connection with said contacts, a shaft journaled in said frame and having a crank-arm, a coiled compression spring in opposed end-thrust engagement with said bridging member and crank-arm and operable by a turning of the arm to impart snap shifting movements to said bridging member first in one and then the opposite direction, and means operable to impart successive rotary movements to said shaft.

12. In a switch of the class described, a pair of spaced contacts, a guide member adjacent to said contacts, a bridging-piece in sliding engagement with said member and having parts coacting therewith to prevent relative lateral movements of the bridging-piece with respect to the guide, said bridging-piece having lugs projecting inward therefrom in sliding contact with said guide and having a centrally disposed outwardly projecting boss, a coiled compression spring having one end fitted over said boss, and means engaging the opposite end of said spring and operable to impart orbital movement thereto and to cause the spring to impart snap shifting movements to the bridging-piece first in one, and then the opposite direction.

13. In an electric socket, two contacts spaced transversely of the socket, a bridging-piece movable into and out of bridging relation to said contacts, means guiding said bridging-piece for sliding movements lengthwise of the socket, a shaft journaled in said socket transversely thereof and having a crank arm, and a coiled compression spring connecting said bridging-piece and crank arm in end-thrust contact therewith and operable by a turning of said crank arm to impart snap shifting movements to said bridging-piece in first one and then the opposite direction on said guide.

14. In a switch of the class described, a pair of spaced contacts, a bridging-piece shiftable into and out of circuit connecting relation to said contacts, a crank shaft having ratchet teeth in a part thereof, means in which said shaft is journaled, means connecting said crank shaft and bridging-piece for imparting successive snap shifting movements to the bridging-piece in first one and then the opposite direction when the shaft is rotated, a chain spool mounted on said shaft for turning movements rela-

tive thereto, a spring pawl carried internally by said spool for successive engagement with the shaft teeth when the spool has predetermined rotary reciprocatory movements imparted thereto, a pull-chain connected to and extending from said spool and operable to impart shaft turning movements thereto, and spring means anchored at one end and connected at its other end to said spool and operable to return the spool to normal position after a shaft turning movement thereof.

15. In a switch of the class described, a pair of spaced contacts, a guide, a bridging piece straddling said guide and slidably shiftable thereon into and out of bridging connection with said contacts, a key shaft having a crank arm, and a coiled compression spring interposed between said crank-arm and the bridging piece and operable to successively move said bridging piece into and out of contact with said spaced contacts upon a turning of the shaft and to yieldingly hold the bridging piece to said guide.

16. In a switch of the class described, a pair of spaced contacts, a guide disposed between said contacts, a bridging piece engaging said guide and slidably shiftable into and out of position for spaced parts thereof to have contact with said contacts, a coiled compression spring projecting from said bridging piece in opposition to said guide and said contacts, and a key shaft having a crank arm for engagement with the outer end of said spring and operable to impart an orbital movement to the engaged end of the spring and a consequent intermittent snap-switch shifting movement to said bridging piece into and out of engagement with said contacts.

17. In an electric socket having a well, spaced contacts and a guide standard in said well, a bridging piece engaging said standard for limited shifting movements thereon, a key shaft mounted in said socket and having a crank arm disposed within said well in transversely spaced relation to said guide standard, and a coiled compression spring compressed between said bridging piece and crank arm in engagement with each and operable to impart snap-switch movements to said bridging piece first into and then out of bridging connection with said contacts when the shaft is turned and also operable to retain the bridging piece in sliding engagement with the standard and permitting it to have yielding engagement with said contacts.

18. In an electrical connecting member, an insulating body forming a switch receiving well, spaced stationary contacts and a guide standard in said well at one side of the longitudinal center of the socket, a bridging piece engaging said standard for limited shifting movements lengthwise of

the socket into and out of bridging connection with said contacts, a key shaft mounted in said body and having a crank arm in said well, and a coiled compression spring
5 interposed between said crank arm and the bridging piece and operable upon a turning of the shaft to successively move said

bridging piece into and out of contact with said stationary contacts to yieldingly hold the bridging piece to said guide.

10

In testimony whereof, I have hereunto signed my name to this specification.

DAVID D. GORDON.