

H. E. REEVE.
LAMP SOCKET SWITCH.
APPLICATION FILED MAY 14, 1910.

988,507.

Patented Apr. 4, 1911.

Fig. 1.

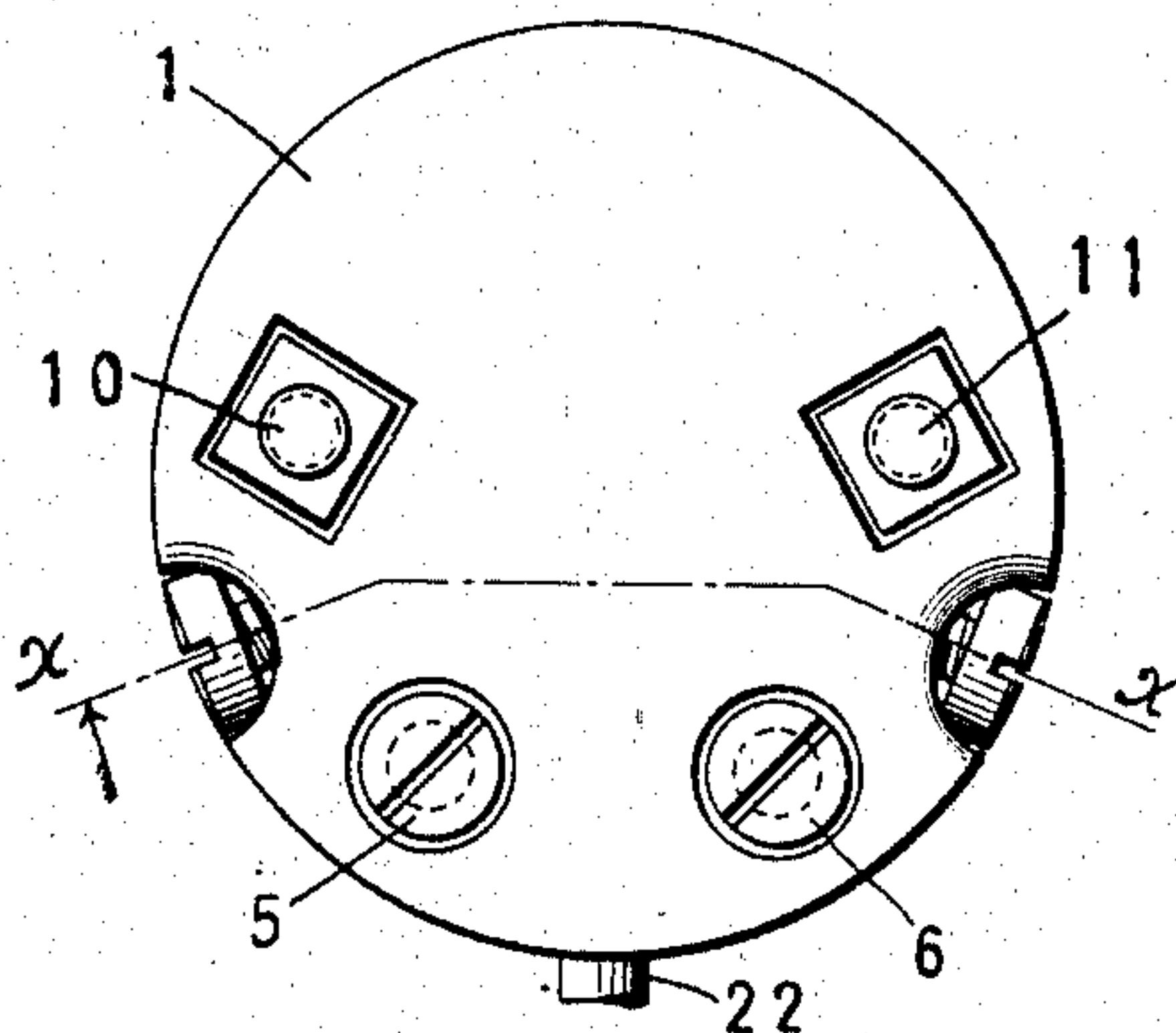


Fig. 4.

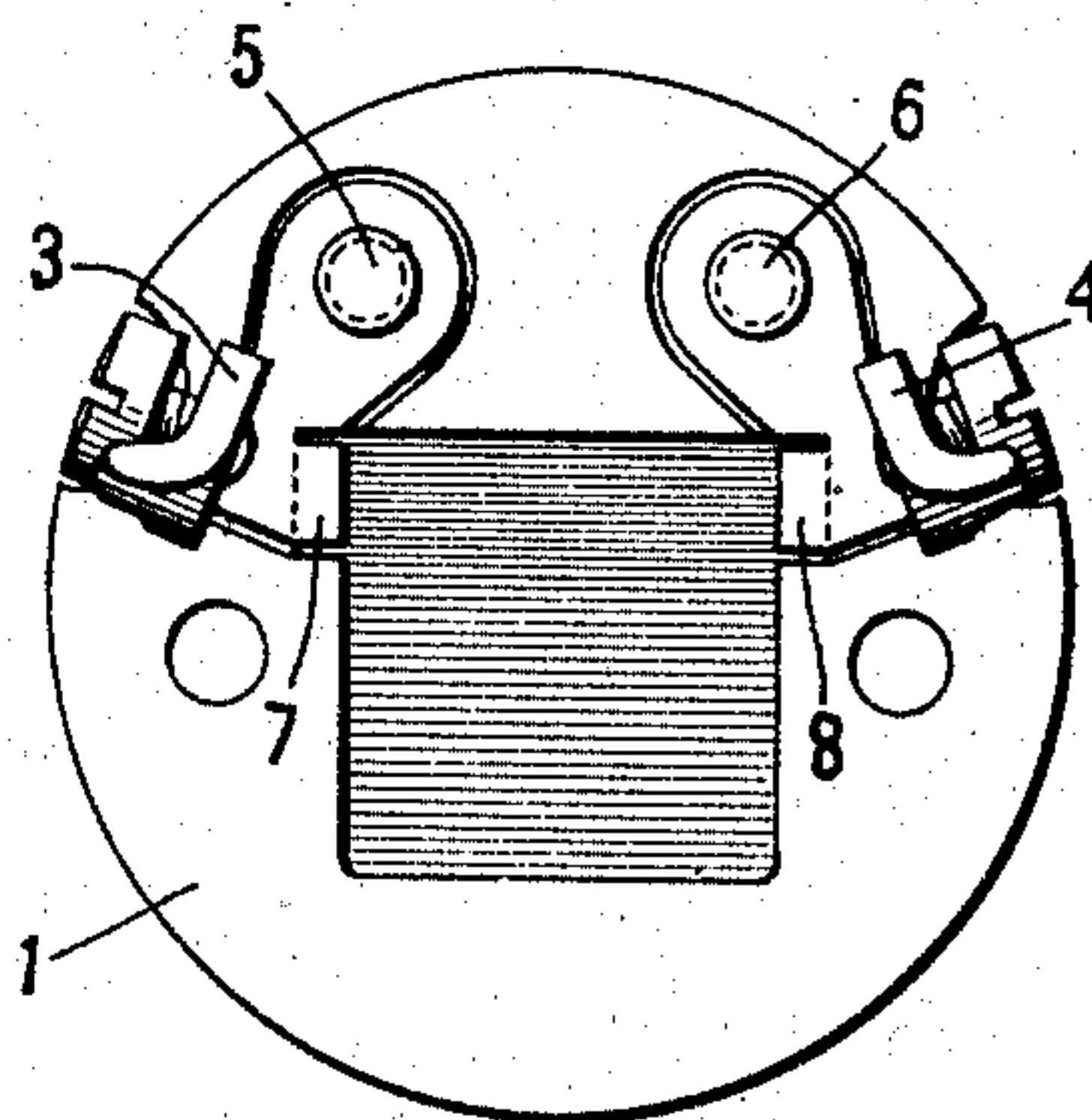


Fig. 2.

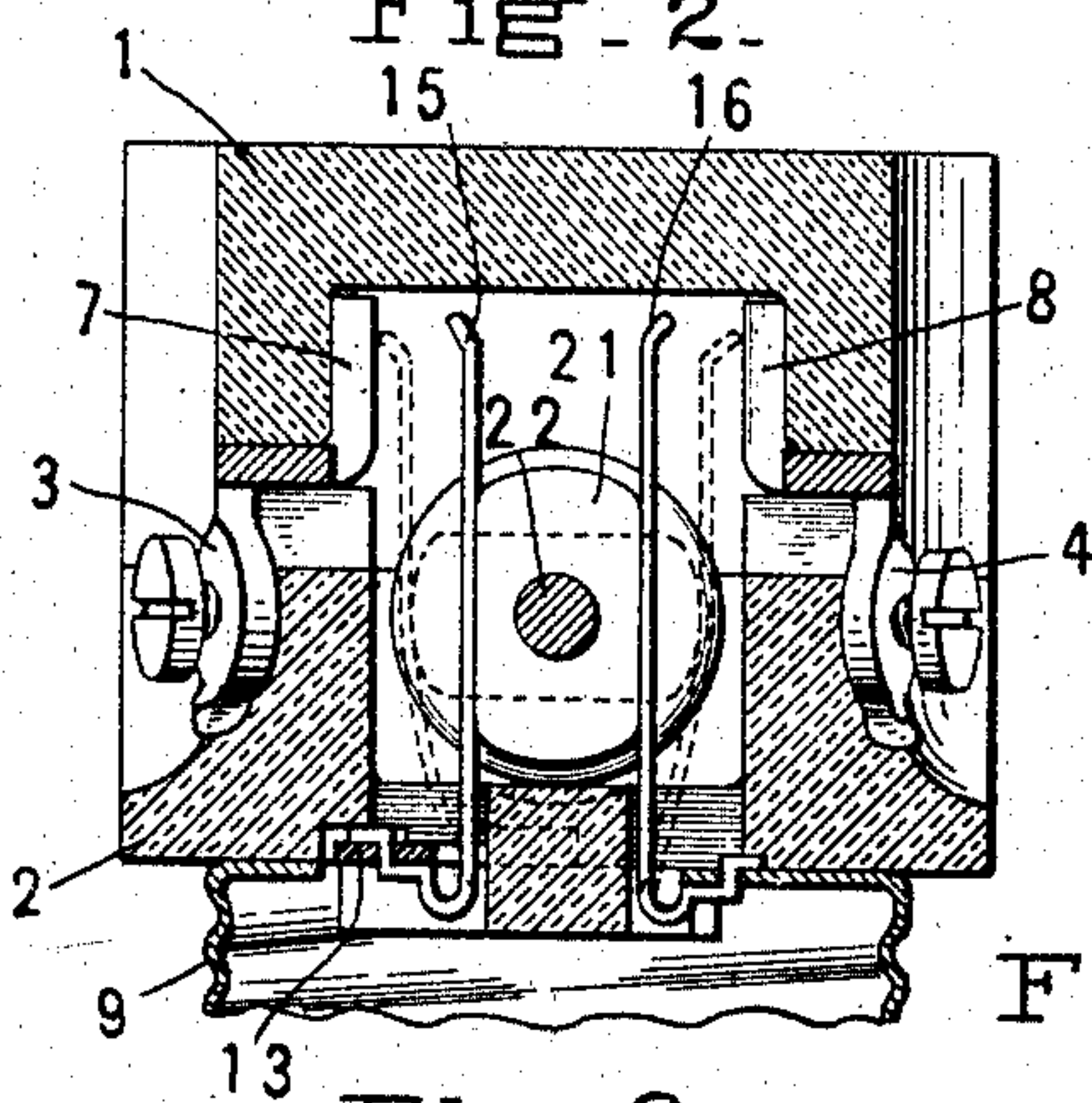


Fig. 6.

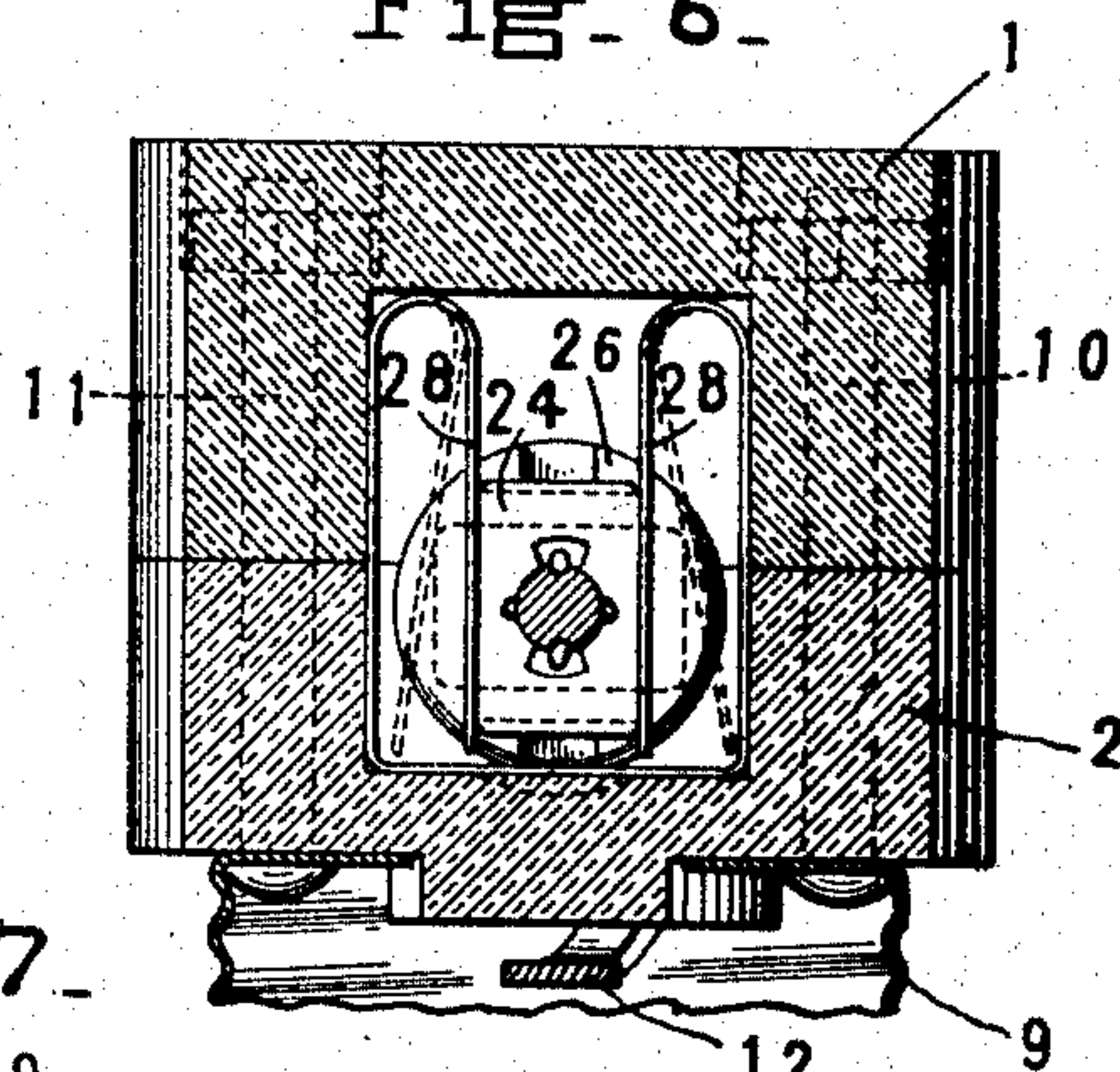
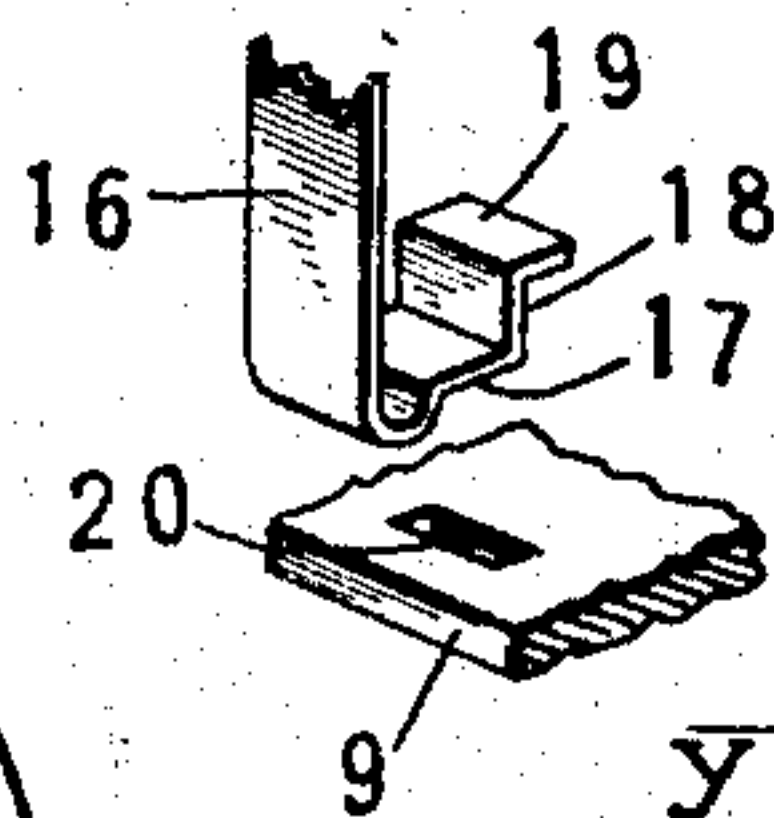


Fig. 7.



UNITED STATES PATENT OFFICE.

HENRY E. REEVE, OF NEW YORK, N. Y.

LAMP-SOCKET SWITCH.

988,507.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY E. REEVE, a citizen of the United States, residing at New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Lamp-Socket Switches, of which the following is a specification.

My invention relates to improvements in electric switches and particularly for incandescent electric lamp sockets and the like.

Switches having spring contact arms and a porcelain operating member or cam mounted in a porcelain base have many advantages but heretofore have had serious drawbacks. Where the spring arms are of sufficient strength to give a quick break or snap action the metal of the arms is apt to be drawn off on to the surface of the cam and causes short circuits. The great strain brought upon the anchorage of the switch arms often breaks the porcelain base and the power sufficient to turn the porcelain cam against the resistance of the spring contact arms sometimes breaks the cam.

It is my principal object to overcome these objections as hereinafter set forth and secure a compact but strong and durable construction which has a positive and reliable action.

In accomplishing my purpose I preferably form the base in two parts one of which carries the wire terminals and stationary contacts and the other of which carries the lamp terminals and spring contact arms. These contact arms are secured in place without the use of screws and the operation of the switch does not subject the porcelain to any substantial strain. The contact arms are operated by a cam and a supplemental spring is provided for supplying the necessary power to effect a quick break of the circuit. This power spring is so constructed that it does not subject the porcelain to any material strain.

The accompanying single sheet of drawings illustrates the preferred form of the invention.

Figure 1, is an end view of the wire terminal carrying portion of the base. Fig. 2, is a longitudinal section of the base and switch on the plane of the line X X of Fig. 1 looking in the direction of the arrow. Fig. 3, is an end view of the lamp carrying part of the base. Fig. 4, is an inside view of the wire terminal carrying part of the base.

Fig. 5, is an inside view of the lamp terminal carrying part of the base, contact arms and power spring being shown in section. Fig. 6, is a longitudinal section of the base taken on the plane of the line Y Y of Fig. 5, looking in the direction of the arrow and showing the power spring and its cam. Fig. 7, is a fragmentary perspective view showing the construction by which a spring contact arm is mounted. Fig. 8, is a perspective view of the operating member of the switch.

1 and 2 are the parts of the base structure of insulating material such as porcelain and referred to for convenience as "porcelain." The part 1 has the two wire terminals 3 and 4 secured to it by the screws 5 and 6 respectively. Integral preferably with the wire terminals are the two stationary switch contacts 7 and 8 located in an interior recess in the part 1.

A threaded lamp terminal 9 is secured to the base by the bolts 10 and 11 which also secure the two parts of the base together. The central spring lamp terminal 12 has a plate or support 13 secured to the part 2 by a screw 14. The spring contact arms 15 and 16 respectively are secured to the plate 13 and the bottom of the lamp terminal 9 preferably as shown in Figs. 2 and 7. Each spring arm for instance, as 16, has a foot 17 turned at substantially right angles thereto and an elbow 18 terminating in a tip 19. The support, such as the base of the lamp terminal 9, has an opening 20 of substantially the cross section of the elbow 18. To assemble the spring arm and its support the tip 19 is introduced from the bottom upward through hole 20 and the spring arm then turned so that the elbow 18 is in the hole 20, the tip 19 then resting on top of the support 9 and the foot 17 being beneath the edge of the support 9 as shown in Fig. 2. The cam 21 between the arms 15 and 16 holds the arms apart, the spring arms being so proportioned and shaped as to exert a slight pressure against the sides of the cam 21 when in their assembled position.

The shaft 22 ordinarily called the key shaft or operating shaft passes freely through the cam 21. The shaft 22 is provided with one or more projections or lugs such as 23, 23 which have a limited amount of lost motion in an opening in the part 24 which I will call the operating cam. This operating cam is formed preferably from sheet metal

and has its ends such as 25 bent parallel with the shaft 22 and fitting easily in recesses in the flange 26. The cam 21 and flange 26 are preferably formed of one piece of porcelain.

- 5 To prevent the shaft 22 from being withdrawn from the operating cam 24 I provide one or more projections or lugs such as 27 which do not however interfere with the partial relative rotation of the shaft and cam.
- 10 Pressing against the sides of the cam 24 are the spring arms 28, 28 which are preferably the opposite ends of a piece of spring metal such as phosphor-bronze bent in the U-shaped form as shown in Fig. 6. These
- 15 arms press equally against the opposite sides of the cam 24 when the switch is in the off position.
- When the operating shaft 22 is rotated from the position shown in full line in Figs. 2, 5 and 6 to the position shown in dotted lines in Figs. 2 and 6 the cam 24 is rotated with the shaft and forces the spring arms 28, 28 apart. As the cam 24 is turned the pressure of the spring arms 28, 28 causes the cam to be snapped suddenly over into the dotted line position. The porcelain flange 26 and cam 21 turn with the cam 24 and cause the spring contact arms 15 and 16 to be forced outwardly into the dotted line position of Fig. 2.
- 20 The spring contact arms are preferably made of comparatively thin and light material so that but little pressure is exerted upon the switch cam 21. The operating or power spring arms 28, 28 are however much
- 25 heavier and stronger so that a very quick and powerful action is obtained. Since the switch contact springs 15 and 16 exert but little pressure on the porcelain cam 21 there is very little or practically no tendency to wear off the material of the springs on to the surface of the cam 21 and thus cause the short circuiting which may occur in other types of switch. There is no current of course passing through the key shaft or
- 30 power spring or power cam of this invention. Since the switch contact arms exert but little pressure there is very little strain upon the porcelain part of the operating member, practically all the strain of turning the operating shaft 22 being exerted through the
- 35 power cam 24 in moving the power spring. As there is but little pressure upon the contact springs 15 and 16, there is scarcely any strain upon the supports 13 and 9 and practically no strain whatever brought upon the porcelain by the operation of the switch. The operating or power spring not being fastened to the porcelain at all, but simply being located in a recess in the base and being symmetrical about a vertical axis
- 40 practically no strain is brought upon the porcelain by the operation of the spring.
- 45 It will be obvious that changes and variations in the location, arrangement, size and design of the parts may be made without de-

parting from the spirit or scope of my invention as set forth in the claims.

What I claim is:—

1. A lamp socket switch comprising a porcelain base formed in two separable parts, a pair of wire terminals and stationary switch contacts carried by one of said parts, lamp terminals and spring contact arms connected thereto carried by the other part and adapted to engage the stationary contacts carried by the first part and a device for operating said spring contact arms to force them into engagement with said stationary contacts and to permit them to be disengaged therefrom by a snap break and a power spring held in a recess between the parts of said base for giving the snap action and means for securing the two parts of said base together. 70
2. In an electric switch, a pair of light spring contact arms, a porcelain cam between said arms, a second cam connected with said porcelain cam and a strong power spring engaging said second cam. 75
3. In an electric switch, a pair of spring contact arms, a porcelain cam cooperating therewith, a power spring, a cam cooperating therewith and a porcelain flange between said cams. 80
4. In an electric switch, a pair of spring contact arms, an operating cam therefor, an operating shaft, a metal cam connected to said operating cam and having a lost-motion connection with said shaft and a power spring cooperating with said metal cam. 85
5. In an electric switch, a porcelain base formed in two parts and having a recess between the parts, a pair of spring contact arms in one side of said recess, a power spring in the opposite side of said recess, an operating device cooperating with said contact arms and said power spring, an insulating member between said arms and said spring and an operating shaft connected to said operating device. 90
6. In an electric switch, switch contact arms, an operating shaft and device therefor, a power cam connected with said shaft and a U-shaped power spring having its ends turned inward and cooperating with said power cam. 95
7. In an electric switch, a base formed in two parts having a recess between the parts, contact arms in one side of said recess, a power spring in the other side of said recess, cams cooperating with said contact arms and said power spring and a non-conducting flange between said cams and an operating shaft. 100
8. In an electric switch, a non-conducting base, lamp terminals connected thereto and having openings, switch contact arms having feet under the edge of said terminals elbows located in said openings and tips engaging the opposite surfaces. 105

9. In an electric switch, a contact arm, a porcelain operating device therefor having recesses, a metal device having portions extending into said recesses, a spring coacting with said metal device and means for turning said metal device.

10. In an electric lamp socket switch, a lamp terminal having a hole 20, a switch contact arm 16 having a foot 17, an elbow 18 and a tip 19 assembled as shown and described with the elbow 18 in hole 20 and with the foot 17 and tip 19 on opposite sides of the lamp terminal and an operating member for moving said contact arm.

11. In an electric switch, a pair of stationary contacts, a pair of spring contact arms adapted to make contact therewith, an insulating operating cam to force said spring contact arms into engagement with said stationary contacts, an operating shaft supporting said cam, bearings therefor, a second cam on said shaft operatively connected with the first cam and a two-armed power spring having its two arms coacting with said second cam.

12. In an electric switch the combination of a two-part insulating base having a recess formed between the parts, two wire terminals 3 and 4 carried by one part of the base at the sides of the base and exterior to

said recess and having extensions forming stationary switch contacts 7 and 8 inside said recess, contact arms 15 and 16 carried by the other part of the base and adapted to engage said stationary contacts respectively, a cam 21 for pressing said arms against said contacts and means for operating said cam.

13. In an electric switch, the combination of an insulating base, a contact arm, a cam for moving said arm, a power cam operatively connected with said first cam and a two-armed power spring coacting with said power cam, said base having a recess in which said spring is placed and held by reason of the shape of said recess alone.

14. In an electric switch, a power cam and a power spring coacting therewith, said spring being formed of a strip of metal bent U-shaped and having its two ends extending down inside substantially parallel with the sides and near the bottom whereby each side with the extended end constitutes in effect a bow spring and substantially equal pressure is exerted by each end upon the power cam.

HENRY E. REEVE.

Witnesses:

ROBT. S. ALLYN,
E. BRADFORD.