

Jan. 23, 1951

B. SILBERMANN

2,539,333

CLAMPING DEVICE

Filed March 13, 1946

FIG. 1.

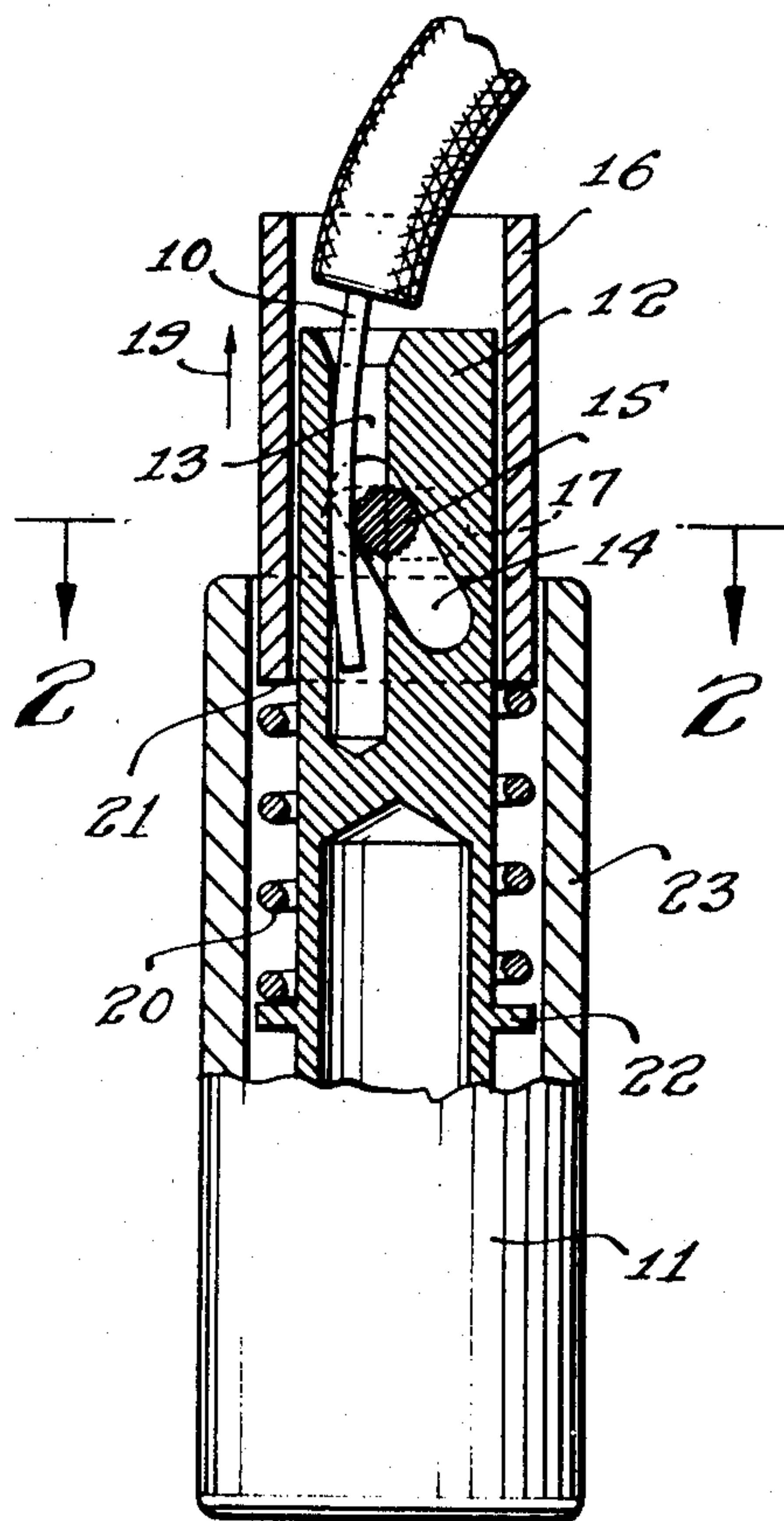


FIG. 3.

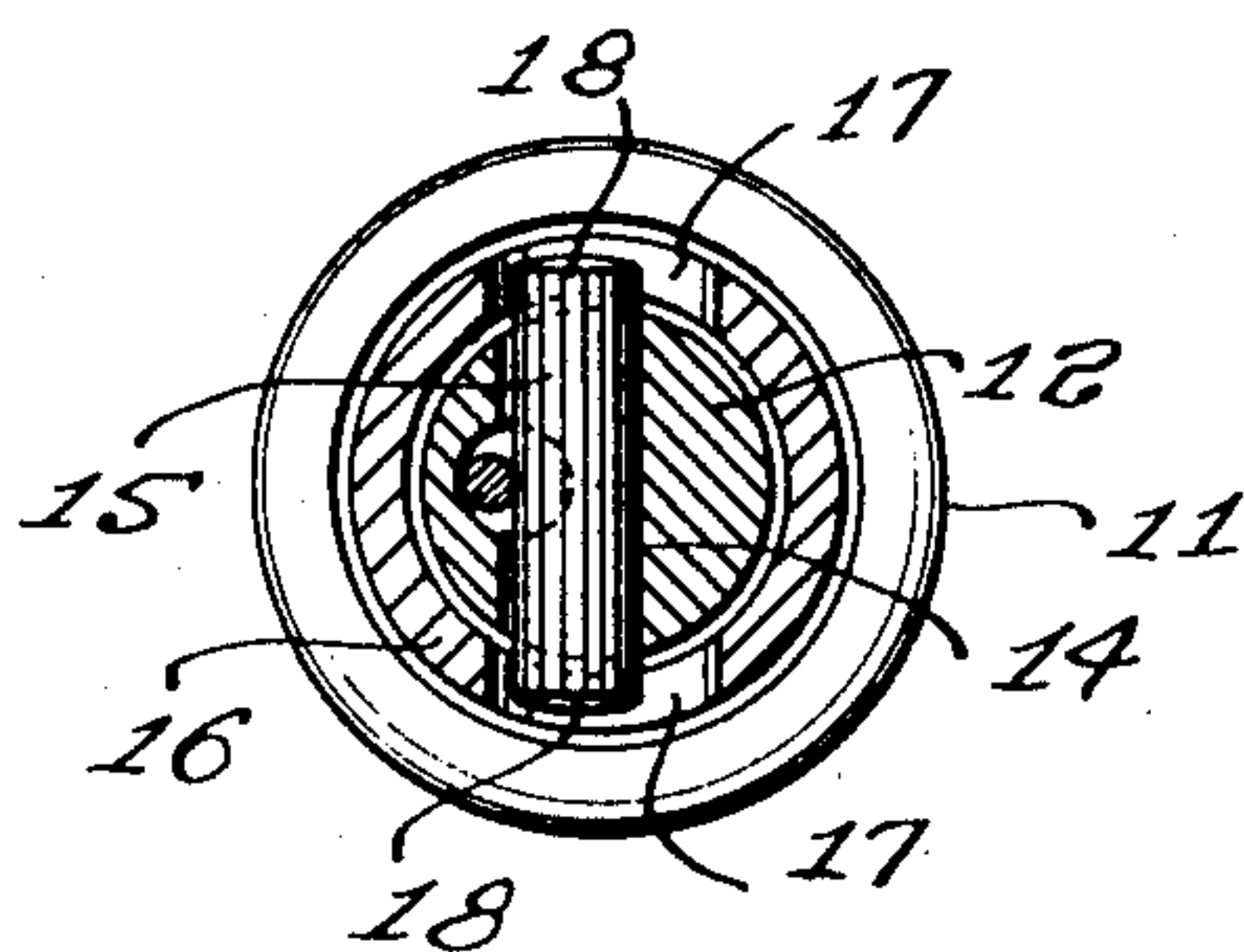
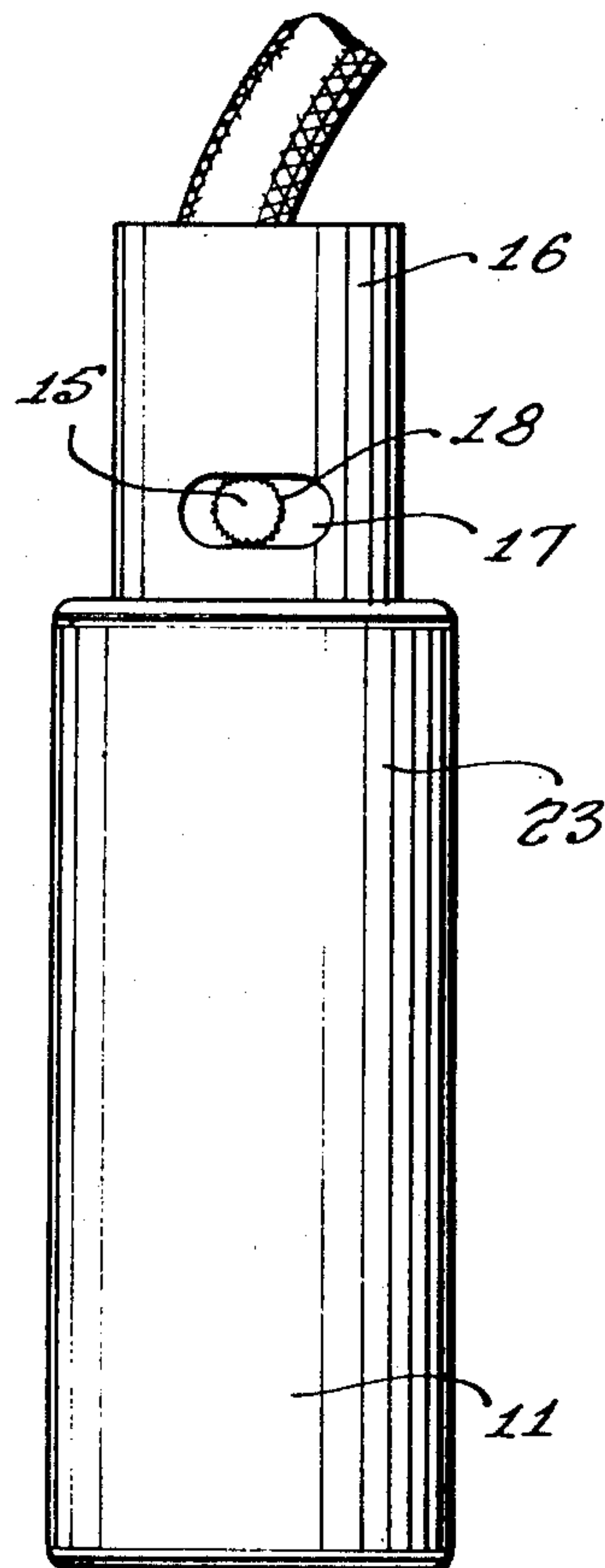


FIG. 2.

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## UNITED STATES PATENT OFFICE

2,539,333

## CLAMPING DEVICE

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Application March 13, 1946, Serial No. 654,039½  
In Switzerland December 27, 1944

6 Claims. (Cl. 173--259)

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The present invention relates to clamping devices for cord-like members, and more particularly to clamping devices for securing a wire, cable or rope to a rigid body, such as a socket.

Still more particularly, the present invention relates to means for attaching electric wires or conductors to terminals.

It is an object of the present invention to provide clamping means for the above purposes which are extremely simple in construction, reliable in operation and inexpensive to produce.

The novel features which I consider as characteristic for my invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a partial longitudinal section through a clamping device according to the present invention;

Fig. 2 is a cross section through the clamping device shown in Fig. 1, along line 2—2 of Fig. 1; and

Fig. 3 is a side view of the clamping device shown in Figures 1 and 2.

The clamping device shown in the drawing is used for securing the electric wire 10 to the terminal 11.

It includes as main elements a cylindrical member 12 which is provided with a longitudinal hole 13 adapted to receive the wire 10 as clearly shown in Fig. 1.

The cylindrical member 12 is also provided with a transversal inclined slot 14 arranged in a plane enclosing an acute angle with the hole 13 so as to cross the hole as shown.

Furthermore, I provide a pin 15 freely movably arranged within the transversal inclined slot 14 so as to be movable in this slot between inoperative position located at the lower end of the slot and the operative position shown in Figure 1, pressing against the wire 10 and firmly holding the same in the hole 13.

In order to permanently force the pin 15 from its inoperative into operative position and to keep it in such operative position, I provide a guiding member such as the guiding ring or sleeve 16 surrounding the cylindrical member 12 and freely slidable in longitudinal direction of the same.

In this guiding sleeve, two opposite guiding slots 17 are provided; each of these slots has at least in transversal direction a greater length

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than the diameter of the pin 15 and is arranged so that the end portions 18 of pin 15 are projecting into the slots 17.

The guiding sleeve is thus adapted to move the pin member from its inoperative into its operative position and back while sliding in longitudinal direction of the cylindrical member 12.

In order to attain permanent pressure of pin 15 against wire 10, it is necessary to provide pressure means which permanently tend to move sleeve 16 in direction of arrow 19. These pressure means consist of a spring 20 abutting at its upper end against the annular bottom face 21 of sleeve 16 and at its lower end against an annular projection 22 provided on the cylindrical member 12 as shown in Figure 1.

In order to obtain proper guidance for spring 20 and sleeve 16, I might provide the outer tubular enclosure member 23 which is arranged around the cylindrical member 12 spaced from the same as shown. This tubular enclosure member 23 might be made out of one piece with the cylindrical member 12 or it might be secured to the same at the bottom end of the cylindrical member in any desired manner.

I wish to stress that in order to increase the gripping action of the pin 15 the same is preferably fluted as shown.

The entire device is assembled by first introducing the spring 20 into the annular space between the cylindrical member 12 and the tubular enclosure member 23, then placing the sleeve 16 on the upper end of the spring and depressing the sleeve until the slots 17 in the same overlap with the inclined slot 14 in the cylindrical member 12. Then the pin 15 is introduced. After release of the sleeve 16, the constant pressure of spring 20 will keep the entire arrangement in assembled state.

If it is desired to clamp a wire to the terminal, the sleeve 16 is depressed against the direction of arrow 19, moving the pin 15 in the inclined slot 14 out of the hole 13 and thus permitting introduction of the wire 10. After introduction of the wire, the sleeve 16 is released and the action of spring 20 pushes the sleeve 16 in direction of arrow 19. The sleeve 16 in turn forces by means of the slots 17 the pin 15 to slide in the inclined slot 14 against the wire 10, firmly clamping the same in the hole 13.

I wish to stress that although I have described above the new clamping device invented by me as used for securing an electric wire to a terminal, such clamping devices may be used for many other purposes.



What I claim is:

1. A clamping device for a cord-like member comprising in combination a cylindrical member; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so as to cross said longitudinal hole; a pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other end of said transversal inclined slot; a guiding ring surrounding said cylindrical member and freely slidable in longitudinal direction of the same; two opposite guiding slots in said guiding ring having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slots, said guiding ring thus adapted to move said pin member from its inoperative into its operative position and back during its sliding in longitudinal direction of said cylindrical member; and pressure means permanently tending to slide said guiding ring into its operative position in which said pin member guided by said guiding ring is in its operative position.

2. A clamping device for a cord-like member comprising in combination a cylindrical member; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so as to cross said longitudinal hole; a pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other end of said transversal inclined slot; a guiding ring surrounding said cylindrical member and freely slidable in longitudinal direction of the same; two opposite guiding slots in said guiding ring having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slots, said guiding ring thus adapted to move said pin member from its inoperative into its operative position and back during sliding along said cylindrical member from its inoperative into its operative position; and spring means permanently tending to slide said guiding ring into its operative position in which it is holding by means of said opposite guiding slots said pin member in its operative position.

3. A clamping device for a cord-like member comprising in combination a cylindrical member; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so

as to cross said longitudinal hole; a pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other end of said transversal inclined slot; a guiding ring surrounding said cylindrical member and freely slidable in longitudinal direction of the same; two opposite guiding slots in said guiding ring having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slots, said guiding ring thus adapted to move said pin member from its inoperative into its operative position during sliding along said cylindrical member from its inoperative into its operative position; an abutment on said cylindrical member spaced from said guiding ring; spring means surrounding said cylindrical member and extending between said abutment and said guiding ring permanently tending to slide said guiding ring into its operative position in which it is holding by means of said opposite guiding slots said pin member in its operative position.

4. A clamping device for a cord-like member comprising in combination a cylindrical member; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so as to cross said longitudinal hole; a pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other end of said transversal inclined slot; a guiding operating sleeve surrounding said cylindrical member and freely slidable in longitudinal direction of the same; two opposite guiding slots in said guiding operating sleeve having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slots, said guiding operating sleeve thus adapted to move said pin member from its inoperative into its operative position and back during its sliding in longitudinal direction of said cylindrical member; and pressure means permanently tending to slide said guiding operating sleeve into its operative position in which said pin member guided by said guiding operating sleeve is in its operative position.

5. A clamping device for a cord-like member comprising in combination a cylindrical member; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so as to cross said longitudinal hole; a pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other



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end of said transversal inclined slot; a guiding operating sleeve surrounding said cylindrical member and freely slidable in longitudinal direction of the same; two opposite guiding slots in said guiding operating sleeve having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slots, said guiding operating sleeve thus adapted to move said pin member from its inoperative into its operative position during sliding along said cylindrical member from its inoperative into its operative position; an abutment on said cylindrical member spaced from said guiding operating sleeve; spring means surrounding said cylindrical member and extending between said abutment and said guiding operating sleeve permanently tending to slide said guiding operating sleeve into its operative position in which it is holding by means of said opposite guiding slots said pin member in its operative position.

6. A clamping device for a cord-like member comprising in combination an outer body member; a cylindrical hole arranged within said outer body member; a cylindrical member arranged within said cylindrical hole in longitudinal direction of the same and secured at the bottom of said cylindrical hole to said outer body member so as to form an annular space between its cylindrical surface and the cylindrical surface of said cylindrical hole; a longitudinal hole arranged within said cylindrical member in longitudinal direction thereof and adapted to receive an end portion of said cord-like member; a transversal inclined slot through said cylindrical member arranged in a plane enclosing an acute angle with said longitudinal hole in said cylindrical member so as to cross said longitudinal hole; a

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pin member freely movably arranged within said transversal inclined slot so as to be movable in said transversal inclined slot between inoperative position located at one end of said transversal inclined slot and operative position located at the other end of said transversal inclined slot; a guiding operating sleeve arranged within said annular space surrounding said cylindrical member and freely slidable in longitudinal direction of the same so as to permanently protrude from said cylindrical hole within said outer body member; two opposite guiding slots in said guiding operating sleeve having each at least in transversal direction a greater length than the diameter of said pin member and arranged so that the end portions of said pin member are protruding into said opposite guiding slot, said guiding operating sleeve thus adapted to move said pin member from its inoperative into its operative position during sliding along said cylindrical member from its inoperative into its operative position; and spring means arranged also within said annular space surrounding said cylindrical member permanently tending to slide said guiding operating sleeve into its operative position in which it is holding by means of said opposite guiding slots said pin member in its operative position.

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## REFERENCES CITED

The following references are of record in the file of this patent:

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