

(No Model.)

W. J. BELCHER.
TROLLEY LINE CLAMP.

No. 545,187.

Patented Aug. 27, 1895.

Fig. 1.

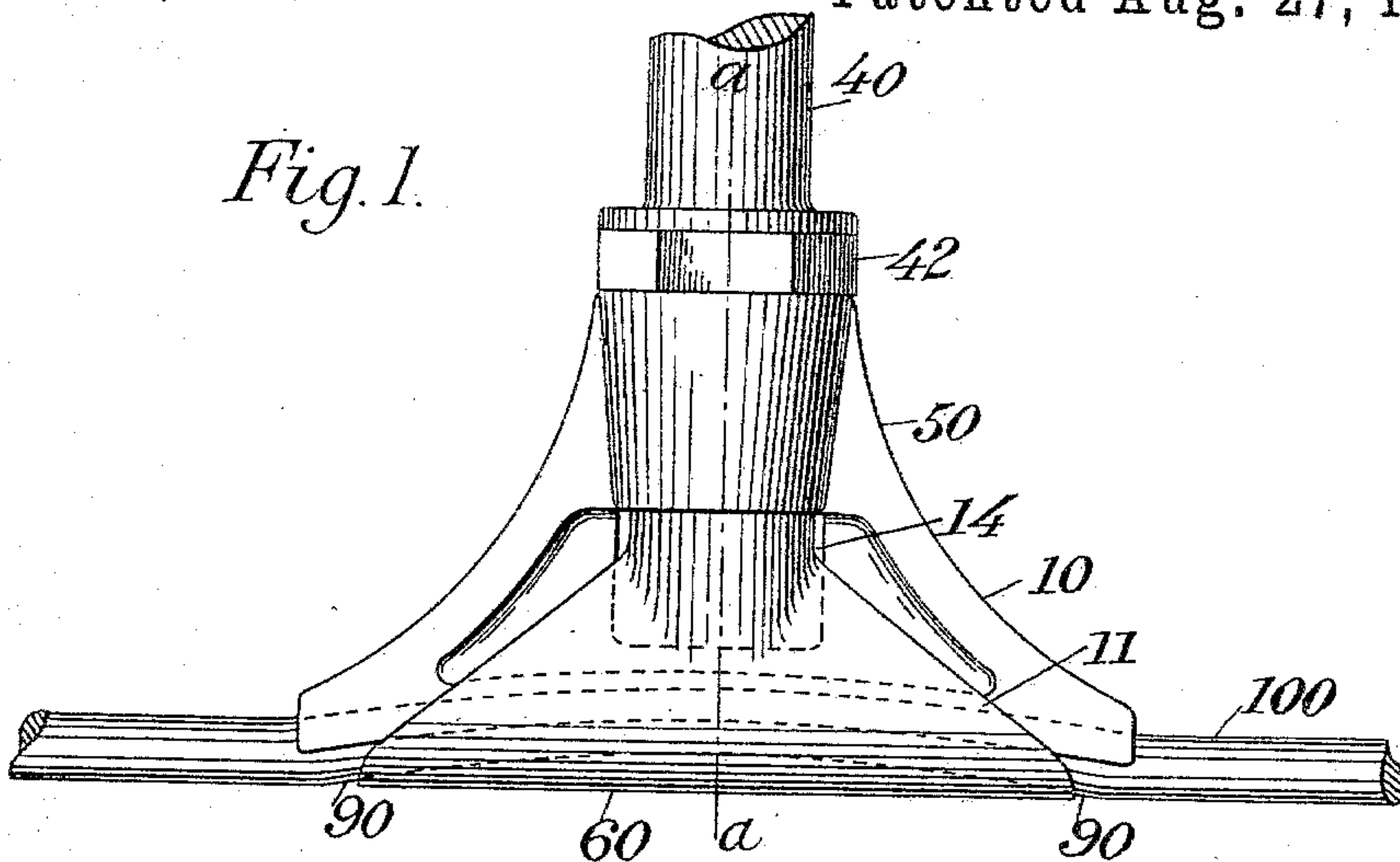


Fig. 2.

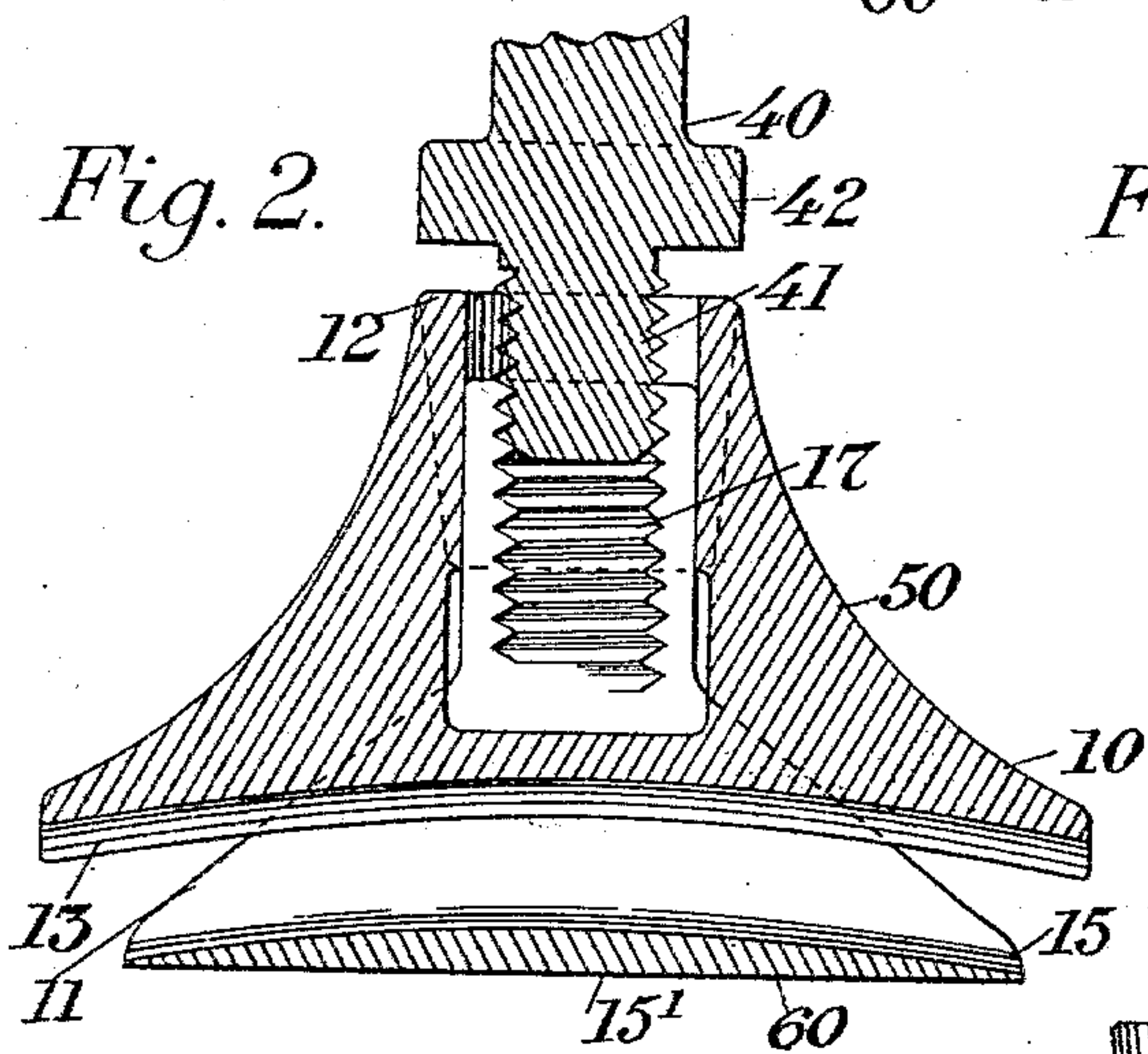


Fig. 3.

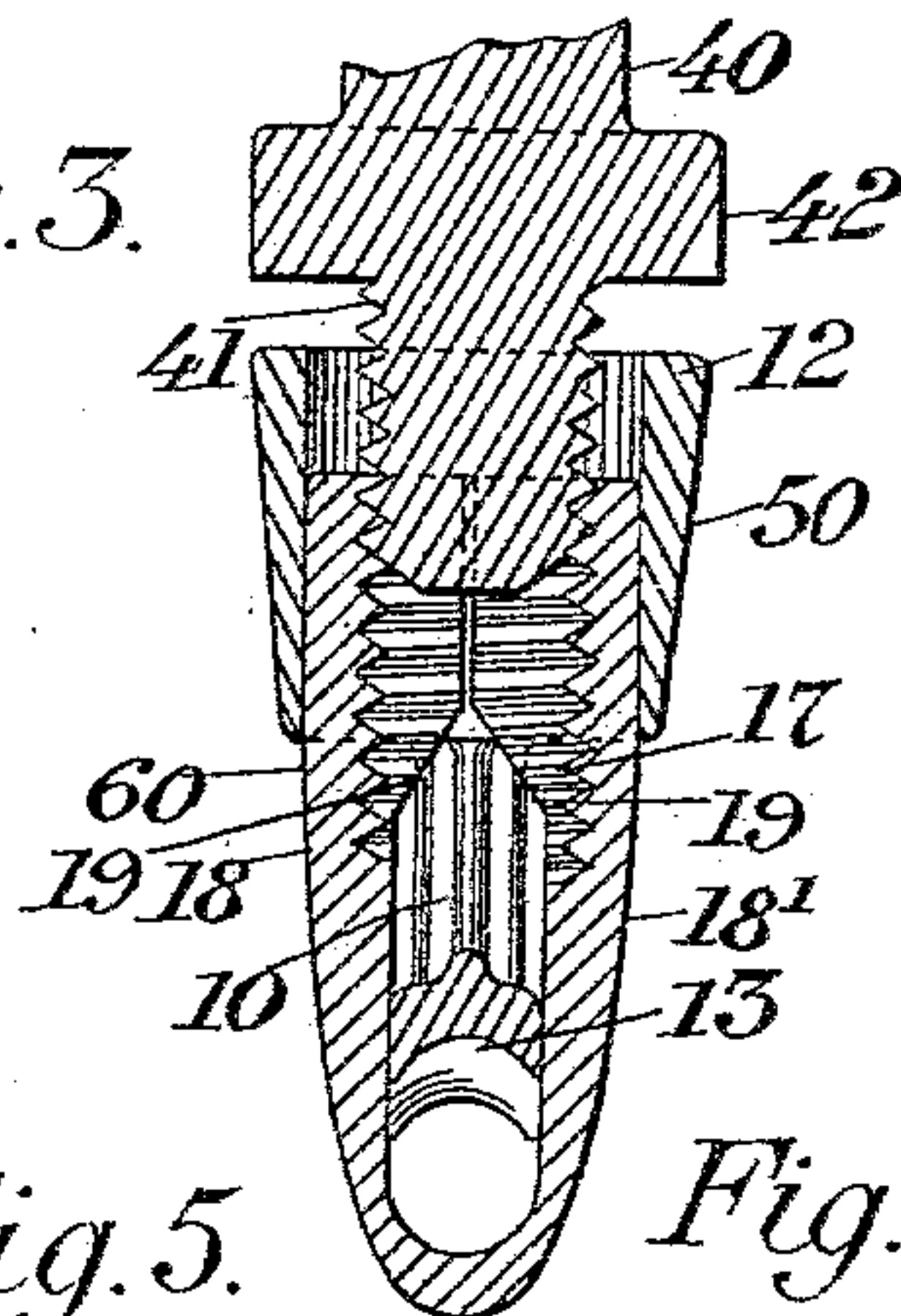
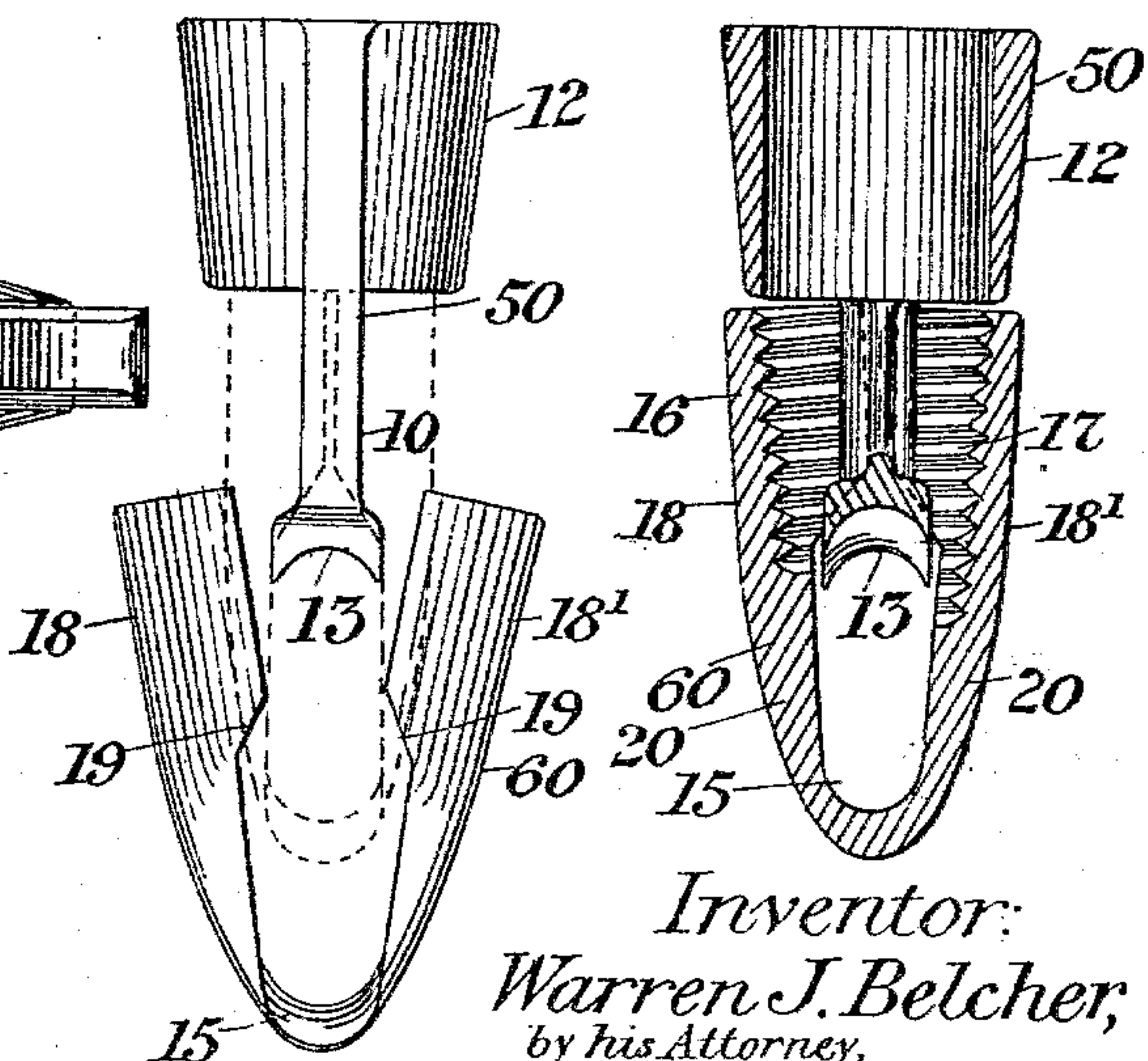
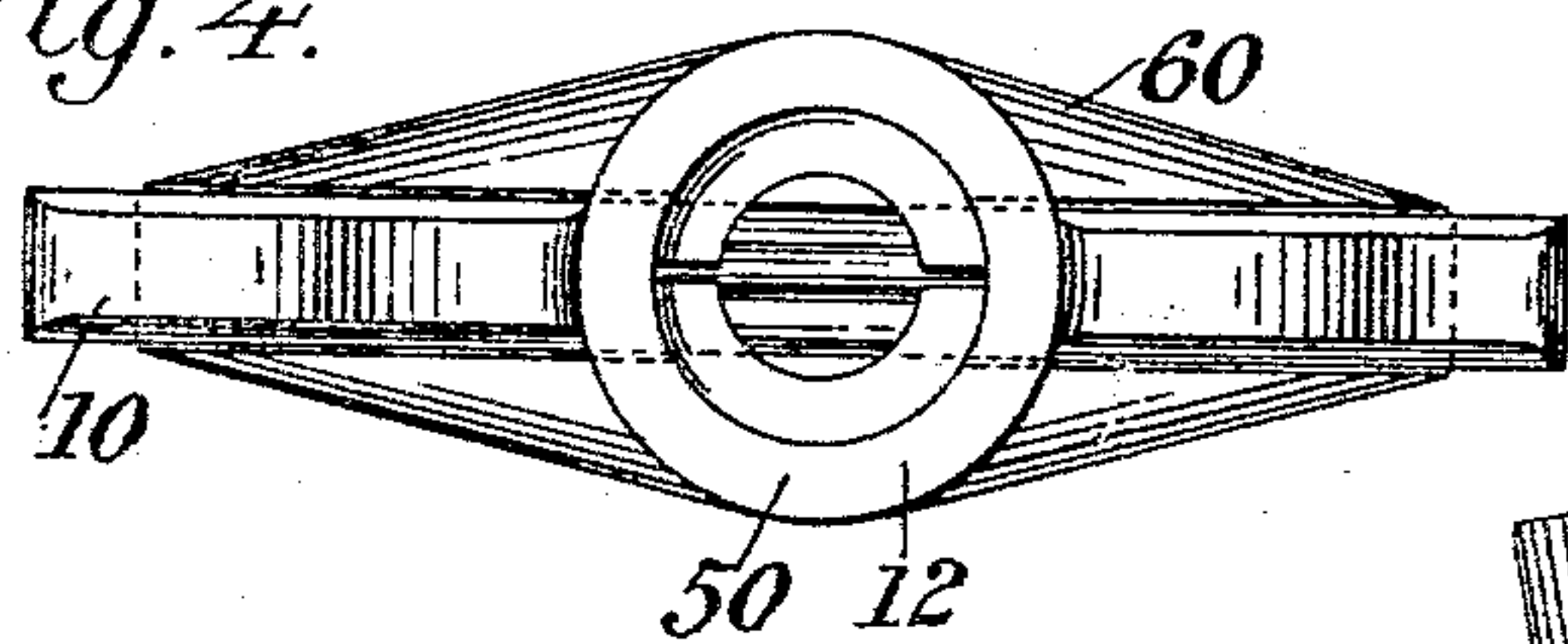


Fig. 5.

Fig. 6.

Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

WARREN J. BELCHER, OF HARTFORD, CONNECTICUT.

TROLLEY-LINE CLAMP.

SPECIFICATION forming part of Letters Patent No. 545,187, dated August 27, 1895.

Application filed April 11, 1895. Serial No. 545,297. (No model.)

To all whom it may concern:

Be it known that I, WARREN J. BELCHER, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Trolley-Line Clamps, of which the following is a specification.

This invention relates to "clamps" of that class commonly known as "trolley-line" clamps, the objects of the invention being to provide a simple, strong, effective, and durable clamp adapted for securely holding the trolley-wire by forcibly clamping the same between two opposing members, and to provide a clamp having its several members so interlocked and secured together as to maintain the same positively assembled and thereby resist the vibrations to which the device is necessarily subjected while in use.

A further object of the invention is to provide a clamp which can be quickly and easily assembled and one in which the several parts thereof can be quickly and easily replaced when rendered useless by reason of wear or breakage.

In the drawings accompanying and forming part of this specification, Figure 1 is a side elevation of the complete trolley-line clamp, showing the same assembled in connection with a trolley-wire supported thereby. Fig. 2 is a longitudinal vertical section of the device shown in Fig. 1. Fig. 3 is a transverse vertical section in line *a a*, Fig. 1. Fig. 4 is a top plan view of the clamp with the supporting-stud thereof removed. Fig. 5 is an end elevation of the upper clamp and the lower clamp, the latter being shown with its longitudinally-divided sleeve or stem in open position preparatory to assembling the two clamping-jaws effectively, and showing in dotted lines the lower clamp after the same has been sprung around the clamping-jaw of the upper clamp in position ready for the insertion of its stem or sleeve into the lower portion of the upper clamp sleeve or socket. Fig. 6 is a transverse vertical section corresponding to line *a a*, Fig. 1, showing the two clamping-jaws partially assembled, the sleeve or stem of the lower clamp having been sprung around the sides of the upper clamping jaw or bar and in position for the stem or sleeve

of the lower clamp to be inserted into the sleeve or socket of the upper clamp.

Similar characters indicate like parts in all the figures of the drawings.

The invention may be constructed of any suitable material, preferably of metal; and it consists, in the preferred form thereof herein shown and described, of two clamping members, designated generally as 50 and 60, each of said members being provided with clamping-jaws 10 and 11, adapted to clamp and support a trolley-line wire, as 100. The upper clamping member 50 is provided with a receiving sleeve or socket 12. Connected to the socket 12 by any suitable means, but by preference integrally connected therewith, although it is understood that any other suitable connection might be used, is a longitudinally upwardly-curved clamping jaw or bar 10, provided with a clamping-surface 13, extending the entire length of the clamping jaw or bar and adapted to partially encircle and clamp upon the trolley-line wire, as 100.

The upper clamping member 50 has a part thereof struck out or cut away between the lower edge of its sleeve or socket 12 and the clamping bar or jaw 10, forming an aperture 14, into which the divided sleeve or stem of the lower clamping member is adapted to be sprung, as hereinafter described.

The lower clamping member 60 consists, in the preferred form thereof herein shown and described, of an upwardly-bent wire-supporting portion 15, having its ends cut away or inclined to form a sleeve or stem 16 at its upper part, said stem or sleeve being provided internally with screw-threads, as 17. The sleeve or stem 16 is divided longitudinally while being manufactured to form two spring members 18 and 18', said members being separated a sufficient distance to permit the trolley-wire, as 100, and the clamping jaw or bar 10 to be sprung therein, said sleeve or stem members being cut away or inclined, as at 19, to permit the upper edges of said members 18 and 18' to swing into position under the lower edge of the upper sleeve or socket 12 when said members are sprung over the clamping jaw or bar 10, ready for insertion into said upper sleeve or socket 12, hereinafter described. This sleeve or stem 16, with its divided members 18 and 18', is sprung

around the clamping jaw or bar 10 and adapted to be inserted or sprung into the sleeve or socket 12 and held therein by frictional contact with said sleeve or socket.

5 A supporting-stud, as 40, of the usual or any suitable construction, having a screw-threaded end 41 and shoulder 42, is adapted to be inserted into the upper sleeve 12 and into the female screw 17 of the sleeve or stem 10 16, and when firmly screwed down will draw said lower sleeve or stem 16 into the upper sleeve or socket 12, said male screw 41 constituting a wedge for expanding the spring members of the lower sleeve or stem to tightly 15 clamp the same within the upper sleeve or socket.

The bent or line-supporting part 15 of the lower clamping member is formed preferably thicker near the central portion of its length, 20 as at 15', tapering from its ends to said central portion, so that said lower clamping member will be slightly curved longitudinally relative to the longitudinal curve of the upper clamping jaw or bar 10. These 25 curved portions of the two clamping-jaws permit the grasping of the trolley-wire with great force the entire length of said jaws, thereby causing the said wire to be curved while passing through said jaws, as shown at 30 90, so that it will be impossible for the wire to slip by the vibrations of the system. The reinforced part 15' of the lower clamp will also prevent the wearing through of said clamp by the friction of the trolley-roller, and 35 thereby present a more durable clamp. The lower clamping member 60 has its sides reinforced, as at 20, relative to the size of the trolley-line, for the purpose of further increasing the strength and durability of the 40 clamping-jaw.

In the use of this improved clamp the lower clamping member 60 is sprung over the trolley-line by means of its divided spring-sleeve members 18 and 18', and over the clamping 45 jaw or bar 10 of the upper clamping member 50, and inclosing the same approximately its entire length and permitting the trolley-wire to rest upon the inner curved surface 15' of said lower clamping-jaw. The divided sleeve 50 or stem of the lower clamping member is then pressed together and sprung into the sleeve or socket of the upper clamping member until the inner edges of said members 18 and 18' are practically parallel with each other, 55 as shown in Figs. 2 and 3. The threaded end of the supporting-stud is then inserted into the upper end of the sleeve or socket 12 of the upper member 50 and is screwed down until the shoulder 42 thereon bears firmly on the upper edge of the upper sleeve or socket. 60 The stud is then firmly screwed down, drawing upwardly and expanding the divided sleeve or stem of the lower clamping member within the upper sleeve of the upper member, and thereby forcibly clamping the two 65 jaws 10 and 11 firmly together onto the trolley-line. When the stud is firmly screwed

down, the lower sleeve or stem being divided longitudinally, said sleeve is forcibly expanded by the threaded stud, which acts as a 70 wedge for this purpose, the result being that the three members thus coact as a clamping device and are all firmly bound together with a self-adjusting fit. The forcibly-expanded sleeve or stem of the lower clamping member 75 within the sleeve or socket of the upper clamping-jaw thereby secures the two clamping-jaws together, encircling the trolley-wire with great firmness, and enables said clamp to effectually resist the usual vibrations of 80 the system and prevent the several members constituting the clamp from being jarred apart or loosened.

In the use of this improvement it will be readily seen that should any of the parts 85 wear out, or become broken by any means, they can be easily replaced at a very small cost of labor, time, and expense.

I claim as my invention—

1. In a clamp of the class specified, the combination with an upper and a lower clamping-member; the upper clamping-member comprising a receiving-sleeve and a clamping-jaw, and having an opening intermediate of the lower end of said sleeve and the jaw; and 95 the lower clamping-member comprising a clamping-jaw adapted to extend around the clamping-jaw of the upper member, and having a longitudinally-divided sleeve, the adjoining edges thereof meeting within the opening of the upper member, and having the 100 sleeve thereof projecting into the receiving-sleeve when the members are assembled; and means for expanding said divided sleeve within the receiving-sleeve, and holding said 105 members assembled, substantially as described.

2. In a clamp of the class specified, the combination with an upper and a lower clamping-member; the upper clamping-member 110 comprising a receiving-sleeve and a clamping-jaw, and having an opening intermediate of the lower end of said sleeve and the jaw; and the lower clamping-member comprising a clamping-jaw adapted to extend around the 115 clamping-jaw of the upper member, and having a longitudinally-divided, internally-screw-threaded sleeve, the adjoining edges thereof meeting within the opening of the upper member, and having the sleeve thereof projecting 120 into the receiving-sleeve when the members are assembled; and a threaded-stud constituting a wedge adapted to enter and expand said divided screw-threaded sleeve in said receiving-sleeve, substantially as described. 125

3. In a clamp of the class specified, the combination with an upper and a lower clamping-member; the upper clamping-member comprising a receiving-sleeve and a clamping-jaw continuous from end to end thereof, and 130 having an opening intermediate of the lower end of said sleeve and the jaw; and the lower clamping-member comprising a clamping-jaw adapted to extend around the clamping-jaw

of the upper member, and having a longitudinally-divided internally-screw-threaded sleeve, the adjoining edges thereof meeting within the opening of the upper member, and having the sleeve thereof projecting into the receiving-sleeve when the members are assembled; and a screw-threaded stud constituting

a wedge adapted to enter and expand said divided screw-threaded sleeve in said receiving-sleeve, substantially as described.

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