No. 897,300. PATENTED SEPT. 1, 1908.

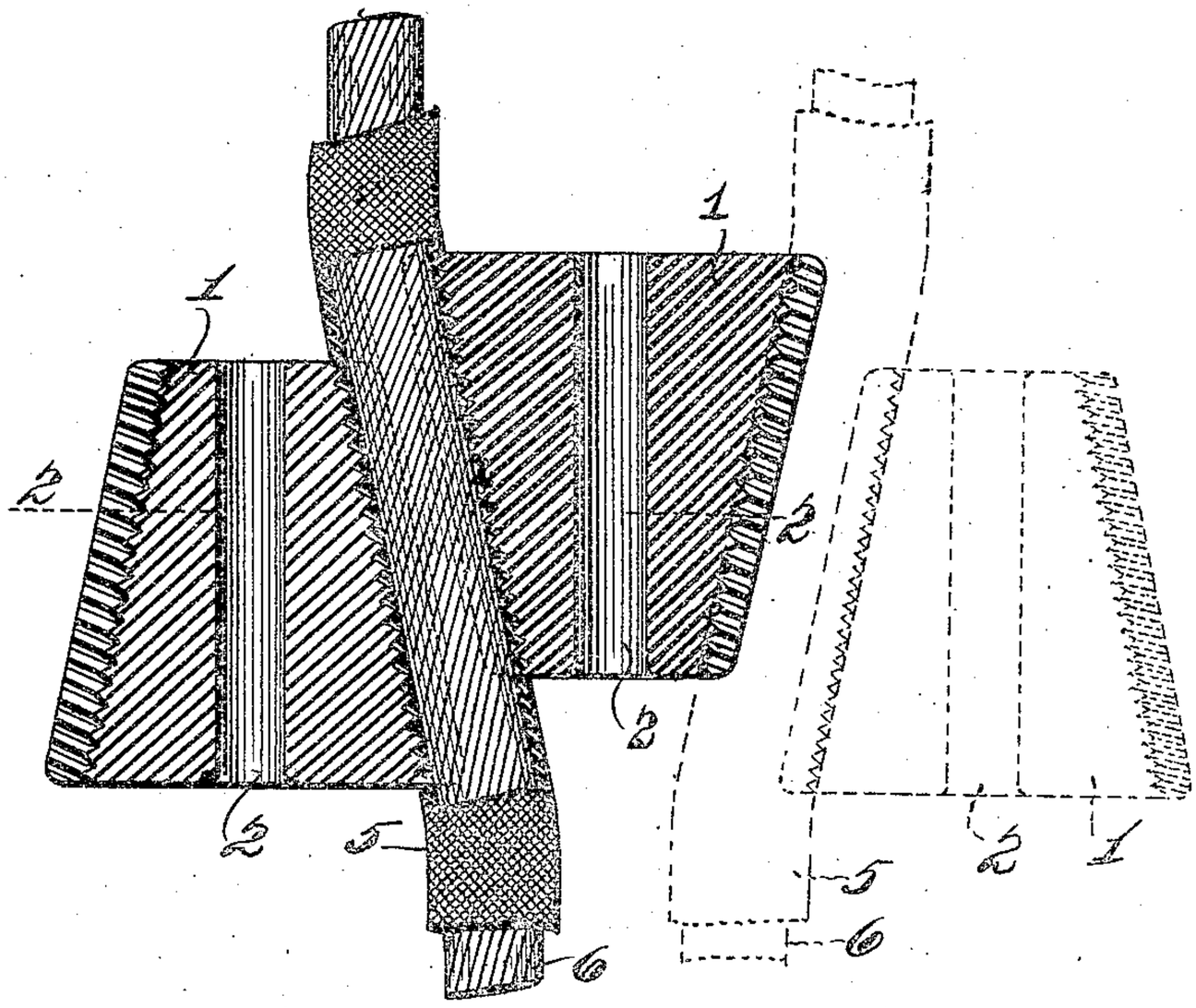
E. W. MULLER.

ELECTRIC CABLE CLAMP.

APPLICATION FILED FEB. 8, 1908.

3 SHEETS—SHEET 1.

Fig. 1.



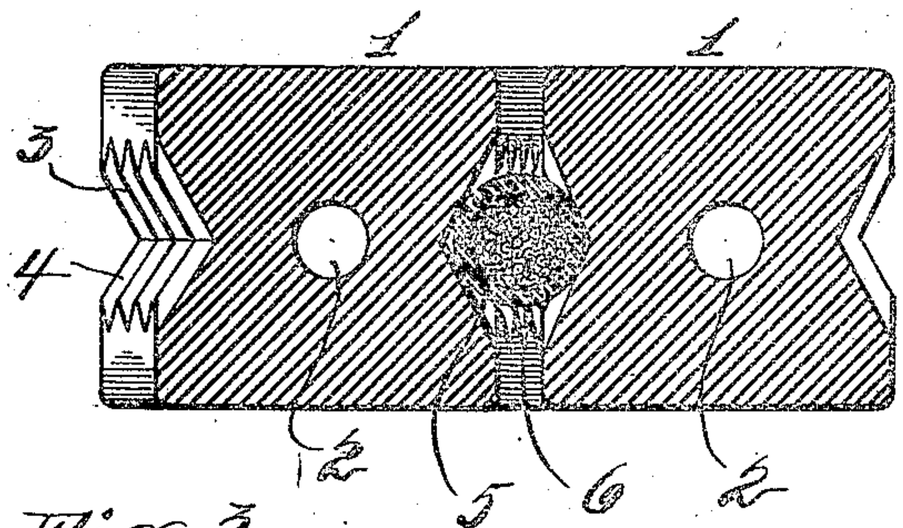


Fig. 2.

Fig. 3.

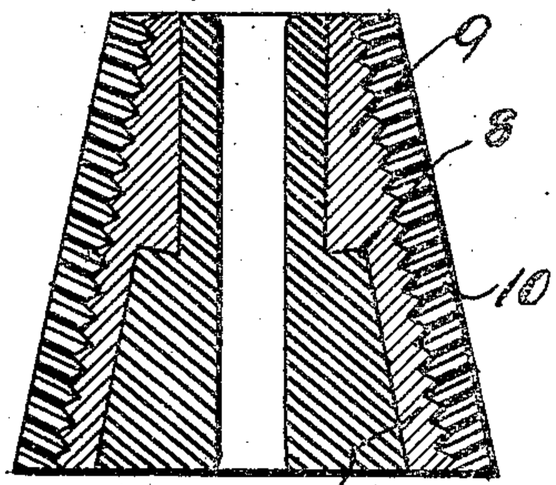
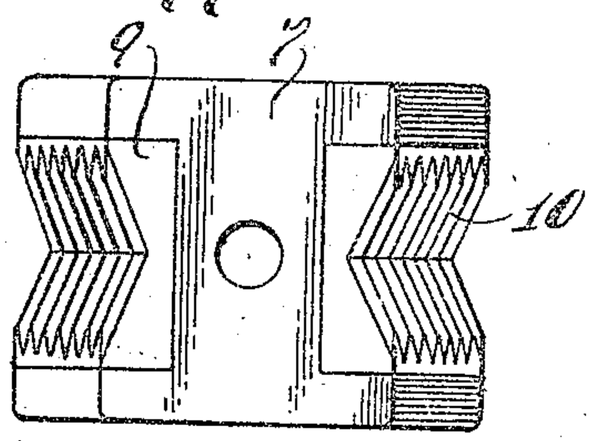


Fig. 4.



Witnesses:
C. A. Jarvis
Mabel Dittenhofer

Inventor
Ernest W. Muller;
By Christie and Wright
his attorneys

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3 SHEETS—SHEET 2.

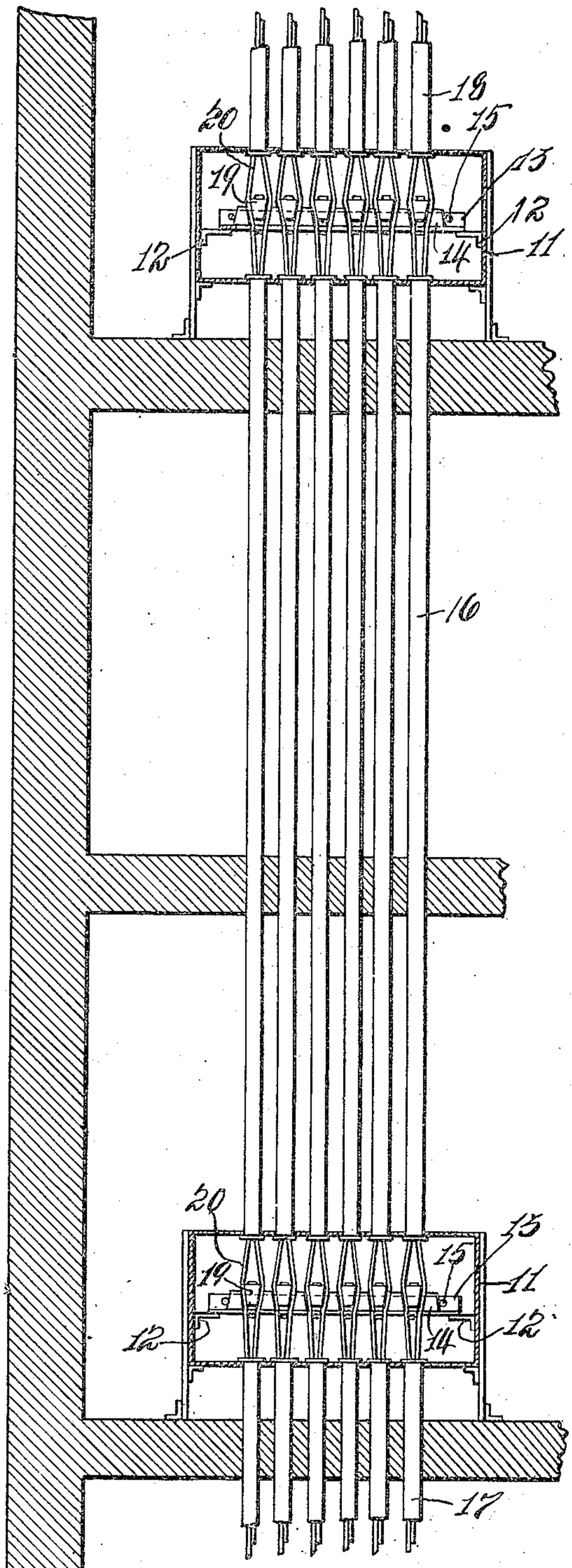

Fig. 5.

Witnesses;
C. A. Jarvis
Mabel Dittenhofer

Inventor:
Ernest W. Muller.
By Chapin and Wright
his Attorneys.

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E. W. MULLER.

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3 SHEETS—SHEET 3.

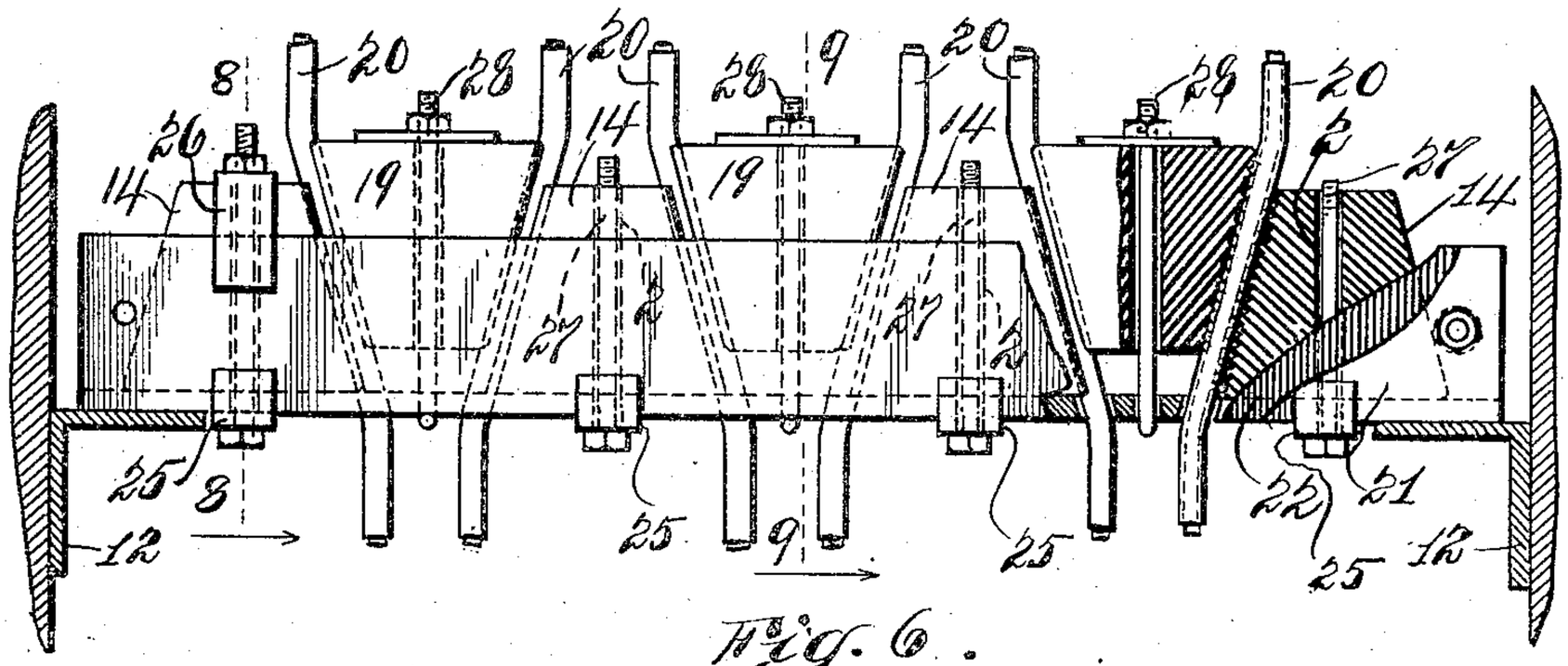

Fig. 6.

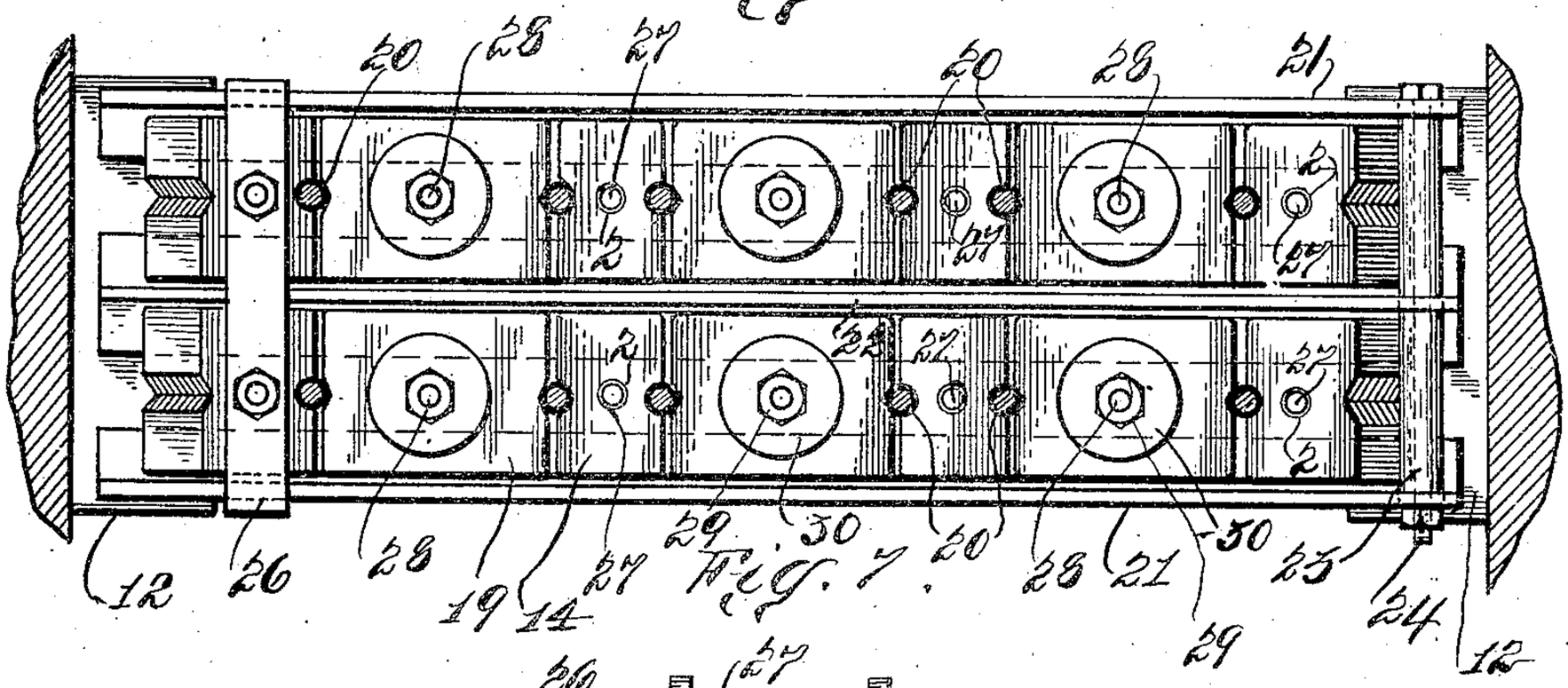

Fig. 7.

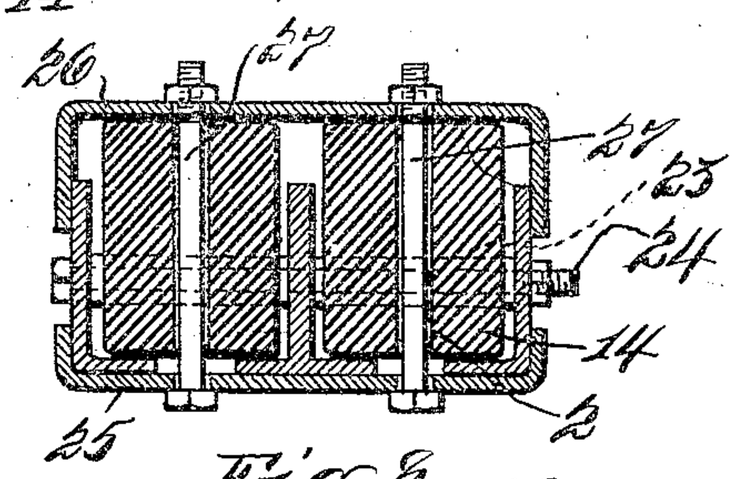

Fig. 8

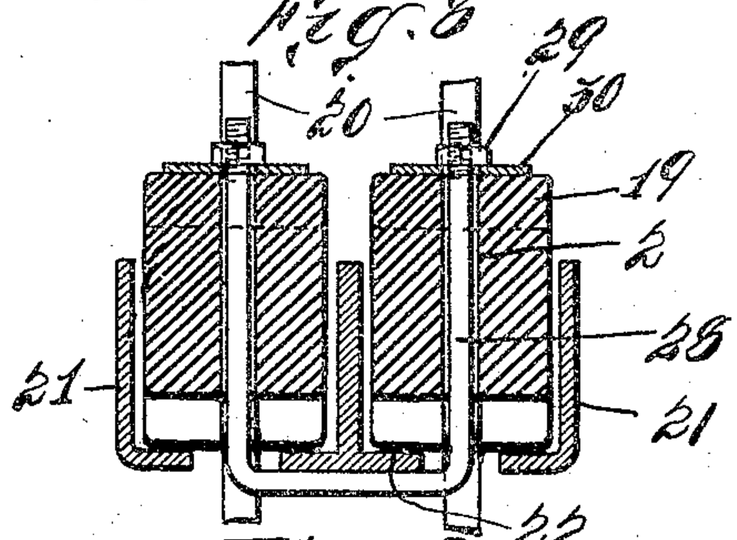

Fig. 9

Witnesses:
C. A Jarvis
Mabel Dittenhofer

Inventor:
Ernest W. Muller
By Chrystie and Wright
his Attorneys.

UNITED STATES PATENT OFFICE.

ERNEST W. MULLER, OF BROOKLYN, NEW YORK, ASSIGNOR TO HUBERT KRANTZ, OF BROOKLYN, NEW YORK.

ELECTRIC-CABLE CLAMP.

No. 897,300. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed February 8, 1908. Serial No. 414,885.

To all whom it may concern:

Be it known that I, ERNEST W. MULLER, a citizen of the United States, residing at Brooklyn, county of Kings, New York, have invented certain new and useful Improvements in Electric-Cable Clamps, of which the following is a clear, full, and exact description.

In modern high buildings where cables of great weight are in use great difficulty is found in securely anchoring or clamping the same in place. If clamps are used, they grasp the insulating cover of the cables and the great relative weight of the core is liable to pull through the covering or sheath to the harmful exposing of the conductor itself, if not resulting in the disengagement of the entire cable. Like results are liable to follow in all instances where great strain is placed upon such cables. This is overcome to some extent in forming loops or semi-loops where the cable is to be secured but such devices result in changing the line of the cable and in waste in material of the cable itself.

It is the object of this invention to overcome the above described defects and to produce a means for clamping the heavy core itself in place to prevent pulling out of the cable from its clamp and at the same time accomplish such result with the minimum amount of cable and without necessarily changing its line of attachment in the building.

The essence of the invention lies in biting or perforating through the insulation cover, with projections properly insulated, which are caused to grasp not the cover for their effective grip but the core itself.

Further features of the invention are means for causing the weight of the core to produce a greater grip on the core on account of such weight; means for initially grasping the core mechanically and positively and-other details of arrangement, construction and combination of elements which will be pointed out in the claims.

In the accompanying drawings:—Figure 1 is a detail view in section showing graphically the gripping of the core of cable by the teeth of the insulator wedges. Fig. 2 is a section on line 2—2 Fig. 1. Fig. 3 is a central vertical section of a modified form of insulator. Fig. 4 is a plan view of the same. Fig. 5 is vertical elevation of my improved mechanism as arranged for three floors of a building with the conduit terminal boxes on section. Fig. 6 is a front elevation partly in section of one battery of the clamps of Fig. 5 drawn to an enlarged scale. Fig. 7 is a plan of Fig. 6. Fig. 8 is a section on line 8—8 Figs. 6 and 7. Fig. 9 is a section on line 9—9 Figs. 6 and 7.

In carrying out this invention, I generally provide at least three insulators, 1, of wedge shape. These insulators are shown in enlarged views in Figs. 1, 2, 3 and 4 of the drawings. They are square at the base and top and have a central passage 2 through same from base to apex. These are provided with opposite inclined portions or sides, each having a groove 3, of substantially the configuration of the circumferences of the conductor or cable to be grasped. I have shown these grooves as V shaped in Fig. 2, though they may be semi circular or shaped as half of any polygon. They are provided with teeth 4, in stepped arrangement, the depth of which teeth is greater than the thickness of insulation to be penetrated by them, so that the teeth thus may be caused to pass through the insulation of the cable, and having passed through the insulation, penetrate and bite into the metal core 6, so that the cable will be gripped tightly and no relative motion permitted between the insulating sheath and the core, due to the weight of the core pulling through the sheath as is ordinarily the case. The gripping being accomplished upon the core itself, there is no tendency for it to pull through the sheath. As before mentioned, these insulators are preferably located in sets of at least three, which enables one to locate two of the insulators with their base downward, and one with its base upward. The cables to be grasped are passed down in front of the faces of these insulators, having their bases downward, and the third insulator put into place between the cables. The teeth are caused to penetrate the cable and grip the core. The wedge shape of the insulators, when their teeth have gripped the core, insure the tight grip of the cable by its own weight, for in its tendency to fall, it pulls down the wedged central insulator, causing it and the adjacent insulators to more firmly grasp the core, due to the wedge action.

I prefer to provide means to initially cause the teeth to engage the core, and I have shown such means in Figs. 5, 6, 7 and 8. They may consist of any suitable bolt or clamping mechanism to hold two insulators in place and a means for forcing the third between the two stationary ones after the insertion of the cables into place. In many cases I may form the teeth on the opposite inclined surfaces of insulators, the teeth being integral with the insulating material thereof, but in some instances where excessive weight is to be taken care of, I may form the wedged insulators proper of insulating material, such as porcelain, and provide them with notched grooves to take and support steel or other metal strips having teeth thereon. This construction is illustrated in Fig. 3. The insulator proper 7 is formed with shoulders 8, while strips 9 of metal provided with teeth 10 and having a cooöperating shoulder meeting the shoulder 8 of the insulator, are provided so that pressure on the teeth by the cable will simply cause the inserted strips of teeth to more firmly hold the insulator in place.

In Fig. 5 I have illustrated my improved electrical cable clamp as applied in practice for securing twelve conductors in six interior conduits, and as shown in that view, the clamps are located on such floors as it may be desired to locate them, over each other, in the instance shown in batteries of six clamps. On the floors on which the clamping is desired to be performed, I preferably locate boxes 11 of ordinary construction in the art provided with angle bars 12, supporting transverse beams of angle or other construction 13, on which are secured insulators 14 having their large areas downward. I preferably provide one more insulator 14 than there are sets of conductors to be clamped, and I cause the extreme insulators 14 to be prevented from longitudinal movement by causing their outer sides to abut against bolts 15 or other stops. The conduit pipes 16, 17 and 18 are run into the boxes and secured in the ordinary way, and the conductors are passed through the pipes and boxes. Each set of conductors is passed between a pair of insulators 14. Insulators 19 having their upper ends the larger, are then forced between adjacent insulators 14, and between the conductors 20 of one set of conductors. They are clamped down and caused to bite into the core of the cable, and after such biting into the core, the weight of the cables themselves will cause the clamps to grip even more tightly upon the same. It will be seen in Fig. 5 that a straight line of draft is thus secured for the conductors in a very attractive and easy-to-be-installed manner.

In Figs. 6, 7 and 8 are shown in detail one preferred manner of mounting my improved electrical cable insulating clamp. To the angle bars 12 I secure transverse outside angle irons 21, and between the same a **T** bar 22. I space these bars by means of sleeves 23 located on a bolt 24 shown at the right of the figure, but omitted at the left for sake of clearness. I set the stationary insulators upon the track or channel, thus formed, as shown in Fig. 8, so that the insulators 14 will rest on the **T** bar 22, and angle iron 21. The outer or extreme members of the insulators 14 may have their inclined outside face resting against the sleeves 23 on the bolt 24, so that they will be held firmly against any motion which would tend to force them sidewise away from the center of the battery of insulating clamps. In order to properly space and at the same time additionally secure the insulators 14 in place, I may place a channel strip 25 around and across the bottom of the transverse supporting beams, and a second channel strip 26 across the top of the insulators securing the strips together, and consequently the insulators in place by bolts 27 passing through the strips 25—26 as well as through the central aperture 2 of the insulators 14. As before described, the insulators 19 are of the same configuration as the insulators 14, but they are arranged with their broadest surfaces upwards, and are forced downward after the cables 20 have been put into place. In order to cause the insulators 19 to initially grip into the core of the conductor, and to cause the teeth of the insulators 14 to likewise engage the conductor, I may provide a **U** bolt 28, see Fig. 8, which may pass around the **T** iron 22 through the central apertures 2 of the insulators 19, and be bolted by nuts 29 securely into place, a washer 20 being interposed between the bolt and insulator to spread the strain of the bolting operation.

The construction shown in Figs. 6 to 9 inclusive is of course but one manner of carrying my invention into effect, the important feature being the grasping of the core itself by the teeth of the clamps, which clamps are preferably wedge shaped, and in so doing penetrate the insulating sheath.

Claims—

1. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly.

2. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core,

whereby the strain on said cable at the clamp may be borne by the core directly, said clamp comprising a stationary member and a movable member.

3. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly, said projections on the faces of said insulators being of metal and means for securing them to the insulator proper.

4. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly, a supporting frame for the insulators and mechanical means for initially causing said teeth to bite through the insulating cover and grip the core.

5. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly, said clamp comprising a stationary member and a movable member, a means for securing the stationary insulator in place, and mechanical means for forcing the movable member into place.

6. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly, said wedged insulator having its projections extending outward from a recess in its face of a configuration approximating the conductor to be gripped.

7. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed wedge-like insulators having projections on their faces adapted to penetrate the cover of the cable and firmly secure themselves in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly, a box adapted to hold said wedge clamp and conduits entering said box for the conductors.

8. In combination with an electric cable comprised of a conducting core and outside insulating cover, a clamp composed of opposed insulators having projections on their faces, said projections being relatively sharp, so that they may be firmly secured in the metal of the conducting core, whereby the strain on said cable at the clamp may be borne by the core directly.

9. An electric cable comprising an insulating cover and a conducting core clamp means adapted to penetrate the cover and directly take into and support the core, a support for the clamp means and insulation between said means and its support.

Signed at Brooklyn, N. Y., this 6th day of February, 1908.

ERNEST W. MULLER.

Witnesses:

SARA SAVAGE MÜLLER,

HARRIET HILLERMAN.