

Sept. 15, 1925.

1,553,549

W. H. PRIESS

CONDENSER

Filed April 3, 1920

2 Sheets-Sheet 1

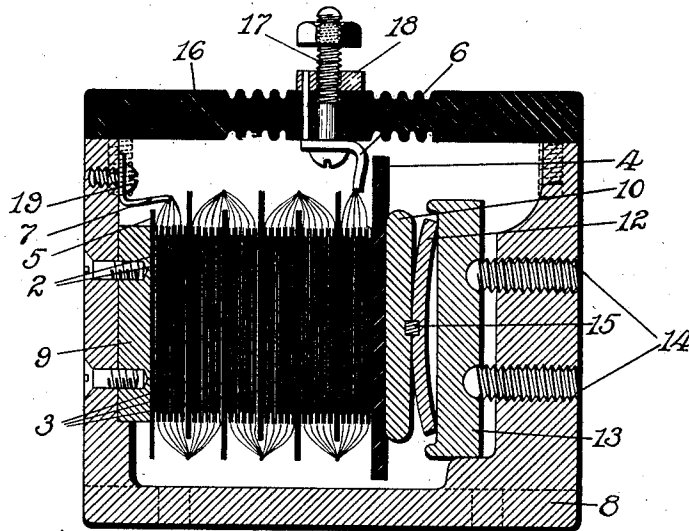


Fig. 1.

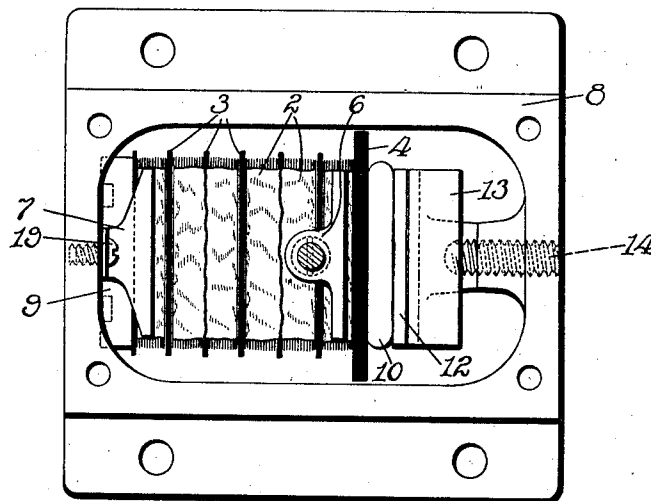


Fig. 2.

INVENTOR.

William H. Priess

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2 Sheets-Sheet 2

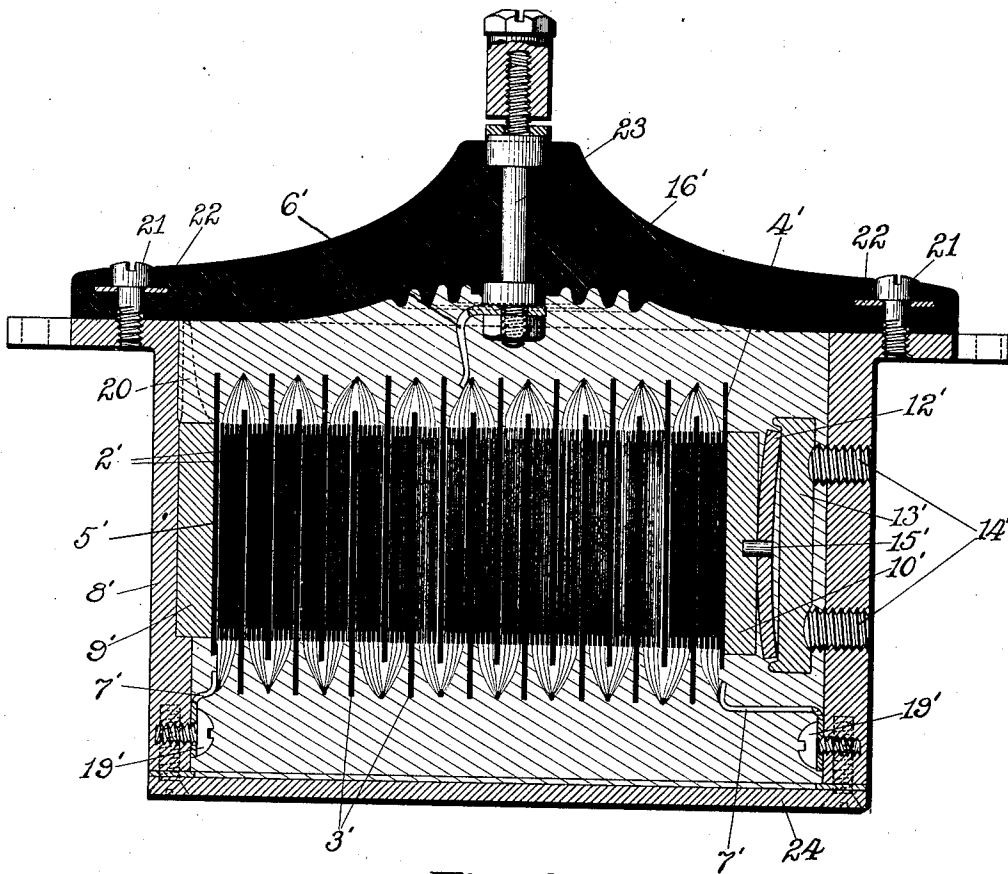


Fig. 3.

INVENTOR.

William H. Priess

UNITED STATES PATENT OFFICE.

WILLIAM H. PRIESS, OF NEW YORK, N. Y., ASSIGNOR TO WIRELESS SPECIALTY APPARATUS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW YORK.

CONDENSER.

Application filed April 3, 1920. Serial No. 370,992.

To all whom it may concern:

Be it known that I, WILLIAM H. PRIESS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain improvements in Condensers, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to electrical condensers and it has among its objects to devise a simple, compact and efficient construction which can be economically manufactured, and which will be adapted for use in many classes of service.

The conducting and dielectric elements of a condenser are practically always secured together with a thin film of some kind of adhesive material, such as wax, varnish or the like, and it is important from the standpoint of securing maximum condenser efficiency and avoiding the danger of a break down in the condenser, that the presence of air, vapor, or an excessive thickness of adhesive material between the elements of the condenser be eliminated. Accordingly, it is one of the objects of the present invention to devise a condenser construction with which this result can be conveniently accomplished.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, in which—

Figure 1 is a cross sectional view of a condenser constructed in accordance with this invention;

Fig. 2 is a plan view of the condenser shown in Fig. 1 with the cover plate removed; and

Fig. 3 is a view similar to Fig. 1 of a modified construction.

The construction shown in Figs. 1 and 2 comprises a condenser stack consisting of a series of condenser units 2 connected together in the desired relationship with suitable mica separators 3 between the units and insulating members 4 and 5 at the opposite ends of the stack. These condenser units may be made according to any convenient process and are built up of alternating sheets of dielectric and foil. Preferably the condenser stack is assembled and the lead

strips 6 and 7 secured thereto before it is placed in the metal casing 8 in which it is to be permanently enclosed.

One end of the stack rests or bears on a metal plate 9 secured to the casing by screws and in order to apply the desired pressure to the stack, a pressure plate 10, preferably of metal, is placed against the opposite end or top of the stack, with a spring plate 12 on top of the plate 10 and a thicker plate 13 is superposed on the spring plate 12. The plate 13 is provided with two depressions to receive the rounded ends of screws 14—14 which are threaded through the thickened portion of one wall of the casing 8. It is obvious that by turning these screws in the proper direction an exceedingly heavy pressure may be applied to the stack and, due to the character of the plate 12, this pressure will be resiliently maintained. The spring plate preferably is made of spring steel and is curved or sprung longitudinally to enable it to exert the desired spring action. A lug or pin 15 may be used to locate the spring plate relatively to the plate 10. Since the pressure exerted on the stack is transmitted through the opposite walls of the casing it is necessary to make the casing sufficiently strong to resist this strain, but this requirement does not necessitate the use of an excessively heavy casing.

It is usual to heat or bake a condenser stack while it is under pressure for the purpose of reducing to a minimum the presence of air, gas, vapor or the thickness of the adhesive material between the elements of the condenser and also, in the case of a condenser in which varnish is used as the adhesive, for the additional purpose of driving out any solvent still remaining in the varnish. In some types of condensers it may be more convenient to perform this baking operation before the condenser stack is placed in the casing 8. In other types, however, it is preferable to assemble the parts in the casing as shown in the drawing and then heat or bake the condenser while pressure is applied to the condenser stack by means of the screws 14—14. These screws 14—14 preferably are made longer than is necessary for the finished casing and they are provided with heads similar to a bolt head so that a good purchase can be ob-

tained on them with a wrench, and practically any desired degree of pressure thus can be applied to the stack.

After the baking and other manufacturing operations on the condenser stack have been completed, the screws 14—14 are cut off flush with the outside surface of the casing and peened to prevent their backing or jarring loose, and a cover plate 16, preferably made of some suitable insulating material, such as hard rubber, bakelite, or the like, is secured over the opening in the casing by means of screws. Prior to the fastening of this cover in place, however, the conducting lead 6 from one end of the condenser stack is soldered to a terminal screw 17 and the screw is placed in a hole provided for it in the cover 16 and is secured therein by a nut 18. The lead 7 from the opposite end of the condenser is secured to the casing by a screw 19, the casing constituting a terminal. It is obvious, however, that if desired both terminals of the condenser could be brought to binding posts on the cover 16. It is obvious also that if desired the space in the casing surrounding the condenser stack could be filled with wax or other suitable insulating material.

A somewhat different embodiment of the invention is disclosed in Fig. 3 in which the parts corresponding to those of the embodiment shown in Figs. 1 and 2 are designated by the same numerals as those used in the latter figures except that these numerals are primed. It will be seen that the condenser stack is mounted in the casing in the same manner as in Figs. 1 and 2, the stack resting on a plate 9' at one end of the casing and pressure being applied to it through a spring plate 12', and screws 14'—14' threaded through one wall of the casing. In this construction, as in that previously described, the casing forms, in effect, a yoke or clamping member which resists the thrust exerted on the stack. The plate 9' preferably is provided with two lugs, one of which is shown at 20, which bear against the inner surface of the cover 16' and prevent the plate from slipping out of its proper position. The cover plate is secured to the casing 8' by screws 21—21, the heads of which bear on pressure distributing plates 22—22 set into the cover. In this form of the invention the high potential terminal 23 mounted in insulating cover 16' is connected by the lead 6' to the middle or high potential part of the condenser stack and the leads 7'—7' at the opposite low potential ends of the stack are connected to the casing 8' by screws 19'—19', the casing constituting a terminal, this construction being in this respect like that disclosed in the pending application of Greenleaf W. Pickard, Serial No. 292,126, filed April 23, 1919. The bottom of the casing, a point remote from the terminal 23 and lead

6', is closed by a plate 24 secured in place by screws, a suitable gasket being interposed between the plate and the casing.

This condenser casing is designed to be filled with insulating material such as wax and the construction here provided is of particular advantage in performing the "waxing" process. That is, after the stack has been assembled in the casing in the position shown with the cover 16' and terminal 23 in place, with lead 6' connected to the terminal, the casing is inverted, filled with molten wax, and the stack is heated up to a point above that necessary to maintain the wax in molten condition, usually about 135° to 145° C. While the stack is maintained at this temperature the screws 14'—14' are turned up far enough to apply the desired pressure to the stack. This squeezes out the surplus wax from between the layers and brings the alternate layers of mica and tin foil into very intimate contact. The wax is then allowed to cool and solidify within the casing. After the waxing process has been completed the plate 24 is secured in position. This construction thus has the advantage that it secures a thorough waxing of the parts adjacent to the high potential terminal which are the points subjected to greatest strain in the condenser.

It will now be evident that this invention provides a very simple condenser construction in which the manufacturing operations can be conveniently and economically performed and which, with the proper selection of materials and the exercise of reasonable care in the process of manufacture, will provide a very efficient and reliable condenser. In one of the forms above described, the condenser units have been shown connected in series, while in the other form the two halves of the condenser are in multiple, and the sections in each half are connected in series. It is obvious, however, that any desired arrangement of connections can be employed. It will also be appreciated that the form of the invention illustrated in Figs. 1 and 2 provides a very convenient unit for connection externally either in series or multiple as particular service conditions may require.

The clamping means for the stacks of the present invention comprises means at one end of the stack for receiving and opposing a thrust exerted or applied at the opposite end of the stack to compress the elements of the stack. Specifically I utilize the casing 8' or the block or member 9, 9' for receiving the thrust at one end of the stack, and a similar member, such as plate 13, 13' for applying or transmitting the pressure to the opposite end of the stack from screws 14, 14' threaded in the casing. For ensuring that the clamping means be springy or yielding under conditions of stack variation in length, I interpose a spring, which preferably is, although

not necessarily, of a plate type as shown, between either end of the stack and either member 9, 9' or 13, 13', such spring being located preferably as illustrated between member 13, 13' and a pressure plate 10, 10', the latter preventing damage to the stack elements by the spring. Upon the assembly of the condenser, the spring is maintained under compression between one end of the stack and one member by means of the screws or other means 14, 14', with the sheets of the stack in intimate contact under spring pressure.

What is claimed as new is:

1. A condenser comprising a casing, a condenser stack mounted in said casing, a screw threaded through on wall of the casing and pressing the stack against the opposite wall of the casing, and a spring plate through which the pressure is applied to the stack by the screw, whereby the pressure is resiliently maintained on the stack for various lengths thereof during service and the degree of pressure may be varied by adjusting the screw for maintenance of the pressure for such various stack-lengths.

2. In a condenser, the combination of a condenser stack, a casing in which said stack is mounted, and means for maintaining permanent pressure on the stack, said means including a screw mounted in one of the walls of the casing, and a spring plate through which the pressure of the screw on the stack is transmitted and maintained for various lengths of the stack in service.

3. A condenser comprising a stack of sheets, a clamping member for said stack, a spring plate interposed between said member and an end of the stack, and means for centering and holding said spring plate in position during service parallel to the sheets in the stack and across the end thereof to maintain the desired pressure over the active areas of the sheets for various lengths of the stack during service.

4. A condenser comprising a stack of sheets, a clamping member for said stack, and a spring plate interposed between said member and an end of the stack for transmitting spring pressure to the stack from end to end thereof; said spring plate being of metal and normally bent and lying across the end of the stack parallel to the sheets thereof and during service being more or less flattened by the clamping member to maintain the desired compression for various lengths of the stack during service.

5. A condenser comprising a stack composed of alternate sheets of foil and dielectric, a clamping member extending from end to end of said stack, a spring plate interposed between said member and an end of the stack, and means for adjusting the pressure on said stack, said spring plate be-

ing of metal and normally bent and lying across the end of the stack parallel to the sheets thereof and during service being more or less flattened by said clamping member to maintain the desired compression for various lengths of the stack during service.

6. A condenser comprising a stack of sections of sheets connected in series and having its ends electrically connected together to be at the same potential and an intermediate point of high potential, a metal clamping member extending from end to end of said stack, and a spring plate interposed between said clamping member and an end of the stack in position parallel to the sheets of the stack and across the end of the stack, said spring plate being of metal and normally tending to bend but during service being more or less flattened by said clamping member to maintain the desired compression for various lengths of the stack during service.

7. A condenser comprising a stack of sections of sheets connected in series and having its ends electrically connected together to be at the same potential and an intermediate point of high potential, a metal clamping member surrounding said stack, a pressure plate on an end of the stack, a spring plate interposed between said member and pressure plate, and means for adjusting the pressure on said stack, said spring plate being of metal and normally tending to bend but during service being more or less flattened between said clamping member and said pressure member and thereby maintaining a given pressure between the ends of the stack for various lengths thereof during service, said pressure being distributed over the areas of the sheets of the stack uniformly by means of said pressure member.

8. A condenser comprising a stack composed of alternate sheets of foil and dielectric, a clamping member extending from end to end of said stack, a pressure plate on one end of the stack located parallel to the sheets thereof and distributing the pressure over the active areas of the sheets, and a spring interposed between said pressure plate and clamping member, said spring being arranged to be more or less contracted between said clamping member and said pressure plate during service and thereby maintaining a given pressure between the ends of the stack for various lengths thereof during service.

9. In an electrical condenser, a stack comprising alternate sheets of foil and dielectric, a clamping member extending from end to end of said stack for maintaining uniform pressure over opposite ends of the stack, and a spring interposed between said member and an end of the stack whereby said pressure is maintained resiliently, said spring during service yielding to various

lengths of the stack and thereby maintaining the desired pressure from end to end of the stack.

10. In an electrical condenser, a stack comprising alternate sheets of foil and dielectric, a pressure plate upon one end of the stack located parallel to the sheets in the stack and distributing pressure over the active areas of the sheets, a spring plate upon said pressure plate and also parallel to the sheets in the stack, and an all-metal clamping member surrounding said stack and plates and transmitting pressure to the opposite ends of the stack through said spring plate; said spring plate being of metal and normally tending to bend but during service being more or less flattened between the pressure plate and the clamping member by variations in the length of the stack, thereby maintaining the desired compression from end to end of the stack during service.

11. A condenser comprising a stack having parts at difference of potential, a clamping member surrounding said stack and electrically connected to a part at one potential, the part of opposite potential being insulated therefrom, and a spring plate interposed between said clamping member and stack, said spring plate lying across the end of the stack parallel to the sheets thereof and being of metal and normally tending to bend but during service being more or less flattened between the clamping member and the stack end by variations in the length of the stack during service, thereby maintaining the desired compression of the stack from end to end.

12. In an electrical condenser, a stack, a casing constituting a clamp for said stack, and means for exerting spring pressure upon the stack and interposed between the stack and casing and an end of the stack, thereby maintaining the desired compression while permitting variations in the length of the stack during service.

13. A condenser comprising a casing, a condenser stack arranged horizontally within the casing, means including the sides of the casing for clamping the stack in place, a spring plate interposed between the end of the stack and said means, and means for centering and holding said spring plate in position across the end of the stack parallel to the sheets therein; said spring plate being of metal normally tending to bend but during service being more or less flattened between the stack and said clamping means by variations in the length of the stack, thereby permitting such variations while permitting maintenance of pressure by said clamping means.

14. A condenser comprising a casing, a condenser stack therein comprising alternate sheets of foil and dielectric, and spring pressure means acting against opposite walls of

the casing to maintain the sheets of foil and dielectric in the stack under heavy spring pressure with the sheets in contact; said spring pressure means being constructed and arranged to permit variations in length of the stack during service while maintaining the desired pressure.

15. A condenser comprising a stack and spring clamping means for said stack comprising a member at opposite ends of the stack, a pressure plate on an end of the stack and a screw threaded in said member and exerting a thrust against said pressure plate and the end of the stack to hold the stack under spring pressure from end to end in said member; said spring clamping means and pressure plate being constructed and arranged to distribute the pressure uniformly over the active areas of the sheets in the stack while permitting variations of the length of the stack during service.

16. A condenser comprising a stack of alternate sheets of foil and dielectric, and a spring clamp for the stack compressing the sheets in the stack into contact and constituting a casing enclosing the stack; said spring clamp being constructed and arranged to distribute the pressure uniformly over the active areas of said sheets while permitting variations of the length of the stack during service.

17. A condenser comprising a casing, a stack arranged horizontally within the casing, means cooperating with the casing and clamping the stack therein, and a spring plate interposed between said means and the stack to exert resilient pressure on the end of the stack and parallel to the sheets in the stack when under compression; said spring plate and clamping means being constructed and arranged to distribute the pressure uniformly over the active areas of the sheets in the stack, and said spring plate being of metal normally tending to bend but in service being more or less flattened toward the clamping means by variations in length of the stack.

18. A condenser comprising a casing, a stack arranged horizontally within the casing and engaging a wall thereof at one end, a pressure plate upon the opposite end of the stack, a spring plate engaging said pressure plate, a compression member engaging the spring plate, and a screw mounted on the casing and engaging the compression member for exerting spring pressure on the stack; said spring plate being of metal normally tending to bend but in service being more or less flattened between the pressure plate and the compression member by variations in length of the stack, and said pressure plate and spring plate lying across the end of the stack parallel to the sheets therein and distributing the pressure uniformly over the active areas of said sheets.

19. A condenser comprising a stack of alternate sheets of foil and dielectric, a casing enclosing said stack and constituting a clamp therefor, and a spring plate interposed between the stack and casing; said spring plate lying across the end of the stack and parallel to the sheets therein and being of metal tending to bend but in service being more or less flattened by increase of length of the stack due to service conditions.

20. A condenser comprising a stack of sections connected in series and having parts at a difference of potential, a metal casing enclosing said stack and constituting a clamp therefor, said casing constituting a terminal connected to a part of one potential, a second terminal projecting through said casing and insulated therefrom and connected to a part at a different potential, and a spring plate interposed between the stack and casing; said spring plate being located parallel to the sheets in the stack and across the end of the stack and being of metal normally tending to bend but during service being more or less flattened by variations of length of the stack due to service conditions.

21. A condenser comprising a stack of sections connected in series and having parts at different potentials, a metal casing enclosing said stack and constituting a clamp therefor, said clamp including means for exerting spring pressure over the stack, said casing constituting a terminal connected to a part of the stack at one potential, and a second terminal connected to another part of the stack and projecting through said casing and insulated therefrom; said clamp being constructed and arranged to distribute the pressure uniformly over the area of the sheets in the stack while permitting variations of length of the stack during service.

22. A condenser comprising a casing having a stack therein, a terminal projecting through said casing and connected to said stack, the stack and casing being relatively proportioned to provide a space inside the casing around said terminal and the side of the stack and a filler of insulating material surrounding said stack and the part of said terminal extending through said space, said casing being constructed with an opening located to permit introduction into said space of said filler in liquid form while said part of the terminal is at the bottom of the liquid body; and a closure for said opening for application after the introduction of said filler.

23. A condenser comprising a metal casing having an insulating portion, a stack of sections within said casing having a terminal electrically connected to said casing and a terminal projecting through the in-

insulating portion, the stack and casing being relatively proportioned to provide a space inside the casing around said projecting terminal and the sides of the stack and an embedment of insulating material within said casing and compacted around said projecting terminal; said casing being constructed with an opening located to permit introduction into said space of said embedment in liquid form while the part of said projecting terminal within the casing is at the bottom of the liquid body; and a closure for said opening for application after the introduction of said embedment in liquid form.

24. A condenser comprising a metal casing having an insulating portion, a stack clamped by said casing and positioned within the same, said casing being electrically connected to said stack, a second terminal from said stack projecting through said insulating portion, the stack and casing being relatively proportioned to provide a space inside the casing around said projecting terminal and the side of the stack and an embedment of insulating material around the stack and projecting terminal; said casing being constructed with an opening located to permit introduction into said space of said embedment in liquid form while the part of said projecting terminal within the casing is at the bottom of the liquid body; and a closure for said opening for application after the introduction of said embedment in liquid form.

25. A condenser comprising a metal casing, a stack arranged horizontally within said casing and electrically connected to said casing which thereby constitutes a terminal of the condenser and a second terminal projecting through said casing and insulated therefrom, the stack and casing being relatively proportioned to provide a space inside the casing around said projecting terminal and the side of the stack, an embedment of insulating material in the space and around the stack and projecting terminal, said casing being constructed with an opening located to permit introduction into said space of said embedment in liquid form while the part of said projecting terminal within the casing is at the bottom of the liquid body, and a closure for said opening for application after the introduction of said insulating material in liquid form.

26. A condenser comprising a casing having a removable bottom portion, a stack arranged within the casing, means engaging the stack for compressing the stack and holding it in position within the casing, a terminal connected to the stack and fixed to and projecting through the top of the casing, and insulating material filling the casing and compacted around said terminal, said opening through the bottom of the cas-

ing when the removable bottom portion is removed permitting the introduction of the insulating material in liquid form into the casing inverted for the purpose so that said terminal may be at the bottom of the liquid body during the solidification thereof.

27. A condenser comprising a metal casing having an insulating portion, a stack arranged within the casing, the stack and casing being relatively proportioned to provide a space inside the casing around the sides of the stack, means for clamping said stack, the thrust of said means and stack being taken up by the intermediate walls of the casing, the opposite ends of said stack being at the same potential and connected to the casing constituting a terminal, a second terminal projecting through said insulating portion and electrically connected to an intermediate part the stack, said terminal also projecting through the space between the stack and casing and being connected to the stack and an insulating filler within said casing and around said second terminal and stack, said casing being constructed with an opening located to permit introduction into said space of said insulating filler in liquid form while the part of said projecting terminal within the casing is at the bottom of the liquid body; and a closure for said opening for application after such introduction of the filler.

28. In an electrical condenser, a stack comprising sheets of conductor and dielectric, a spring at one end of the stack and a member between which and an end of the stack the spring is located in service, said member being constructed and arranged to act by way of said spring to press the sheets in the stack from said end toward the other end thereof to maintain them in intimate contact with one another under spring pressure throughout the length of the stack from end to end thereof; said spring and said member being constructed and arranged relative to the stack to act over the entire areas of the sheets in the stack and maintain the desired pressure while permitting during service the lengthening and subsequent shortening of the stack.

29. In an electrical condenser, a stack comprising sheets of conductor and dielectric, a spring at one end of the stack, a member between which and an end of the stack the spring is located in service and means for maintaining said spring compressed between the end of stack and said member to hold the sheets in the stack compressed throughout its length from end to end thereof in intimate contact with one another under spring pressure; said spring and said member being constructed and arranged relative to one another and the stack so as to act over the entire active areas of the sheets in the stack uniformly while

permitting the lengthening and subsequent shortening of the stack under service conditions.

30. In an electrical condenser, a stack comprising sheets of conductor and dielectric, a pressure plate at one end of the stack, a spring abutting the pressure plate and a member between which and the pressure plate the spring is located, said member acting to compress the sheets in the stack throughout its length from end to end thereof to maintain them in intimate contact with one another under pressure of the spring against the pressure plate; said pressure plate being disposed across said stack end parallel to the sheets in the stack to distribute the pressure uniformly over the active areas of such sheets; and said spring and said member being constructed and arranged relative to one another and the pressure plate so as to maintain the desired pressure while permitting variations in length of the stack during service conditions.

31. In an electrical condenser, the combination with a stack of dielectric and conducting sheets, said stack being constructed to have a high difference of potential between its ends during service, of clamping means arranged to compress the stack from end to end and hold the sheets thereof in intimate contact with one another during service while permitting variations of length of the stack, said clamping means including a metal portion extending with metallic continuity from one end of the stack to the other, and said clamping means including a metal spring plate arranged transversely of an end of the stack and parallel to the sheets therein and normally tending to bend but during service being more or less flattened by the action of the rest of the clamping means when variations occur in the length of the stack; and said clamping means including also an insulating means consisting of material capable of withstanding high compression and located between an end of the stack and an adjacent portion of the rest of the clamping means and thereby held under yielding compression and acting to prevent the spring plate of the clamping means from short-circuiting the ends of the stack; said metal spring plate and insulating means of the clamping means being constructed and arranged to distribute the clamping pressure uniformly over the entire active areas of the sheets in the stack.

32. In an electrical condenser, the combination with a stack of dielectric and conducting sheets, said stack being constructed to have a high difference of potential between its ends during service, of clamping means arranged to compress the stack from end to end and hold the sheets therein in intimate contact with one another while

5 permitting variations of length of the stack
 during service, said clamping means includ-
 ing a principal portion of metal extending
 with metallic continuity from one end of
 10 the stack to the other; said clamping means
 including an insulating means capable of
 withstanding high compression and located
 between an end of the stack and an adjacent
 end of said metal portion and held under
 15 high compression thereby; and said clamp-
 ing means including also a metal spring
 plate located between an end of the stack
 and said metal portion and extending par-
 20 allel to the sheets in the stack and across the
 end of the stack to distribute the clamping
 pressure uniformly over the entire active
 areas of the sheets in the stack, said spring
 plate being constructed to tend to bend but
 being more or less flattened in service with
 the rest of the clamping means while main-
 taining the desired compression for various
 lengths of the stack under service con-
 ditions.

25 33. In an electrical condenser, the combi-
 nation with a stack of dielectric and con-
 ducting sheets, of clamping means arranged
 to subject the stack to high pressure from
 end to end and hold the sheets therein in
 intimate contact with one another through-
 30 out their active areas during service, said
 means including a principal portion of
 metal extending with metallic continuity
 from one end of the stack to the other; and
 said means including also a metal spring
 35 plate arranged transversely of one end of
 the stack and parallel to the sheets therein,
 said spring plate and the rest of the clamp-
 ing means being constructed and arranged
 to distribute the pressure uniformly over
 40 the areas of the sheets in the stack, and said
 plate being constructed to tend to bend but
 being more or less flattened in service with
 the principal portion of the clamping means
 to maintain the desired pressure at various
 45 lengths of the stack under service con-
 ditions.

50 34. In an electrical condenser, a stack of
 conductors and dielectrics, pressure plates
 upon opposite ends of the stack, one at least
 of which is springy, and means adjustably
 connecting said pressure plates whereby an

adjusted spring pressure is exerted upon the stack.

35. In an electrical condenser, a stack
 composed of sheets of conductors and di- 55
 electric and having its opposite ends at a
 difference of potential, and a clamp therefor
 having pressure plates at the opposite ends
 of the stack, one at least of said plates being
 springy, and means insulating the opposite 60
 ends of the stack from each other.

36. In an electrical condenser, the com-
 bination with a stack of sheets constructed
 to have a difference of potential between the
 conducting sheets at opposite ends of the 65
 stack; of a metal casing enclosing the stack,
 a spring metal clamping plate extending
 over an end of the stack inside the metal
 casing; insulation between the clamping
 plate and the stack; and means for flexing 70
 the clamping plate to compress the stack.

37. In an electrical condenser, a stack
 comprising alternate sheets of foil and di-
 electric in intimate contact, and clamping 75
 means for maintaining said intimate con-
 tact and including a spring plate arranged
 to have its surface facing an end of the
 stack and held under stress exerting a resil-
 ient pressure over the active area of oppo-
 site ends of the stack. 80

38. In an electrical condenser, a stack
 comprising alternate sheets of foil and di-
 electric in intimate contact and clamping
 means for maintaining said intimate con-
 tact and including a spring plate arranged 85
 to have its surface facing an end of the
 stack and held under stress, tending to as-
 sume a curved condition and exerting a re-
 silient pressure over the active area of oppo-
 site ends of the stack. 90

39. In an electrical condenser, a stack
 comprising alternate sheets of foil and di-
 electric and clamping means exerting uni-
 form pressure over opposite ends of the
 stack and including a spring plate arranged 95
 to have its surface facing an end of the
 stack and held under stress whereby said
 pressure is maintained resiliently.

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

WILLIAM H. PRIESS.