

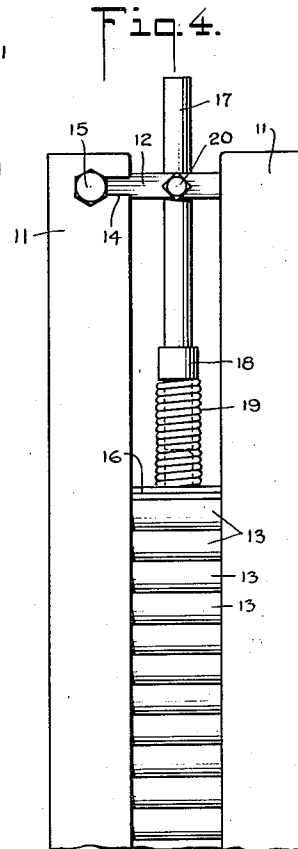
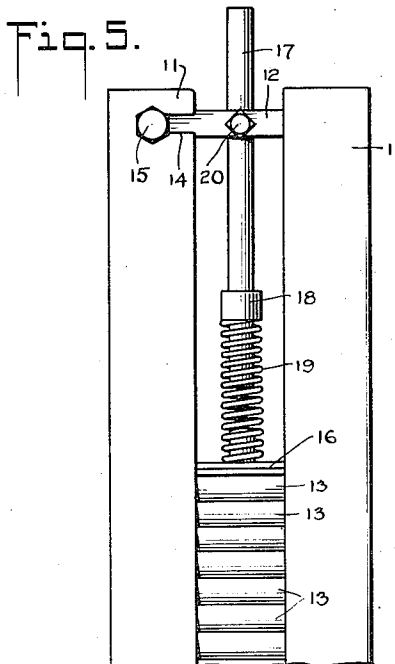
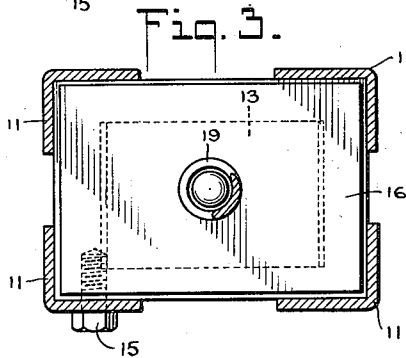
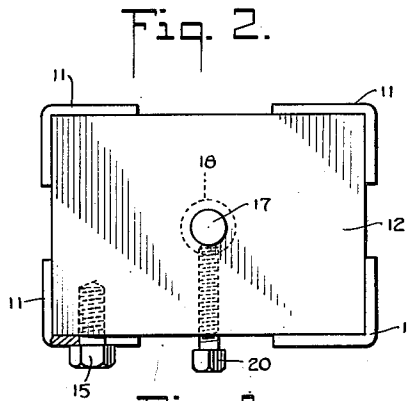
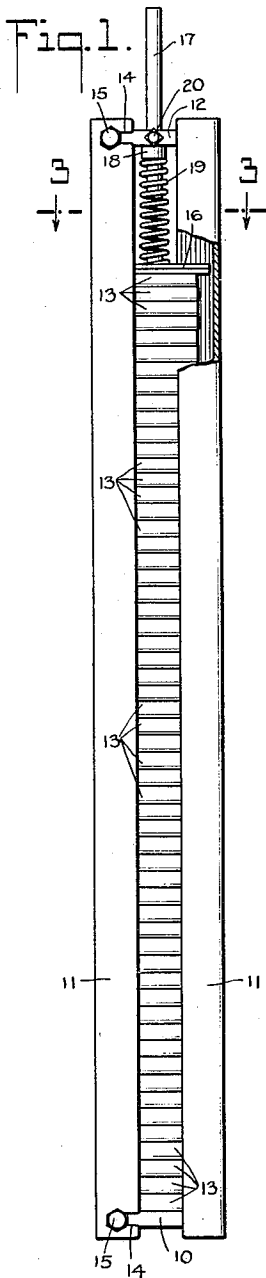
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H. I. DANZIGER

CONDENSER RACK

Filed Nov. 2, 1926



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CONDENSER RACK.

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My present invention relates to supporting racks for a plurality of stacked elements, and has particular reference to racks of the character which are employed for the support of electrical condenser elements during the manufacture of the latter.

Although I have illustrated, and shall hereinafter describe, my invention as applied to condenser racks of the character referred to, nevertheless it will be obvious after this specification has been read, that as to certain phases of my invention, an application of this character is not essential.

In the manufacture of electrical condensers of the type wherein layers of paper or the like are interposed in alternate relation with layers of conducting material such as tinfoil, it is desirable to provide a supporting rack of the character to which this invention relates, said rack being designed to support the condenser units in stacked relation during certain portions of the manufacturing process. More particularly, where the condenser units are subjected to various steps of treatment which include impregnation by a hardenable liquid material, such as wax, it is desirable to provide a rack which will subject the condenser units to pressure in a manner which will be more fully set forth hereinafter.

It is an object of the present invention to provide a rack of this character, and it is a particular object to provide a rack wherein certain structural characteristics render it particularly useful and efficient for a purpose of the character described.

A manufacturing process of the character hereinbefore referred to generally entails the impregnation of condenser units with a material which shrinks during the hardening thereof. This is a factor which must be borne in mind in connection with the subjection of the units to pressure. Where a plurality of stacked units are to be impregnated, it is desirable to subject them to pressure before impregnation so as to preclude the formation of air pockets within the units. After they have been impregnated, it is desirable to retain them under pressure for a similar purpose. However, inasmuch as the impregnated units are likely to shrink during the cooling of the impregnating material, a difficulty arises which I have solved by means of the present invention.

Where I have attempted to employ a rack

wherein means are provided for adjusting the pressure from time to time, said means comprising an unyielding arrangement exemplified by a hand-press arrangement, I have found that a maximum output efficiency of perfect condensers is not obtainable. This is due to the fact that the pressure means is not uniformly adjusted, and this in turn is due to the fact that sufficient personal attention cannot be paid to individual racks during the hardening of the units. On the other hand, where the units are subjected to an excessively great initial pressure, in an attempt to render subsequent adjustment unnecessary, serious impairment of the units frequently occurs for obvious reasons.

It is an object of the present invention to provide a rack whose employment will obviate these difficulties; and it is a more specific object to provide a rack wherein self-adjusting means are provided for retaining the condenser units under suitable pressure conditions.

Briefly, my invention contemplates the provision of resilient means for continuously urging a cover for the elements in a direction which retains the stack under sustained compression in a yieldable manner.

It is accordingly a feature of my invention to provide a rack wherein relatively adjustable base and cover elements are arranged to support the stack therebetween, and wherein resilient means, such as a spring or springs, cooperates between the base and cover to provide a continuous force for creating sustained compression. In a preferred embodiment, the resilient means comprises a compression spring which is operatively interposed between the adjustable cover and an element fixedly associated with the base.

Another feature of my invention lies in providing means for initially adjusting the operative strength of the resilient means. And in a preferred embodiment, this adjusting means is of such a character that it may also be employed for the purpose of adjusting the initial positional relation of the resilient means with respect to the base and cover.

In general, it is an object of the invention to provide a device which is both simple in construction and staunch in nature; which embodies relatively few cooperating elements; whose elements are of a simple and

separable nature rendering likelihood of damage or defective operation small; and which embodies features which simplify, expedite, and increase the efficiency of the condenser manufacturing process.

For the attainment of the foregoing objects and such other objects as may hereinafter appear or be pointed out, I have illustrated one embodiment of my invention in the accompanying drawings in which—

Fig. 1 is a front elevational view of a rack constructed in accordance with my invention, and associated with a stack of elements;

Fig. 2 is a plan view of the same;

Fig. 3 is a cross-sectional plan view taken along the line 3—3 of Fig. 1;

Fig. 4 is an enlarged view of a portion of a rack, showing one adjustment thereof; and

Fig. 5 is a view similar to Fig. 4 showing another adjustment thereof.

Referring to the drawings and particularly to Figs. 1, 2, and 3, it will be observed that I have shown a rack having a base 10 and four angular supporting elements 11 arranged in parallel relation and extending upwardly from the base so as to form side supports or walls. At the opposite end of the elements 11 I have shown a top element 12 substantially similar to the base 10 and constituting a fixed element with respect to the latter.

A plurality of elements 13, such as condenser units of the type referred to, are designed to be arranged in stacked relation upon the base 10. In order to render these elements insertable and removable, I have shown one of the angular elements 11 associated with the base 10 and the top 12 in a removable manner, indicated by the slots 14 and the bolts 15.

After the elements 13 have been stacked, it is contemplated that they will be supported at opposite ends of the stack, and it will be observed that I have shown a separable and relatively removable cover plate 16 which may be applied to the top of the stack.

The invention contemplates the association with the cover 16, and in cooperative relation between the cover and the rack proper, of resilient means for constantly urging the cover toward the base with predetermined force. Thus, it will be observed that I have shown the top element 12 provided with a central aperture through which a suitably shaped rod 17 extends. This rod constitutes a spring supporting member, and is therefore provided with an enlarged portion or collar 18 which is disposed beneath the cover 12. Extending downwardly from the collar 18 is an extension which provides inside support for the upper end of a compression spring 19. Correspondingly, an

upwardly projecting extension carried by the cover 16 provides inside support for the lower end of the spring 19.

The spring 19 is a compression spring, and is illustrative of the type of resilient means contemplated by the invention. It will be observed that it extends between the cover 16 and the collar 18, and inasmuch as the spring supporting member 17 is designed to be normally in locked association with the top 12, it may be said that the spring 19 is operatively interposed between the cover and the top 12.

The rod 17, which is in effect a spring abutment, is made adjustable with respect to the fixed element 12, and I have illustratively shown a set screw 20 associated with the top 12 and bearable against the rod 17 to secure the latter in any desired position with respect to the top 12.

It will now be obvious that adjustment of the rod 17 with respect to the top 12 may serve to either (1) adjust the initial tension of the spring 19, or (2) adjust the positional relation of the spring with respect to the rack proper. Thus, in Fig. 1 I have shown a relatively high stack of elements 13, and consequently the spring 19 is positionally as close to the top 12 as it could be, because the shoulder 18 is bearing against the under-side of the top 12. On the other hand, in Figs. 4 and 5, the spring is relatively remote from the top 12.

In the employment of my device, a stack of desired size is arranged within the rack, the cover 16 is applied thereto, the spring 19 is associated with the cover and arranged to abut against the collar 18, and the rod 17 is then adjusted relative to the top 12 to produce the desired initial tension. The rack, with the stacked elements therein, is then subjected to desired steps of the manufacturing process, and it is obvious that the rod 17 may, if desired, be subsequently adjusted in accordance with requirements. Actually, it is contemplated that only one adjustment will be necessary.

More particularly, referring now to Figs. 4 and 5, a single initial adjustment will have the following effect. A stack of desired size having been completed, and the cover and spring having been positioned, the rod 17 may advantageously be adjusted downwardly to the maximum position shown in Fig. 4, wherein the spring 19 is under maximum tension. The rod 17 is then locked in this position by adjusting the set screw 20 carried by the top 12. Assuming that the elements 13 are now subjected to an impregnation, and assuming that the impregnation will cause shrinkage, and therefore a reduction in the height of the stack, the cover 16 and the spring 19 will gradually assume a position such as that shown in Fig. 5. It will be observed that the cover 16 is still

held under pressure against the top of the stack, and that the stack has therefore been retained under sustained compression. In other words, after the initial adjustment shown in Fig. 4 has been made, no further attention need be paid to the rack.

In this way, it will be observed that the efficiency of the manufacturing process has been substantially increased. The condenser units are retained under continued pressure, the latter being sustained automatically, and being quite different in nature from the intermittently increased pressure which the hand-press arrangements have heretofore created. Furthermore, the condensers are not subjected to any excessive initial pressure which might have impairing effects upon them.

In general, it will be observed that my device is both simple in construction and use; and staunch, reliable, and efficient in operation.

It will be obvious that many changes in the details herein described and illustrated for the purpose of explaining the nature of my invention may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims. It is therefore intended that these details be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. In a condenser rack for subjecting a stack of retained condenser bodies to impregnation treatment, a supporting frame comprising a base plate adapted to receive said stack thereon, a top plate, and a set of spaced longitudinal frame elements extending between the base and top plates; a separately applicable cover plate for the stack; and a compression spring interposed between the cover and top plates; whereby the condenser bodies may be yieldably retained under sustained pressure in stacked relationship during the impregnation treatment thereof.

2. In a condenser rack for subjecting a stack of retained condenser bodies to impregnation treatment, a supporting frame comprising a base plate adapted to receive said stack thereon, a top plate and a set of spaced longitudinal frame elements extending between the base and top plates; at least one of said frame elements being adjustable into and out of normal interposition between said plates to permit stacking of the bodies; a separately applicable cover plate for the stack; and a compression spring interposed between the cover and top plates; whereby the condenser bodies may be yieldably retained under sustained pressure in stacked

relationship during the impregnation treatment thereof.

3. In a condenser rack for subjecting a stack of retained condenser bodies to impregnation treatment, a supporting frame comprising a base plate adapted to receive said stack thereon, a top plate, and a set of spaced longitudinal frame elements extending between the base and top plates; at least one of said frame elements being removably associated with the base and top plates to permit stacking of the bodies; a separately applicable cover plate for the stack; and a compression spring interposed between the cover and top plates; whereby the condenser bodies may be yieldably retained under sustained pressure in stacked relationship during the impregnation treatment thereof.

4. In a condenser rack for subjecting a stack of retained condenser bodies to impregnation treatment, a supporting frame comprising a base plate adapted to receive said stack thereon, a top plate, and a set of spaced longitudinal frame elements extending between the base and top plates; a separately applicable cover plate for the stack; a compression spring operatively interposed between the cover and top plates; and means for initially tensioning said spring; said means comprising a rod slidably associated with the top plate and having its inner end portion constructed as a spring abutment and support, and means for locking said rod in desired positional relation to said top plate; whereby the loaded rack may be handled as a unit for and during the impregnation treatment, and whereby the condenser bodies may be yieldably retained under a desired sustained pressure during said handling and treatment.

5. In a condenser rack for subjecting a stack of retained condenser bodies to impregnation treatment, a supporting frame comprising a base plate adapted to receive said stack thereon, an apertured top plate, and a set of spaced longitudinal frame elements extending between the base and top plates; a separately applicable cover plate for the stack; a compression spring operatively interposed between the cover and top plates; and means for initially tensioning said spring; said means comprising a rod slidably arranged in said aperture and having its inner end portion constructed as a spring abutment and support, and a set screw arrangement associated with the top plate and adapted to engage said rod for locking the latter in desired positional relation to said top plate.

In witness whereof, I have signed this specification this 25 day of October, 1926.

HAROLD I. DANZIGER.