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C. B. KNUDSEN

PRESS

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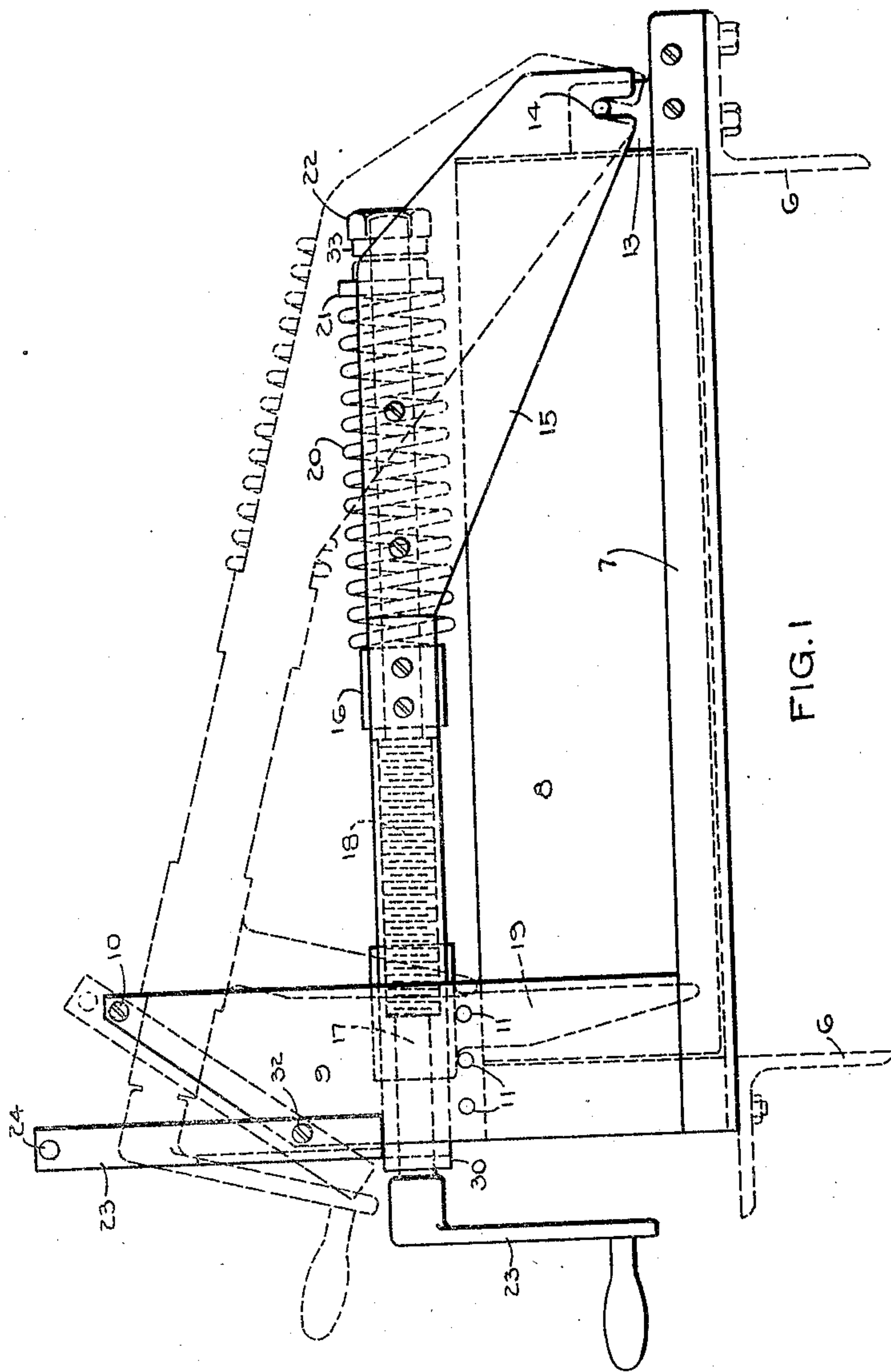
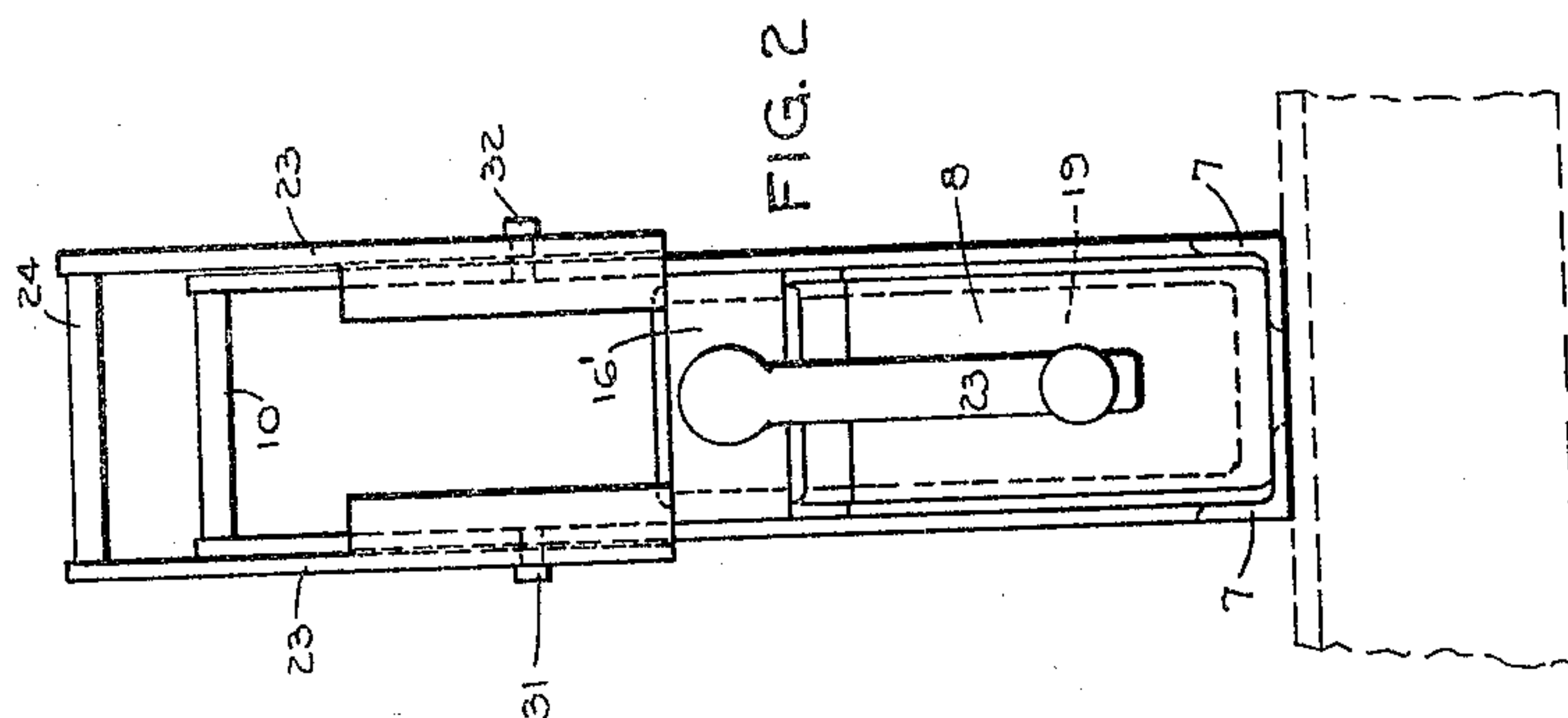


Fig. 1



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PRESS.

Application filed June 20, 1927. Serial No. 199,924.

This invention relates to presses and more particularly to presses which are especially adapted for compressing paper capacitors or articles of like character to desired dimensions.

In one step in the manufacture of fixed capacitors and especially those formed of conducting foil and paper dielectric it is necessary to compress them to a predetermined thickness after they have been impregnated in a suitable impregnating material. In the manufacture of such capacitors it has been found that the best quality is obtained when they are compressed to their final dimensions while flooded on all sides by an excess of impregnating material.

In a former process most widely used for manufacturing such capacitors, after they have been impregnated, it was the practice to remove them from the work tray and press them in an open hydraulic press with the result that during the pressing operation a certain amount of the impregnating material flowed from the capacitor units resulting in what was known as "bleeding" which caused their windings to be exposed to air and moisture so that many of the units proved to be defective. In a copending application a new process of manufacturing capacitors is disclosed in which the windings are pressed to their final dimensions while flooded with an excess of impregnating material. In order to perform the step of pressing the capacitors under such conditions the press of the present invention has been developed.

One of the features of the present invention is the design of a press which will permit the pressing of the capacitor units without removing them from the work tray in which they have been carried through various steps of the process.

Another feature of the invention resides in the design of a press suitable for pressing capacitor units in a work tray which press is provided with means for maintaining a constant pressure so that it compensates for the contraction of the impregnating material during cooling.

A further feature of the invention resides in the provision of a press which is inexpensive to manufacture and simple in operation.

For a clearer understanding of the invention reference is made to the drawings in which Fig 1 is a side elevation of the press in position to start compressing the mate-

rial within the work tray, while the dotted lines show the movable portions of the press elevated to an inoperative position such as when a work tray is being inserted or removed. Fig. 2 is an end elevation of the press.

Referring to Figs. 1 and 2 there is represented a support consisting of angle irons 6, 6 on which there are mounted at right angles thereto two angle irons 7, 7 spaced apart a sufficient distance to receive a work tray 8 including material or units to be compressed, assumed for purposes of this description to be fixed capacitors to be compressed to their dimensions while flooded with impregnating material. At the left hand end of the angle irons 7 as view in Fig. 1 there are provided two spaced uprights 9 secured to irons 7 and held in spaced relation by a rivet 10, the upper portion of which uprights are cut off thereby forming an acute angle to the vertical. There is mounted on the uprights 9 on the pivots 31 and 32 a U shaped latch element including the uprights 23, 23 held in spaced relation by rivets 24 which also serves as a handle. Each upright is formed of angle iron from the upper portion of which the flange has been removed. This latch serves to hold the movable part of the press in elevated position as will be more fully described and the lower end of the latch when vertical holds the movable part of the press in operative position. Between the right hand ends of the angle iron 7 there is secured a bracket 13 provided with a pin 14 which serves as a pivot for a U shaped frame including a spacing member 16 integral with a pair of spaced hinge arms 15 extending from the pivot to the upright plates 9. This frame supports a guide 16 having a longitudinal opening there-through, fastened to the hinge arms 15 by screws or other suitable means while the spacing member 16' is provided with a bearing 30 which with guide 16 serves as a support for the rod 17. This rod is provided with a threaded portion 18 on which there is mounted a cast iron jaw 19 having a threaded portion arranged to engage the threaded portion 18 of the rod 17. A spiral spring 20 surrounding the rod 17 and engaging one end of the guide 16 is held in place by a washer 21 engaging thrust bearing 33 and a nut 22 threaded on the right hand portion of the rod 17 so that the tension of the spring 20 may be adjusted merely by turning the nut 22. A

crank 23 is detachably mounted on the left hand end of the rod 17 so that this rod may be turned to cause the jaw 19 to travel toward or away from the bracket 13.

5 While the press is not in use its movable portion is in the position shown in dotted lines in Fig. 1 where it is supported by the latch member since when the latch member is inclined with its flange resting on the inclined
10 portion of the uprights the left hand end of the hinged plates will rest on the ends of the flanges on latched members 23. When it is desired to operate the press such as for compressing capacitor units a work tray 8 loaded
15 with units is inserted in the base between the angle irons 7, 7 and the bracket 14. The latch member is then elevated to its vertical position as shown in full lines in Fig. 1 and the movable portion of the press is then lowered
20 until the hinge arms 15 engage stops mounted on uprights 9 by rivets 11 and the jaw 19 enters the work tray so that it can engage the series of capacitor units or other material to be compressed. The crank 23 is then turned
25 to cause the jaw 19 to travel toward the right which movement is effected by rotating the rod 17 whose threaded portion 18 engages the corresponding threaded portion in the jaw 19. The spiral spring 20 whose tension is ad-
30 justed by the nut 22 threaded on the end of the rod 17, engages the guide 16 and tends to force the rod 17 together with the jaw 19 which it carries, toward the right. This spring is provided since in compressing capacitor units
35 while flooded with impregnating material it has been found that as the impregnating material cools it tends to contract and unless some compensating means is provided the gradual release of the pressure develops air
40 spaces or voids within the capacitor units. The provision of the spiral spring 20 arranged as herein disclosed, causes the jaw 19 to move toward the right as the impregnating material contracts so that a uniform predeter-
45 mined pressure is applied to the capacitor units until the impregnating material has completely solidified. When, however, it is desired to remove the work tray from the press, the movable portion shown in dotted
50 lines, may be completely removed or elevated to such a position that the work tray can be withdrawn from the base.

What I claim, is:

1. In combination with a work container
55 having closed sides and a closed bottom but being open at its top, said container serving to support articles to be compressed, a traveling member hingedly mounted with respect to said container, said traveling member pro-
60 jecting into said container through its open top, and means for moving said traveling member toward one side of said container.

2. In combination with a work container
65 having closed sides and a closed bottom but being open at its top, said container serving

to support articles to be compressed, a traveling member projecting into said container through its open top, said traveling member being hingedly mounted with respect to said container, means for moving said traveling
70 member toward one side of said container, and a spring tending to move said traveling member toward said last mentioned side of said container to compensate for contraction of said articles after said traveling member
75 is adjusted.

3. In combination, a base, a bracket near one end of said base, a work container open at its top and engaging said bracket, a travel-
80 ing arm arranged to project into said container and hingedly mounted on said bracket, and means for moving said traveling arm toward said bracket.

4. In combination, a base, a bracket near one end of said base, a work container open
85 at its top resting on said base and engaging said bracket, a traveling arm arranged to project into said container and hingedly mounted on said bracket, means for moving said traveling arm toward said bracket, and a
90 spring tending to move said traveling arm toward said bracket after said traveling arm has been adjusted by said means.

5. In a device of the class described, a base, a bracket attached at one end of said base, a
95 work tray for supporting articles to be compressed resting on said base and engaging said bracket, a member hingedly mounted on said bracket for vertical movement, a screw-
100 threaded element mounted for rotation in said member, a traveling arm projecting into said work tray, said traveling arm having a threaded portion engaging said screw-threaded element whereby said traveling arm is
105 movable toward and away from said bracket upon the rotation of said screw-threaded element, and means for rotating said screw-threaded element.

6. In a device of the class described, a base, a bracket attached at one end of said base, a
110 work tray for supporting articles to be compressed resting on said base and engaging said bracket, a member hingedly mounted on said bracket for vertical movement, a screw-
115 threaded element mounted for rotation in said member, a traveling arm projecting into said work tray, said traveling arm having a threaded portion engaging said screw-threaded element whereby said traveling arm is
120 movable toward and away from said bracket upon the rotation of said screw-threaded element, means for rotating said screw-threaded element, and a spring placed under compression by the engagement of said traveling arm
125 with the articles to be compressed whereby said arm is moved toward said bracket to compensate for contractions of said articles after the adjustment of said arm.

7. In a device of the class described, a base consisting of angle members spaced apart, a
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bracket attached at one end of said base, a work tray containing articles to be compressed, resting on said angle members and engaging said bracket, an arm hingedly
5 mounted on said bracket for vertical movement, a screw-threaded member mounted for rotation in said hinged member, a traveling arm projecting into said work tray, said traveling arm having a threaded portion engaging
10 said screw-threaded member whereby said traveling arm is movable toward and away from said bracket upon the rotation of said screw-threaded member, means for rotating said screw-threaded member, and a spring
engaging a portion of said hinged member and
15 the end of said screw-threaded member whereby said arm is caused to move toward said bracket after its engagement with the articles to be compressed to compensate for contractions of said articles.
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In witness whereof, I hereunto subscribe my name this 14th day of June A. D. 1927.

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