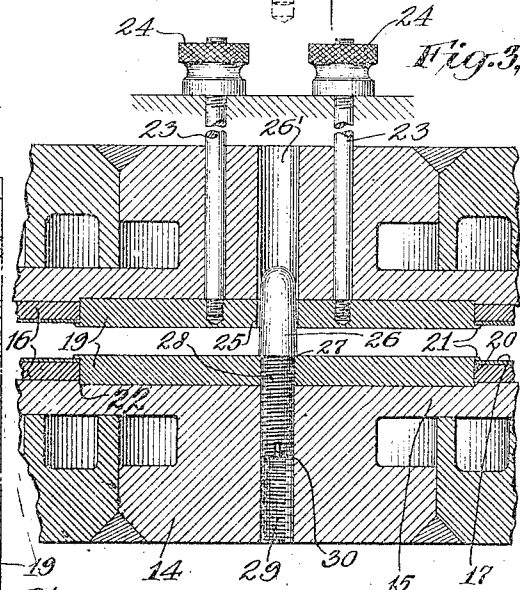
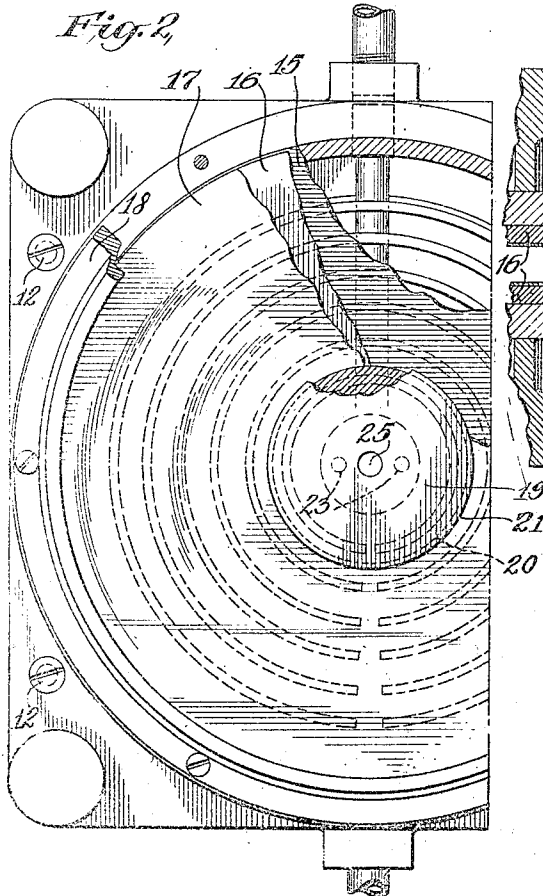
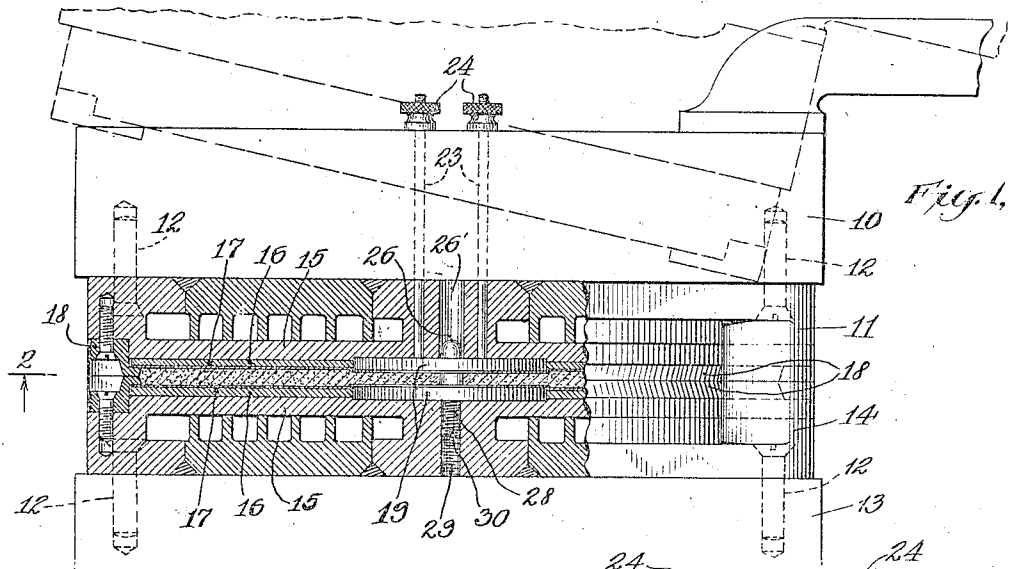


G. H. DAVIS AND C. T. BOWMAN.
 CENTER CLAMP PLATE FOR RECORD MATRICES.
 APPLICATION FILED APR. 4, 1921.

1,401,966.

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UNITED STATES PATENT OFFICE.

GEORGE HOWLETT DAVIS AND CHARLES T. BOWMAN, OF ORANGE, NEW JERSEY,
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CENTER-CLAMP PLATE FOR RECORD MATRICES.

1,401,966.

Specification of Letters Patent.

Patented Jan. 3, 1922.

Application filed April 4, 1921. Serial No. 458,603.

To all whom it may concern:

Be it known that we, GEORGE HOWLETT DAVIS and CHARLES T. BOWMAN, citizens of the United States, and residents of Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Center-Clamp Plates for Record Matrices, of which the following is a specification.

Our invention relates to improvements in presses for molding phonograph records, and is particularly directed to improvements in the means for clamping a central portion of a record matrix to the head of the press.

In clamping matrices for making talking machine records in place on the presses customarily employed, it has been found necessary to clamp the matrices adjacent their centers, as well as about their outer edges, owing to the thin metal from which the matrices are formed and the necessity for providing a central hole in the records. Clamps employed for holding the matrix center in place must, however, not only be permanently rigid and unmoving under the exacting conditions of repeated use, but must also be so formed and constructed that they will produce a pleasing contour to the surface of the record with which they come in contact. Clamps heretofore used have been deficient in these particulars, having a tendency to shift slightly after being used for some time, loosening thereby their grip on the matrix and producing either an undue depression or an unsightly elevation in the record. An object of our invention is to provide a clamp which will remain rigidly in position, and which will materially improve the appearance of records.

Another object is to provide a center clamp of this type which may be more readily and rapidly fixed in position and removed, reducing materially the labor cost incident to changing matrices, without sacrificing the permanent rigidity of the clamp when in position.

It is important to register each matrix accurately relative to the center of the press head on which it is mounted. Owing to the difficulties incident to the construction of clamps and cooperating parts which would engage the center of the matrix so as to produce accurate registration through such engagement, it has been generally customary heretofore to register the matrix by devices

engaging its periphery, such as the usual clamping ring overlying the outer edge of the matrix when positioned on the press. The difficulty in registering matrices by engagement therewith adjacent their centers has been caused partly by the thinness of the metal from which the matrices are formed, increasing the liability of crumpling the edges of a matrix engaging a central registering device, and also by the necessity for employing a clamp which will not only be located accurately at the center of the matrix, but which may also be centered properly in the press head without so tight an engagement as to preclude the release of the clamp within a reasonable length of time. An object of our invention is to provide a central clamp which will register the matrix accurately at the center of the press head, and which may at the same time be readily and rapidly applied and removed without sacrificing its registration accuracy.

Other objects and advantages of our invention will be apparent from the following description, taken in connection with the accompanying drawings, in which:

Fig. 1 is a somewhat diagrammatic side elevation of the heads of a press, parts being broken away to show the pressing plates in transverse median section,

Fig. 2 is a top plan view of a portion of the face of one of the pressing plates, parts being broken away, and

Fig. 3 is an enlarged fragmentary central view of the construction shown in Fig. 1.

For purposes of illustration our invention is shown as applied to one common type of press, which includes the upper head 10, to which is removably attached the pressing plate 11, as by means of screws 12, and the lower press head 13 upon which is similarly mounted a registering lower pressing plate 14 by means of screws 12. The plates 11 and 14 may be of any approved construction, those shown being of the type disclosed in our copending application Serial No. 458,604 filed April 4, 1921. Each of the plates 11 and 14 is provided with the usual table 15 upon which is placed a copper presser plate 16 forming a bed for the matrix 17, the plate 16 and matrix 17 being held in position by marginal engaging means such as clamping ring 18 of the usual type. It will be apparent that the precise construction of the matrix backing and mar-

ginal clamping means disclosed are not essential to our invention.

We hold the central portion of the matrix 17 in place by a center clamping plate 19, circular in form. The plate 19 is provided with a cylindrical body portion 20 fitting accurately and snugly in a central aperture in matrix 17, and where a bed plate 16 is employed, preferably fitting also a corresponding aperture in said plate. The center plate 19 also is provided with a narrow bevelled lip 21 of just sufficient extent to overlie and engage the inner edge of the matrix 17 to retain it in position.

In order to register matrix 17 accurately on the pressing plate 11, we provide said plate with a socket engaged by a registering portion of the clamping plate 19, so that said clamp plate and presser plate will be maintained in accurate fixed relation. We have found it convenient for this purpose to extend the body 20 of clamp plate 19 slightly below the surface of the table 15 into an annular recess 22 formed in said table and fitting accurately against the edges of the center plate 19. With this construction it will be evident that the matrix when placed on the table may be rapidly registered with complete accuracy thereon by passing the body 20 of center plate 19 through the central aperture of the matrix and into recess 22 in table 15.

We employ suitable means for holding plate 19 in clamping position, one object as above noted being to provide for ready release and engagement of said clamping means. We have accomplished this object by mounting on the plate 19 one or more clamp rods 23, the form illustrated in the upper part of Fig. 3 having two of these rods, which pass upward through suitable recesses in presser plate 11 and the press head 10, having suitable knurled nuts 24 at their upper ends engaging the top of the press head 10. By relying upon socket 22 in the presser plate for registration of the clamping plate 19, we are enabled to avoid the necessity for having rods 23 or their equivalents fit snugly in the corresponding recesses in plate 11 and head 10, as would be necessary were such recesses relied on to register the clamping plate. The relatively loose fit of rods 23 in these recesses therefore permits the plate to be readily and rapidly released by removing the nuts 24, and to be replaced with corresponding accuracy. Furthermore, the danger of destroying accurate registration through wear of the parts is reduced to a minimum, since there is practically no rubbing or sliding between the parts which insure registration during the application or removal of the center plate.

Obviously the type of socket in the table 15, and the corresponding contour of the engaging element on plate 19 may be varied

considerably; and furthermore, the precise construction and arrangement of the bolt rods 23 may be likewise altered. We particularly desire, however, to avoid the previous construction, in which the clamping plate was held in position by threaded means located so far below the press head that such means was relatively inaccessible and could only be removed with considerable difficulty, ordinarily by extending a long screw driver into a relatively small hole in the press head.

In order to form the usual central hole in the record, we form the upper clamp plate 19 with a central aperture 25 registering with a corresponding aperture 26' in the presser plate 11, and mount at the center of the lower clamp plate 19 a cooperating stud 26 which passes into the aperture 25 when the press is closed. We prefer to mount pin 26 in fixed position, and to taper it slightly, so that the record may be readily slipped up over the pin after pressing. We may also employ pin 26 as the means for holding the lower clamping plate 19 in position. This is accomplished readily by reducing the diameter of the pin 26 at its base to form a shoulder 27 overlying and engaging the lower plate 19, and threading the extension 28 of pin 26 below the shoulder into a bore 29 in the lower presser plate 14. With this construction the pin and lower clamping plate 19 may be readily removed by unscrewing the pin, which ordinarily can be accomplished without difficulty by engaging the exposed end of said pin. For convenience, however, the lower end of pin extension 28 may be provided with a slot 30 to receive a screw driver projected upwardly through bore 29, if necessary or desirable.

It will be apparent, of course, that the lower clamping plate 19 may be held in position by means similar to that illustrated in connection with the upper clamping plate, suitable changes being made if necessary to adapt the construction to the lower press head 13. Furthermore, pin 26 may be mounted in a variety of ways. We have, however, found that the construction illustrated is cheap to produce, rapid to remove and replace, and is not likely to get out of order in use.

While we have shown our invention as applied to a common kind of press, obviously it may be employed on other types. In particular, our invention is not restricted to presses in which a detachable pressing plate is employed, as obviously the clamping plate may be installed on a press having a solid head.

We claim:

1. A matrix center clamp, including a matrix engaging member, and means directly releasable from the outside of the press

head for locking said member in clamping position.

2. A matrix center clamp, including a matrix engaging member, an extension on said member projecting into the press head, and means releasable from the outside of the press engaging said extension and the press head to hold the member in clamping position.

3. A matrix center clamp, including a matrix engaging member, a rod connected to said member and extending through the press head to the outside, and releasable means engaging the outer end of the rod and the press head for locking said member in clamping position.

4. A matrix center clamp, including a matrix engaging member, a rod rigidly mounted on said member and extending through the press head to the outside, and a nut threaded on the outer end of the rod adapted to engage said head.

5. In a record press, a matrix table having a socket therein, a matrix center clamp adapted to fit accurately into said socket to register a matrix accurately on the table, and means for locking said clamp in operative position.

6. In a record press, a matrix table having a socket therein, a matrix center clamp adapted to engage the edges of a central aperture in a matrix and to fit accurately into said socket to register the matrix accurately on the table, and means for locking said clamp in operative position.

7. In a record press, a matrix table having a socket therein, a matrix center clamp in-

cluding a circular disk adapted to engage the edges of a central aperture in a matrix and provided with a clamping flange overlying the matrix adjacent said edges, said disk being adapted to fit accurately in the socket to register said matrix on the table, and means for locking the disk in clamping position.

8. In a record press, a matrix table having a socket therein, a matrix center clamp adapted to engage the edges of a central aperture in a matrix and to fit accurately into said socket to register the matrix accurately on the table, and means for locking said clamp in operative position, said locking means including an extension fitting loosely in a bore in the press head and extending to the outside of said head, and a releasable locking element engaging the outer end of said extension and said head.

9. A record press including a matrix table having a central annular socket; a matrix clamping disk adapted to engage the edges of a central opening in a matrix and provided with a marginal flange adapted to engage the matrix adjacent said edges, the disk fitting accurately in said socket to register the matrix on the table, a rod mounted on the disk and extending freely through a bore in the press head to the outside thereof, and a clamping nut threaded on the end of the rod adapted to engage said head.

Signed at Orange in the county of Essex, and State of New Jersey, this 31st day of March, A. D. 1921.

GEORGE HOWLETT DAVIS.
CHARLES T. BOWMAN.