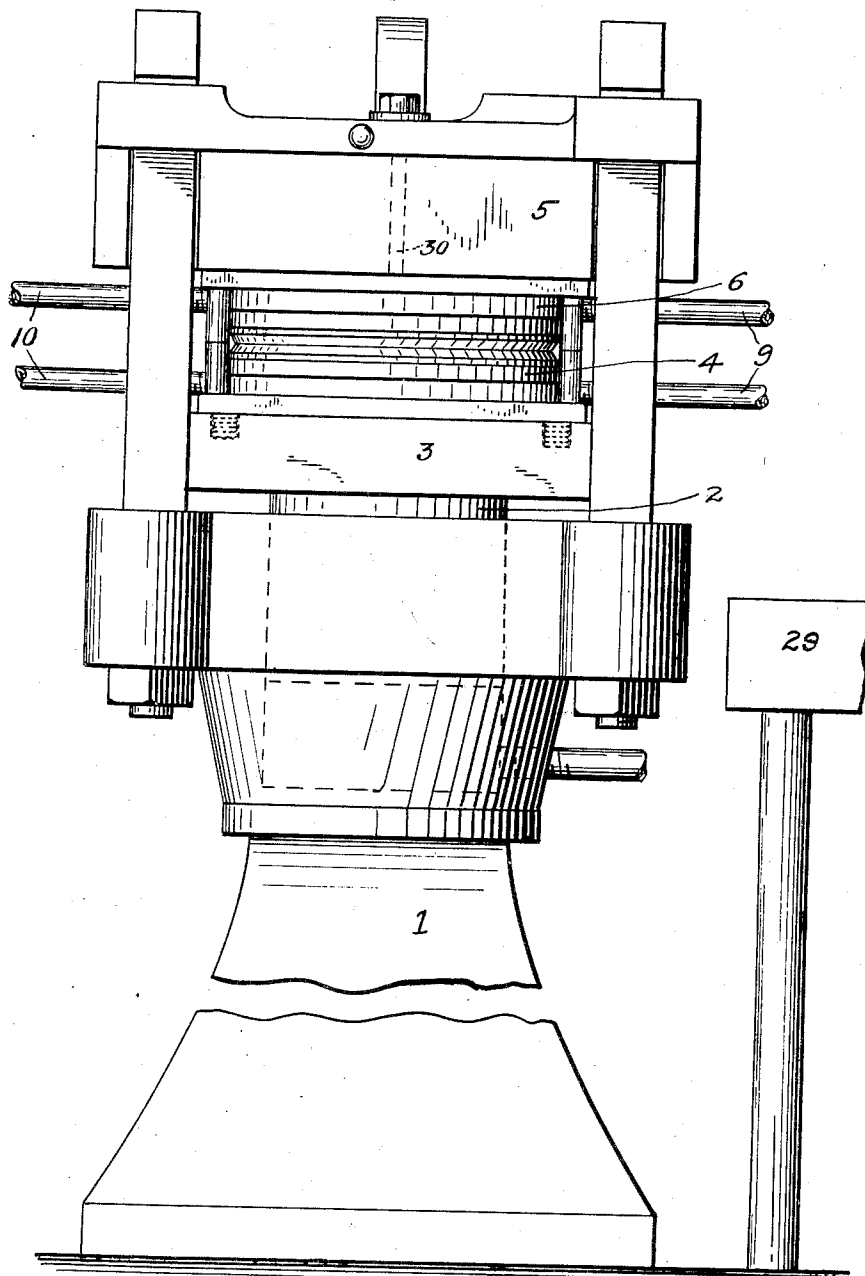


G. H. DAVIS AND C. H. MITCHELL.
PRESS FOR MOLDABLE COMPOUNDS.
APPLICATION FILED DEC. 17, 1919.

1,375,831.

Patented Apr. 26, 1921.
3 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

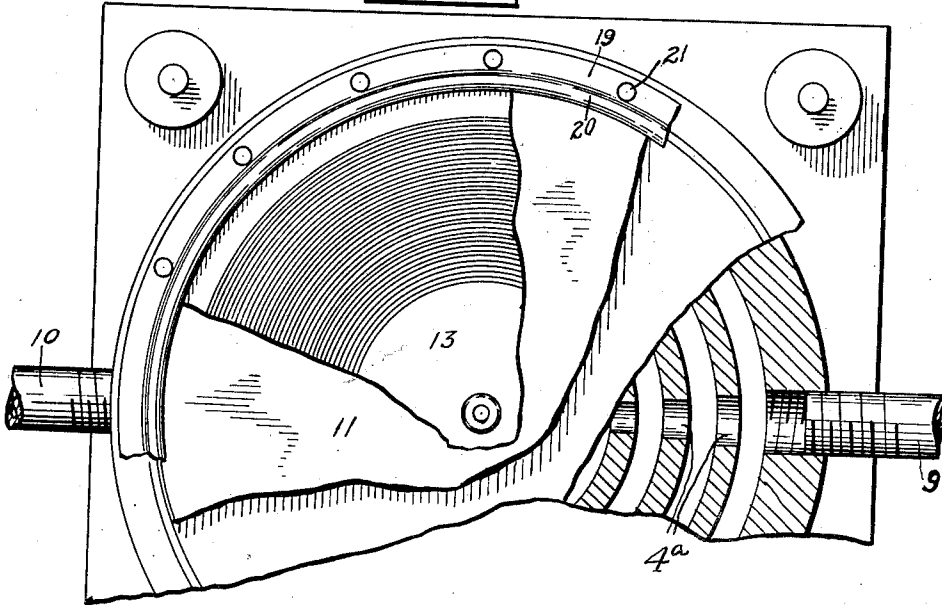
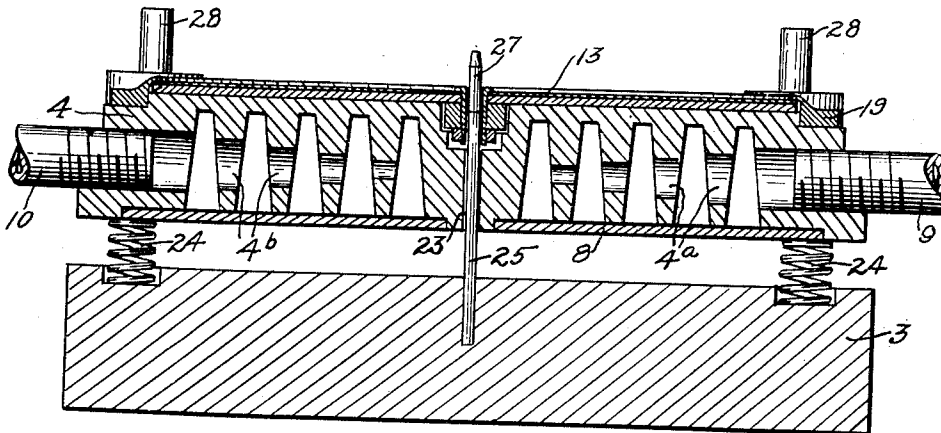


Fig. 3.



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Fig. 7.

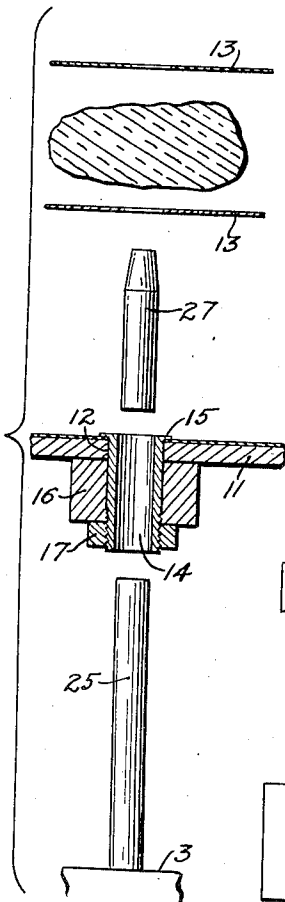


Fig. 4.

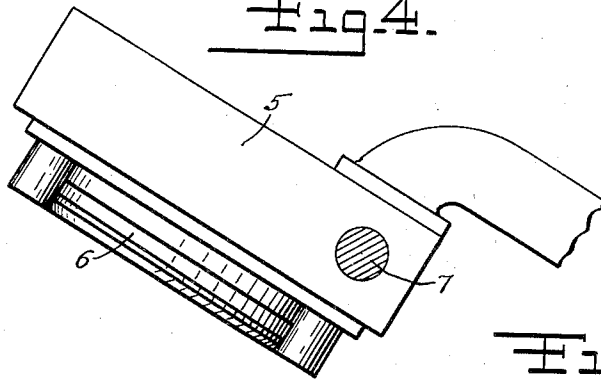


Fig. 6.

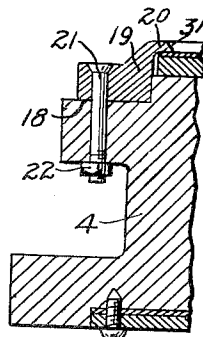
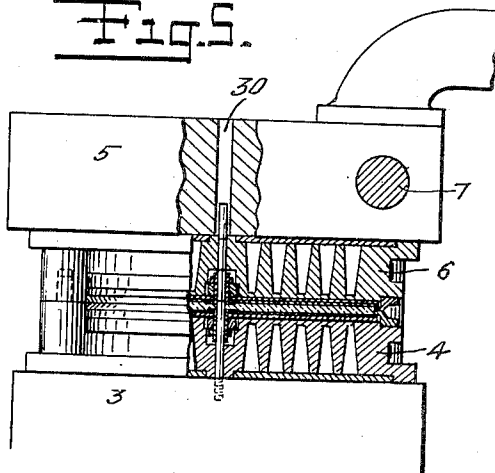


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PRESS FOR MOLDABLE COMPOUNDS.

1,375,831.

Specification of Letters Patent.

Patented Apr. 26, 1921.

Application filed December 17, 1919. Serial No. 345,456.

To all whom it may concern:

Be it known that we, GEORGE HOWLETT DAVIS and CHARLES H. MITCHELL, citizens of the United States of America, residing at West Orange, New Jersey, respectively, have invented a new and useful Press for Moldable Compounds, of which the following is a specification.

Our invention relates in general to presses and specifically to presses especially useful for operating on moldable compounds to produce phonograph records, and the like.

An object of our invention is to provide means by which the die or dies may be quickly and uniformly heated and cooled alternately. Another object is to provide means for securing a matrix in place. Another object is to provide means for piercing moldable compounds by means of a pin and for automatically removing the pin from the molded product after the latter has been pressed. This is of great utility where it is desired to provide the finished article with an accurately positioned center hole, or where it is desired to place center labels on the articles. Other objects will be apparent as the specification proceeds.

In the drawings, which show only a preferred form of our invention:—

Figure 1, is a front elevation of our invention.

Fig. 2, is a plan view of one of the die members having the matrix in place, parts being shown in section and parts being partly broken away.

Fig. 3, is a central vertical section of the lower die member and its supporting press platen.

Fig. 4, is a fragmentary view showing the two die members in separated relation, parts being shown in section.

Fig. 5, is a view similar to Fig. 4 showing the die members together, parts being shown in section.

Fig. 6, is a fragmentary view showing our improved means for securing the matrix to the die member.

Fig. 7, is a diagrammatic view of certain parts.

Our invention will be described as a machine for molding phonograph records, but it is to be understood that it is capable of use for molding other articles.

1 is the base of a suitable hydraulic press.

2 is a ram. Mounted upon the ram 2 is the usual platen 3. Upon the platen is mounted the lower die member 4 and upon the head 5 of the press is mounted the upper die member 6. The head of the press 5 may be rocked on pivot 7 so as to swing upwardly to separate the two die members as shown in Fig. 4. Each die member is preferably cast with a series of tapered grids concentrically arranged. Through these grids are two series of apertures 4^a, 4^a and 4^b, 4^b which apertures progressively decrease in size toward the center. The back of each die member may be suitably closed by a plate 8 so as to form a series of substantially concentric chambers within each die. A heating or cooling fluid, preferably steam and water respectively, may be alternately admitted through a pipe 9 and the steam, or water, will pass through said series of progressively decreasing apertures 4^a, 4^a and thence between the grids to the outlet apertures 4^b, 4^b and outlet 10. Since the apertures are of progressively decreasing size toward the center, the heating or cooling fluids will uniformly heat or cool the die members.

11 is a backing plate of relatively soft metal, such as copper, having a central aperture 12 therein. 13 is a matrix which is adapted to be placed upon the plate 11. A sleeve 14 having a slight flange 15 upon the outer end thereof, passes through the matrix and copper plate, the flange engaging the matrix. A washer 16 may be slipped over the sleeve 14 and a nut 17 may be threaded on the latter to rigidly secure the matrix and copper plate together. The copper plate and matrix, as a unit, are then placed upon a die member. Around the periphery of the die member the surface is cut away to form a depressed supporting shoulder 18. When the matrix and copper plate has been placed upon the surface of the die, a ring 19 is slipped down around the cut-away portion until a lip 20, on said ring 19, engages the matrix. Around the periphery of the ring are a number of fixed pins 21, preferably riveted thereto. These pins extend down through suitable apertures in the shouldered portion of the die and nuts 22 are provided on said pins for securing the ring 19 to the die member so as to securely hold the outer edge of the matrix in place. This construction affords an

exceedingly rapid means for securing the matrix to the die member. It should of course be understood, that the matrix may be secured directly to the die member without the intervention of the soft plate 11, the latter being used merely for the purpose of protecting the surface of the die member itself should a hard substance, such as a nail, get into the moldable compound.

10 The lower die member may be provided with a central passage 23, suitably enlarged at its upper end for the reception of the washer, nut and sleeve hereinbefore described and clearly shown in Fig. 3.

15 The lower die member 4 is preferably spaced from the platen 3 by means of springs 24, 24. Mounted in the platen 3 is a pin 25 which projects into the aperture 23 in the die member 4 and extends almost to the surface of the said die member when the latter is in raised position, as shown in Fig. 3. 27 is a loose pin which is placed within the sleeve 15 from the top and extends above the surface of the matrix for a purpose herein-
25 after described. 28 are dowel pins mounted upon one die member and adapted to fit into suitable apertures, not shown, in the other die member for alining said die members.

In the making of a double faced phonograph record a proper matrix would first be attached to each die member as previously described. While the dies are separated as shown in Fig. 4, a short pin 27 is put in place as shown in Fig. 3. One label for the record is then placed face down upon the lower matrix and over the centering pin 27. A lump of compound to be molded, which has been previously heated upon the steam table 29, is next placed on the center of the lower matrix over the pin 27, as clearly shown in Fig. 4. Then another label, face up, is placed on top of the compound and over said center pin 27. The upper die member 5 is then lowered so as to face up properly with the lower die member. The press fluid will then be admitted under the ram by means of the usual change valve, not shown, and the platen 3 will begin to ascend. The springs 24 will first be compressed until the die member 4 will rest directly upon the platen 3 which will then continue to move upwardly and compress and mold the lump of compound which has been previously placed between the two matrices. During
55 this operation the heating fluid will be passed through the dies to maintain the proper temperature.

When the dies have been heated and the pressing action completed, the heating fluid is cut off and a cooling fluid, such as water, is passed through the die members for the purpose of chilling the molded product and making it sufficiently rigid to be removed with safety. When the molded product is properly hardened, the press change valve is op-

erated so as to permit the die members to separate. When the die members have separated, the springs 24 will raise the die member 4 away from the platen 3 and the pin 25 will be withdrawn into the body of the die 4. 70 The pin 27, during the pressing operation will be forced into an aperture 30 in the upper die member 6 and will be temporarily held therein. When the upper die member is swung upwardly, as shown in Fig. 4, the 75 pin 27 will move with it and the pressed record will lie upon the lower matrix and since there is no pin or other projecting part to hold said record, the latter may be easily and quickly removed without danger of 80 injury thereto. A bevel 31 upon the flange 20 of ring 19 gives the record the requisite shape at the edge to facilitate removal of the same from the lower matrix.

The short pins 27 are pushed through the 85 aperture 30 in the upper die member and the press head, and are successively ejected from the head so that they may then be used over and over again.

It will thus be seen that we have provided 90 a machine of the character described by means of which records and other moldable articles may be quickly turned out and with a minimum danger of injury.

While we have explained one embodiment 95 of our invention in great detail, it is to be understood that we do not wish to limit ourselves to the specific form shown or described since many changes may be made therein without departing from the scope of 100 the appended claims.

We claim:—

1. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, at least one of said die members being constructed to permit a heating or cooling fluid to be circulated therethrough for heating or cooling the same uniformly, one of said dies having an aperture there- 110 through, a pin in said aperture and extending through the compound when the dies are pressed together, and means for causing said pin to be withdrawn from the compound and into the aperture in said die when the dies 115 are separated.

2. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, and a member adapted to extend 120 into one of said die members and through the material being pressed and adapted to be automatically withdrawn from the pressed material and into one of the die members when the die members are separated. 125

3. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, and a member adapted to extend into one of said die members and 130

through the material being pressed and means for causing said member to be automatically withdrawn from the pressed material and back into said die member.

4. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, a pin carried by and extending from one part of the press into a through passage in one die member, said last mentioned die member being resiliently supported in spaced relation to the press platen when the dies are separated, the end of said pin lying below the surface of its die when said dies are separated.

5. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, one of said die members having a through passage, a member supported by a part of the press and extending into said passage, a pin adapted to be placed in said passage above said member, said other die member having an aperture in line with said pin, said pin being forced from said first mentioned die member into the aperture in said second mentioned die member when said die members are pressed together and means for causing said member to be drawn back in said passage when said dies are separated.

6. In a device of the character described, a press, two die members mounted upon said press and adapted to press a compound between them, said die members having aligned apertures, springs for spacing one of said die members away from the press platen when the press is open, a pin mounted on said press and extending into the aperture in one die member, a relatively short pin adapted to be placed in said aperture in line with said first mentioned pin, said short pin being adapted to be forced out of the first aperture and into and temporarily held in the aperture in the other die member when the die members are together said springs serving to cause said first mentioned pin to be withdrawn into the aperture in one die member so that when the press is opened the pressed product will be free of pins projecting thereinto.

7. In a die member for a press, a series of grids therein forming chambers, said grids having inlet and outlet apertures therein for conducting fluid through said chambers for modifying the temperature of said die member.

8. In a die member, a series of grids therein forming chambers of different sizes, said grids having inlet and outlet apertures for conducting fluid through said chambers, the area of said apertures being substantially proportionate to the volumes of the chambers respectively for the purpose of distributing the fluid with substantial uniformity.

9. In a die member, a series of grids therein forming a series of substantially concentric chambers, said die member having an inlet for fluid, said grids having a series of apertures of progressively decreasing size to admit and distribute fluid proportionately to the volume of the chambers for the purpose of heating or cooling the die member uniformly and having suitable outlets to permit of a circulation of said fluid.

10. In a die member, a relatively raised central portion adapted to support a matrix, a ring secured to said die member below the plane of the supporting surface and adapted to secure the edge of a matrix to the die member, the securing means for the ring comprising pins secured in said ring and threaded at their free ends to receive clamping nuts.

11. In a device of the character described, a backing plate adapted to rest upon a die member and having an aperture therein, a flanged sleeve extending through said aperture for securing a matrix to said plate, and a nut threaded upon the sleeve on the side of the plate remote from said flange.

12. In a device of the character described, a die having a through passage, a plate adapted to rest upon said die and having an aperture therethrough, a flanged sleeve adapted to extend through said aperture to secure a matrix to the latter, said die being recessed to receive said sleeve.

13. In a device such as claimed in claim 12, and means for securing said plate and matrix to the die.

14. In a device of the character described, a die having a peripheral ring supporting shoulder, a ring supported upon said shoulder, said ring having a beveled lip, pins secured in said ring and passing through apertures in said shoulder and nuts upon said pins for securing the ring and die together to clamp the matrix therebetween.

15. In a device of the character described, a plate of relatively soft material having an aperture therethrough, a sleeve adapted to pass through said aperture and having one end threaded and the other end flanged for engagement with a matrix and a nut upon said sleeve for securing the matrix to the plate.

16. In a device of the character described, a die, spring supported from and normally out of contact with a press platen, said die having a passage therethrough, a pin supported by said platen and extending into said aperture, said pin being of such length as to extend completely through said die when the die and platen are in contact for the purpose described.

17. In a press having a platen and a head, a die upon each said platen and head, the die upon one of said members being supported from and normally out of contact

therewith, said last mentioned die having an aperture therethrough, a pin engaged by said last mentioned member and extending into said aperture when the die is in normal position, said pin being of such length as to be forced entirely through said aperture when the die and member are together for the purpose described.

18. In a device such as claimed in claim 17, said other die member having an aperture in substantial alinement with said first mentioned aperture, and a short pin in said first mentioned aperture adapted to be forced therefrom into said second mentioned aperture for the purpose described.

19. In a device of the character described, a die member, a relatively soft backing plate on said member, a matrix on said backing plate and means for securing said plate and matrix to the die member.

20. In a device of the character described, a backing plate adapted to rest upon a die member and having an aperture therein, and means extending into said aperture for securing a matrix to said backing plate.

21. In a device of the character described, a relatively soft backing plate adapted to rest upon a die member, and a matrix secured to said relatively soft backing plate.

22. In a device of the character described, a press having complementary press heads, a die supported from and out of contact with one head when the heads are separated, said die having an aperture therethrough, a pin extending into said aperture and to said head, said pin being of a length to extend entirely through the aperture when the die is in

contact with the head, whereby when a compound is being pressed the pin will project through said compound.

23. In a device of the character described, a press having two complementary press heads, a die supported from and normally out of contact with one of said heads, said die having an aperture therethrough, a pin extending from said head and into said aperture when the die and head are separated, said pin extending through said die and through a compound being pressed when the press heads are brought together and said pin being withdrawn from the compound and into the die when the press heads are separated and the die separated from its head.

24. In a device of the character described, a press having two complementary press heads, a die supported from and normally out of contact with one of said heads, said die having an aperture therethrough, a pin extending from said head and into said aperture, and a second loose pin in said aperture and resting upon said first mentioned pin, a second die on the other press head and having an aperture therein, said short pin being projected into the aperture in the last mentioned die when the press heads are brought together, and said first mentioned pin being withdrawn into its die when the press heads are separated and the die separated from the press head, whereby the molded compound will be free of pins.

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