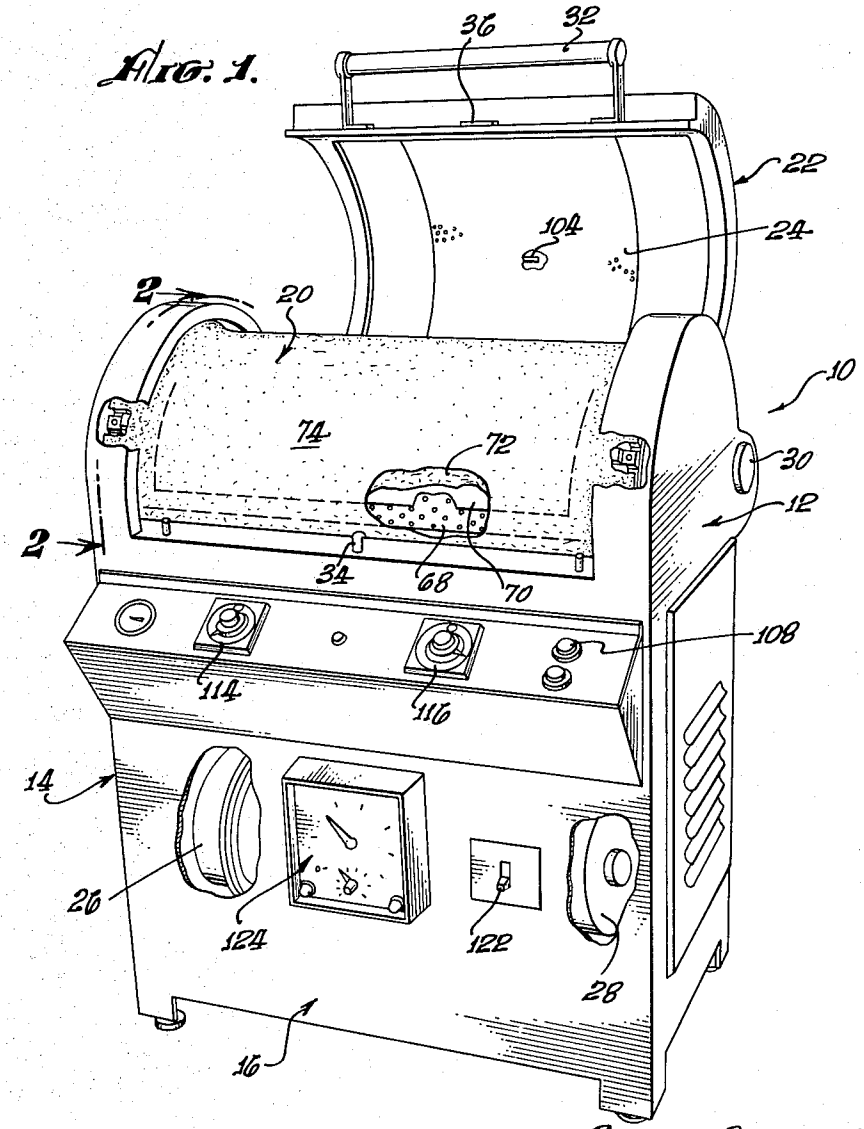
May 31, 1966 S. ODERMAN ET AL 3,253,348

MATRIX DRYING AND FORMING APPARATUS

Filed Jan. 10, 1963 4 Sheets-Sheet 1

FIG. 1.



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MATRIX DRYING AND FORMING APPARATUS

Filed Jan. 10, 1963 4 Sheets-Sheet 2

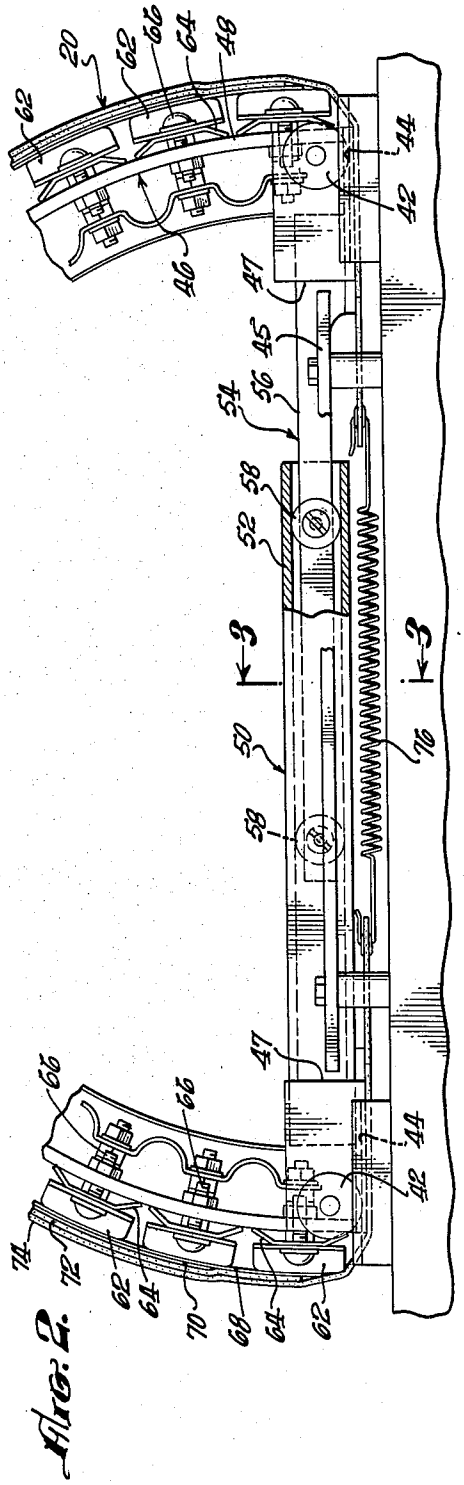


Fig. 2.

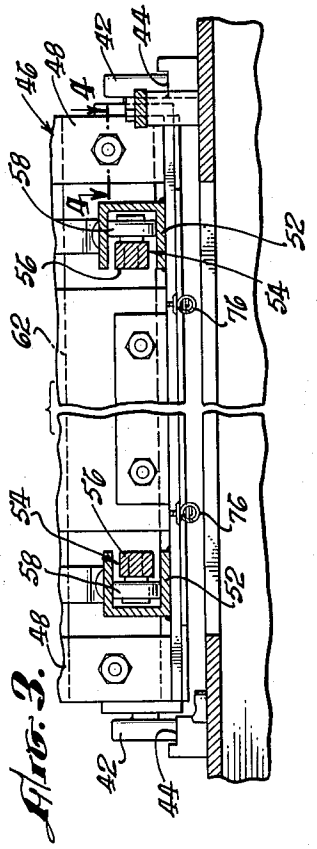


Fig. 3.

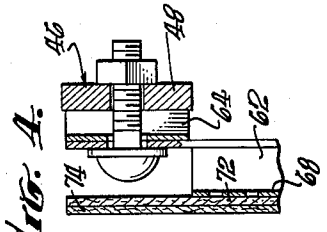


Fig. 4.

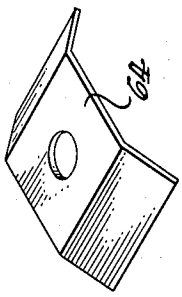


Fig. 5.

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MATRIX DRYING AND FORMING APPARATUS

Filed Jan. 10, 1963 4 Sheets-Sheet 3

FIG. 6.

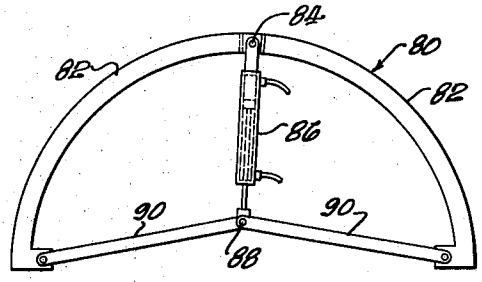


FIG. 7.

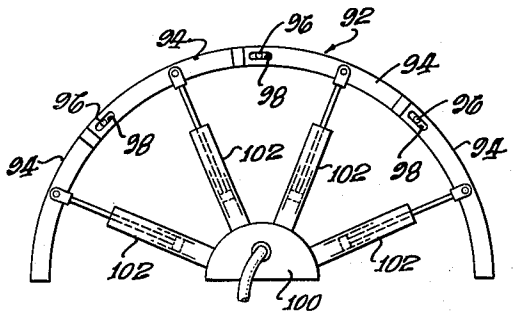
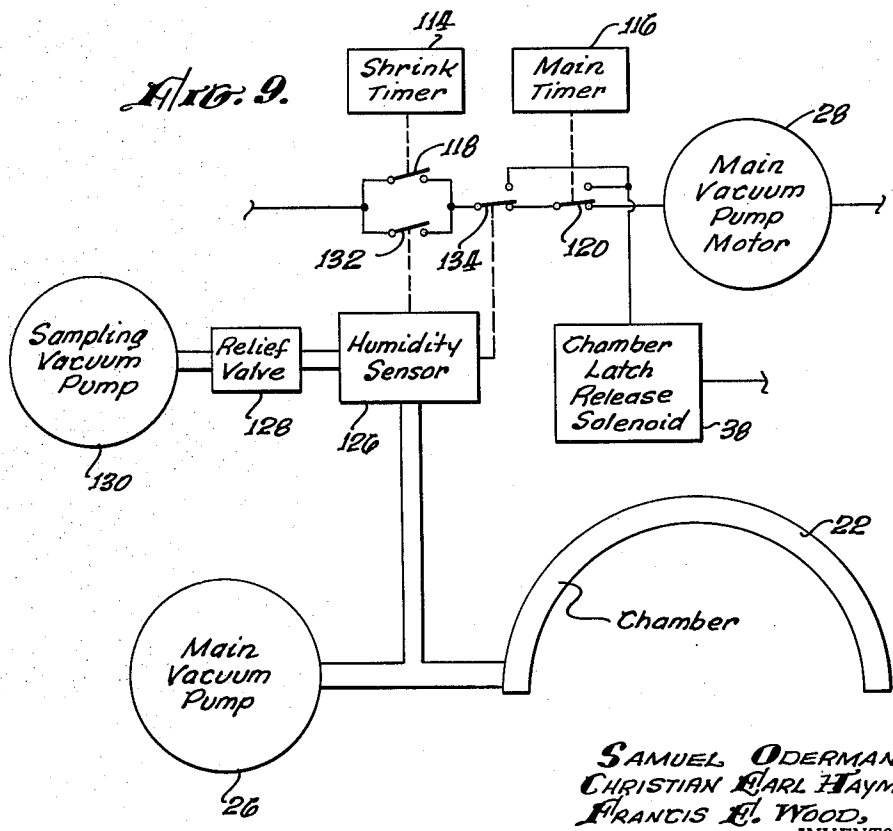


FIG. 9.



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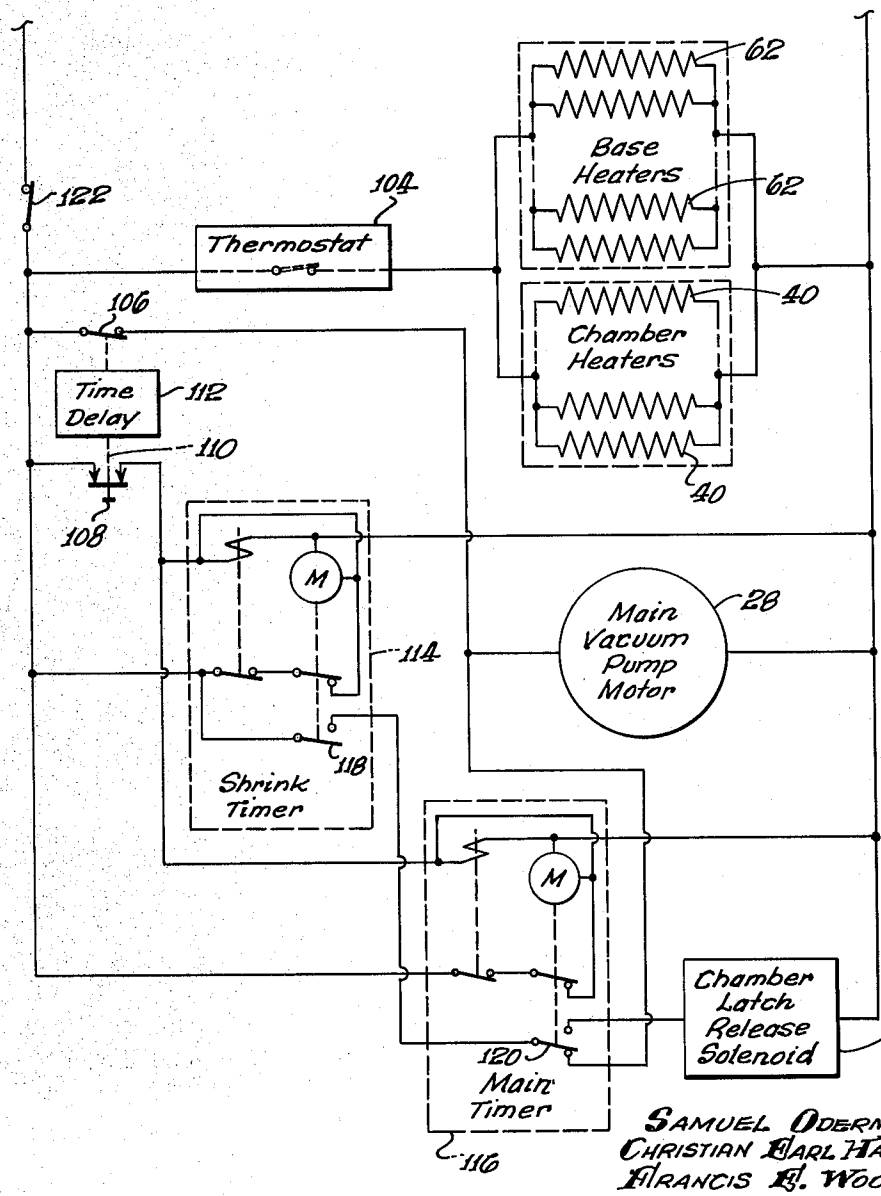
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MATRIX DRYING AND FORMING APPARATUS

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FIG. 8.



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United States Patent Office 3,253,348 Patented May 31, 1966

3,253,348

MATRIX DRYING AND FORMING APPARATUS

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Filed Jan. 10, 1963, Ser. No. 250,585
14 Claims. (Cl. 34—46)

The present invention relates to an apparatus for drying and forming stereotype matrices prior to casting stereotype plates, for use in newspaper printing presses, or the like, from the matrices. Such a matrix drying and forming machine is commonly referred to in the art as a master former, and will be so referred to hereinafter for convenience.

A conventional master former includes two generally hemicylindrical drying and forming assemblies one of which is movable into nesting relation with the other to dry and form a matrix inserted therebetween. It will be understood that one of the drying and forming assemblies is convex and the other is concave to receive the convex assembly in nesting relation. At least one of the drying and forming assemblies comprises an evacuable chamber having connected thereto a vacuum pump for removing moist air from the vicinity of the matrix. In the preferred embodiment of the present invention, the concave drying and forming assembly is pivotally mounted on the base for movement into and out of nesting relation with the convex drying and forming assembly, and includes the evacuable chamber. With this construction, to which the present disclosure will be restricted as a matter of convenience, the convex drying and forming assembly is commonly referred to as the base or base assembly and the concave drying and forming assembly is commonly referred to as the chamber or chamber assembly.

A general object of the present invention is to provide an improved master former, and particularly an improved master former having the foregoing construction.

The base assembly of a master former of the foregoing nature conventionally includes a substantially hemicylindrical frame on which other components of the base assembly, such as heaters, insulation, a cover, and the like, are mounted. After prolonged usage, distortion of this frame tends to occur as the result of repeated engagement of the base assembly by the concave chamber, such distortion primarily taking form of curling of the longitudinal edges of the frame inwardly toward each other. The effect is to impair the mechanical fit between the base assembly and the chamber and the seal therebetween, both of which are undesirable.

An important object of the invention is to overcome the foregoing disadvantages of prior base-assembly frames by providing means interconnecting circumferentially spaced portions of the frame for maintaining its desired substantially hemicylindrical configuration.

An object in connection with the presently preferred embodiment of the invention is to provide bracing means interconnetcing the longitudinal edges of the hemicylindrical frame for preventing them from curling inwardly toward each other. A related object is to provide

interengaged track means and track follower means extending diametrally across the hemicylindrical frame, and respectively connected to the longitudinal edges thereof, for prevening curling of such longitudinal edges inwardly toward each other.

The hemicylindrical frames of master-former base assemblies are frequently provided with longitudinally-extending strip-type resistance heaters rigidly mounted on the convex sides thereof. This construction tends to impair the mechanical fit between the base assembly and the chamber, and the seal therebetween, and an important object of the invention is to overcome this disadvantage by resiliently mounting the strip heaters on the convex side of the frame so that the heaters may yield toward the frame. More particularly, an object is to provide spring means individually connecting the heaters to the frame and permitting the heaters to yield toward the frame independently of each other.

Another object of the invention is to improve heat distribution to the matrix from the base-assembly heaters by superimposing on the heaters a substantially hemicylindrical, perforated sheet, and by superimposing on such perforated metal sheet an imperforate metal sheet overlying a major, central area of the perforated metal sheet.

Another, primary object of the present invention is to provide a master former having a control system which automatically regulates the total length of the drying and forming cycle, and the portion of such cycle during which shrinking of the matrix is permitted, thereby eliminating any necessity for manual control.

An object in connection with one embodiment of the invention is to control the total drying and forming cycle, and the portion thereof during which shrinking is permitted, by means of a timer or timers.

An object in connection with another embodiment of the invention is to control the total drying and forming cycle, and the portion thereof during which shrinking is permitted, in accordance with the humidity of the air in the vicinity of the matrix, and, more particularly, in accordance with the humidity of an air sample withdrawn from the chamber. Another object in this connection is to provide humidity sensing means for establishing the total length of the drying and forming cycle, and the length of the portion thereof during which shrinking is permitted, and to provide sampling means communicating with the chamber for continuously delivering an air sample therefrom to the humidity sensing means.

A further object of the invention is to provide means for initially evacuating the chamber to seat a matrix therein and to hold the matrix in place in the chamber until the master former has been closed, i.e., until the chamber has been pivoted into nesting relation with the base assembly, with the matrix inserted therebetween. After this initial period of energization of the means for evacuating the chamber, the evacuating means is de-energized, in either of the ways hereinbefore outlined, to permit shrinkage to occur, and, thereafter, the evacuating means is re-energized, in either of the ways outlined, until the drying and forming cycle has been completed.

Still another object of the invention is to provide means for latching the chamber in its closed position, wherein it is in nesting relation with the base assembly, and to

provide means for automatically releasing the latching means upon completion of the drying and forming cycle.

Yet another, and important, object of the invention is to provide means for closely regulating the matrix temperature which involves providing the chamber with heaters having a lower total heat output than the heaters of the base assembly, and which involves the ues of a single thermostat means in the chamber for controlling the heaters of both the chamber and the base assembly.

The foregoing objects, advantages, features and results of the present invention, together with various other objects, advantages, features and results thereof which will be evident to those skilled in the master former art in the light of this disclosure, may be achieved with the exemplary embodiments of the invention described in detail hereinafter and illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view of a master former which embodies the invention;;

FIG. 2 is an enlarged, fragmentary sectional view taken as indicated by the arrowed line 2—2 of FIG. 1;

FIG. 3 is a fragmentary sectional view taken along the arrowed line 3—3 of FIG. 2;

FIG. 4 is an enlarged, fragmentary sectional view taken along the arrowed line 4—4 of FIG. 3;

FIG. 5 is an enlarged perspective view of a heater mounting spring embodied in the invention;

FIGS. 6 and 7 are semidiagrammatic end-elevational views of alternative base-assembly frames of the invention;

FIG. 8 is a schematic view illustrating diagrammatically one embodiment of the electrical circuitry of the master former of the invention; and

FIG. 9 is a fragmentary schematic view illustrating diagrammatically an alternative electrical circuit utilizing humidity control of the operating cycle of the master former in accordance with the invention.

Referring initially to FIG. 1 of the drawings, the master former of the invention is indicated generally therein by the numeral **10** and is preferably provided with a suitable supporting structure **12** shown as including a housing **14** having various controls mounted on the front **16** thereof. The basic components of the master former **10** are generally hemicylindrical, drying and forming assemblies **20** and **22**, the assembly **20** being convex and the assembly **22** being concave and the two being interengageable in nesting relation. In the particular construction illustrated, the assembly **20**, which is referred to hereinafter as a base or base assembly, is mounted directly on the supporting structure **12** in a manner to be described, while the assembly **22**, hereinafter referred to as a chamber, is pivotable relative to the supporting structure, about one of the longitudinal edges of the chamber, into and out of nesting relation with the base **20**.

The chamber **22** is provided on its concave side with a foraminous or perforated wall **24** against which a matrix to be dried and formed is adapted to be seated by a vacuum developed within the chamber. The necessary vacuum is produced within the chamber **22** by an evacuating means which includes a main vacuum pump **26** located within the housing **14** and driven by a motor **28**, preferably an electric motor, therewithin. The inlet of the main vacuum pump **26** is connected to the chamber **22** through a passage and manifold system which includes a hollow shaft **30** by means of which the chamber **22** is pivotally connected to the supporting structure **12**, all of this being shown in detail in Patent No. 2,319,031, issued May 11, 1943, to Craig C. Baker, so that a detailed description herein is not necessary.

The chamber **22** is provided adjacent its free longitudinal edge with a handle **32** for pivoting the chamber between its open position, shown in FIG. 1 of the drawings, and its closed position, wherein it is displaced downwardly over the base **20** in nesting relation therewith. The supporting structure **12** carries a latch **34** engageable with a keeper on the chamber **22** to latch the chamber in its closed position. The latching means formed by the latch **34** and the keeper **36** is releasable by a solenoid **38**, FIGS. 8 and 9, which, when energized, moves the latch **34** to an inoperative position to disengage the keeper **36**. The weight of the chamber **22** is counterbalanced by a counterweight, not shown, connected to the chamber on the rear side of the master former **10**. The chamber **22** contains electrical resistance heaters **40**, FIG. 8, which are not shown in detail, but which may be similar to the strip-type electrical resistance heaters **62** hereinafter described in connection with the base **20**.

The entire base **20** is so mounted on the supporting structure **12** that it can float back and forth laterally as the chamber **22** is opened and closed, such floating being accomplished in essentially the same manner as disclosed in the Baker patent mentioned. As shown in FIGS. 2 and 3, the base **20** is provided at each end thereof with two diametrally-spaced rollers **42** which engage a complementary track **44** on the supporting structure **12**. Thus, the base **20** may shift back and forth laterally relative to the supporting structure **12** to minimize interference with opening and closing of the chamber **22**. Interengageable stops **45** and **47**, on the supporting structure **12** and the base **20**, respectively, limit the lateral shifting movement of the base.

The master former **10**, as thus far described, may be similar in structure to that disclosed in the aforementioned Baker patent, reference to which is hereby made for a more detailed description.

The base **20** includes a substantially hemicylindrical frame **46** which, as shown in Patent No. 1,960,697, granted May 29, 1934 to Albert W. Cochran et al., may comprise essentially two semicircular bands **48** at the respective ends of the base, the four rollers **42** being suitably mounted on the respective ends of such bands. In prior master formers, frames comparable to the frame **46** tend to become distorted in use, such distortion frequently taking the form of curling of the longitudinal edges of the frame, i.e., the ends of the bands **48**, inwardly toward each other. The result is impairment of the mechanical fit between the chamber **22** and the base **20**, and impairment of the seal achieved between these members around the edges of a matrix inserted therebetween. To overcome these difficulties, the master former **10** of the present invention incorporates yieldable bracing means **50** interconnecting circumferentially spaced portions of the frame **46** for maintaining the desired substantially hemicylindrical configuration thereof, and particularly for preventing curling of the longitudinal edges of the frame inwardly toward each other.

In the embodiment under consideration, the bracing means **50** extends diametrally of the frame **46** and includes two longitudinally-spaced tracks or track means **52** suitably rigidly connected to the frame at longitudinally spaced points along one edge thereof. For example, the tracks **52** may be suitably rigidly connected to the respective band ends which constitute one longitudinal edge of the frame **46**. Suitably rigidly connected to the opposite longitudinal edge of the frame **46** at longitudinally spaced points thereon are longtiudinally spaced track followers or track follower means **54** respectively engaging the tracks **52**. In the particular-construction illustrated, the tracks **52** are longitudinally-facing channels which receive the respective track followers **54** therein, the latter comprising diametrally-extending supports **56** inserted into the channels **52** and carrying rollers **58** engageable with the flanges of the channels.

With the foregoing construction while the frame **46** can flex to permit the longitudinal edges thereof to move toward and away from each other as the chamber **22** is opened and closed, such flexing can never result in curling or rolling of the longitudinal edges of the frame inwardly toward each other because of the restraining influence of the tracks **52** and the track followers **54** in

engagement therewith. Consequently, the desired substantially hemicylindrical configuration of the frame **46** is preserved even after prolonged service, which is an important feature.

The base **20** includes circumferentially spaced, longitudinally extending, strip type, electrical resistance heaters **62** which are mounted on the outer, convex side of the frame **46**. Conventionally, such strip heaters are rigidly connected to the frame **46**, e.g., are rigidly connected at their respective ends to the respective bands **48**. An important object of the present invention is to improve the physical fit between the base **20** and the chamber **22**, and to improve the seal attained therebetween around the edges of a matrix, by resiliently mounting the strip heaters **62** on the bands **48**. This is accomplished by utilizing spring means to connect the respective heater ends to the respective bands. Each such spring means includes a leaf spring **64**, preferably having the configuration best shown in FIG. 5 of the drawings, interposed between the corresponding heater end and the corresponding band. A bolt **66** extends through each heater end, the corresponding leaf spring **64**, and the corresponding band **48**, each leaf spring being so oriented as to bias the corresponding heater end outwardly away from the corresponding band. Consequently, when the chamber **22** is closed, the heaters **62** are capable of yielding radially inwardly toward the frame **46** to minimize any tendency to distort the frame, and to thus achieve an excellent mechanical fit and an excellent seal between the base and the chamber, which are important features of the invention.

To achieve maximum uniformity of heat distribution from the base heaters **62** to a matrix between the base **20** and the chamber **22**, a substantially hemicylindrical, perforated metal sheet **68** overlies the base heaters. In the construction illustrated, the perforated metal sheet **68** is shown as directly contacting the base heaters **62**. Overlying the perforated metal sheet **68** is a complementary, imperforate metal sheet **70** so that it leaves the margins of the perforated metal sheet exposed, as best shown in FIG. 1 of the drawings. Preferably, the imperforate metal sheet **70** covers roughly three-quarters of the perforated metal sheet **68**. We have found that the addition of the imperforate metal sheet **70** to the perforated metal sheet **68** materially improves the uniformity of heat distribution and results in a superior matrix.

The base **20** includes various other components which are conventional. For example, it includes a blanket **72** of heat insulating material overlying the metal sheets **68** and **70**, and includes a cover **74** overlying the insulating blanket. The longitudinal edges of the cover are interconnected by tension springs **76** which keep the cover tight. Additionally, the base **20** may be provided with a blanket of heat insulating material, not shown, radially inwardly of the frame **46**. Also incorporated in the base **20** are the requisite electrical connections to the heaters **62**, it being thought unnecessary to describe same herein.

FIGS. 6 and 7 of the drawings illustrate alternative base-assembly frames and alternative bracing means for maintaining the desired substantially hemicylindrical configurations thereof. These will now be described.

Referring first to FIG. 6, illustrated therein is a substantially hemicylindrical base-assembly frame **80** which is divided approximately into halves **82**, each frame half being substantially one-quarter of a cylinder. The two frame halves **82** are pivotally interconnected by a longitudinal pivot means **84** paralleling the longitudinal edges of the frame **80**. One end of a fluid motor **86** of the reciprocating type is connected to the pivot means **84**, and the other end thereof is pivotally connected, at **88**, to adjacent ends of links **90**. The other ends of the links **90** are pivotally connected to the respective longitudinal edges of the frame **80**. With this construction, the fluid motor **86**, which is preferably an air cylinder, constantly biases the frame **80** into the desired substantially hemicylindrical configuration. At the same time, the frame **80** can flex to facilitate opening and closing movement of the chamber **22**.

Turning now to FIG. 7 of the drawings, illustrated therein is a substantially hemicylindrical base-assembly frame **92** which includes circumferentially arranged segments **94**, shown as four in number. Adjacent edges of the segments **94** are interconnected by longitudinal pivot means **96** which incorporate circumferential slots **98** permitting the segments to telescope circumferentially relative to each other, as well as to pivot relative to each other, so as to permit some variation in the diameter of the frame **92**. A central manifold **100** rigidly mounts fluid motors **102** of the reciprocating type, preferably air cylinders, which extend radially to and are pivotally connected at their outer ends to the respective frame segments **94**. As will be apparent, air pressure supplied to the air cylinders **102** through the central manifold **100** acts to maintain the desired substantially hemicylindrical configuration of the frame **92** while permitting contraction of the frame to facilitate opening and closing movement of the chamber **22**.

Thus, all of the embodiments of the invention hereinbefore described have in common a means interconnecting circumferentially spaced portions of a base-assembly frame for maintaining the desired substantially hemicylindrical configuration thereof, while permitting temporary deformation of the frame.

Turning now to FIG. 8 of the drawings, the electrical-circuitry embodiment of the invention which is illustrated therein is shown in highly diagrammatic, simplified form for convenience (the same being true of the modification illustrated in FIG. 9). An important feature of the invention is that the chamber heaters **40** and the base heaters **62** have different total heat outputs (the total heat output of the chamber heaters **40** being lower than the total heat output of the base heaters **62**), and are all controlled by a single thermostat **104** carried by the chamber **22** centrally thereof, as shown in FIG. 1 of the drawings. (Merely as an example, there may be seventeen 350-watt base heaters **62** and sixteen 200-watt chamber heaters **40**.) We have found that using such a heat output differential, with the chamber heaters **40** having the lesser heat output, and utilizing a single, central thermostat **104** in the chamber **22** for controlling all of the heaters, results in extremely close temperature control, and much closer temperature control than can be attained with independent base and chamber thermostats, which is an important feature of the invention. Controlling chamber **22** temperature is preferred. Being all metal chamber **22** can dissipate or build up hat faster than the well insulated base **20**. Higher heat output of base unit **20** is necessary to cause matrix to achieve a semi-cylindrical form with its casting base on the concave side.

Continuing to consider the circuitry of FIG. 8 of the drawings, the main vacuum pump motor **28** is controlled by a switch **106** which is closed upon closing of a push-button start switch **108**, an operative connection between the switches **108** and **106** being indicated by the dotted line **110**. Interposed between the switches **106** and **108** is a time delay unit **112** (which may be a commercially-available pneumatic timer) which opens the switch **106** after a predetermined time interval, e.g., twelve seconds. With this construction, upon momentary closure of the push-button start switch **108**, the main vacuum pump motor **28** is energized for a length of time sufficient to seat a matrix to be dried and formed in the chamber **22**, and to permit movement of the chamber into and latching thereof in its closed position.

The main vacuum pump motor **18** is also controlled by a shrink timer **114** and a main timer **116** which provide a current path paralleling that provided by the switch **106** and which are controlled by the start switch **108**.

The shrink timer **114** and the main timer **116** are commercially-available automatic reset timers requiring no detailed description. Briefly, the shrink timer **114** includes a shrink timer switch **118** which is connected in series with the main vacuum pump motor **28** and which is normally open. The main timer **116** includes a main timer switch **120** which is interposed between the shrink timer switch **118** and the main vacuum pump motor **28** in series therewith. The main timer switch **120** is normally in a closed position with respect to the main vacuum pump motor **28**. With this construction, after opening of the switch **106**, the main vacuum pump motor **28** cannot re-start until the shrink timer switch **118** is closed by the shrink timer **114**, thus permitting shrinkage of the matrix being dried and formed during the interval for which the shrink timer is set. Subsequently, the main timer **116**, after a predetermined time interval depending upon the setting of the main timer, opens the main timer switch **120**, with reference to the main vacuum pump motor **28**, to again de-energize the main vacuum pump motor, this marking the end of the operating cycle. At the same time, the main timer switch **120** moves into a position to energize the solenoid **38** for releasing the chamber latch **34**, permitting the chamber to open.

Considering the over-all operation of the master former **10** with the electrical circuitry of FIG 8 of the drawings, the former is initially placed in operation by closing a main switch **122**, which results in energization of the chamber and base heaters **40** and **62** under the control of the thermostat **104**, the temperature being indicated by the indicator **124** on the front of the housing **14**. Normally, the heaters **40** and **62** remain energized constantly, under the control of the thermostat **104**, so that the master former **10** is always ready for operation when needed.

When a matrix is to be dried and formed, it is placed against the concave side of the chamber **22** and the start switch **108** is actuated momentarily. This results in closure of the switch **106** for a period of time sufficient to seat the matrix and to permit movement of the chamber **22** into its closed position, whereupon the time delay unit **112** opens the switch **106** to de-energize the main vacuum pump motor **28**. Momentary closure of the start switch **108** also starts the shrink and main timers **114** and **116** through the circuitry disclosed, these timers including holding circuits which cause them to continue to run after momentary closure of the start switch **108**. After the time interval for which the shrink timer **114** is set has elapsed, the shrink timer closes the shrink timer switch **118** to start the main vacuum pump motor **28** again. The shrink timer **114** then stops. During the interval for which the shrink timer **114** is set, the matrix is permitted to shrink to the desired extent. Ultimately, the time interval for which the main timer **116** is set elapses, whereupon the main timer actuates the main timer switch **120** to open the circuit to the main vacuum pump motor **28** and to close the circuit to the solenoid **38** for releasing the chamber latch **34**. At this time, the main timer **116** also stops and both timers automatically reset in preparation for the next operating cycle. The dried and formed matrix may now be removed from the master former **10** for subsequent casting of a corresponding stereotype plate.

Turning now to FIG. 9 of the drawings, duplicated in this figure is a portion of the electrical circuitry of FIG. 8, and added thereto is a control system for regulating the operation of the main vacuum pump motor **28** in accordance with the humidity of the air adjacent the matrix being dried and formed. As shown in FIG. 9, a continuous sample stream of the air in the chamber **22** is drawn through a humidity sensor or sensing means **126** and a relief valve **128** by a sampling vacuum pump **130**. The humidity sensor **126** is a commercially-available unit so that a detailed description is not necessary. As long as the humidity of the air constituting the sample stream is above a predetermined value, switches **132** and **134** controlled by the humidity sensor **126** are open and closed, respectively. The switch **132** is in parallel with the shrink timer switch **118**, and the switch **134** is in series with the main timer switch **120**. When the humidity of the air in the sample stream has been reduced to a predetermined level, e.g., to a relative humidity of 15%, which marks the end of the shrinking portion of the complete operating cycle, the humidity sensor **126** closes the switch **132** to re-start the main vacuum pump motor **28**. When the matrix has been dried sufficiently, which may, for example, correspond to a relative humidity of 4% in the sample air stream, the humidity sensor **126** opens the switch **134**, with reference to the main vacuum pump motor **28**, and thus stops the main vacuum pump motor. At the same time, the main switch **134** is moved to a position to energize the solenoid **38** for releasing the chamber latch **34**.

It will be noted that if the switches **132** and **134** are not actuated by the humidity sensor **126** within the respective time intervals for which the shrink and main timers **114** and **116** are set, these timers will actuate the switches **118** and **120** to override the humidity sensor. For this reason, the shrink and main timers **114** and **116** are preferably set for time intervals about 50% higher than normal, thus providing sufficient shrinkage and total times, under normally anticipated conditions of matrix moisture content, to achieve the desired humidities at the end of the shrinking phase of the total cycle and at the end of the total cycle.

Although exemplary embodiments of the invention have been disclosed herein for purposes of illustration, it will be understood that various changes, modifications and substitutions may be incorporated in such embodiments without departing from the spirit of the invention as defined by the claims which follow.

We claim:

1. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having diametrically opposed longitudinal edges capable of inward movement toward each other; and

(f) means, including yieldable bracing means interconnecting circumferentially spaced portions of said frame, for constantly biasing said longitudinal edges thereof away from each other so as to constantly tend to maintain said substantially hemicylindrical configuration of said frame while permitting temporary inward movement of said longitudinal edges thereof toward each other.

2. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having diametrally opposed longitudinal edges capable of inward movement toward each other;

(f) means, including yieldable bracing means interconnecting circumferentially spaced portions of said frame, for constantly biasing said longitudinal edges thereof away from each other so as to constantly tend to maintain said substantially hemicylindrical configuration of said frame while permitting temporary inward movement of said longitudinal edges thereof toward each other;

(g) heaters extending longitudinally of said frame on the convex side thereof; and

(h) spring means respectively connecting said heaters to said frame and permitting said heaters to yield toward said frame independently of each other;

3. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having diametrally opposed longitudinal edges capable of inward movement toward each other; and

(f) means, including yieldable bracing means interconnecting said longitudinal edges of said frame, for constantly biasing said longitudinal edges of said frame away from each other so as to prevent inward curling of said longitudinal edges toward each other while permitting temporary inward movement of said longitudinal edges toward each other.

4. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having longitudinal edges; and

(f) interengaged track means and track follower means extending diametrally across said frame, and respectively connected to said longitudinal edges of said frame, for preventing curling of said longitudinal edges of said frame inwardly toward each other while permitting said longitudinal edges to move toward and away from each other.

5. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having longitudinal edges;

(f) interengaged track means and track follower means extending diametrically across said frame, and respectively connected to said longitudinal edges of said frame, for preventing curling of said longitudinal edges of said frame inwardly toward each other while permitting said longitudinal edges to move toward and away from each other;

(g) heaters extending longitudinally of said frame on the convex side thereof; and

(h) spring means respectively connecting said heaters to said frame and permitting said heaters to yield toward said frame independently of each other.

6. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a substantially hemicylindrical frame;

(f) heaters mounted on the convex side of said frame;

(g) a perforated metal sheet overlying said heaters; and

(h) an imperforate metal sheet overlying a major central area of said perforated metal sheet.

7. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) means for latching said movable assembly in said nesting relation;

(f) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(g) means connected to said chamber for evacuating same;

(h) means for initially energizing said evacuating means;

(i) automatic means for subsequently de-energizing said evacuating means and for thereafter re-energizing same and for ultimately again de-energizing same; and

(j) means for releasing said latching means upon the second de-energization of said evacuating means.

8. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in

nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(f) means connected to said chamber for evacuating same;

(g) means for initially energizing said evacuating means; and

(h) automatic means for subsequently de-energizing said evacuating means and for thereafter re-energizing same and for ultimately again de-energizing same.

9. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(f) means connected to said chamber for evacuating same;

(g) means for initially energizing said evacuating means; and

(h) automatic timer means for subsequently de-energizing said evacuating means after a first time interval, and for thereafter re-energizing same after a second time interval, and for ultimately again de-energizing same after a third time interval.

10. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(f) means connected to said chamber for evacuating same;

(g) means for initially energizing said evacuating means;

(h) automatic means for subsequently de-energizing said evacuating means after a first time interval, and for thereafter re-energizing same after a second time interval, and for ultimately again de-energizing same after a third time interval; and

(i) said automatic means including means responsive to the moisture content of the matrix for establishing the lengths of said second and third time intervals.

11. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(f) means connected to said chamber for evacuating same;

(g) means for initially energizing said evacuating means;

(h) automatic means for subsequently de-energizing said evacuating means after a first time interval, and for thereafter re-energizing same after a second time interval, and for ultimately again de-energizing same after a third time interval;

(i) said automatic means including humidity sensing mean, responsive to the humidity of the air in said chamber, for establishing the lengths of said second and third time intervals; and

(j) said automatic means including timer means for establishing the length of said first time interval.

12. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) one of said assemblies including an evacuable chamber having a perforated wall facing the other of said assemblies;

(f) means connected to said chamber for evacuating same;

(g) means for initially energizing said evacuating means;

(h) automatic means for subsequently de-energizing said evacuating means after a first time interval, and for thereafter re-energizing same after a second time interval, and for ultimately again de-energizing same after a third time interval;

(i) said automatic means including humidity sensing mean, responsive to the humidity of the air in said chamber, for establishing the lengths of said second and third time intervals;

(j) said automatic means including timer means for establishing the length of said first time interval; and

(k) means communicating with said chamber for delivering air therefrom to said humidity sensing means.

13. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) said concave assembly being movable relative to the other into said nesting relation;

(e) said convex assembly including heating means;

(f) said concave assembly including heating means having a lower heat output than said heating means of said convex assembly; and

(g) thermostat means carried by said concave assembly only for controlling both of said heating means.

14. In a stereotype matrix drying and forming machine, the combination of:

(a) a supporting structure;

(b) a generally hemicylindrical, convex drying and forming assembly mounted on said supporting structure;

(c) a generally hemicylindrical, concave drying and forming assembly mounted on said supporting structure and engageable with said convex assembly in nesting relation to form and dry a matrix inserted therebetween;

(d) one of said assemblies being movable relative to the other into said nesting relation;

(e) said convex assembly including a deformable substantially hemicylindrical frame having longitudinal edges; and

(f) yieldable, radially extending, bracing means interconnecting a plurality of circumferentially spaced

portions of said frame for maintaining said substantially hemicylindrical configuration of said frame while permitting temporary deformation theerof.

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