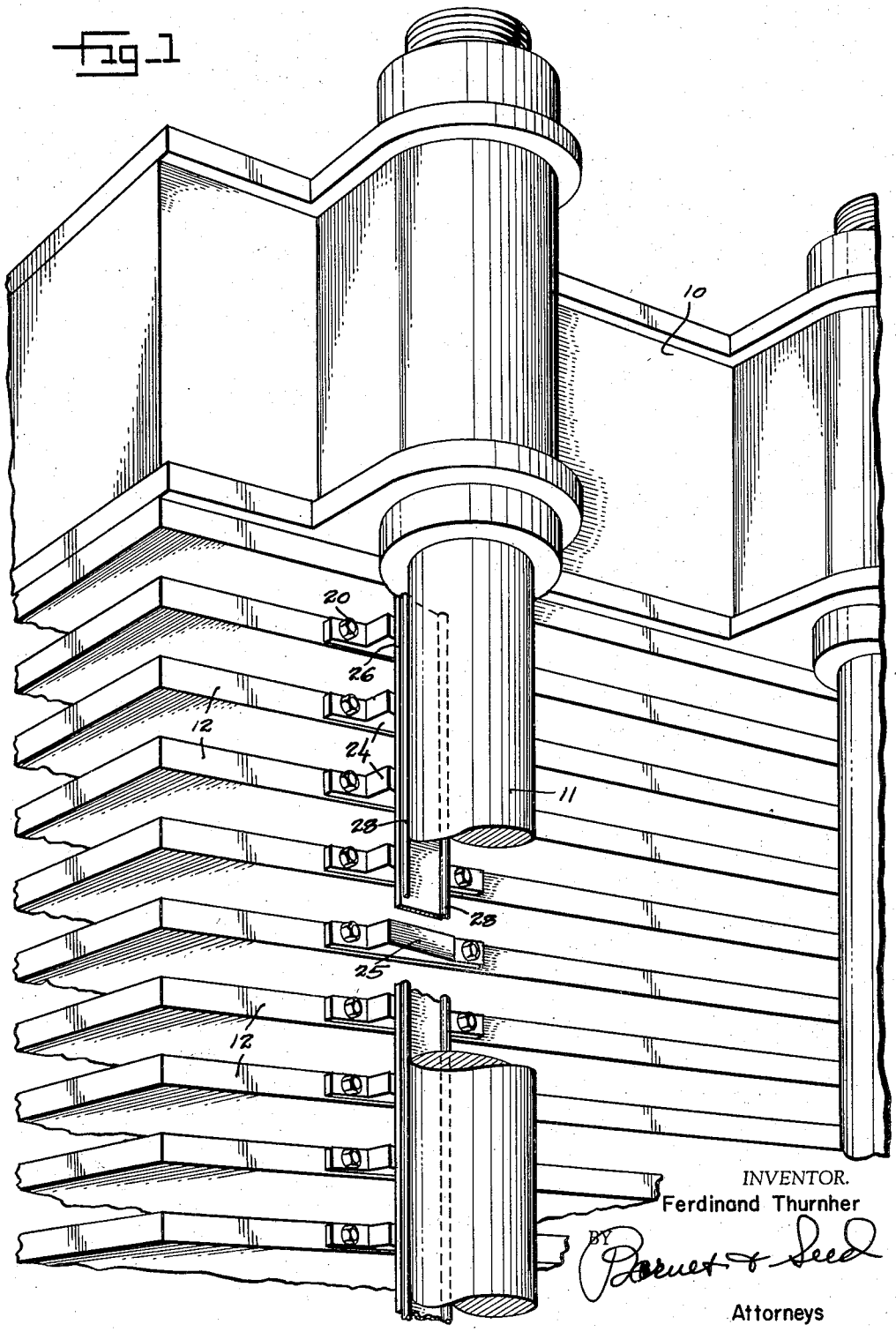
April 28, 1959 F. THURNHER 2,884,033

MULTI-PLATEN HOT PRESS

Filed May 6, 1957 2 Sheets-Sheet 1

Fig. 1



INVENTOR.
Ferdinand Thurnher
BY Parker & Reed
Attorneys

April 28, 1959 F. THURNHER 2,884,033

MULTI-PLATEN HOT PRESS

Filed May 6, 1957 2 Sheets-Sheet 2

Fig. 2

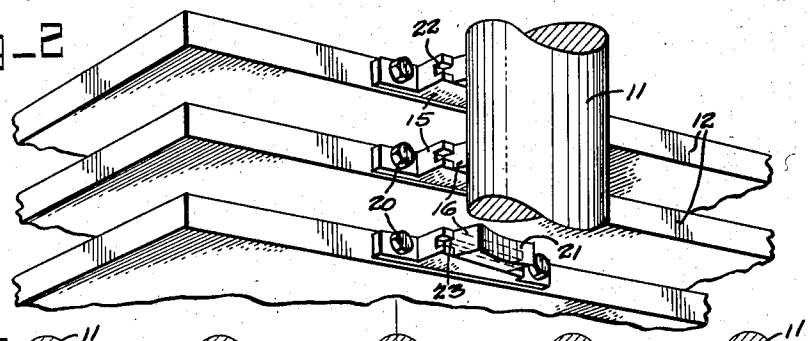


Fig. 3

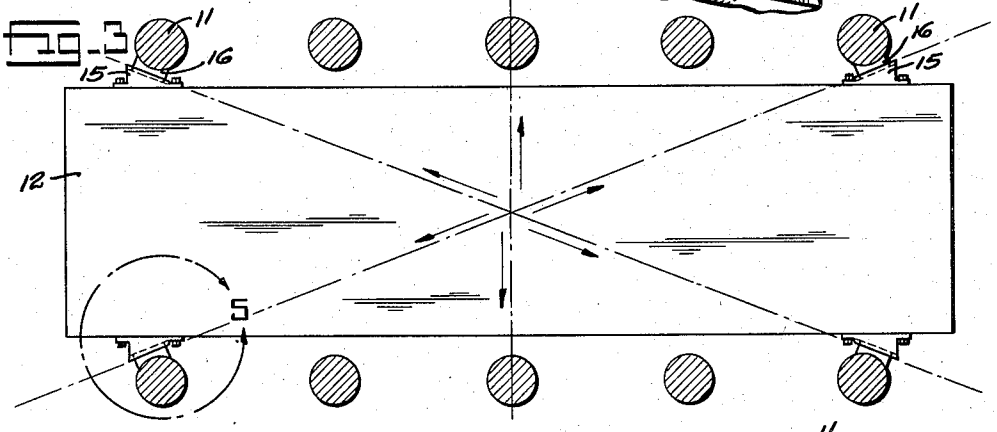


Fig. 4

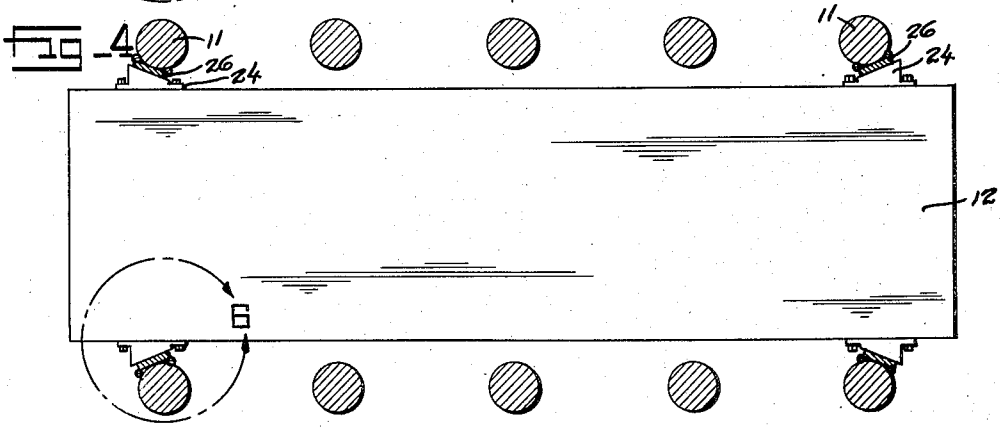


Fig. 5

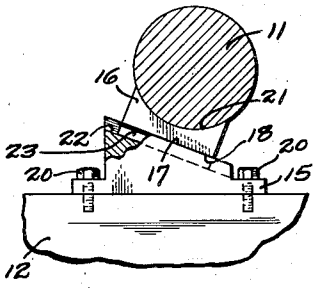
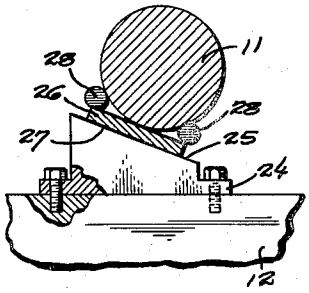


Fig. 6



INVENTOR.
Ferdinand Thurnher

BY Barnes & Seed

Attorneys

United States Patent Office 2,884,033 Patented Apr. 28, 1959

2,884,033

MULTI-PLATEN HOT PRESS

Ferdinand Thurnher, Seattle, Wash., assignor to Washington Iron Works, Seattle, Wash., a corporation of Washington

Application May 6, 1957, Serial No. 657,092

7 Claims. (Cl. 144—281)

This invention relates to multi-platen hot presses, and namely presses which employ a plurality of platens occupying vertically spaced positions between stationary and movable end plates, the usual arrangement being one in which the stationary end plate occurs at the top and the movable end plate, commonly termed a cross-head, occurs at the bottom. Sheets or mats composed of plywood, fiber or other like or suitable material are charged to the press pockets which are defined between successive platens and the act of raising the cross-head—most generally by hydraulic energy applied to rams which work in cylinders of a subjacent bed-plate—closes the platens upon the introduced sheets.

In the usual hot press, the stationary top or head plate is carried by a plurality of vertical columns placed at longitudinally spaced intervals along each of the sides of the press. A respective one of these columns is placed adjacent each of the four corners of the press, and guide means are provided on each platen, engageable either with a related said corner column or with means carried by a related said corner column, for maintaining the platens in vertical alignment.

In engineering said platen-aligning guide means into a hot press, it must be recognized that the platens are constantly subject to expansion and contraction as temperature conditions change with the opening and closing of the press. These dimensional changes are perforce of a nature which admits to predetermination, and this is to say that the same resolve themselves into a diagonal mean representing the resultant of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature. The columns are circular in horizontal cross-section, wherefor the provision upon each corner of the platen, for direct engagement with the related column, of a guide block having this diagonally developed bearing surface compensates the guide means to contraction and expansion movements of the respective corner of the platen. The objection to this arrangement of guide means is that the single point of contact provided within the perimeter of the column subjects the columns to localized wear and interferes with the free ascent and descent of the pallets as the press closes and opens.

The present invention purposes to provide a pallet-guiding arrangement which will produce, between the platens and the columns, linear rather than point contact in the direction of thermally induced extension.

A further and important object is to provide improved platen-guiding means simple and economical in construction and maintenance permitting the platens to expand and contract with substantially a complete absence of inhibiting stress.

Other objects and advantages in view, together with the foregoing, will appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is a fragmentary perspective view illustrating a hot press embodying platen-guiding means constructed in accord with one embodiment of the invention.

Fig. 2 is a fragmentary perspective view portraying a second and preferred embodiment.

Fig. 3 is a horizontal sectional view showing the embodiment of Fig. 2, the scale being reduced from that used in the preceding perspective illustrations.

Fig. 4 is a view similar to Fig. 3 showing the embodiment of Fig. 1; and

Fig. 5 and Fig. 6 are each a large-scale fragmentary detail view of one of the several guide assemblies provided for each platen and pin-pointed by the broken-line circles "5" and "6" of Figs. 3 and 4, respectively.

The press to which the present invention is applied is or may be of well-known or suitable construction, and for simplicity in illustration only so much of the press is shown in the drawings as is necessary to a clear understanding of the invention, namely the stationary head designated by the numeral **10**, a plurality of vertical columns including corner columns **11** supporting said head, and a plurality of heated platens **12**. Deleted from the drawings are the above-mentioned cross-head, the subjacent bed-plate, and the hydraulically operated rams which engage said cross-head and work in cylinders carried by the bed-plate.

The guide means of the present invention are applied along the side edges adjacent each end of the respective platens, particularly in a transverse vertical plane traversing a related one of the four corner columns **11**. These several guide means are duplicates of one another and a description of one will hence suffice for the others.

Each guide means is comprised of a set of two slidably associated block and shoe pieces one of which is carried by the platen and the other by the column, and I have illustrated two embodiments with the characterizing feature of each being that the bearing contact is of substantial length in the direction of thermally-induced extension and contraction of the concerned platen within a plane which is perpendicular to the plane of the platen and developed diagonal to the major and minor axes of the platen on a line representing the resultant of the longitudinal and transverse extensions of the platen with increase and decrease of temperature. In Fig. 3 of the accompanying drawings I have represented the major and minor axes of a platen by the letters *a* and *b*, respectively. Resultants of the longitudinal and transverse extensions and retractions of a platen with increase and decrease of temperature are designated by letter *c*, determined by the relation which the mass occurring on the major axis bears to the mass occurring on the minor axis.

First, considering the preferred embodiment of Figs. 2, 3 and 5, the platen-carried block is denoted by **15** and the column-carried shoe by **16**, with the diagonally developed planar bearing surfaces being designated by **17** and **18**, respectively. The block **15** is rigidly secured to the platen, as by bolts **20**. Shoe **16** merely saddles the column **11**, presenting a concave back surface **21** which closely fits the perimeter of the column, and is free to slide both circumferentially and vertically thereon. In the bearing surface **17** there is provided a horizontal groove **22**, and formed upon the column-saddling shoe **16** as the mating complement thereof is a tongue **23**.

The other of the two illustrated embodiments, shown in Figs. 1, 4 and 6 provides, as the platen-carried piece a block **24** distinguished from the block **15** only in that its bearing surface **25** is uninterrupted by a groove. The complementing piece is comprised of a plate **26** presenting a planar bearing surface **27**, such plate being made rigid with the column to produce a flat face therefor. Rods **28** are applied as fillets to stabilize the side edges

of the plate and welding is applied along the lines of juncture between such rods and both the plate and the column so that the column, plate and rods become an integrated assembly. The plate extends the full length of the column, or so much thereof as will comprehend the full vertical range within which the platens work as the press opens and closes.

It is thought that the invention and the manner of operation will have been clearly understood from the foregoing detailed description of my two illustrated embodiments. Modifications may be resorted to without departing from the spirit of the invention and I accordingly intend that no limitations are to be implied and that the hereto annexed claims be given a scope fully commensurate with the broadest interpretation to which the employed language fairly admits.

What I claim is:

1. In a hot press, in combination with a movable platen and a column located alongside the platen, mechanism for guiding the platen comprised of a means carried by the platen slidably associated with a complementing means carried by the column, the slide contact being linear in nature considered in the direction of thermally-induced extensions and contractions of the platen within a plane which is perpendicular to the plane of the platen and diagonal to the major and minor axes of the platen on a predetermined line representing the resultant of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature.

2. In a multi-platen hot press, in combination with the platens and a column located alongside the platens, mechanism for guiding the platens in the opening and closing movements of the press comprised, for each platen, of a means carried by the platen slidably associated with a complementing means carried by the column, the contact as between the slide faces of said mechanism being of substantial length in the direction of thermally-induced extensions and contractions of the platen within a plane which is perpendicular to the plane of the platen and diagonal to the major and minor axes of the platen on a predetermined line representing the resultant of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature.

3. In a hot press having a plurality of platens of rectangular plan configuration, and a respective column located alongside the platens at each of the four corners thereof, mechanism for guiding the platens in the opening and closing movements of the press comprised, for each corner of each platen, of a means carried by the platen slidably associated with a complementing means carried by the related column, the contact as between the slide faces of said mechanism being of substantial length in the direction of thermally-induced extensions and contractions of the platen within a plane which is perpendicular to the plane of the platen and located diagonal to the major and minor axes of the platen on a predetermined line representing the resultant of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature.

4. In a multi-platen hot press, in combination with the platens and a column located alongside the platens, mechanism for guiding the platens in the opening and closing movements of the press comprised, for each platen, of a means carried by the platen slidably associated with a complementing means carried by the column, the contact as between the slide faces of said mechanism being of substantial length in the direction of thermally-induced extensions and contractions of the platen within a plane which is perpendicular to the plane of the platen and diagonal to the major and minor axes of the platen on a predetermined line representing the resultant of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature, said column-carried means being slidable upon the column in a direction endwise to the column, means being provided restraining the column-carried means against motion independently of the platen-carried means in a direction normal to the plane of the platen.

5. Structure according to claim 4 in which the means last recited comprises a tongue-and-groove spline interfit as between the means carried by the platen and the means carried by the column.

6. Structure according to claim 4, said column being cylindrical in form, and wherein the piece carried by said column saddles the column.

7. In a multi-platen hot press, in combination with the platens and a cylindrical column located alongside the platens, mechanism for guiding the platens in the opening and closing movements of the press comprised, for each platen, of a means carried by the platen slidably associated with a complementing means carried by the column, the slide faces of said mechanism occupying a plane traced by a right line disposed normal to the plane of the platen and traversing the center of the latter on a line diagonal to the major and minor axes thereof representing the resultant, predetermined as a mean of the relative masses occurring on said axes, of the longitudinal and transverse extensions and contractions of the platen with increase and decrease of temperature, the column-carried means comprising a flat strip of plate stock extending throughout the full span of the multiple platens and welded to the column as a face therefor.

References Cited in the file of this patent

UNITED STATES PATENTS

2,062,043	Stacy	Nov. 24, 1936
2,500,791	Baldwin	Mar. 14, 1950