

April 25, 1961

N. MALARKEY, JR

2,981,307

PRESS MACHINE

Filed June 24, 1957

2 Sheets-Sheet 1

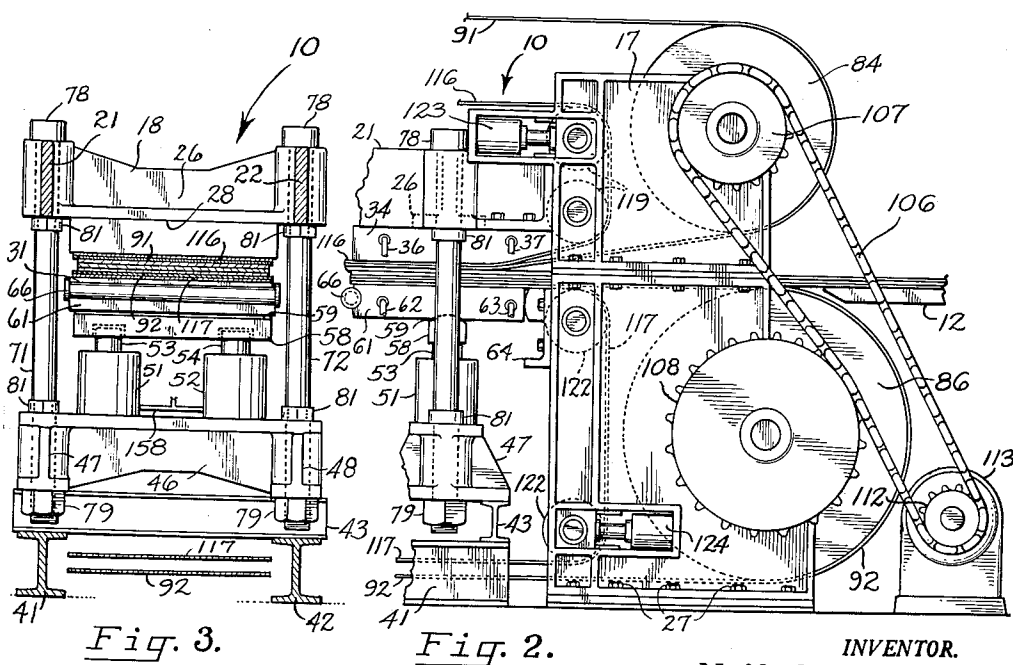
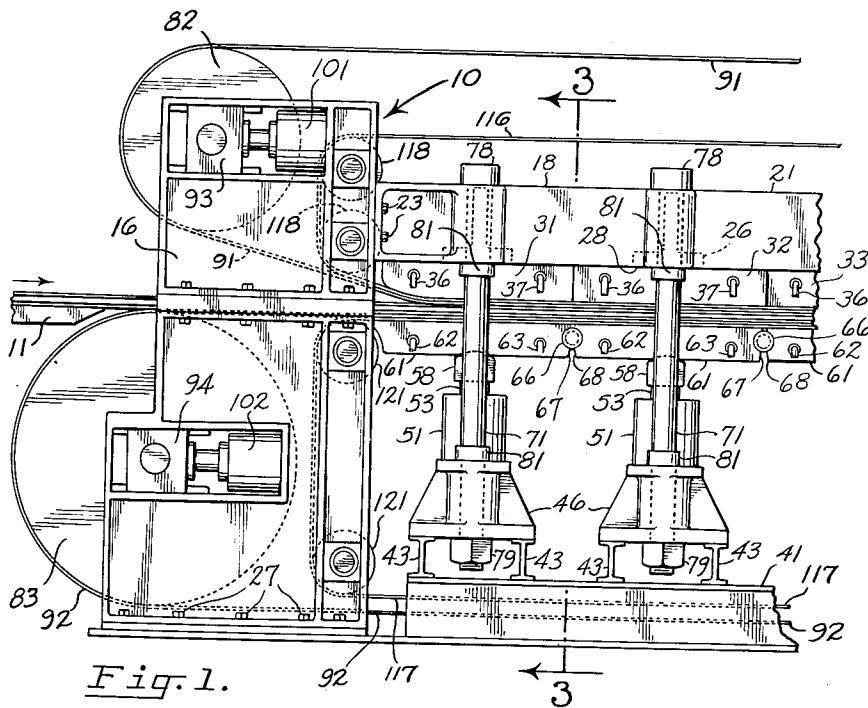


Fig. 3.

Fig. 2.

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2 Sheets-Sheet 2

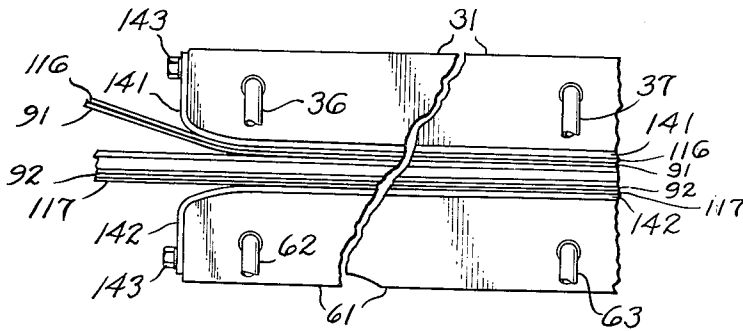


Fig. 4.

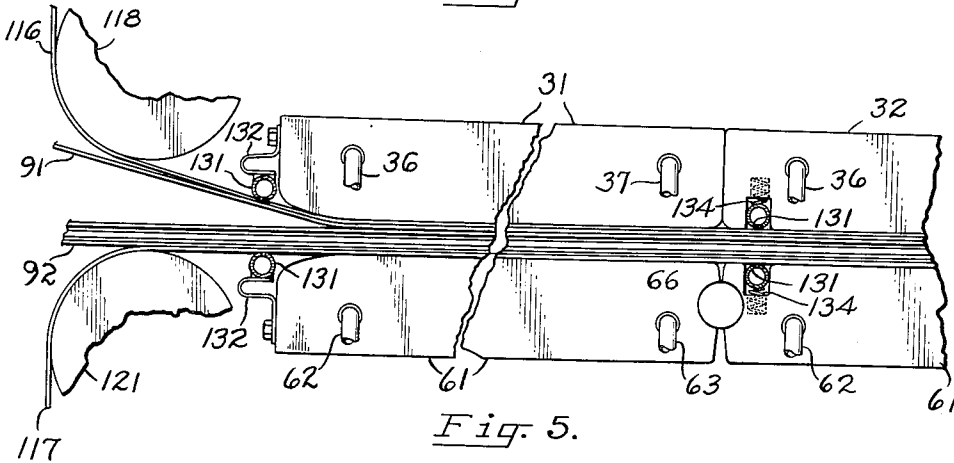


Fig. 5.

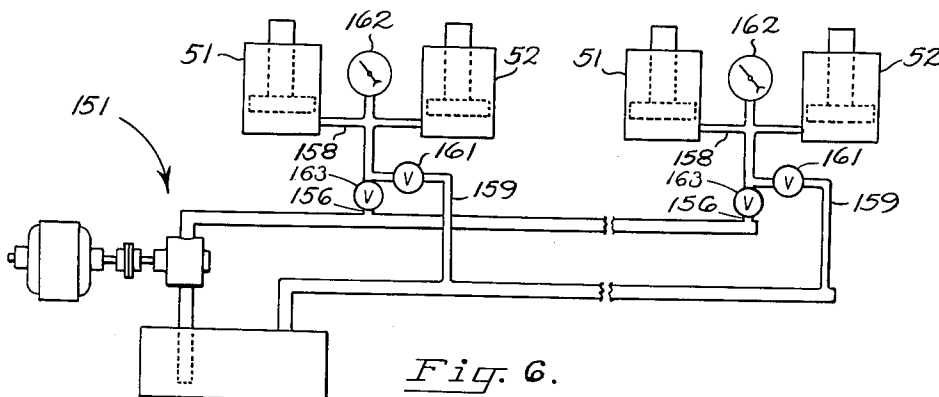


Fig. 6.

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2,981,307

PRESS MACHINE

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10 Claims. (Cl. 154—1)

This invention relates to a press machine and more particularly to a press machine such as may be used for compressing mats or laminae to form a composite sheet product. The invention utilizes continuous traveling belts carrying the material to be compressed through the press, the press being adapted for continuous or flow processing of material into a sheet product.

The invention is particularly useful in the manufacture of composite wood products prepared by bonding together sheets of wood veneer, or mats of disintegrated lignocellulose material, or a combination of such material. In the manufacture of such composite sheet, material is conventionally compressed at elevated temperatures to produce the finished sheet. Heated platens or pressure members may be used for such purposes in the press of this invention. The press of this invention is well adapted to produce sheet from mixtures which must first be heated and then cooled while under pressure. In such a manufacture, the platens or pressure members at the forward end of the press are heated, whereas the platens at the rear end of the press are cooled, enabling these platens to act as heat extractors.

Various press devices have been proposed for the continuous manufacture of composite sheet material. However, mechanisms known to date have been characterized by a number of disadvantages including high initial capital cost, inefficiency of operation, and high maintenance requirements which have rendered the devices unsuitable from a practical standpoint. Further, most known devices have been constructed in such a manner that it has been difficult, if not impossible, to maintain uniformly distributed pressures in the press, with the result that an inferior product is produced.

This invention contemplates a press construction wherein the press includes "fixed" or "stationary" pressure platens or pressure members suitably mounted in a frame. The platens are arranged to define a way or path through the press and function to compress material transported between the platens. As used herein, the term "fixed" or "stationary" platens refers to platens which are mounted in a press against movement longitudinally through the press conjointly with material treated, as compared to movable platens which travel with the work through the press. Although the platens are referred to as stationary or fixed, it should be understood that they may be subject to some movement, such as movement in a line perpendicular to the work treated, in response to a compressive force delivered to the platens.

The platens have planar bearing surface portions and are arranged in opposed relation so as to compress material disposed between the platens. Traveling between the platens are a pair of power-driven continuous belts spaced apart from each other and moving in unison through the press. These belts are operable to transport material continuously through the press. By using the combination of continuous belts and platens having planar bearing surface portions, uniformly distributed pressures can be applied to material treated as compared

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to the undulating or pulsating pressure characteristics which result from using pressure elements formed as a series of rollers or the like, each roll of the latter type of device only producing line contact with the surface 5 being compressed.

Between each of the belts and the pressure platens exerting a pressure on the belt is mounted a continuous band movable through the press conjointly with the power-driven belt. Each of the bands has an outer face which engages the belt associated therewith so as to be drawn through the press with the power-driven belt. The inner faces of the bands slide relative to the stationary pressure members in the press, enabling the belts and bands to be pulled through the press. A lubricating 15 medium is applied to the inner faces to facilitate movement of the bands through the press. Since the power-driven belts are not lubricated, suitable traction may be developed between an ordinary pulley and the driven belts to pull the belts through the press. The drive imparted to the driven belts may be produced without the necessity of perforations or other arrangements which tend to weaken the belts or mar the otherwise smooth surfaces of the belts.

It has been found highly desirable to employ a solid film dry lubricant as the lubricating medium for the bands. A lubricant of this type comprises a lubricating material carried in a thermosetting resin binder, the binder and lubricating material being bonded to a surface using conventional curing methods. These lubricants have been found to provide a low coefficient of friction between the bands and the stationary parts in the press, contributing to efficient operation of the press.

Generally, it is an object of this invention to provide a press having stationary pressure platens or pressure members which employs belts traveling through the press for transporting material through the press and supplementing bands between the belts and the stationary pressure members accommodating sliding movement of the belts through the press.

A related object is to provide such a press wherein the pressure members have planar bearing surface portions acting to compress material treated, the planar surface portions applying pressure smoothly and evenly to the material treated.

A press constructed according to this invention may use two series of platens or pressure members, one series of platens arranged in opposed relation to the other so that the two series of platens are urged together when material is to be compressed. A separate pressure generating means such as a piston-cylinder may then be provided for each platen in one of the series of platens. Regulating means for each pressure generating means affords close control of the pressures generated throughout the length of the press.

The platens in the series of platens disposed along one side of the material treated are advantageously constructed so that one or more are pivotable about an axis extending transversely of the path of the material through the press between the driven belts. Pivotable movement of a platen enables the forward and rear ends of a platen to shift in conformity with variations in thickness occurring in the sheet being formed. In this way, the pressure developed in a platen tends to be transmitted uniformly to the work throughout the bearing surface area of the platen.

In an embodiment of this invention, a bearing strip may be interposed between the lubricating band and the pressure members or platens acting thereupon. This strip is stationary in the press together with the platens, the platens and strip together forming the pressure means for the press. The outer face of the bearing strip is treated with lubricant and slides over the lubricated inner face of the band. In this manner, wear of the

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platens is retarded. Also, particularly if a solid film dry lubricant is used, removal of the bearing strip presents an opportunity to deposit new lubricant on the surface sliding over the band without extensive dismantling of the press. As an additional feature, such a strip further distributes pressures developed by the platens and transmitted to the material being compressed.

The above and other objects, features, and advantages are attained by the present invention, various novel features of which will become more fully apparent as the following description is read in conjunction with the accompanying drawings wherein:

Fig. 1 is a side view of the front portion of a press machine embodying this invention;

Fig. 2 is a side view of the rear portion of the press machine illustrated in Fig. 1;

Fig. 3 is a sectional view generally along the line 3—3 in Fig. 1;

Fig. 4 illustrates the infeed or forward sets of press platens in a modification of the invention, and shows the bearing strips which are used in the modified form of this invention;

Fig. 5 illustrates the infeed or forward sets of press platens in another modification of the invention, which modification includes lubricant dispensers; and

Fig. 6 is a schematic showing of an hydraulic pressure system such as may be used in this invention for actuating the press platens.

The invention is described hereinbelow in connection with the production of laminated panels or boards prepared by applying heat and pressure to a stack of veneer sheets having a suitable adhesive such as a phenol-aldehyde condensation product distributed between the interfaces of the sheets to form a plywood product. It should be understood that the invention is applicable to the manufacture of other types of sheet materials such as fiberboard and hardboard and sheet materials comprised partially of veneer and partially of a ligno-cellulose layer which may be deposited either within the interior of veneer layers or as an overlay over the exterior faces of veneer pieces. Typically, a plywood product of the type described is prepared by heating the veneer layers at temperatures of from about 200° F. to 400° F. under pressures ranging from about 200 to 1,000 p.s.i.g., although other temperatures and pressures may be used depending on the product formed and constituents used.

Referring to the drawings wherein an embodiment of this invention is illustrated, and more particularly to Figs. 1, 2, and 3, a press constructed according to this invention comprises a frame structure generally indicated at 10, having an infeed end illustrated at the left-hand side of Fig. 1 and an outfeed end illustrated at the right-hand side of Fig. 2. Rails 11 and 12 at the infeed and outfeed ends of the press, respectively, are provided to transport material from the conventional processing line into the press and to transport the material out of the press after the sheet material has been formed.

Frame structure 10 may be comprised of a pair of laterally disposed, mating front uprights such as upright 16 and a pair of laterally disposed, mating rear uprights such as upright 17. Extending longitudinally of the press between the front and rear pairs of uprights is an elongated cross frame member 18 having elongated longitudinal beam portions 21 and 22 affixed to the front and rear uprights as by bolts 23 and transverse beam portions 26 extending between and joined to longitudinal beam portions 21 and 22 at spaced intervals along the top of the press. Cross frame member 18 rigidizes the upper portion of the press, and the lower portion of the press is secured in place as by fastening the front and rear uprights to the floor by bolts 27.

Secured at intervals to a lower face 28 of each of the transverse beam portions and in series along the length of the press are a number of pressure platens or

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members indicated at 31, 32, 33, and 34, respectively. Each of the platens has a substantially planar lower surface or bearing surface portion which, during operation of the press, functions to compress material in the press.

It will be noted that the forward edge of the front platen and the rear edge of the rear platen are beveled. This facilitates movement of material into and out of the press, as will be described hereinbelow. Further, the beveled forward edge of the front platen operates to offer a gradually increasing amount of compaction to material transported into the press as the material advances past the forward edge.

The platens may be heated in any conventional manner. For instance, electrically heated platens may be used or, as an alternative, steam heated platens may be employed. In the embodiment illustrated, inlet and outlet conduits 36 and 37 are provided for the inlet and exhaust of steam to the platens thereby to heat the same.

Extending longitudinally along the press approximately beneath longitudinal beam portions 21 and 22 of the cross frame member are a pair of base frame supports 41 and 42. These may take the form of conventional I-beams as illustrated. The upper surfaces of the base frame supports carry a series of transverse frame supports, indicated at 43, spaced at intervals along the length of the base frame supports. Transverse frame supports carry the hydraulic pressure cylinders or pressure generating means employed in the press and the lower platens for the press.

More specifically, supported on co-operating pairs of frame supports 43 at spaced intervals along the press are a series of press support members 46 having, at opposite ends, flared portions 47 and 48, respectively, which rest on the transverse frame supports. Each of the press support members supports a pair of pressure cylinders 51 and 52. Pressure cylinders 51 and 52 are conventional, each carrying a piston element slidably mounted within their interior operable when fluid under pressure is emitted into the cylinder to push or extend rod portions 53 and 54 outwardly from the pressure cylinders. The upper ends of rod portions 53 and 54 seat in cavities formed in a transverse bar member 58 extending transversely across the press and overlying the pair of rod members.

Pivotaly mounted on the upper convexly curved surface 59 of each of the bar members is a lower pressure member or platen 61. As with the upper pressure platens, each of the lower platens has a substantially planar bearing surface portion operable to compress material treated in the press.

As in the case of the upper platens, each of the platens 61 may be heated in a conventional manner. In the embodiment illustrated, inlet and outlet conduits 62 and 63, respectively, provide inlet and exhaust connections for steam admitted to each of the platens.

The lower series of platens are pivotaly mounted in the manner described to accommodate pivotal movement of the platens about axes extending transversely of the press, thereby to compensate for variations in thickness of material compressed. In this way, the platens are able to exert a uniform pressure throughout their bearing surface areas. Interposed between successive platens are series of cylindrical rod members 66 seated in appropriate cavities formed in the edges of the platens, the platens forming an articulated series of pressure members. These rod members are operable to transmit thrust from one platen to another so that the entire series of platens is prevented from shifting longitudinally during operation of the press. It will be noted that the rearward, lower platen abuts a frame member 64 extending transversely of the rear uprights in the press. Adjacent edges of the platens are cut away as at 67 and 68 to accommodate pivotal movement of the platens.

Each of the press assemblies in the press, comprised of an upper and lower pressure member or platen, is

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provided with a pair of tension bars 71 and 72, holding the upper and lower platens from being spread apart under the action of pressure cylinders 51 and 52. These tension bars may take the form of enlarged shafts, each inserted through accommodating bores formed in the upper cross frame member and lower press support members. A head portion 78 and a nut 79 are included at opposite ends of the shaft. Split nuts 81 secured to the tension bars position the cross frame section and press support members on the tension bar

Generally, material is treated in the press of this invention by conveying material past the pressure platens, which constitute stationary pressure means in the press, between a pair of continuous driven belts. These belts, which may be comprised of steel, are rotated through the press between the upper and lower platens described, with their outer faces engaging the material treated and their inner faces contacting a pair of lubricating bands. The lubricating bands are moved through the press by reason of their outer faces engaging the inner faces of the belts. The inner faces of the lubricating bands are treated with a lubricant, enabling the bands to slide freely through the press past the platens described.

Referring again to the drawings, rotatably mounted at the forward end of the press are a pair of pulleys or roll members, upper pulley 82 and lower pulley 83, respectively. A similar pair of upper and lower pulleys 84 and 86 are provided at the rear end of the press. Reeved about the upper pulleys and the lower pulleys are a pair of continuous belts 91 and 92. The belts are moved through the press with portions of the belts opposed to each other and spaced from each other. The pulleys are rotatably mounted in suitable bearing assemblies mounted in the uprights of the press. Bearing assemblies 93 and 94, mounting the pulleys at one end of the press, are mounted for movement longitudinally of the press and serve as take-up bearings in the press. Hydraulic cylinders 101 and 102 are provided for the purpose of adjusting the position of these bearing assemblies and thus the tension of the belts.

Pulleys 84 and 86 are rotatably driven by means of a chain 106 which engages a pair of sprockets 107 and 108 affixed to pulleys 84 and 86, respectively. A motor 113, and sprocket 112 affixed to the output shaft of motor 113, provides a power means for moving chain 106 and thereby rotating the pulleys. The size of sprockets 107, 108 is selected so that the peripheral speed of the upper and lower pulleys is the same, the belts moving conjointly and at the same rate of speed through the press.

Carried through the press between the upper series of platens and belt 91 is a lubricating band 116, and carried through the press between the lower series of platens and belt 92 is a lubricating band 117, respectively. These bands are substantially coextensive in width with belts 91, 92. The bands may be mounted for movement outside the press on rollers or pulleys such as pulleys 118, 119, 121, and 122. The tension of the bands may be adjusted by means of hydraulic piston-cylinders 123, 124 regulating the position of one of the pulleys 119 and one of the pulleys 122. As noted hereinabove, the platens at the forward and rear ends of the press have beveled edges, which reduces the wear on the lubricating bands as they travel into and out of the press.

A lubricating medium is deposited over the inner face of each of the lubricating bands to facilitate movement of the bands over the platens of the press. This lubricating medium may take the form of a conventional liquid lubricant deposited on the lubricating bands by means of dispensers mounted in the press, the lubricant being dispersed by the movement of the bands over the platens. Preferably, a solid film dry lubricant is used. The lubricant is deposited on the inner faces of each of the lubricating bands and on the bearing surfaces of each of

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the platens. The latter method of lubrication has the advantages of providing a low coefficient of friction between the belt and the platens, good heat resistance, ease in maintenance, and the elimination of possible accumulations of lubricant in the press. The lubricated bands constitute sliding antifriction bands or means in the press.

Fig. 4 illustrates a modified form of this invention. In this instance, bearing strips 141 and 142, each comprised of a thin strip of steel substantially coextensive in width with each lubricating band, are interposed between the upper and lower series of platens and the lubricating bands passing between the platens. The strips extend the length of the press past the rearmost platens in the press. Strip 141 overlies the top series of platens whereas strip 142 overlies the bottom series of platens. The rear ends of the strips ride freely in the press whereas the front ends of the strips are fixed in position as by fastening them by bolts 143 to the forward portion of the foremost platens in the press. These strips, together with the pressure platens, constitute the stationary pressure means of the press, their outer surfaces sliding against the lubricating bands. The strips are separable readily from the platens, enabling them to be easily removed when it is desired to deposit a solid film lubricant on the outer surfaces of the strips.

The solid film dry lubricant may be applied to the lubricated surfaces in a conventional manner as known in the art. Conventionally, a lubricating material is mixed with a resin carrier, which acts as a binder, and the mixture then bonded to the surface treated. By way of example, if the surface treated is comprised of steel, the surface is first finished to between approximately 30 and 60 R.M.S. Such a finish is readily obtained by sandblasting a smoothed surface. An iron manganese phosphate coating is then applied to the surface by immersing the surface in a hot iron manganese phosphate solution and allowing the iron manganese phosphate to deposit in crystals upon the surface until a coating of .0002 thickness is obtained. The phosphate coating improves the corrosion resistance of the surface. A molybdenum disulfide-graphite coating is then applied to the pretreated surface, the ratio of molybdenum disulfide to graphite in the coating mixture being approximately 9:1. The molybdenum disulfide and graphite are carried in a thermosetting resin binder, exemplified by the epichlorohydrin-bisphenol epoxy resin, sold commercially as an Epon resin. The proportion of resin binder to disulfide-graphite mixture conventionally ranges from approximately 3:1 to 5:1. The coating is most conveniently applied by spraying the resin mixture on the pretreated surface until a coat of about .0003 inch is obtained. The coating may then be cured at approximately 400° F. for one hour to produce a surface coated with a solid film dry lubricant. A lubricant coating material of the type described is currently available on the market under the name of Drilube.

If desired, the lubricating bands may be lubricated using conventional liquid lubricants. For instance, the press may be constructed according to the embodiment illustrated in Fig. 5. Referring to Fig. 5, fixed in the press and in sliding contact with the lubricating bands as they travel through the press are a number of lubricating tubes or dispensers 131. These tubes extend transversely across the press substantially for the width of the lubricating bands. Each is provided along that portion of the tube which lies proximate a lubricating band with a series of holes or bores accommodating the passage of lubricant from the lubricating tube to the inner face of the band which passes over the tube. Lubricant is fed into the tubes by suitable conduits connected to the tubes. In the embodiment illustrated, the tubes at the forward end of the press are mounted by resilient spring members 132 directly to the forward edge of the foremost platens in the press. The lubricating tubes toward the rear of the press may be mounted at the for-

ward end of a platen, as illustrated, in suitable channels formed in the platens to accommodate the tubes. Springs 134 urge these lubricating tubes against the bands passing thereagainst.

Alternatively, the lubricating bands and/or the bearing strips may be comprised of steel having bonded over their faces a low coefficient of friction material, such as the material marketed as Fabroid, which is a laminated fiberglass product coated with the fluorocarbon tetra fluoroethylene, which is sold commercially as Teflon.

In Fig. 6, a schematic showing of a fluid pressure system for pressure cylinders 51, 52 of each of the press assemblies of this invention is illustrated. The system illustrated is adapted for use with hydraulic pressure fluid although, of course, an air pressure system could be employed. Referring to Fig. 6, a pump 151 circulates fluid under pressure to cylinders 51, 52 by means of conduits 156, 158, and 159. Valves 161, 163, associated with each pair of cylinders 51, 52, afford the opportunity to regulate the fluid pressures in each pair of cylinders and thus the pressures generated by the cylinders. This is highly desirable since it may be advantageous to use different pressures along the length of the press. For instance, it might be desirable to subject material entering the press, which is in a relatively uncompressed state, to higher pressures than the pressures used at the rear end of the press where the material has been compressed to the thickness desired. A pressure gauge 162 provides an indication of the pressures in each pair of cylinders.

In the manufacture of certain types of composite sheet product, adhesives are employed which require, for optimum results, that the sheet be heated and subsequently cooled while maintaining the sheet under pressure. The press of this invention is particularly well suited for this type of manufacture. The platens at the forward end of the press may be heated and those at the rear end of the press cooled so that heat will first be applied and then extracted from material as it moves under pressure continuously through the press. Thus, conduits 36, 37 and 62, 63 of the platens forwardly in the press may provide for the circulation of steam through the platens, whereas these conduits may be used for circulating a coolant such as water in the platens located rearwardly in the press.

It will be apparent from the above that the press of this invention has a number of advantages. By the use of continuous lubricating bands, a means is provided for sliding the power-driven belts through the press easily and continuously. The lubricant is applied to the inner faces of the bands, leaving the outer faces of the bands untreated so that they are gripped by the drive belts and in this way moved through the press. The traction created between the drive belts and the pulleys driving these belts enables the belts to be moved through the press by the pulleys without the use of extensive mechanism for grasping the belts.

The pressure means employed is stationary rather than movable which greatly simplifies the construction of the press. Further, the pressure fluid operating the press assemblies in the press acts in conventional type pressure cylinders, eliminating the extensive leakage problems which usually arise using other types of construction.

While there has been described a few embodiments of this invention, variations and modifications in the construction and arrangement of this invention are possible without departing from the scope thereof. It is desired not to be limited to the specific embodiments illustrated but to cover all modifications and arrangements which would be apparent to one skilled in the art and that come within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. In a press machine, a frame, a belt mounted for movement in said frame and providing a pressure surface for compressing material treated in said press, stationary pressure means having a flat bearing surface portion

for urging said belt against said material, and an imperforate sliding, antifriction band having a planar face presented to said bearing surface portion interposed between said belt and said pressure means and slidable relative to said pressure means and movable through said press together with said belt.

2. In a press machine, a frame, a belt mounted for movement in said frame having a flat inner face and an outer surface providing a pressure surface for compressing material treated in said press, stationary pressure means urging said belt against said material, said pressure means having a planar bearing surface portion mounted in said press with said bearing surface portion urging said belt against said material, and an imperforate band with flat inner and outer faces interposed between said belt and said bearing surface portion of said pressure means, the outer face of said band presenting a planar surface that engages said belt in moving past said pressure means whereby the band is moved conjointly with said belt through said press relative to said pressure means, the inner face of said band carrying a lubricating medium, said inner face of said band sliding through said press against the bearing surface portion of said pressure means.

3. In a press machine, a frame, a belt mounted for movement in said frame having a flat inner surface and an outer surface providing a pressure surface for compressing material treated in said press, stationary pressure means urging said belt against said material, said pressure means including a pressure member having a planar bearing surface portion and mounted in said press for pivotal movement about an axis extending transversely across said belt, said bearing surface portion urging said belt against said material, and an imperforate band interposed between said belt and said pressure means and having a planar outer surface that engages the inner surface of said belt in moving past said pressure means whereby the band is moved conjointly with said belt through said press, said band having a planar inner surface that slides through said press against the bearing surface portion of said pressure means.

4. In a press machine, a frame, a belt mounted for movement in said frame and providing a pressure surface for compressing material treated in said press, stationary pressure means urging said belt against said material, said pressure means including a series of articulated pressure members each having a planar bearing surface portion and each mounted for pivotal movement about an axis extending transversely across said belt, said bearing surface portion urging said belt against said material, fluid pressure means activating each of said pressure members, and a band interposed between said belt and said bearing surface portions of said pressure means, one face of said band engaging said belt in moving past said pressure means thereby to be moved conjointly with said belt through said press, the other face of said band carrying a lubricating medium, said other face sliding through said press against said bearing surface portions.

5. A press for the manufacture of a composite board product comprising frame structure, a pair of power-driven movable belts, means mounting said belts in said frame structure with portions of said belts opposed to each other, nontraveling pressure means with a flat bearing surface portion for each of said belts operable to press said belts together, and an imperforate band for each belt having a planar face in contact with the bearing surface portion of the pressure means for the belt and moving with the belt intermediate the belt and its pressure means.

6. A press for the manufacture of a composite board product comprising frame structure, a pair of movable belts, means mounting said belts in said frame structure with portions of said belts opposed to each other, means driving said belts conjointly and at the same rate of speed, stationary pressure means with a flat bearing sur-

face portion for each of said belts operable to press said belts together, and a band for each belt intermediate the belt and the pressure means associated therewith, said bands having planar inner and outer faces, the outer face of each of said bands engaging a belt so as to be moved through the press simultaneously with the belt, the inner face of each of said bands sliding through the press against the bearing surface portion of a pressure means.

7. A press for the manufacture of a composite board product comprising frame structure, a pair of movable belts, means mounting said belts in said frame structure with portions of said belts opposed to each other, means driving said belts conjointly and at the same rate of speed, stationary pressure means for each of said belts operable to urge said belts together, each of said pressure means including a pressure member having a planar bearing surface portion for urging said belts together, at least one of said pressure members being mounted for pivotal movement about an axis extending transversely across said belts, and an imperforate band having inner and outer planar faces associated with each of said belts intermediate the belt and the pressure means associated therewith, each of said bands being substantially coextensive in width with its associated belt and having a dry lubricating medium deposited over its inner face, the lubricated face of each of said bands sliding through the press against the bearing surface portion of a pressure means, the outer face of each of said bands engaging a belt so as to be moved through the press simultaneously with the belt.

8. In a press machine, a frame, a belt mounted for movement in a path in said frame having inner and outer surface portions, said outer surface portions providing a pressure applying surface for compressing material, stationary pressure means with a flat bearing surface mounted in said frame opposite said inner surface portions of said belt, and an imperforate sliding antifriction band interposed between said stationary pressure means and said belt, said antifriction band having flat outer surface portions engageable with said inner surface portions of said belt and movable therewith, and lubricated flat inner surface portions slidable relative to said pressure means against its bearing surface.

9. A press for the manufacture of a composite board product comprising a frame, a pair of cooperating movable belts mounted in said frame with portions of said belts disposed opposite each other, drive means for moving said belts conjointly and at the same rate of speed, stationary pressure means with flat bearing portions mounted in said frame for each of said belts operable to press oppositely disposed portions of said belts together, and sliding antifriction means interposed between each of said belts and the flat bearing portions of the stationary pressure means associated therewith, each of said antifriction means having flat outer surface portions engageable with the belt and movable therewith, and lubricated flat inner surface portions slidable across the bearing surface portions of a stationary pressure means.

10. In a press machine, a frame, a belt mounted for movement in said frame and providing a pressure surface for compressing material treated in said press, stationary pressure means having a substantially flat bearing surface portion mounted in said press with said bearing surface portion urging said belt against the material, and an imperforate sliding antifriction band interposed between the bearing surface portion of said pressure means and said belt, said antifriction band having lubricated flat surface portions presented to said bearing surface portion and slidable relative to said bearing surface portion.

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