Feb. 9, 1960 T. L. COLLINS 2,924,536

PROCESS FOR TREATING WIRE SCREEN

Filed Nov. 3, 1958

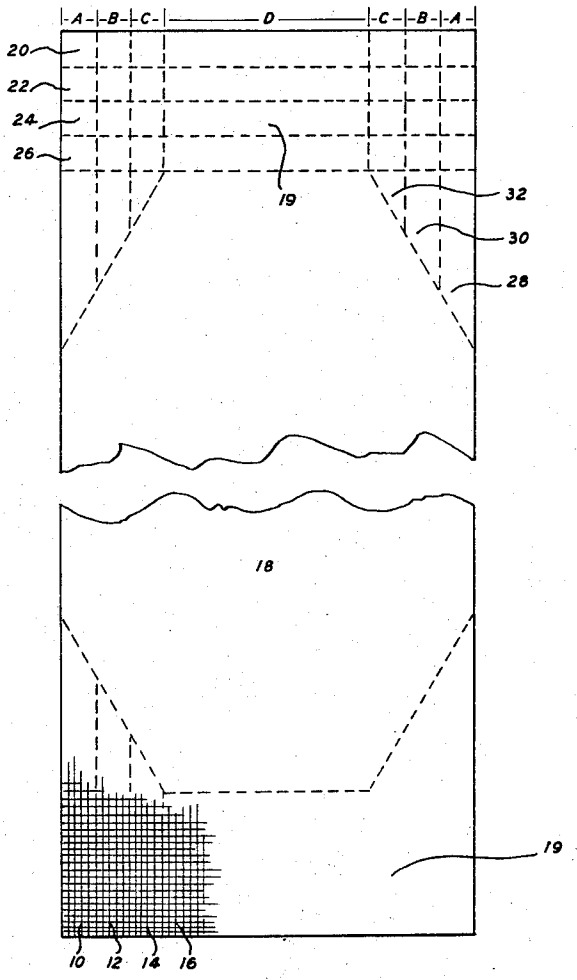

Fig. 1

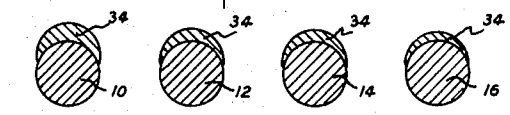

Fig. 2 Fig. 3 Fig. 4 Fig. 5

INVENTOR
THURMON L. COLLINS

BY George J. Mitman
ATTORNEY

United States Patent Office 2,924,536 Patented Feb. 9, 1960

2,924,536

PROCESS FOR TREATING WIRE SCREEN

Thurmon L. Collins, Laurel, Miss., assignor to Masonite Corporation, Laurel, Miss., a corporation of Delaware

Application November 3, 1958, Serial No. 771,468

3 Claims. (Cl. 117—43)

The present invention relates to an improvement in hydraulic press equipment. More specifically, the invention relates to hydraulic presses equipped with a multiplicity of heated platens and wherein a wire screen is employed in conjunction with each platen as a means for obtaining uniform heat transfer to the articles pressed therein.

In the manufacture of hardboard, wallboard, plywood, particle board and the like flat sheet articles, the art usually employs heated multi-platen hydraulic presses in consolidating the sheet products. Frequently the sheet article is pressed against a polished metal pressing plate which imparts to the product a desirable smooth surface. In such instances, it is common practice to insert a heavy rectangular-mesh wire or screen between the heated press platen and the pressing plate. The wire screen serves primarily to transfer the heat uniformly from the press platen to the pressing plate and thence to the sheet article. Ordinarily, however, the press and platen construction is such that through metal fatigue, inequal ram pressure or any one of numerous other factors which may not be fully understood, the finished consolidated sheet article is characterized by a perimetric area of higher caliper and consequent lower density than the central portion of the sheet. The configuration of this undesirable sheet area may vary somewhat with the platen size, but usually the sheet has a low density area several inches in width along each edge and, particularly, at each sheet corner. Previously, the art has compensated for this inequality in caliper by employing thin metal shims of the required configuration to increase the effective pressing area of the platen and so to obtain products of substantially uniform thickness and density. Within reasonable limits this means has performed more or less satisfactorily for several years. However, the use of shims has been attended by a number of fairly obvious difficulties and undesirable features. First, it is difficult to place and retain the thin metal shims in an immovable position between the pressing plate and the press platen. Second, after a relatively short period of use, the shims become compressed and distorted until their replacement is required. Furthermore, frequently the distorted metal causes the pressing plate to become dimpled, thus requiring its removal and repair. The situation has posed a problem which the art has been unable to solve to the present time.

It is a primary object of the invention to provide an improved shim means adapted for use with multi-platen hydraulic presses.

Another object of the invention resides in the provision of a novel method for the preparation of press wire screens characterized by perimetric areas of increased thickness.

A further object of the invention resides in the provision of a novel method for increasing the thickness of a predetermined area of a wire screen without clogging the screen mesh.

Other objects will become apparent from the following

description of the invention. The description will be given with particular reference to the accompanying drawing in which:

Fig. 1 is a plan view of a metal wire screen illustrating a typical pattern of perimetric area of increased thickness,

Fig. 2 is an enlarged sectional view of the wire **10** shown in Fig. 1,

Fig. 3 is an enlarged sectional view of the wire **12** shown in Fig. 1,

Fig. 4 is an enlarged sectional view of the wire **14** shown in Fig. 1, and

Fig. 5 is an enlarged sectional view of the wire **16** shown in Fig. 1.

In a general sense, the invention comprises the application of a spray of molten metal to a wire screen in order to increase the thickness of the screen over a predetermined perimetric area. As shown in Fig. 1 in which the numeral **18** refers to a wire screen about 4 feet wide and 12 feet long, the area **19** which has been selected for treatment is first masked off, as with light gauge metal or the like. In the drawing, the laterally and longitudinally extending wires of the screen are shown at the lower left hand corner of Fig. 1. The molten metal spray is then applied in horizontal sweeps **20**, **22**, **24**, and **26** by traveling a suitable conventional spray nozzle back and forth laterally across the screen. In a typical operation where the spray is so adjusted as to apply a metal coating about 3–4 mils thick to the wire screen, four passes may be made to obtain the thickened area **20**. For the areas **22**, **24**, and **26**, respectively, three passes, two passes and one pass will result in obtaining thickness increases of 9–12, 6–8, and 3–4 mils. The operation is carried out across both ends of the wire screen. Subsequently, similar passes of the spray nozzle are made longitudinaly across the side areas of the screen to obtain the thickened areas **28**, **30**, and **32**. Thus, it will be seen that the individual wires in each of the areas A, B, C, and D of Fig. 1 are increased equally in thickness. In a typical operation, these areas will comprise 3, 2, and 1 superimposed metal coatings, respectively. Thus, where the spray nozzle applies a metal coat about 3 mils thick in each pass, it will be seen that the area at each corner of the screen is increased in thickness substantially as shown in the chart below.

Thickness increase in mils

	12	15	18	21
	9	12	15	18
	6	9	12	15
	3	6	9	12
		3	6	9

Obviously, the obtained increase in screen thickness is dependent upon the screen size, the desired pattern, and the individual press platen requirements. Ordinarily, however, the corners of the wire screen are desirably increased about 20–25 mils with a gradual decrease in thickness toward the inner portion of the spray-treated area. Accordingly, over the selected perimetric area, fewer or more individual layers of molten metal may be applied as needed. Desirably, the spray path is con-

trolled so as to apply the metal in strips about 3.5–4 inches in width. In this manner, excessive loss of metal may be avoided while, at the same time, the applied metal particles will be firmly bonded to the screen.

In carrying out the novel method, conventional so-called "flame spraying" equipment may be employed. In some instances, where the mesh openings are required to remain open, the fact that the mesh is not filled with metal is of great importance. The deposition of metal on the individual wires of the screen occurs substantially as shown in Figs. 2, 3, 4, and 5. In these figures, each of the wires **10**, **12**, **14**, and **16**, respectively, has been increased in thickness by the layer or layers of metal **34**. The metal employed is largely a matter of choice. However, for use in hardboard manufacture, it has been found that bronze performs satisfactorily and possesses an unusually long operational life.

It will be seen that the novel method provides a practical and simple manner of obtaining the desired increase in screen thickness. The applied metal lasts indefinitely and more than doubles the life of the screens. In changing screens in the press openings, obviously the ones containing the permanently bonded metal are easy to position, thus providing a decided operational advantage over the prior art use of individual metal shims. Another outstanding advantage of the novel method stems from the fact that it permits the tailoring of the individual press wire screens to the requirements of the press openings where they are to be employed. The amount of increased thickness which is necessary for any particular screen is easily determined and the novel method enables the art to obtain this end quickly and economically.

I claim:

1. A method of increasing the thickness of press wire screen adapted to transfer heat uniformly over a predetermined area wherein the increased hictkness gradually decreases from he outer screen edge inwardly toward the center, which comprises spraying said wire screen with molten metal to increase the thickness of the edge portions thereof about 20–25 mils over an area comprising a series of longitudinal strips about 3.5–4 inches wide in several discrete layers each of which is about 3–4 mils thick.

2. A method of increasing the thicknesses of the perimetric area of a wire screen adapted for use as heat transfer means in a heated hydraulic press which comprises applying molten metal in the form of a spray to a selected perimetric area of the surface of a wire screen to impart to said screen increased thickness at the edges thereof and said thickness gradually diminishing as the sprayed area approaches the center of the screen surface, said edge thickness increase lying in the range of about 20–25 mils.

3. A method of increasing the thickness of the perimetric area of a wire screen adapted for use as a heat transfer means in a heated hydraulic press which comprises applying molten metal in the form of a spray to a selected perimetric area of the surface of a wire screen to impart to said screen increased thickness at the edges thereof and said thickness gradually diminishing as the sprayed area approaches the center of the screen surface, said edge thickness increase being in the range of about 20–25 mils and the thickness of applied metal decreasing to about 3–4 mils at the interior portion of the treated area.

References Cited in the file of this patent

UNITED STATES PATENTS

2,338,091	Brennan et al.	Jan. 4, 1944
2,402,554	Irvine et al.	June 25, 1946
2,542,025	Goss	Feb. 20, 1951
2,619,681	Baker et al.	Dec. 2, 1952