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[21] Appl. No.	870,968	1,589,964	6/1926	Hennen.....	101/368
[22] Filed	July 14, 1969	1,780,095	10/1930	Norman.....	101/125
[45] Patented	Dec. 14, 1971	2,267,918	12/1941	Hildabolt.....	29/182.3 X
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	Original application Mar. 31, 1961, Ser. No. 99,871, now Patent No. 3,522,769.	2,688,307	9/1954	Nichols et al.....	118/264
	Divided and this application July 14, 1969, Ser. No. 870,968	2,919,642	1/1960	Mooney.....	101/125
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[54] **PRINT-EMBOSSING SEAL PRESS**  
 7 Claims, 9 Drawing Figs.

[52] U.S. Cl. .... 101/3 SP,  
 29/182.3, 101/28, 101/125, 101/327, 118/264

[51] Int. Cl. .... B44b 5/02

[50] Field of Search..... 101/125,  
 119, 120, 327, 3, 28, 109, 368; 118/264; 29/182.3

[56] **References Cited**

**UNITED STATES PATENTS**

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**ABSTRACT:** An embossing and printing seal press provided with a female die structure having an internal portion of porous material for retention and flow control of pigmented fluid and withstanding embossing pressures to coat by capillarity and contact the crown portion of characters embossed in paper.

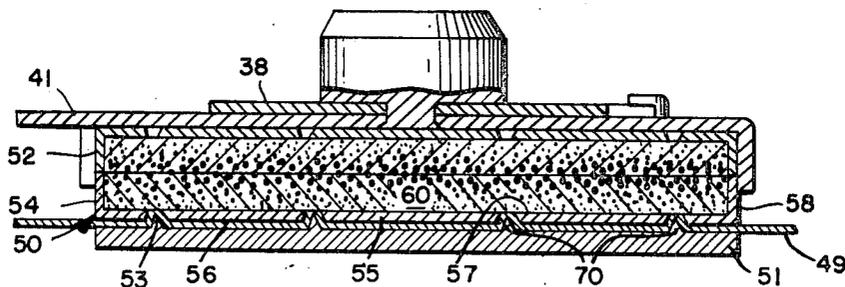


FIG. 1

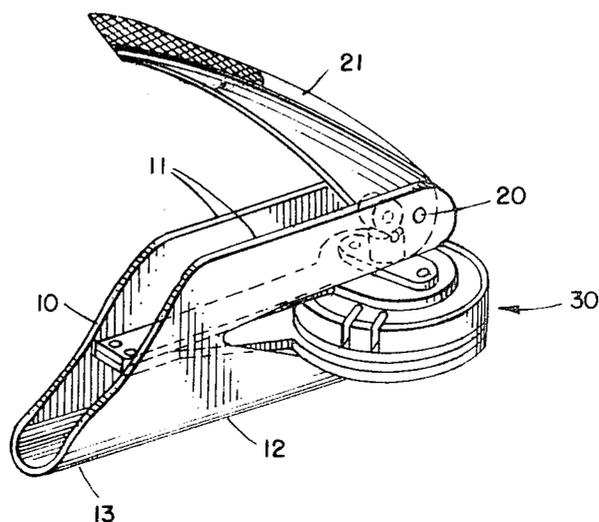
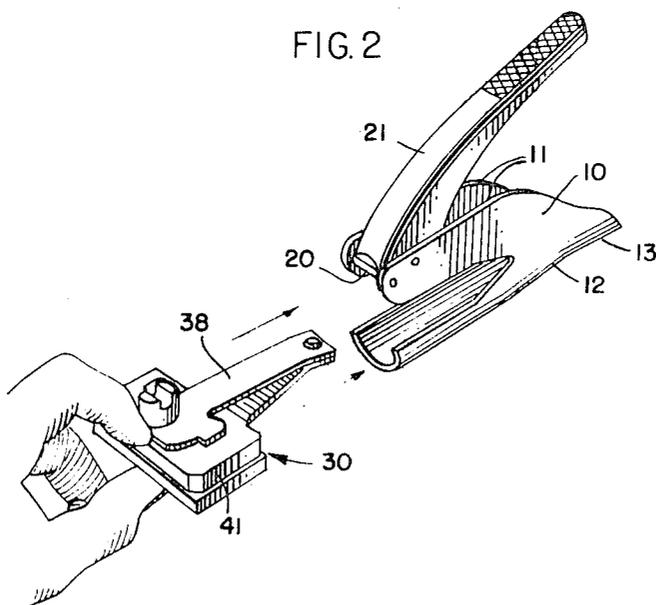


FIG. 2



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FIG. 3

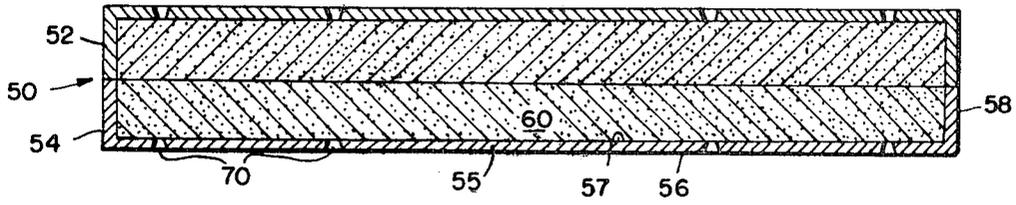


FIG. 3A

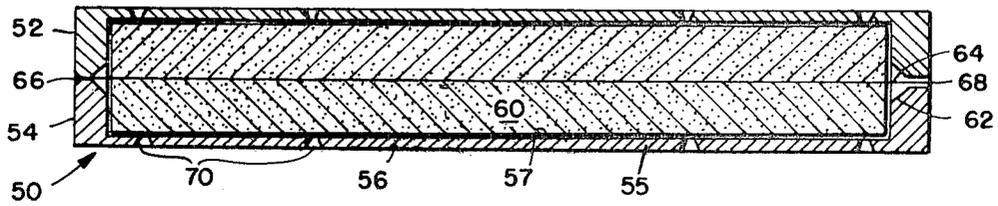


FIG. 4

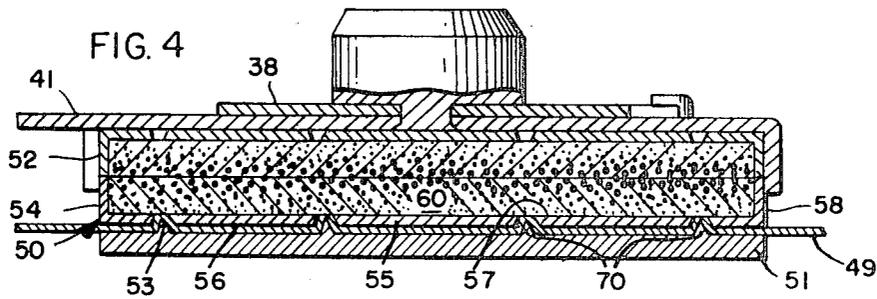


FIG. 5

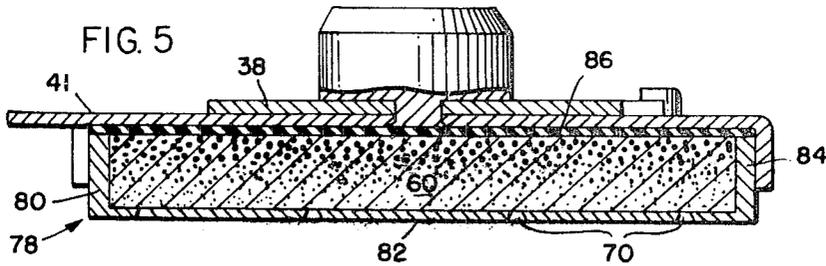
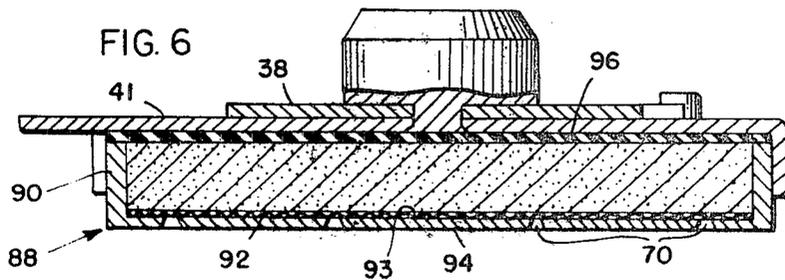


FIG. 6



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FIG. 7

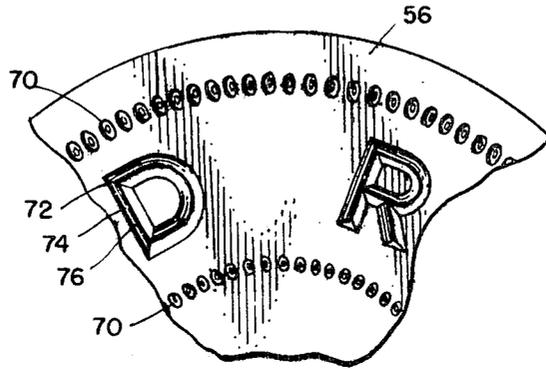
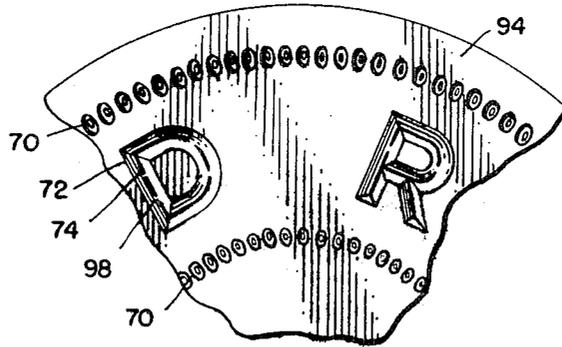


FIG. 8



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## PRINT-EMBOSSING SEAL PRESS

## CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a division of application Ser. No. 99,871 now U.S. Pat. No. 3,522,769, dated Aug. 4, 1970;

Priesmeyer application Ser. No. 13,106, filed Mar. 7, 1960, now abandoned;

Continuation application of Ser. No. 13,106, Ser. No. 287,738, now U.S. Pat. No. 3,177,801, dated Apr. 13, 1965;

Priesmeyer application Ser. No. 691,646, now U.S. Pat. No. 2,998,766, dated Sept. 5, 1961.

This invention relates in general to a seal press assembly and more particularly to a seal press die structure for embossing and printing a seal.

Heretofore, it has been necessary to impress seals on many documents for a variety of reasons. Most seal presses, particularly of the hand-operated, portable variety, have dies oriented to present an upright impression when inserted over the edge of the document. The upright impression derived from the seal press provides the necessary permanency to the document due to the distortion of fibers of the material, but in recent years, with the vast multiplicity of agencies and recording offices, it has become necessary to provide additional copies of the original documents. Considerable difficulty has been encountered in being able to reproduce additional copies from these original documents even with today's modern photographic and reproducing equipment, because the seal document cannot be legibly reproduced.

It is, therefore, the primary object of this invention to provide an improved seal press to present an upright impression on the document and to distinguish the crown portion of the characters of the seal whereby the impressed seal may be legibly reproduced on existing reproducing equipment.

A specific object of this invention is to provide an improved die structure for seal presses which permits embossing of paper with a plurality of characters and printing the characters at the same time.

Another object of this invention is to provide an improved female die structure of a die assembly for seal presses which provides an internal portion of porous material for retention and flow control of a pigmented fluid for printing the crown portion of embossed characters formed in the paper by the seal.

A further object of this invention is to provide an improved female die structure of a die assembly for seal presses having two parallel planar surfaces for the formation therein of desired seal characters with a portion of sintered material forming a reservoir for a pigmented fluid therebetween and exposed to the crown portion of said seal characters to permit the flow of the pigmented liquid to the paper as the seal is being impressed.

A still further object of this invention is to provide an improved female die structure of a die assembly for seal presses having an internal portion of porous material saturated with a pigmented fluid for flow to the paper as the seal is being impressed thereon and yet maintains the desired uniformity of overall external configuration for insertion into existing die supports.

Another object of this invention is to provide an improved die structure which permits printing and embossing of the desired characters formed in the surface thereof by a die maker and is of sufficient rugged construction to readily permit the formation of the characters by the die maker in the field with existing equipment.

A still further object of this invention is to provide an improved die structure for a seal press which is rugged in construction, simple in design, inexpensive to manufacture, yet provides the two desired features of embossing and printing of the seal characters at the same time.

These being among the objects of the invention, further objects and advantages will become apparent from the drawings and the description relating thereto, in which:

FIG. 1 is a perspective view of a pocket seal press embodying a round, twin-faced die structure of this invention;

FIG. 2 is an exploded view in perspective showing the assembly of the two major components of a pocket seal embodying the die of this invention and illustrating a rectangular-shaped die structure;

FIG. 3 is a cross-sectional view in side elevation of the preferred twin-face die structure of this invention.

FIG. 3a is a cross-sectional view in side elevation illustrating an alternate construction of the preferred embodiment of FIG. 3;

FIG. 4 is a fragmentary cross-sectional view in side elevation illustrating the preferred die structure shown in FIG. 3 as releasably retained in a die holder;

FIG. 5 is a fragmentary cross-sectional view illustrating another embodiment of a single-face die of this invention as releasably secured in a die holder.

FIG. 6 is a fragmentary cross-sectional view illustrating another embodiment of a single-face die of this invention as shown in FIG. 5 and releasably retained in a die holder.

FIG. 7 is a fragmentary plan view of the face surface of the die of this invention illustrating the preferred formation of characters therein; and

FIG. 8 is a fragmentary plan view of the face surface of the die of this invention similar to that shown in FIG. 7 illustrating an alternate formation of the characters therein.

By way of generalization for a better understanding of the detailed description to follow, the die construction of this invention is characterized primarily by a hollow cuplike member which has the desired seal characters recessed in a planar surface thereof with the crown or uppermost portion of the characters severing the cup surface. Disposed within the hollow portion of the cup member is a hydroscopic or porous member that has been saturated with a pigmented fluid. As a mating die having raised characters thereon, is received within the recessed characters of the die of this invention, with a paper document sandwiched therebetween, the paper not only be embossed, but as the paper is forced into the crown of the recessed characters, the fluid will be drawn downwardly by the absorbent characteristics of the paper to darken the crown portion of the embossed characters on the document.

Referring now to the drawings in further detail, the seal press assemblies embodying the die construction of this invention are illustrated in FIGS. 1 and 2. The operation, construction and relationship of the component parts of these assemblies are disclosed in my said application Ser. No. 13,106 and U.S. Pat. Nos. 2,998,766 and 3,177,801 reference thereto being made herewith and consist generally of a frame 10 formed in a U-shaped cross section with parallel sidewalls 11; a handle 12 with the rear end drawn downwardly as at 13; a handle 21 pivotally mounted to the sidewalls 11 by a rivet 20 and a unitary die assembly 30 which is readily detachable as illustrated in FIG. 2. As specifically set forth in my pending application, Ser. No. 13,106, previously referred to, the die holder 41 is rotatably secured to a spring member 38. The general relationship of these parts, holder 41 and spring 38, has been incorporated in FIGS. 4, 5 and 6 of this application only to illustrate the relationship of the die structure of this invention thereto and the adaptability of this die to existing seal press assemblies.

It is to be understood that the die structure of this invention may be employed for either circular dies as shown in FIG. 1, rectangular dies as shown in FIG. 2, or for any external side wall contour that may be desirable and may be readily and advantageously employed in all seal press assemblies. The pocket seal assembly is illustrated in the drawing only by way of example. It is to be further understood that the die structure of a seal press comprises two separate dies, one die 50 having recessed characters formed in its surface and a mating die 51 having raised characters formed thereon. The structure of this invention pertains to the die 50 having recessed characters on the face thereof.

Referring now specifically to FIGS. 3 and 4, the preferred embodiment of the die structure of this invention is illustrated and is indicated generally by the numeral 50 and provides an outer shell from two cup-shaped members 52 and 54. The two

cup-shaped members 52 and 54, being identical in configuration, the following description, for convenience, will relate to only the cup member 54. The cup member 54 is formed from a suitable rigid material, preferably brass, and provides a large flat lower wall 55 having an outer facing surface 56 with the sidewalls 58 thereof extending upwardly therefrom at right angles. Disposed against the inner surface 57 of the wall 55 is a porous member 60. The member 60 may be formed from any suitable material which provides structure sufficient to withstand deformation from the force subjected thereto when a seal is applied, and is preferably formed from a sintered metal. The unitary cup member 54 may be formed by any of several known processes, such as taking a piece of thin, flat brass stock, preferably 0.015 inch in thickness and forming the sidewalls by a drawing or spinning operation. A plurality of metallic shot, preferably brass, is then placed within the cup member and subjected to a compressing force, the size of shot and the amount of compressive force varying with the degree of porosity desired. The cup member, with the shot in a compacted or compressed condition, is then elevated in temperature sufficient to effect a bonding of the shot adjacent to one another and to the inner wall surfaces of the cup member. The cup members are then secured in back-to-back relationship, the porous member is charged or saturated with a pigmented fluid, and the desired characters of the seal are then formed in the facing surface as will be explained.

Referring now specifically to FIGS. 3a and 4, an alternate construction of the preferred embodiment of the die structure of this invention is illustrated, like numerals are used throughout to indicate similar parts, and is indicated generally by the numeral 50, and provides an outer shell formed from two cup-shaped members 52 and 54. The cup members, preferably formed from brass, each provide an enlarged lower wall 55 having a flat facing surface 86 and a thin cross section in which the desired seal characters are recessed. Sidewalls 58 of the cup member, having substantially greater thickness in cross section than the facing wall 55 extend upwardly therefrom at right angles.

The inner surface, adjacent the upper edge of the sidewalls 58, is beveled, as at 62, to provide an internal groove 64 about the inside of the die when the two cup-shaped members 52 and 54 are secured together in a back-to-back relation. The groove 64 provides a uniform flow channel for insertion of a pigmented liquid as will be readily understood as the description continues. The cup members 52 and 54 may be rigidly secured together in a leakproof relationship by any suitable means and has been illustrated in the drawings by means of welding as at 66. An opening 68 is formed through the joined sidewalls at a point of juncture of the two cup members and terminates in the groove 64 to provide means for replenishing the fluid supply upon depletion thereof.

Disposed within each of the cup members 52 and 54, filling the entire volume thereof, is a porous member 60 having a greater resistance to deformation than the material forming the wall 55. The porous member, such as sintered brass or steel, is securely bonded to the inner surface 57 of wall 55 to provide a solid unitary member. The two cup members 52 and 54, having a porous member secured thereto, are then secured together in back-to-back relationship as previously described. If desired, the member 60, disposed within the cup members 52 and 54, may have a variable porosity with minimum porosity adjacent the inner surface 57 of face 56 and gradually increasing in porosity to the upper or outer surface of each cup member.

Referring now more specifically to FIG. 7, the formation of the desired recessed characters of the seal is shown in the fragmentary view of the face 56. The desirable border characters 70 are formed on both sides of the die at time of manufacture of the die with the remaining letter characters to be formed at a die shop in the field as desired by the ultimate purchaser. The border characters and letter characters are formed in the same manner as now commonly employed in the industry, that is, primarily by use of an engraving machine which cuts the

desired contours, that is, having tapered sidewalls 74, of the characters 72 into the face of the surface 56. The cutter is set for a specific depth whereby the tip thereof will just sever the wall 55 to expose the porous member 60 along the crown portion 76 of the recessed characters. An alternate method of forming the desired recessed characters which may be employed is by selecting the desired character from a set of master dies having raised characters thereon, properly locating the master die on the surface 56 and embedding the master die into the surface 56 by a sharp, compressive force, except it is now desirable to have the force sufficient to have the crown edge of the master die just pierce the inner surface 57 of wall 55 to expose the porous member 60. It is now readily understandable why it is necessary to provide a porous material with a greater resistance to deformation or greater hardness than the material of surface 56. Otherwise, the compressive force of the master die would only create a large concaved area and possibly prevent the piercing of the wall 55. It is also desirable and readily understandable that the master die is formed from a material having substantially a greater hardness characteristic than the porous material 60 to prevent damage to the crown edge of the raised characters of the master die when forming the characters on the seal surface. Upon removal of the master die, a recessed character 72 is seen in the die surface 56 having tapered sidewalls 74 which terminate at a thin, centrally disposed bottom line 76, formed when the crown edge of the master die pierced the inner surface 57 to permit exposure of the porous member 60. It is obvious that if the more commonly used engraving device is used to form the recessed characters, the hardness characteristic of the porous member 60 may be substantially less.

Having formed the desired recessed characters of the seal on one side of the die, the porous member is saturated with a pigmented fluid, preferably a fluid which maintains a constant viscosity over a long period of time, by insertion through the opening 68 into the channel 64. When the saturation point is attained, the die is then placed in the releasably rotating die holder 41. A mating die, 51 having raised characters 53 formed thereon, is formed and positioned in the other die holder of the die assembly and when it is desired to form the seal on a paper, the paper is disposed between the two die units and the dies are brought together. As the paper is forced upwardly by the action of the raised characters of the one die entering mating recessed characters of the die of this invention, the desired embossing is accomplished. As the raised characters bottom in the mating recessed characters, the paper sandwiched therebetween is brought into contact with the fluid-saturated porous member 60. The absorbency of the paper draws the fluid from the member 60 to darken the upper or crown edge of the embossed characters, it being understandable that by having only the upper or crown edge portion of the embossed characters in contact with the fluid-saturated member, there is little likelihood of the fluid spreading from one character to the next character to cause any confusion as to the exact formation of the characters and provides the entire seal to be highly legible and readily reproduced by photograph or on reproducing equipment. The required permanency of the seal is further enhanced since not only are the fibers of the document distorted by embossment but the pigmented fluid is absorbed in the area of distortion rather than merely deposited on the surface of the document. This is more readily apparent where the document has a gloss or finished surface.

Referring now to FIG. 5, another embodiment of the preferred die construction of this invention is illustrated by the formation of a single face die indicated generally by the numeral 78. In formation of a single-face die, a cup-shaped member 80, similar to members 52 and 54, is preferably formed from brass and provides a thin, wall 82, having the same thickness as wall 55, with upwardly extending sidewalls 84 attaining a height equal to the combined height of the side walls of cup members 52 and 54, less the thickness of a protective cover seal 86 formed from a flexible nonporous material

such as plastic-coated rubber. A porous member 60, of variable porosity, is securely bonded within the cup member 80 as previously described for cup members 52 and 54 and completely fills the entire volume thereof. The desired seal characters are formed as previously described with reference to FIG. 7. The porous member 60 is saturated with a pigmented fluid through the open back of the cup-shaped member 80 which is then sealed to prevent contact with other surfaces by the cover seal 86. The die is then inserted in the die holder 41 with the desired embossing and printing being accomplished as described for the twin-faced die construction of this invention previously explained.

Referring now more specifically to FIGS. 6 and 8, an alternate construction for the die of this invention is illustrated, indicated generally by the numeral 88, and provides a cup-shaped member 90 having configuration identical to cup member 80 previously described. A fine mesh screen member 92 is disposed over the entire inner surface 93 of lower wall 94. Placed on top of the screen 92 is a porous member 60, to be saturated with a pigmented fluid, which completely fills the remaining volume of the cup member 90. The porous member 60, similar to the porous members previously described, is preferably of a material that has a resistance to deformation such as a sintered steel. A seal cover 96, identical to cover 86 previously described, is placed over the open end of the cup to seal it from contact with other surfaces and to retain the fluid within the porous material.

The principal variations of this embodiment are in the formation of the recessed characters and the elimination of the necessity of securely bonding the porous material to the inner surface of the seal facing surface as previously described.

As best seen in FIG. 8, the recessed characters 72 are formed having tapering sidewalls 74 which terminate on a centrally disposed line 76 which is formed as the inner surface 93 of wall 94 is severed, similar to the severance as previously explained, except there is only a spaced severance since it is necessary to provide interconnecting strips 98 to retain the counters or center areas of the recessed characters, such as the D and R illustrated in the drawings. The interconnecting strips 98 were not required for the preferred embodiments in that the porous members 60 were secured to the inner surface 57 of wall 55 to which the counters or center areas of the characters were retained.

The recessed characters of this embodiment are formed in the face of the die in substantially the same manner as previously described by use of an engraving machine. An alternate way of forming the characters is accomplished by first disposing a hardened steel backing member with the cup. A master die, of the desired raised character, having recessed slots formed across the crown edge thereof, is selected and is embedded in the wall 94 by a sharp, compressive blow sufficient to pierce the inner surface 93 of wall 94. The recessed slots in the crown edge of the master die permit the interconnecting strips 98 to be formed since the inner surface of wall 94 will not be severed at these points.

The size of mesh of the screen 92 will be determined by the size of the smallest counter of the characters formed in the die face since it is necessary that these areas are provided with a supporting back. By use of a fine mesh screen, the porosity of the fluid-saturated material will not have to be of a specific size. If it is preferable that the screen member is to be omitted, then the porosity of the fluid-saturated material will be determined by the smallest counter of the characters, it being obvious that the largest cavity in the porous material adjacent the inner face surface will have to be substantially less than the smallest counter of the characters formed therein.

The embossing and printing of the seal is accomplished exactly as previously described. The absorbency of the paper will draw the fluid downwardly, the portion of the paper blocked from contact with the fluid by the retaining strips 98 is so small and with the absorbent characteristics of the paper the entire portion of the crown edge of the embossed characters will be printed or coated.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects.

I claim:

1. In paper-embossing seal press having a mating die with raised characters formed thereon, a female die structure cooperating with the mating die for embossing paper and comprising

a hollow member having a top access opening and a bottom wall defining an inner surface and an outer face subjected to working pressures applied between the dies to a sheet of paper disposed against said outer face,

a holder releasably receiving said hollow member,

means engaging said inner surface of said bottom wall and subjected to said working pressures including a porous member disposed within the hollow member through said access opening and carrying a supply of printing fluid,

a cover seal of flexible nonporous material releasably sealing the top access opening to prevent contact between said holder and porous member, and

said bottom wall having recessed seal characters mating with the raised characters on the mating die for embossing said paper under said working pressures and opening upon said inner surface to expose the paper embossment to contact with porous member and the printing fluid carried thereby at said inner surface whereby a sheet of paper being embossed will be forced by the raised characters into engagement with the porous member and be inked thereby.

2. In a paper-embossing seal press having a mating die with raised characters formed thereon, a die structure cooperating with the mating die for embossing paper and comprising

a hollow member having a bottom wall defining an inner surface and an outer face subjected to working pressures applied between the dies to a sheet of paper disposed against said outer face, and

means engaging said inner surface of said bottom wall and subjected to said working pressures including a screen disposed within said hollow member against said inner surface and a porous member disposed within the hollow member against said screen and carrying a printing fluid to supply said screen therewith,

said bottom wall having recessed seal characters mating with the raised characters on the mating die for embossing said paper under said working pressures and opening upon said inner surface to expose the paper embossment to contact with the screen and the printing fluid carried thereby at said inner surface whereby a sheet of paper being embossed will be forced by the raised characters into engagement with the porous member and be printed thereby.

3. The invention as set forth in claim 2 wherein the mesh of the screen member is substantially less than the smallest counter of said characters to provide support therefor under embossing pressures.

4. In a paper-embossing seal press having a mating die with raised characters formed thereon, a die structure cooperating for embossing action with the mating die and comprising

a hollow cup-shaped member open at the top and having a thin bottom wall defining an inner surface and an outer face subjected to working pressures applied between the dies to a sheet of paper disposed against said outer face, a holder releasably receiving said hollow cup-shaped member,

means engaging said inner surface of said bottom wall and subjected to said working pressures including a porous member disposed within the hollow member and carrying a supply of printing fluid, and

cover means sealing the open top of the cup-shaped member to seal said porous member and prevent contact thereof with said holder,

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said bottom wall having recessed seal characters mating with the raised characters on the mating die for embossing said paper under said working pressures and opening upon said inner surface to expose the paper embossment to contact with the porous member and the printing fluid carried thereby at said inner surface whereby a sheet of paper being embossed will be forced by the raised characters into engagement with the porous member and be printed thereby.

5. The die construction defined in claim 4 in which said cover means is of resilient material interposed between said

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holder and porous member and is subjected to said working pressures.

6. The die structure defined in claim 4 wherein said porous member is secured to the inner surface of said bottom wall and completely filling the space within the cup member.

7. The invention as set forth in claim 6 wherein the porous member is of metallic structure having variable porosity with the minimum porosity adjacent to the inner surface of the bottom wall and with maximum porosity adjacent said cover member.

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