

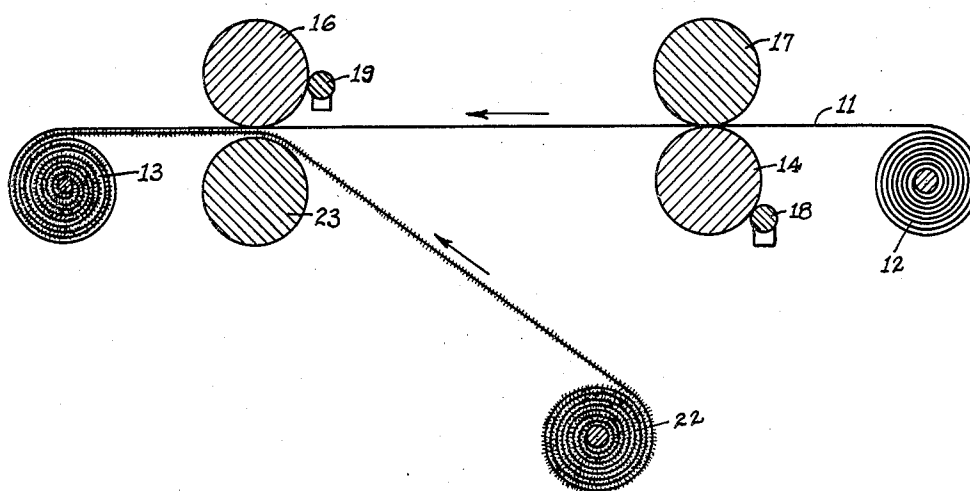
Nov. 23, 1937.

C. E. WOODDELL

2,099,879

APPARATUS FOR PRINTING AND DRYING

Filed Dec. 23, 1935



INVENTOR.
CHARLES E. WOODDELL

BY *REBerner*

ATTORNEY.

UNITED STATES PATENT OFFICE

2,099,879

APPARATUS FOR PRINTING AND DRYING

Charles E. Wooddell, Niagara Falls, N. Y., assignor, by mesne assignments, to The Carborundum Company, Niagara Falls, N. Y., a corporation of Delaware

Application December 23, 1935, Serial No. 55,742

5 Claims. (Cl. 101—420)

This invention relates to a method and apparatus for printing and drying freshly printed webs of material and is particularly directed to an apparatus arrangement for printing relatively non-absorbent materials that have a glossy surface such as glazed paper, "Cellophane" and like substances.

The utilization of a web of granular coated paper which is interleaved with a roll of non-absorbent material after the printing operation to preserve the fresh printed images while drying takes place has been practiced in the past. The rough surface of sandpaper in such an arrangement is positioned towards the printed surface so that the image will be permitted to dry satisfactorily or without being offset or smeared when wound in roll form. The printing on both sides of a web of non-absorbent material has brought about the development and use of a web having a coating of granules on each side of the paper which may be interleaved with a roll of, for instance, "Cellophane" after both sides thereof have been printed. A rough surface is thus provided and directed towards a fresh printed surface, while the opposite side of the sandpaper is directed towards the other printed surface at one convolution removed point in the roll. The bilaterally abrasive coated sheet in fact acts as a separator between the spirals of the sheet material which has been printed on both sides and rolled therewith. The method of drying as set forth briefly above is more fully described in the patent to Frank J. Tone, 1,941,328, issued December 26, 1933.

An abrasive coated web or sandpaper associated with a platen roll to prevent smearing or offsetting of the printed images on a sheet web of non-absorbent material while the opposite side of the web is being printed has been employed in the past. Ordinary granularly coated paper has been used in connection with a platen roll to prevent smearing during the second printing operation but the conventional type of sandpaper wherein the grain is distributed in a haphazard manner has not been found in actual operation to entirely avoid smearing. Granular coated paper has been developed with elongated grains attached endwise to the web or paper backing so that the sheet carrying a fresh printed image on one side will be supported over the platen roll by the points of the grain while the sheet is printed on the reverse or opposite side. The elongated grains in addition to supporting the paper by means of a smaller surface contact also carry more ink before saturation there-

of and consequent smearing of the fresh printed images occurs. The use of such a granularly coated web as more fully shown and described in the patent to Romie L. Melton et al., No. 2,011,181, issued August 13, 1935 is contemplated in the method and apparatus arrangement of the present invention.

The present invention however is directed to a new combination and arrangement of apparatus for printing web material on both sides and wherein use is made of a single means for preventing offsetting during the second printing operation and also as a separator in a drying roll of the double printed sheet material.

It is therefore an object of my invention to reduce the number of elements necessary to such apparatus and accordingly an element of the past apparatus arrangements is eliminated by the present printing and drying combination of elements.

In the accompanying drawing:

The figure is a diagrammatic view illustrating the application of the simplified method and apparatus in the printing of both sides of sheet material and drying such a web sheet.

Referring to the drawing a blank sheet of web material 11 is fed from any source of supply, as from a roll or reel 12, through a printing apparatus and wound on a reel or into a roll 13, or otherwise disposed of after it is printed. The sheet is printed on both sides by feeding the same in contact with a series of printing rolls arranged to print first one side and then the reverse or opposite side of the blank web. A series of printing cylinders are horizontally disposed with a roll 14 arranged to print the sheet on the under side and a printing cylinder 16 arranged to print the sheet on the reverse or upper side. A roll 17, of the conventional tympan type, is arranged adjacent the printing cylinder 14 and cooperating therewith to support the blank web while the printing matter is being imparted thereon. An inking roll 18 is arranged for rotatable contact with the printing cylinder 14 and supplies a printing fluid to the images of the printing cylinder.

The second series of printing cylinders is similar to the arrangement above described with the printing cylinder 16 of this series arranged above the web sheet. The printing cylinder 16 is likewise provided with an inking device 19. However after the blank web 11 has been printed on one side by the printing cylinder 14 and then printed on the reverse side before the image or ink has dried, care must be exercised to avoid

smearing or blurring of the already printed image. To prevent smearing or blurring of the printed surface while the sheet is being printed on the opposite side by the printing cylinder 16, a granular coated sheet web of carrying material 21, such as abrasive cloth or sandpaper, is fed from a supply roll 22 and over the tympan or platen roll 23. The granular coated paper is arranged over the platen roll with the granules on one side thereof in contact with the under surface of the sheet 11 which has been previously printed by the cylinder 14 and thus support the sheet, while the same is being printed on the upper or reverse side. The printed sheet is supported over the platen roll 23 by the points of the granules thereby preventing the ink from being squeezed laterally over the under surface of the sheet web. The granular coated paper or web 21 after cooperating with the platen roll 23 to prevent smearing of the printed underside of the web 11 while printing is imparted to the upper side of the web, is fed along with the printed sheet and wound on the reel 13 in an interleaved fashion with the printed web. Distortion, blurring, or blotting of the printed image is prevented by the bilaterally granularly coated web 21 which acts as a separator between the convolutions of the double printed web.

It is to be noted that the granular coated web 21 serves the double function of cooperating with the platen roll 23 to prevent smearing during the second printing operation and also serves as a separating sheet to permit drying of the printed images without smearing of either printed side of the web 11.

The particular arrangement of the apparatus and the method of printing as above described therefore provides a combination of parts wherein one of the customary elements is eliminated. The printing of relatively non-absorbent web materials, such as "Cellophane" requires a relatively long drying period and a drying separator is necessary to prevent offsetting in the drying roll. A granular coated web cannot be used indefinitely in cooperation with a platen roll since the granular surface thereof would eventually become coated with the printing ink and become useless without cleaning or drying thereof. The present arrangement of using the granular coated web as a platen support eliminates the necessity of time wasted in drying the platen roll or the replacement of a coating therefor. During the drying of the printed web a granular coated web will also dry and may therefore be used again to prevent offset printing at the platen roll and as a drying separator. A considerable saving is also effected by the elimination of an element of the previous apparatus arrangements, that is to say, the drying separator of the

prior arrangements has been combined with the elements of the present printing apparatus.

I claim:

1. Printing and drying apparatus of the character described comprising, in combination, means for printing one face of a moving web sheet, means for printing the opposite face of said sheet, a double faced granular coated web cooperating with the second printing means to prevent smearing of the first printed face of said sheet during the second printing operation, and means for moving said granular coated web along with the printed sheet subsequent to the second printing operation comprising a reel for rolling the two webs in an interleaved fashion whereby smearing of the printed matter is prevented during the rolling and drying thereof.

2. Printing and drying apparatus of the character described comprising, in combination, a platen roll for supporting web sheet material previously printed on one side, means for printing the opposite side of said web sheet, a bilaterally faced granular coated web cooperating with said platen roll to prevent offsetting of the printed side of said web sheet during the second printing operation, means for moving said web sheet and said granular coated web and supporting the two webs in a continuous interleaved fashion whereby smearing of the printed images is prevented during the drying thereof.

3. The method of producing printed webs which comprises printing an image on one side of the web, printing an image on the other side of the web while protecting the previously printed side by a layer of carrier material having a gritty surface on each side thereof and then rolling up the web and the carrier material in interleaved relation.

4. The method of producing a printed web which comprises printing an image on the underside of said web, printing an image on the top side of said web while the underside of said web is in contact with a layer of carrier material having a coated gritty surface on both sides and then rolling up the web and the carrier material in interleaved relation.

5. The method of producing printed webs which comprises printing an image on one side of the web, printing an image on the other side of the web while protecting the previously printed side by a layer of carrier material having a gritty surface on each side thereof and then rolling up the web and the carrier material in interleaved relation so that both printed surfaces of the web are protected from smearing by the gritty surfaces of the carrier material while drying.

CHARLES E. WOODDELL.