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(21) International Application Number: PCT/US91/06536 (22) International Filing Date: 10 September 1991 (10.09.91) (30) Priority data: 581,003 12 September 1990 (12.09.90) US (71) Applicant: M & R PRINTING EQUIPMENT, INC. [US/ US]; 1 North 372 Main Street, Glen Ellyn, IL 60139 (US). (72) Inventors: HOFFMAN, Richard ; 4858 North Newcastle, Chicago, IL 60656 (US). SZYSZKO, Aleksander ; 876 Farm Glen Lane, Carol Stream, IL 60188 (US).		(74) Agents: JAGODA, James, J. et al.; Wellenstein, Wagner & Hattis, Ltd., 311 South Wacker Drive, 53rd Floor, Chicago, IL 60606 (US). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CI (OAPI patent), CM (OAPI patent), DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (Euro- pean patent), GN (OAPI patent), GR (European pa- tent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI pa- tent), SU ⁺ , TD (OAPI patent), TG (OAPI patent). Published <i>With international search report.</i>
(54) Title: DETACHABLE SCRAPER ATTACHMENT FOR A FLOOD BAR (57) Abstract A detachable scraper attachment (22) for a flood bar (12) having a pair of opposing opposite edges (14) comprising a portion adapted to mount on a portion of the flood bar holder (17), a flange (26) having an upper (28) and lower edge (30), the lower edge (30) being generally arcuate, the upper edge (28) attached to the channel portion (24), and means (34) for detachable affixing the scraper attachment (22) to the edges of the flood bar (12).		

+ DESIGNATIONS OF "SU"

Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

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DETACHABLE SCRAPER ATTACHMENT FOR A FLOOD BAR

DESCRIPTION

Technical Field Of The Invention

The present invention relates to the field of screen printing. More specifically, the present invention relates to a detachable scraper attachment to a flood bar.

Background Of The Invention

Printed indicia which are applied to T-shirts and other articles of clothing have become very popular in the last decade. Boutiques which specialize in printing fanciful indicia such as slogans, college names, or sports team names on T-shirts and other clothing, are commonly seen in shopping malls. The indicia available at these boutiques can be pre-printed on a substrate and applied with a heated press by operators at these boutiques to articles of clothing purchased by the consumer, or can be screen printed directly on an article of clothing.

In the screen printing process, a stencil screen embodying the indicia is placed over the object to be printed. Ink of one color is then flooded onto the screen by a flood bar of conventional design. The ink is of the type well-known in the industry for screen printing. After the ink is flooded onto the screen, the ink is squeegeed through the screen onto the object leaving ink of the desired color where the interstices in the screen appeared. The squeegee is of any type well-known in the art.

As the ink is flooded onto the screen, and during the print stroke, the ink tends to be forced to the edges of the screen between the ends of the squeegee and flood bar and the screen frame. This results in ink buildup which is not utilized in the printing process and is wasted. The operator must periodically scrape up the ink from the edges of the screen and place it in front of the flood bar. At cleanup time, the operator must clean the screen of all ink so that it may be reused. The ink deposits along the frame significantly increase the time required for cleanup, particularly if the ink has dried. The operator must use a spatula or putty knife to scrape the ink from the edges and then wash the area with solvents.

In an attempt to automatically prevent the ink from collecting at the edges of the screen, flood bars with integral scrapers have been developed. The scrapers

work to scrape the ink from the edges of the screen automatically while the flood bar moves along the screen during the flood stroke. The integral contoured scrapers generally work, but requires the purchase of entire sets of flood bar and scraper assemblies in various sizes and lengths which can be quite expensive since different sizes of screens and indicia are used. They also do not permit the versatility or reusability of the present invention.

10 A need has developed for an inexpensive detachable scraper attachment which can be retrofitted to any existing flood bar. A need has also developed for a reusable scraper. The present invention solves these and other problems.

Summary Of The Invention

5 The detachable scraper attachment of the present invention comprises a portion adapted to mount on a portion of the flood bar holder, a flange having an upper and lower edge, the lower edge being generally arcuate, the upper edge attached to the channel portion, and means for detachably affixing the scraper attachment to the edges of the flood bar.

10 An object of the present invention is to provide a simple and inexpensive detachable apparatus for recovering ink which collects at the edges of a screen during the printing process. The present invention allows less ink to be used during the flooding process, thereby also reducing waste.

15 The present invention also decreases production time by continuously scraping ink from the edges of the screen, obviating the need for the operator to stop the process to do so manually. It also reduces cleanup time as less ink collects along the margins of the screen, and lessens the chance of injury to the operator who tries to
20 scrape the ink into the path of a moving flood bar.

 Other advantages and aspects of the invention will become apparent upon making reference to the specification, claims, and drawings to follow.

Brief Description Of Drawings

FIGURE 1 is a perspective view of a typical print station of a printing press showing the flood and squeegee bars with the present invention attached to the flood bar.

FIGURE 2 is a side view of the typical print station of FIGURE 1 showing the present invention attached to the flood bar.

FIGURE 3 is a perspective view of the scraper attachment of the present invention.

FIGURE 4 is a rear view of the scraper attachment of the present invention.

FIGURE 5 is a side view of the scraper attachment of the present invention.

FIGURE 6 is a top view of the scraper attachment of the present invention.

FIGURE 7 is a bottom view of the scraper attachment of the present invention.

Detailed Description Of The Invention

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail, a preferred embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention, and is not intended to limit the broad aspect of the invention to the embodiment illustrated.

Referring now to the drawings, FIGURES 1 and 2 disclose a typical print station 10 of a screen printing press. A flood bar 12 having opposing outer edges 14 is slidably mounted on a radial arm 16. The flood bar 12 is mounted on a flood bar holder 17. A squeegee 18 is positioned directly behind the flood bar 12. To print indicia on an object, a screen 20 having a frame 21 along its edges is placed at the print station 10 on a bed (not shown) beneath the flood bar 12 and squeegee 18. The screen 20 is placed over the object to be printed and the ink flooded by the flood bar 12 on the forward stroke and the ink squeezed through the screen 20 by the squeegee 18 on the return stroke.

FIGURES 1 and 2 disclose the scraper 22 of the present invention attached to an edge of the flood bar 12. The scraper 22 may be attached to the flood bar using any conventional means but is preferably clamped to the flood bar 12 as shown in FIGURE 1.

To print indicia on an object, the flood bar 12 and squeegee 18 move along the radial arm 16. On an initial stroke, the flood bar 12 deposits ink onto the screen 20 in a conventional manner. On the return stroke, the squeegee 18 moves along the screen forcing ink into interstices stencilled into the screen 20. While the squeegee 18 passes over the screen 20, ink is forced to outer edges of the screen 20.

FIGURES 3-7 disclose the preferred embodiment of the scraper 22 of the present invention. The scraper 22, preferably, has a generally U-shaped channel portion 24 which is adapted to mount on the upper portion of the

flood bar holder 17. The scraper 22 also has a flange 26 having an upper edge 28 and a lower edge 30. The upper edge 28 is preferably straight and is longitudinally attached to the base of the channel portion 24 such that the flange 26 extends below the channel portion 24. The lower edge 30 of the flange 26 is preferably arcuate such that it comprises approximately one quarter of a circle. The flange 26 flares from the upper edge 28 to the lower edge 30.

Preferably attached to a non-flared edge of the flange 26 is a means for affixing the scraper 22 to the flood bar 12. The affixing means preferably comprises a pair of tabs 34. The tabs 34 preferably extend from opposing surfaces of the flange 26. The tabs 34 are adapted to fittingly accept an outer edge 14 of the flood bar 12 therebetween. The tabs 34 connect the scraper 22 to the flood bar 12. The scraper 22 is then preferably clamped to the flood bar 12 at the channel portion 24 to further secure it to the flood bar 12. One scraper 22 is attached to each opposing edge or end 14 of the flood bar 12.

The scrapers 22 attached to the edges 14 of the flood bar 12 preferably extend to edges of the screen 20 and closely adjacent the screen frame 21. As the ink is deposited onto the screen 20, the arcuate edge 30 of the scraper 22 acts to force ink which was moved to the outside of the screen 20 by the squeegee 18 toward the center of the screen 20. This allows the scrapers 22 to reach the edges of the screen 20 where ink tends to collect and prevents buildup of ink. It also reduces the amount of ink necessary for a print by keeping the ink concentrated in the print area rather than building up along the frame 21. The scraper 22 is preferably made of a non-corrosive material such as polyurethane or other inert material. This allows the scraper to be reused for a long period of time and facilitates cleanup by conventional solvents.

While the specific embodiments have been illustrated and described, numerous modifications come to

mind without significantly departing from the spirit of the invention, and the scope of protection is only limited by the scope of the accompanying claims.

CLAIMS

I claim:

1. A detachable scraper attachment for a flood bar having a pair of opposite edges comprising:
 - 5 a portion adapted to mount on a portion of the flood bar holder;
 - a flange having an upper and lower edge, said lower edge being generally arcuate, said upper edge attached to said channel portion; and
 - 10 means for detachably affixing the scraper attachment to the edges of the flood bar.
2. The scraper attachment of Claim 1 wherein said detachable affixing means comprises a pair of tabs
15 extending from opposing surfaces of the flange adapted to fittingly accept an edge of the flood bar therebetween.
3. The scraper attachment of Claim 1 wherein said portion is a generally U-shaped channel.
20
4. The scraper attachment of Claim 1 wherein said upper edge of said flange is straight and is attached longitudinally to said portion, such that said flange extends below said portion.
25
5. The scraper attachment of Claim 1 wherein said scraper is made of a non-corrosive material.
6. The scraper attachment of Claim 5 wherein said
30 non-corrosive material is polyurethane.

1 / 2

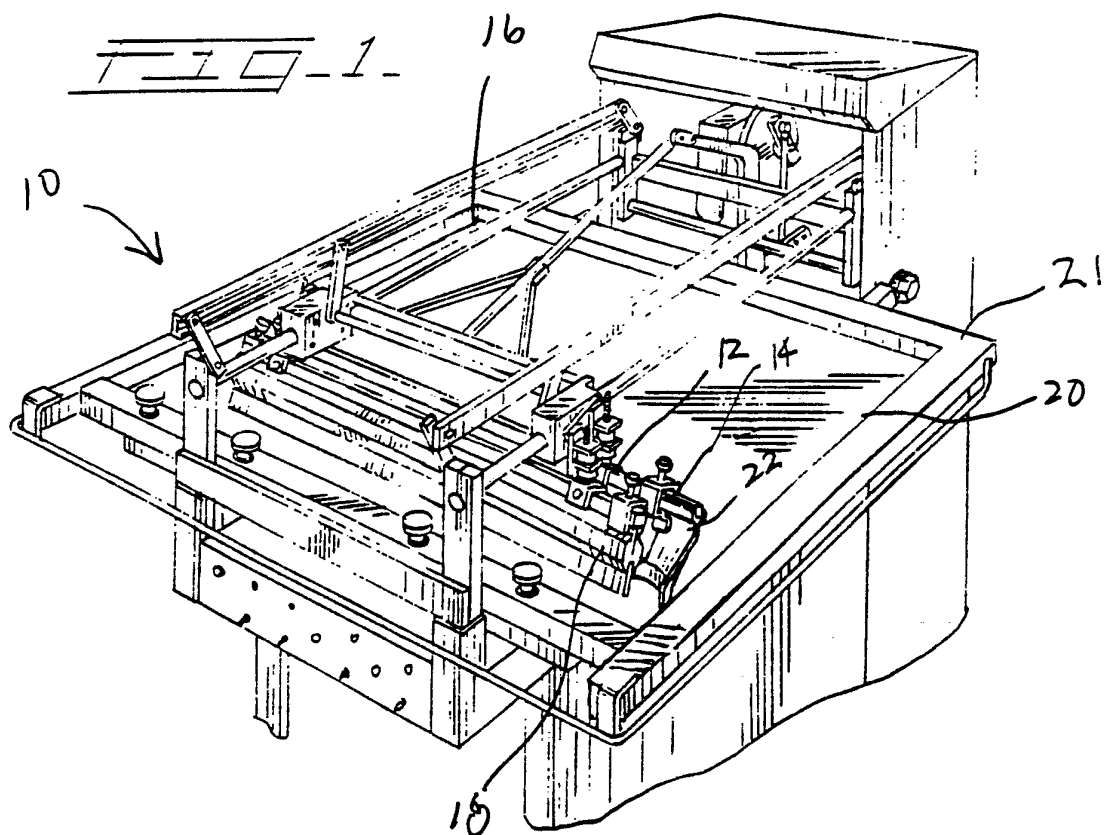


FIG. 2

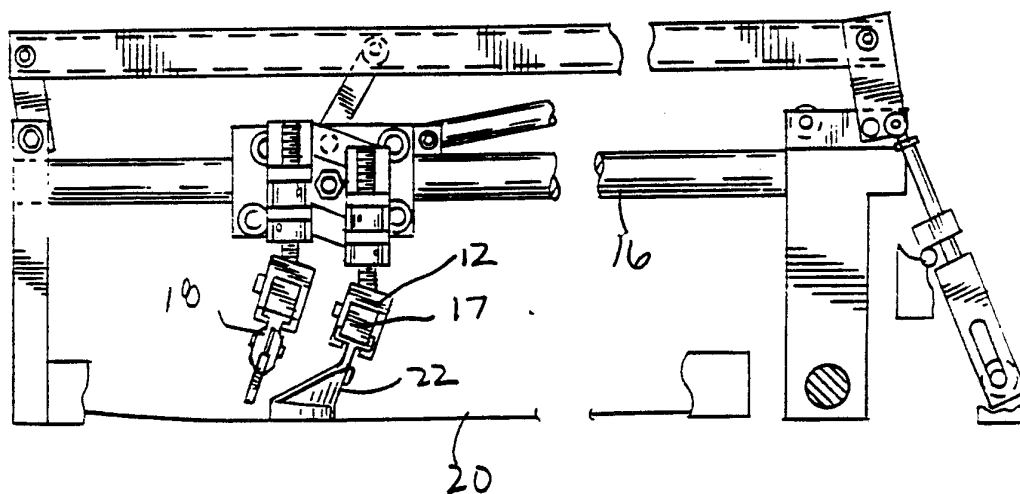


FIG. 3.

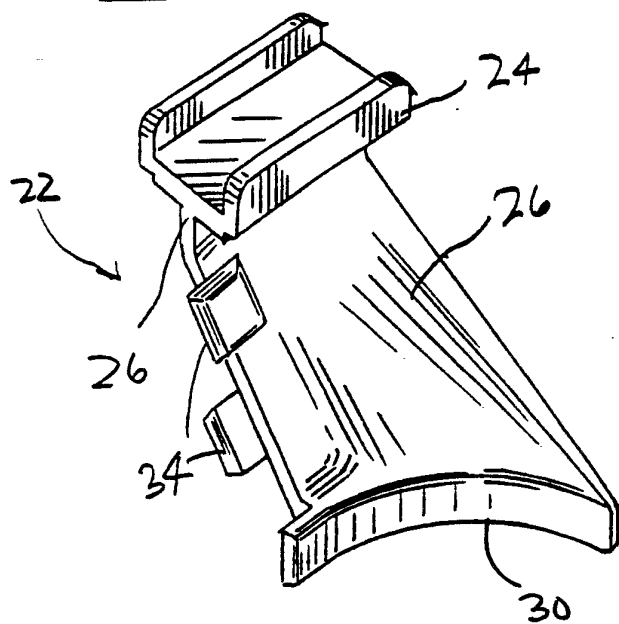


FIG. 4.

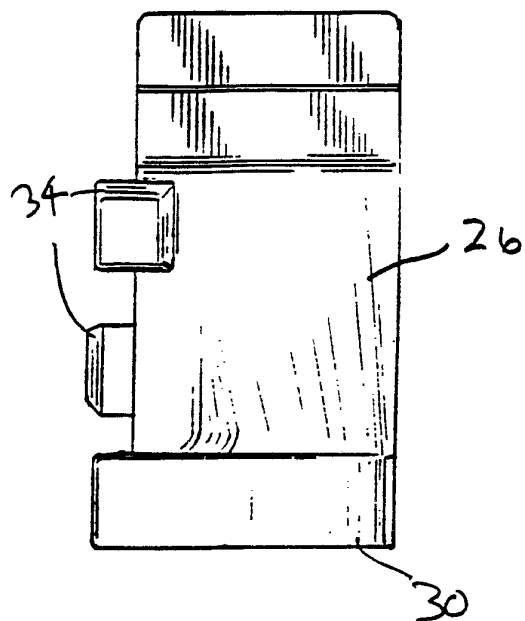


FIG. 5.

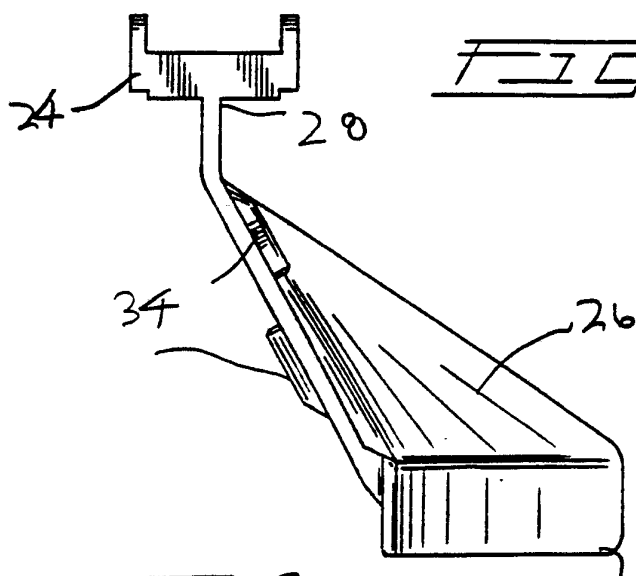


FIG. 6.

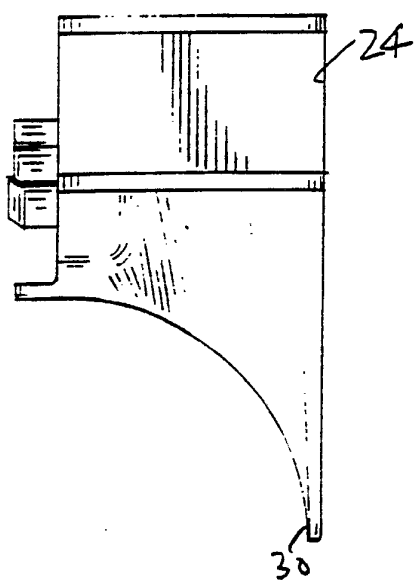
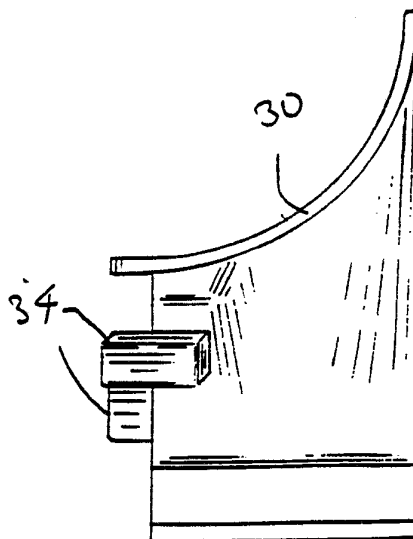


FIG. 7.



INTERNATIONAL SEARCH REPORT

International Application No. PCT/US91/06536

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC IPC(5): B41F 15/00, B41F 15/42, B41F 15/46, B41L 13/18 US CL : 101/123		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
U.S.	101/114, 115, 119, 121, 123, 124, 129	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	US, A, 3,955,501 (BUBLEY ET AL.) 11 MAY 1976 See entire document.	1-6
Y	US, A, 4,216,716 (ZIMMER) 12 AUGUST 1980 See entire document.	1-6
Y	US, A, 3,988,986 (ZIMMER) 02 NOVEMBER 1976 See entire document.	1-6
A	US, A, 2,881,698 (GRAHAM) 14 APRIL 1959	
A	US, A, 3,943,849 (VASILANTONE) 16 MARCH 1976	
A	US, A, 4,080,893 (WEDELL) 28 MARCH 1978	
A	US, A, 4,102,266 (PORTH) 25 JULY 1978	
A	US, A, 4,121,519 (PORTH) 24 OCTOBER 1978	
A	US, A, 4,389,936 (JAFFA ET AL.) 28 JUNE 1983	
A	US, A, 4,509,455 (SHIRATAKI) 09 APRIL 1985	
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