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P. A. GRAMATZKY
SCREEN PRINTING APPARATUS
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2,802,419

FIG. 1

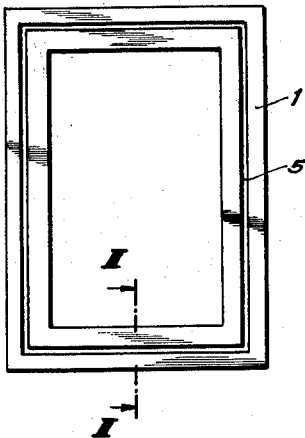


FIG. 2

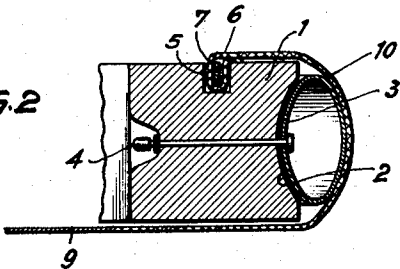
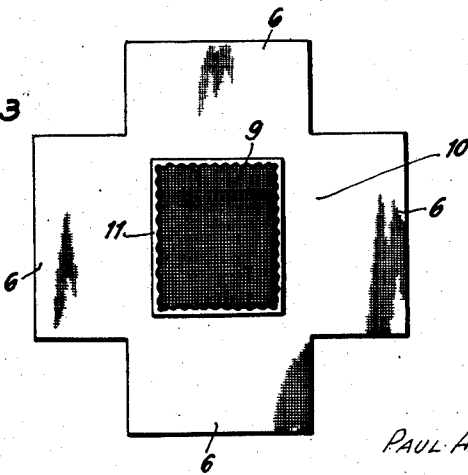


FIG. 3



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SCREEN PRINTING APPARATUS

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Claims priority, application Germany December 19, 1951

6 Claims. (Cl. 101—415.1)

In order to carry out the screen printing process, there are employed screens which are tensioned over frames and into which the colour is introduced through a stencil in order to be printed on to, for example, a sheet of paper. The tensioning of the fine screens over the frame always presents difficulties. Above all, it has not been possible hitherto to produce a uniform clamping with correct alignment of the threads, which is particularly necessary when printing in two or more colours.

The present invention solves this problem by the fact that the screen frame is equipped with a tube which is adapted to be inflated for tensioning the screen. This tube is preferably disposed in a peripheral groove of the frame. In order to secure the screen, the frame is provided on that side which is remote from the screen with a channel which is intended to accommodate a bar enclosed by the screen. For reasons of expediency and economy, the screen can be surrounded with a flexible material.

By means of the arrangement according to the invention, there is obtained an adjustable tension which remains constant.

One constructional example of the screen printing frame in accordance with the invention is shown in the accompanying drawing, wherein:

Figure 1 is a plan view of a screen frame;

Figure 2 is a section on the line I—I on Figure 1 to a larger scale as compared with Figure 1; and

Figure 3 is a plan view of the screen with a surrounding elastic and flexible web therefor.

The frame 1 is formed at its periphery with grooves 2 in which is disposed an inflatable tube 3. The tube therefore surrounds the entire frame. The tube has an inlet valve 4 which passes through the frame and is accessible from the inside of the frame for the purpose of inflating the tube. Alternatively the valve could be directed outwards and pass through the screen. The upper face of the frame is formed with a channel 5.

In order to economize in valuable screen material and to be able to provide a better clamping and cleaning action, the screen 9 is surrounded, as shown in Figure 3, by a web 10 of flexible material, for example, fabric saturated with polyvinyl chloride, oilcloth or similar adherent material with high tensile strength. The surrounding material can be stuck, sewn, vulcanised or bonded to the edges of the screen.

For the purpose of fitting the screen, the ends 6 stiffened by means of a bar 7 are placed in the channel 5.

As will be seen from Figure 2, the screen 9 covers the pneumatic tube which initially is not inflated. When the screen is correctly positioned on the frame, the pneumatic tube is inflated through the valve 4 and thus the screen is tensioned on the frame. The tension is elastic and uniform and in line with the threads, and can be varied as required according to the air pressure obtaining in the tube. The elastic tension provides a decisive advantage which consists in that printing can be carried out

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with the aid of doctor blades which traverse the screen 9 without the latter at any time being brought into contact over its entire area with the sheet to be printed and without danger of excessively stretching the screen.

I claim:

1. In screen printing apparatus, a screen supporting frame having a channel in its upper face, means locatable within said channel for clamping the margin of the screen to the frame, a screen covering said frame, the margin of the screen extending around the periphery of the frame, a groove in the entire outer periphery of the frame, and in said groove an endless inflatable tube interposed between the screen and the peripheral face of the frame, said tube maintaining said screen under elastic tension during printing.

2. In screen printing apparatus, a screen supporting frame having a channel in its upper face, means locatable within said channel for clamping the margin of the screen to the frame, a screen covering said frame, the margin of the screen extending around the periphery of the frame, a groove in the entire outer periphery of the frame, a flexible endless tube in said groove interposed between the screen and the outer peripheral face of the tube, and an air inlet valve in said tube extending through the frame to the inner peripheral face thereof, said tube maintaining said screen under elastic tension during printing.

3. In screen printing apparatus, a screen supporting frame having a channel in its upper face, a bar locatable within said channel for clamping the margin of the screen to the frame, a screen covering said frame, the margin of the screen extending around the periphery of the frame, a flexible endless tube interposed between the screen and a groove in the peripheral face of the frame, and an air inlet valve in said tube, said tube maintaining said screen under elastic tension during printing.

4. In screen printing apparatus, a frame having a channel in its upper face, a screen provided at its margin with a flexible material of high tensile strength, a bar locatable within said channel for clamping the margin of the screen to the frame, a flexible tube interposed between the screen and the peripheral face of the frame, and an air inlet valve in said tube.

5. In screen printing apparatus, a screen supporting frame, a groove in the entire outer periphery of said frame, a screen covering the front of said frame, the margin of the screen extending around the periphery of the frame and being secured to the back of said frame, and an endless inflatable tube in said groove interposed between the frame and the screen secured to the back of said screen and maintaining said screen under elastic tension during printing.

6. In screen printing apparatus, a screen supporting frame, a groove in the entire outer periphery of said frame, a screen covering the front of said frame, the margin of the screen consisting of a flexible material of high tensile strength and extending around the periphery of said frame, means securing said margin to the back of said frame, and an endless inflatable tube in said groove interposed between the frame and the screen secured to the back of said screen and maintaining said screen under elastic tension during printing.

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