

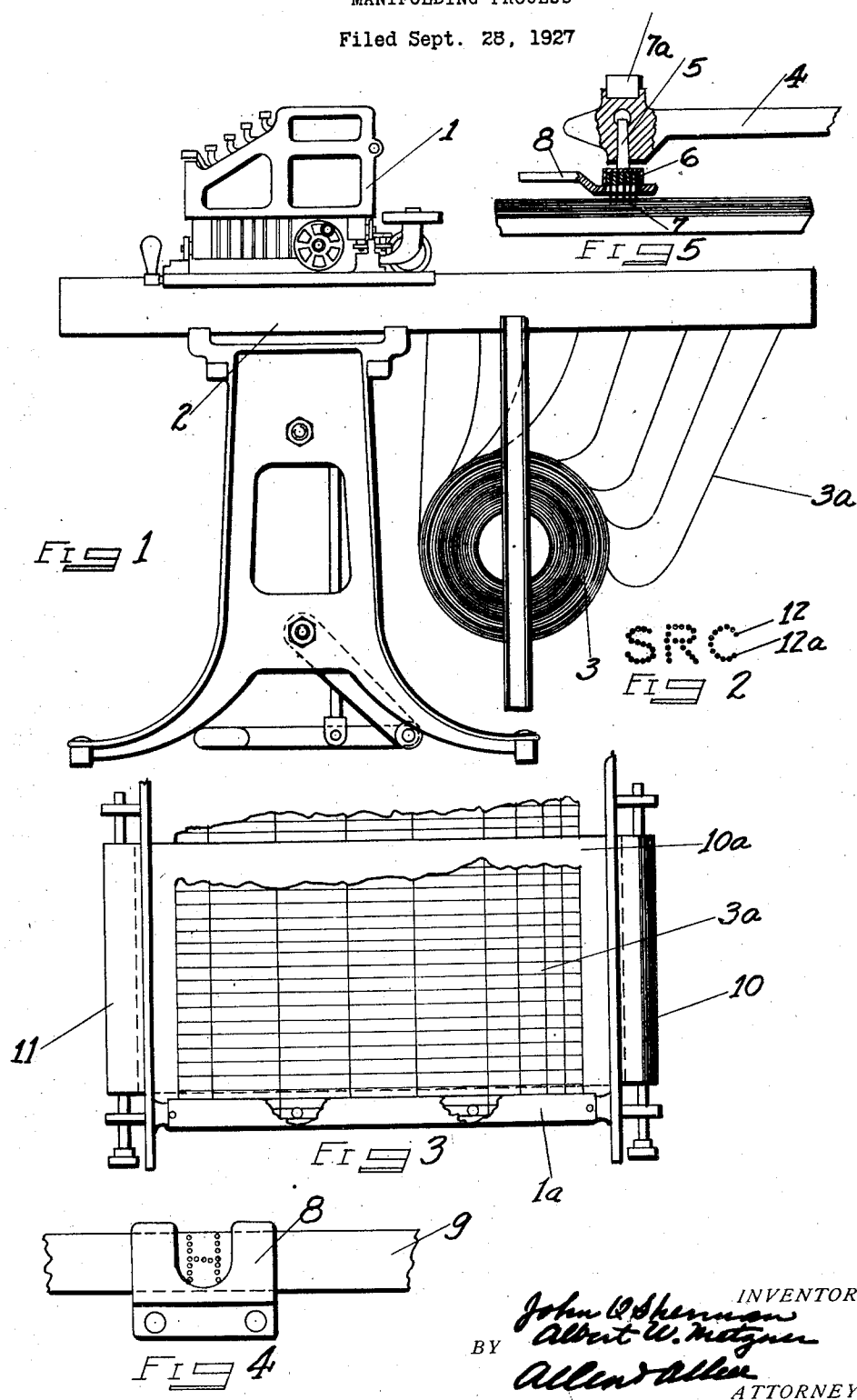
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MANIFOLDING PROCESS

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## UNITED STATES PATENT OFFICE

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## MANIFOLDING PROCESS

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Our invention relates to a method of forming manifolding copies which shall be perforated as well as imprinted with a colored impression so as to be entirely safe against subsequent alterations, the impression on the original and all manifold copies being of a type similar to impressions made by check protective printing in use at the present.

There are several types of structures whereby writing can be done in characters which are perforated, the chief one being by means of type faces formed of pin points which penetrate the paper, said points being covered with ink or other suitable medium which will leave a color around the peripheries of the holes. Devices have also been constructed which operate after the fashion of a dentist's tool on a flexible shaft, which have a rapidly reciprocating point which will penetrate paper and leave a perforated impression. Our invention is also applicable for use with such devices.

We have illustrated our invention as applied to an Elliot Fisher manifolding typewriter machine, but it will be understood that this is for purposes of convenience.

We accomplish our object in manifolding with perforated impressions in that manner to be hereinafter more specifically pointed out and claimed.

In the drawings:—

Figure 1 is a side elevation of an Elliot Fisher manifolding typewriter machine.

Figure 2 is a view showing the form of characters which may be printed using our method.

Figure 3 is a plan view showing the arrangement of pin inking means as preferably employed by us.

Figure 4 is a detail showing the type abutment plate.

Figure 5 is a detail, partly in section, showing a printing character of which the type face is formed of pins for perforating manifolding forms.

Referring briefly to the drawings we show a typewriter 1 mounted to move to and fro and forward and back on a frame 2. A storage roll for manifold paper webs, such as printed forms, is shown at 3, which paper

passes up and over a flat bed or platen against which the type faces are impressed by the typewriting machine.

As a perforating type we have shown a type arm 4 having in its outer end a tapered pin 5 driven into the end of the arm, which pin serves to mount a perforated type body 6 having pins 7 arranged in the form of a desired letter or character. The bars have plugs of felt 7a on their tops, which prevent the pins from being blunted if more than one type bar is operated at once. The typewriter is equipped with a bifurcated plate 8 at the printing point, having an orifice between the arms thereof, which plate is mounted as desired upon the typewriter, and is spaced slightly from the paper. The type faces on the type arm of the typewriter are so arranged that the pin type faces come down into the space between the arms of the plate 8, with the type bodies coming up against the plate arms as a stop.

In Figure 4 the ribbon 9 is illustrative of the usual ribbon of the Elliot Fisher typewriter. There are tough ribbons made which will stand the penetration of pin type faces to a considerable extent without tearing or breaking. We have not shown the ribbon guide of the machine will lie under the plate 8 where it is bent down toward the platen of the machine.

The webs of paper 3a, where they pass along the platen beneath the typewriting machine, will be interleaved with bands of printing cloth formed of like material to the tough printing ribbons last above referred to. The strips of cloth 10a may be wound on rollers as indicated at 10 and 11, and thus can be renewed from time to time as required. The cloth will be as wide as the portion of the paper, which is exposed for purposes of being impressed with desired characters, is long. Otherwise it would be necessary to shift the cloth with the printing mechanism which would be impractical.

In following our method of printing, the pin type faces are brought down over the assembled printed forms on the platen of the machine, so that the pins penetrate through the printing ribbon, the several forms, and

the printing cloth between the several forms.

It is not practical to use printing cloth with ordinary type faces, although this would be considerable of a saving in trouble of handling carbon paper and renewing the same. The reason for this is that the cloth with the paper between it makes a soft body, which acts like a pillow to the type, and thus prevents any blow such as is required to make a proper impression, and produces a blurred impression which is hardly legible. With the perforating pins as the type faces, however, the pins will penetrate, or at least deform, each layer of the pile of paper and cloth, and forms an excellent impression which it is not practical to alter.

The pins readily penetrate the cloth and receive the ink from the cloth in such a way that the wall of each hole is surrounded by the ink, making a very clear and distinct impression.

This has been illustrated in Figure 2 in which the letters S R C are formed of central points 12 surrounded by inked walls or circular marks 12a.

The usual paper holding bar 1a of the manifolding machine is shown as holding the forms on the platen while they are being written or printed upon.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A process for forming impressions in manifolding, which consists in passing a perforating type face through alternate layers of paper and printing cloth while same are supported on a platen.

2. A process for forming impressions in manifolding, which consists in passing a pin or pins through alternate layers of paper and printing cloth while same are supported on a writing support.

3. A process for forming impressions in manifolding, which consists in passing a pin or pins through alternate layers of paper and printing cloth while same are supported on a writing support, said pin or pins being impressed at various points in the combined layers so as to form characters without moving the printing cloth.

4. A process for forming impressions in manifolding, which consists in passing a pin or pins through alternate layers of paper and printing cloth while same are supported on a writing support, said pin or pins being impressed at various points in the combined layers so as to form characters without moving the printing cloth and without moving the paper.

5. A process for forming impressions in manifolding, which consists in feeding a series of webs of paper in form lengths across a platen, interposing webs of printing cloth between the webs of paper and moving said webs transverse the path of movement of the

paper for renewing the same, and forming impressions on the paper while stationary on the platen, by passing into the paper and cloth a pin or pins arranged as characters, at various points, for the purpose described.

6. A process for forming impressions in manifolding, which consists in arranging a set of paper forms with printing cloth transversely interleaved therewith, and passing a pin or pins through the assembled layers.

7. A process for forming impressions in manifolding, which consists in arranging a set of paper forms with printing cloth transversely interleaved therewith, and of a width equal substantially to the length of the portion of the printed form to be filled in, and passing a pin or pins through the assembled layers to form the desired characters in each of the set of forms.

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