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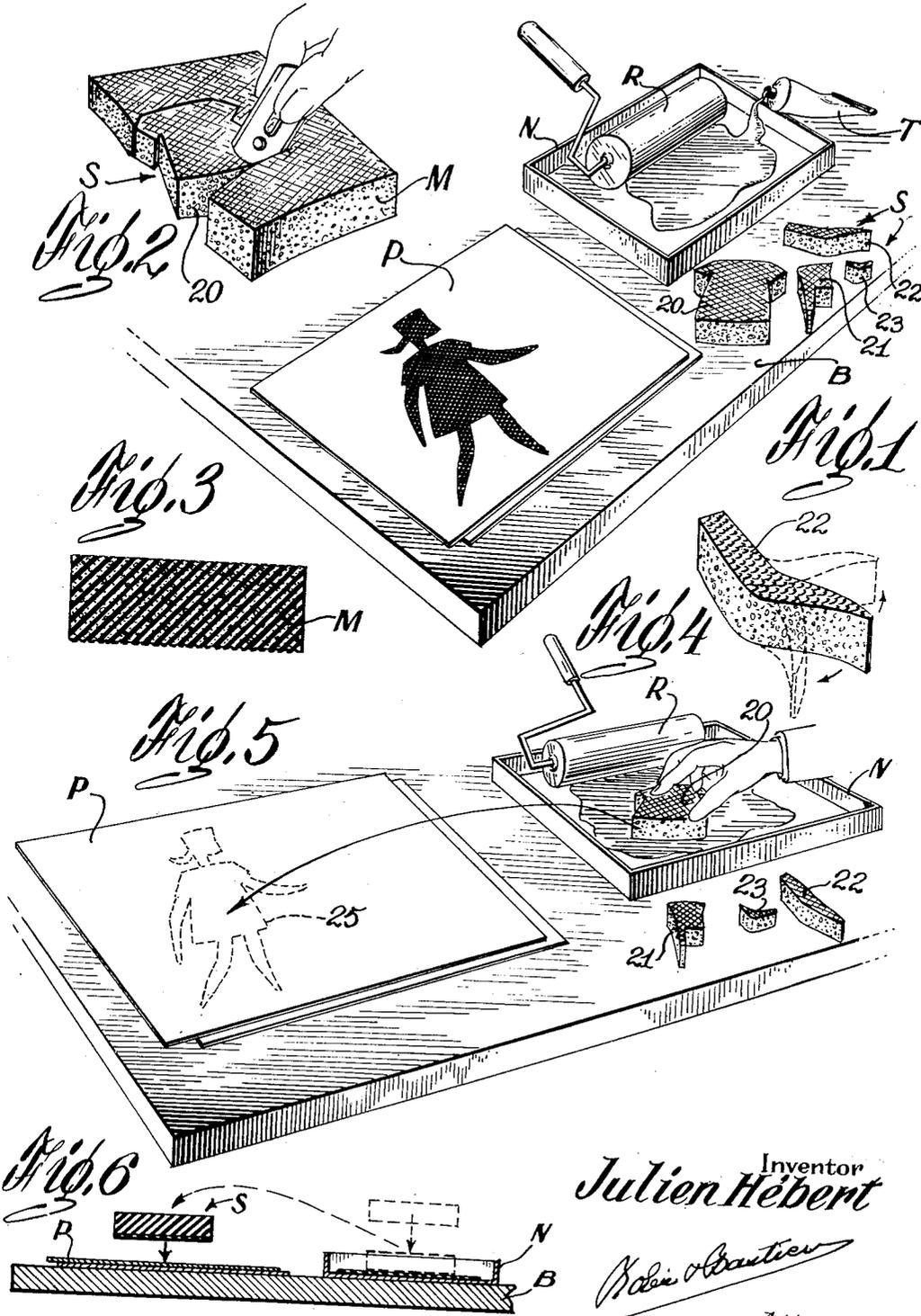
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2,684,012

GRAPHIC MATTER ANIMATING METHOD

Filed Dec. 21, 1951

3 Sheets-Sheet 1



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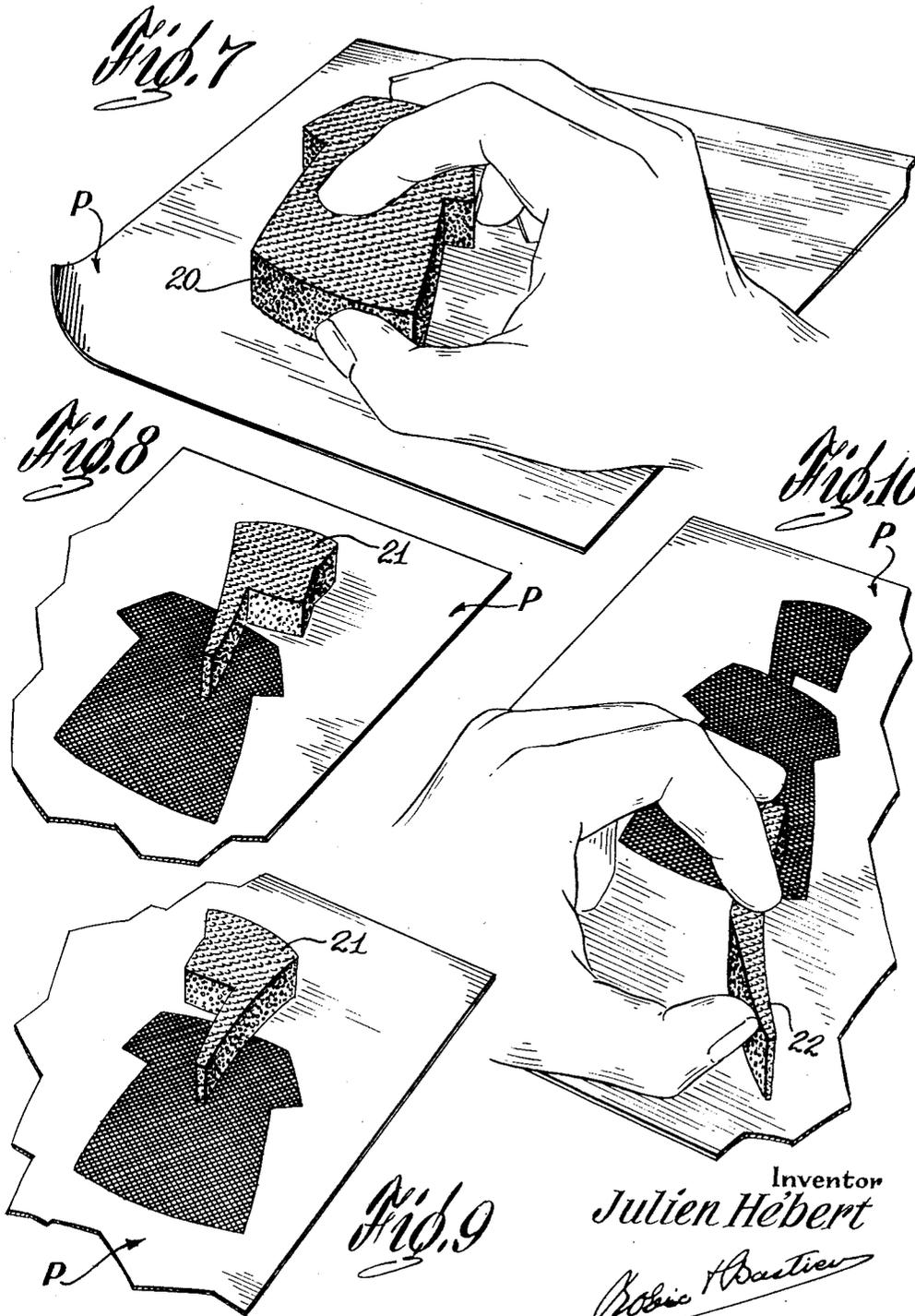
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3 Sheets-Sheet 2



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## GRAPHIC MATTER ANIMATING METHOD

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8 Claims. (Cl. 88—16)

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The present invention relates to motion pictures and, more particularly, to a method for preparing animated cartoons and the like by cinematography.

Animated cartoons are well known cinematographic productions consisting of drawings, so reproduced on a screen, that the illusion of movement and reality are indeed striking. This is accomplished, in a general manner, by photographing successive drawings in which the position and dimensions of a subject are gradually altered. Thus, by reproducing said drawings at a suitable rate, the impression of continuous movement is obtained through the well known "persistence of vision" of the human eye.

Inasmuch as each drawing of a series must be accurate as to size, or proportion, great care must be exerted in the preparation of each and every drawing, one of such being required for each successive phase of a given movement, irrespective of the amplitude of same. Because such movements are often of complex nature and, frequently, must be synchronized with sound and music, the "animator" must possess a wide experience and be an accomplished artist also.

Such an animated cartoon, obviously, requires thousands of separate drawings, even for a ten-minute "short," the expense thereof being much in excess of an equivalent film shot from nature. Naturally, the cost is a function of the tremendous amount of skilled man-hours expended for the preparation of an animated sketch.

The present invention has been conceived to obviate at least part of the disadvantages noted above in the making of animated cartoons and the like.

For that purpose, the invention is based on the premise of printing each image of the continuity, using to that end flexible and rigid stamps adapted to depict a desired subject on sheets of suitable size. The synchronization, as well as usual animating tricks are attended to and sequence photographing on a film is done according to the accepted practice.

The main object of the invention, therefore, resides in the provision of an improved method for the more efficient and rapid production of animated cartoons by cinematography.

An important object, also, is the provision of an improved method for cartoon and the like animation which is relatively simple and adapted to be performed serially by relatively unskilled operators.

A further object contemplates a method of the character described which is especially

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adaptable to the cinematographic animation of the so-called comic strips, graphs, maps and so on, said method being versatile and such as to reduce considerably the man-hours normally expended on animated cartoons and the like produced in the conventional manner.

Another object of the invention concerns an animating method which can be performed by means of inexpensive materials readily available and easily operable.

A still further object of the invention envisages a method whereby graphic subject matter may be animated in the most simple manner, for use and within the reach of small studios, amateur cinematographers, advertising agencies and others not normally provided with the facilities of large studios.

Other objects and advantages of the invention will become apparent, or be pointed out further, during the description to follow.

As an example of execution, and for purposes of illustration only, a possible embodiment of the invention is shown in the annexed drawings, wherein:

Figure 1 is a perspective view of the minimum material requirements for working the present method, said material being assembled on a board on which appears a printed figure forming part of an animated sequence;

Figure 2 shows in perspective view a possible manner of cutting and shaping the printing stamps of the method;

Figure 3 is a vertical sectional view through one such stamp;

Figure 4 is a perspective view of one stamp according to the invention and depicting the flexing of said stamp as per a characteristic of the method;

Figure 5 is a view similar to Figure 1 and illustrating the first step of the present method;

Figure 6 is a diagrammatic elevation and section view schematically the method step of Figure 5;

Figure 7 is a perspective view illustrating the manner of printing designs, or parts thereof, with the stamps shown in Figures 1 and 4;

Figure 8 is another perspective view illustrating a further step of the method;

Figure 9 is a view similar to Figure 8 but showing the reversal of the stamp for a different effect;

Figure 10 is another perspective showing the use of a different stamp for adding to the design printed according to Figures 7 and 8;

Figure 11 shows the completed figure;

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Figure 12 is another view illustrating the design of Figure 11 in a different position;

Figure 13 is a perspective view suggesting an operating procedure for sequentially photographing the separate images of an animated strip;

Figure 14 depicts the procedure for accenting the impression of rapid movement by sliding or shifting of the stamps laterally;

Figure 15 is yet another trick effect produced by under-printing designs selectively for suggesting fog, snow and other illusions; and

Figure 16 shows a design printed in various colours.

Referring to the drawings, wherein similar reference characters represent corresponding parts throughout, the letter S indicates, generally, a stamp according to the invention, said stamp preferably to be cut from the material M to be defined later on. The elements shown in Figure 1 are: the board B, the roller R, ink tube T, pasteboard sheets P and the stamps S.

As shown to advantage in Figure 2, the stamps S are cut directly from plates, bats or the like in sheet form, the material M thereof being preferably a resilient substance such as foam rubber, plastic or the like. The exact choice will depend upon the effect desired in the final picture; for instance, mottled effects can be obtained from spongy material, while solid silhouette effects are easily made with a smooth uniform texture in the material. The final selection, therefore, is a matter of the eventual results desired.

The material chosen, of course, must be flexible, elastic and such as to hold inks on its outer surfaces, the thickness being such as to permit sidewise grasping of the stamps made therefrom (see Figures 7 and 10). As stated previously, the surface texture can be varied to suit the requirements of the eventual animated subject. Countless materials will suggest themselves to the user, the determining factor of the final choice being the adaptability of the material to clean cuts by ordinary cutting tools.

From this material M are formed figures, patterns, numerals, designs and all kinds of graphic representations, such as illustrated in Figure 2. Thus are constituted stamps which are rubbed on an inked surface, such as the pan N of Figures 1 and 5, the ink picked up by the stamp to be transferred to the sheets P for constituting the design or character desired. Due to the flexibility of said stamps endless pictorial treatments are possible, such as compression or elongation of a figure, for purposeful distortion, the bending of portions thereof one way or the other, the printing or stamping of part only of the said figure, the blurring of the outlines, etc. etc.

The specific embodiment shown in the drawings will now be described. In this particular case the representation of a little girl is to be animated, the movement of the subject being that of walking in a general rightward direction.

The first step is that of cutting the body stamp 20 from sponge rubber (Figure 2), the head and limbs being cut after as stamps 21 and 22, respectively. Additional elements such as the hair 23 can be made also, thereby affording a greater range of movements during animation.

The stamps having been prepared, printing can be commenced, the general lay-out on the sheets P having been sketched roughly beforehand by the chief animator.

The materials being ready, and the general sequence of the little girl's position pre-deter-

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mined, in accordance with a synchronized sound track or not, the body is imprinted on the first sheet P by inking the lower face of the stamp 20, as shown in Figure 5, and pressing the inked stamp at the proper point of the sheet, as outlined at 25. The head is successively printed to point one way, or the other, by reversal of the stamp 21 (Figures 8 and 9). Follows the arms and legs by proper manipulation of the limbs stamps 22. The hair is finally added in, the end result being as shown in Figures 1 and 11.

The little girl is now represented in its initial starting position; successive modifications are obtained by shifting the printed areas of the head, arms and legs, this being obtained by bending, or otherwise displacing the corresponding stamps in successively printed sheets P, whereby to give the impression of continuous movement as the individual images are rapidly projected on a screen (see Figure 12).

After all the sheets, or cards, have been printed, they are placed in proper sequential order and individually photographed on a film; this is suggested in Figure 13 where the cards are stacked in a magazine 26 and allowed to fall, one at a time, into a properly positioned rack 29 for copying by the camera 27.

Certain pictorial effects can be obtained at will by proper manipulation of the stamps during the printing, or inking, stages: for instance, by dragging the stamp laterally, as shown in Figure 14, a blurred trace 30 may be obtained in addition to the darker and sharply-defined imprint 31, thereby suggesting perfectly an illusion of speed.

Again, by inking the stamps differentially, that is: distorting said stamp so as to pick ink on one side only of the stamps surfaces, indistinct edges may be obtained, thereby simulating certain conditions such as snow, smoke, mist, etc. Conversely, the same effect can be obtained by bending the stamps in their printing planes, while printing, so that portions only thereof are in contact with the card P, for partly transferring the surface ink onto said card.

Colored effects are also obviously possible by using differently hued inks for various parts of the printed design; this is shown graphically in Figure 16.

In the specific example described above a soft, spongy material M has been suggested for making the stamps but, obviously, a more rigid, smooth surfaced substance may be used in which case the stamp can be surface-tooled to form depressions therein so as to accentuate the outlines, for instance, or improve the detail definition of the printed character. With such stamps the printing procedure would be the same as hereinbefore described, except that the reproduction would carry more detail and be less of a silhouette nature.

For "animating" graphs, sales promotion curves, "travelogue" maps and the like, the above-noted tooled stamps (having certain designs in intaglio) are well adapted to carry slogans, or emphasize strongly one particular thought or subject.

For facilitating carrying out the present method, especially in the hands of unskilled operators, the sheets P may be of such nature as to be relatively transparent, whereby a previously-printed sheet may be used as the outline 25 for printing a successive blank sheet placed thereover. This is illustrated in Figures 11 and 12, wherein the design of Figure 11, on sheet marked

A, is used for printing sheet B placed thereover. By properly positioning, or shifting, the sheet B, the changes in the position of the design for a given effect can be clearly seen and the stamps manipulated accordingly.

This invention is obviously capable of being applied to an extremely wide range of subjects in a most rapid manner. Once the subject has been sketched, the lay-out decided upon, the sequential arrangement worked out and the stamps cut, the actual printing can be carried out without the service of an artist, the operator being able to reproduce many hundreds of identical images an hour. No drafting procedure can hope to reproduce images at this rate and with as much automatic regularity.

From the foregoing, it should be evident that the present invention is an advance in the art of cartoon animator and the like, said invention permitting the rapid, economical and accurate reproduction of animated subjects such as comic strips, graphs, maps and other graphic representations.

This invention is relatively simple and is based on the broad idea of reproducing the various elements of the subject or story by means of sectional stamps cut from sheet resilient material and inked for transferring an impression upon a suitable support. Due to the nature of the stamps, they may be deformed, or distorted, for changing the relative position of the subject from one phase to another of the sequential movement. Thus, individual sketching of separate figures for each of such phases is avoided.

It must be understood that various modifications of procedure and material structure can be resorted to without departing from the spirit of the invention, or the scope of the subjoined claims.

What I claim is:

1. A method of the character described for animating graphic matter comprising the steps of forming separate resilient stamps collectively representing said graphic matter, printing from said stamps a first representation of said matter on a sheet of material, printing successive images from said stamps on transparent sheets of material by placing said last mentioned sheets of material on said first mentioned sheet of material so as to use the first print as an outline for the successive prints, transposing and bending said stamps while printing said successive images, and photographing the successive images as a continuous strip.

2. A method of the character described for animating graphic matter, comprising the steps of forming resilient stamp components collectively representing said graphic matter, printing from said stamp components a representation of said matter, deforming at least one stamp component, printing another representation of said matter from said stamp components whereby the portion printed with the deformed stamp component shows an animation movement in a part of the graphic matter, and photograph-

ing the individual representations successively on a film for producing a visual animated continuity.

3. The method of animating cartoons and the like comprising the steps of forming resilient stamp components collectively representing a complete cartoon subject, printing a first complete representation of said cartoon subject by means of all said stamp components, bending at least one of said stamp components, printing a second complete representation whereby the portion printed with the bent component shows an animation movement in a part of the cartoon subject, and photographing the successive representations as a continuous strip.

4. The method of animating cartoons and the like consisting in cutting resilient parallel-faced stamp components in the shape of the constitutive elements of a cartoon subject, printing a first image from said stamp components, bending at least one of said stamp components, printing a second image from said stamp components whereby the portion printed with the bent stamp component shows an animation movement in a part of the cartoon subject, and photographing the successive images as a continuous strip.

5. In a method for the printing of images forming part of animated graphic matter by cinematography, the steps of printing a first sequential image of the graphic matter by means of inked deformable separate stamp components collectively forming a complete subject, printing successive images from all said stamps, transposing and bending at least one of said stamp components while printing said successive images whereby the portion printed with the bent stamp component shows an animation movement in a part of the subject, and photographing the individual successive printed images as a cinematographic continuity.

6. In a method as claimed in claim 5, the additional step of differentially inking said stamp components for obtaining selectively printed images suggesting snow, fog, smoke or mist.

7. In a method as claimed in claim 5, the additional step of inking said stamp components in different colors.

8. In a method as claimed in claim 5, the step of laterally sliding an inked stamp component in contact with a flat surface whereby to obtain printed images having blurred edges on one side.

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