

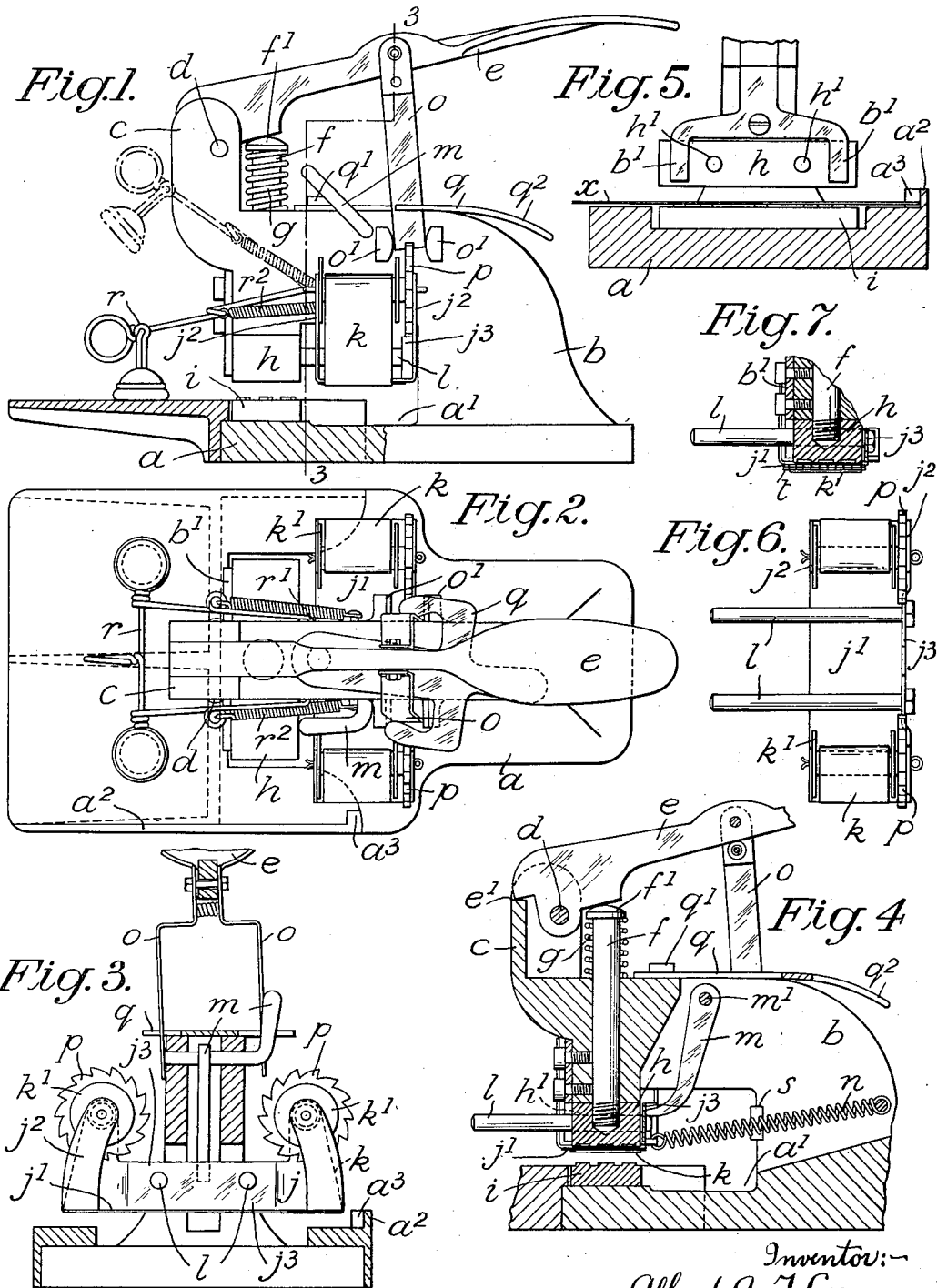
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EMBOSSING MACHINE

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EMBOSSING MACHINE

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This invention relates to embossing machines and more especially to means for coloring those portions which are in relief when materials such as paper, cardboard, parchment or the like have been subjected to an embossing operation.

The invention is particularly intended for the coloring of the portions in relief of letter-paper, home addresses on post-cards or photographs, impressions of corporation seals or the like.

The invention has for objects to provide an embossing machine with color-imparting means brought into operative position, when desired, by a hand-controlled device; to provide a hand-operated machine which is simple and inexpensive in construction and will enable the color to be varied; to provide a constantly and automatically changed surface in the color applied to the raised impressions. Other objects will hereinafter appear.

The invention is hereafter described with reference to the annexed drawing, in which:—

Fig. 1 is a side elevation of a hand-operated embossing machine provided with color-imparting means.

Fig. 2 is a plan view thereof.

Fig. 3 is a vertical section on line 3—3 of Fig. 1.

Fig. 4 is a section at right angles to that of Fig. 3.

Fig. 5 is a front elevation of part of Fig. 1.

Fig. 6 is a plan view.

Fig. 7 is a sectional elevation of a modification.

The embossing machine shown comprises a base plate *a* having an overhanging standard *b* the upper part of which extends in approximately a horizontal direction. In a bracket *c* mounted on the upper part of the standard is pivoted at *d* an operating hand-lever *e*, said lever adjacent to the pivot *d* bearing upon a plunger rod *f*. A coiled spring *g* bears against a collar or nut *f*¹ on the rod *f* and normally holds the lever *e* in its upper position. Lever *e* is prevented from rising too much by the provision of a stop *e*¹ in the bracket *c* in advance of pivot *d*. The rod *f* is guided in the standard *b* and secured to the female element *h* of the embossing die. This die-element bears against guide arms *b*¹ *b*¹ to ensure a vertical movement of the die-element *h*. Below the die-element *h* and sunk in the plate *a* is the male element *i* of the die. This male element may, however, be otherwise secured in position by cross members, for example.

These co-operating die-elements *h* *i* are removable, they are designed according to the lettering or wording required, and they are secured in their respective positions in any suitable manner. This known type of machine by depressing the lever *e* impresses the movable element *h* upon a sheet *x* of paper or other material introduced between the elements *h* *i*, leaving the impression of the die embossed upon the material *x* as

a result of the operative stroke of the lever *e*. Fig. 5 shows the position of the material *x* and the co-operating die-elements *h* *i* prior to the embossing operation.

In such an embossing machine and for carrying out the invention, I provide means for imparting color to those portions of the material *x* which are in relief as a result of the action of the die-elements *h* *i*. A thin sheet of impregnated medium *k* is brought from an operative position to the operative position by a hand-controlled device and thereafter actuated by a subsequent and similar stroke of the embossing mechanism. As shown, a frame *j* suitably carried by the die-element *h* so as to rise and fall therewith, is provided with a thin flexible backing plate or diaphragm *j*¹ and with upturned ends *j*². In the ends *j*² are journaled rollers and around these rollers is wound an ink ribbon *k* of any desired color. This ribbon is laid or stretched below the thin backing plate *j*¹. The frame *j* is adapted to be brought by a hand-controlled device from an inoperative position to a position in which the backing plate *j*¹ and ribbon *k* are immediately below the movable die-element *h*.

In the inoperative position (Fig. 1), the frame and ribbon move idly with the die-element *h* and the ends *j*² are clear of the movable die-element *h*, but in the operative position of the frame *j*, (Fig. 4), the die-element *h* when caused to descend by a stroke of the lever *e*, presses the color-ribbon *k* of the frame *j* upon the tops of the already embossed portions of the paper or other material *x*, so that the tops of such portions in relief and whilst such portions are still upon the male element *i* of the die, are tinted or colored. During this movement, the female element *h* is covered by the flexible plate *j*¹ and the incised or hollow portions in the element *h* are protected so that only the tops of the raised impressions are colored.

Suitable devices for allowing displacement of the frame and ribbon from the inoperative position to the operative position consist of parallel rods *l* *l* mounted on a rear wall *j*³ of the frame *j* and guided in holes *h*¹ *h*¹ in the die-element *h*. The frame *j* plate *j*¹ and ribbon *k* thus rise or fall with the movable die *h*, whether they are in the rearward position or in the operative position. A two-armed control lever *m* pivoted at *m*¹ upon the standard *b* acts at its inner end upon the said rear of the frame *j* and against the action of a recall-spring *n*, to push the frame *j*, plate *j*¹, rods *l* *l* and ribbon *k* forward when the movable die-element *h* is in the raised position. Whilst the plate *j*¹ and ribbon *k* are thus maintained in the operative position by pressure on the outer arm of cranked lever *m*, a stroke upon hand-lever *e* will depress the die-element *h* on to the backing plate *j*¹ and the latter will thereupon cause color from ribbon *k* to be transferred to the tops of

those portions of the paper or other material which are in relief as a result of the previous operation of embossing. When the hand-lever *e* and control lever *m* are released, the spring *g* raises lever *e* and the die-element *h*, and thereupon the spring *n* recalls the frame *j* with plate *j*¹ and ribbon *k* to the inoperative position. In the inoperative position, the frame *j*, plate *j*¹ and ribbon *k* can enter a shallow recess *a*¹ in the base plate *a* when the frame descends with the movable die *h*.

The rollers in the frame ends *j*² are removable so that a ribbon of any desired color e. g. red or green, can be employed. A ribbon of the kind used in a typewriting machine is suitable.

In order to feed the ribbon *k* from one roller to the other across the backing plate *j*¹, I have shown by way of example, pawl and ratchet devices operated by the downward stroke of the hand lever *e* during the embossing operation. The lever *e* is provided on each side of standard *b* with a dependent arm or striker *o* acting as a pawl. These arms *o o* swing from the lever *e* laterally so that either of them may be close to the standard or slightly removed therefrom. Each of these strikers *o o* is capable of engaging one of the ratchet wheels *p p* secured to the ribbon rollers *k*¹ *k*¹, so that by a downward stroke of an arm *o*, the corresponding ratchet wheel is rotated to the extent of one tooth.

Pivoted on the standard *b* at *q*¹ is a striking fork *q* with thumb piece *q*², and the arms *o o* are guided in their vertical movements by studs *o*¹ *o*¹ projecting laterally from the pillar *b*. The ratchet wheels *p p* are so positioned that only one can be engaged by an arm *o*, the striking fork *q* bringing one arm into position above the side of the ratchet and at the same time bringing the other arm *o* out of the position above the side of the other ratchet wheel. It is the downward stroke of lever *e* during the embossing operation, which causes one of the ratchet wheels to be turned to the extent of one tooth, thereby making the ribbon move slightly across the plate *j*¹. This causes a fresh portion of the ink ribbon to be impressed on the tops of the embossed letters or the like, when the frame *j* has been advanced and the second downward stroke of lever *e* takes place.

If desired, a thin sheet of rubber or other resilient or cushioning material *t* may be fitted to the plate *j*¹ as a layer or facing between the plate *j*¹ and the ribbon *k*. Such arrangement is shown in Fig. 7.

The rear of the frame *j* on the plate *j*¹ may be arranged to make contact with a rubber or similar stop *s* upon the standard *b* when the frame is recalled by the spring *n*.

I have also shown a spring-fitted pad device pivoted on the standard *b* and adapted to bear upon the paper, card or other material laid upon the base plate *a*. This pad device consists of a wire frame *r* pivoted at *r*¹ to the standard *b* and acted on by coiled springs *r*². Each spring bears upon an arm of the frame at an intermediate point in the length of the arm and below the level of pivot *r*¹. The sprig pad device can, therefore, be held automatically by means of the springs *r*² *r*² in an upper position or in a lower position, and in the latter case it bears on the paper or other material *x* to hold it stationary during the first (or embossing) stroke and the second (or coloring) stroke of the lever *e*.

It is to be noted that during the coloring of the tops of the embossed letters or portions of the material which are in relief as a result of the descent of the female die element upon the male

die element, the embossed portions remain on the male die element *i* and the plate *j*¹ covers and protects the female die element *h*.

The base plate *a* may have a guiding side wall *a*² and a stop bar *a*³ against which the edge of a paper sheet can be guided.

What I claim is:—

1. An embossing machine comprising male and female die elements, one of said elements being fixed and the other movable, means for actuating said movable element, and color-imparting means mounted on the machine and adapted to be brought to an operative position between said die elements, said color-imparting means being actuated by the means which actuates said movable die element.

2. A hand-operated embossing machine comprising co-operating male and female die elements, one fixed and the other movable, a hand-lever pivoted upon the machine and actuating said movable element, color-imparting means mounted on the machine and movable between the said die elements when said die elements are separated, said color-imparting means also adapted to be thereupon actuated by the said pivoted hand-lever.

3. A hand-operated embossing machine comprising co-operating male and female die elements, one fixed and the other movable, a hand-lever pivoted on the machine, said lever actuating said movable element by a first operation of said hand-lever, a frame mounted on the machine and carrying a medium impregnated with color, means for moving said frame and medium to an operative position in which said medium is between the said die elements, and means for moving said medium towards said fixed die element by a second similar operation of the said hand-lever.

4. A hand-operated embossing machine comprising co-operating male and female die elements, one fixed and the other movable, a hand-lever pivoted on the machine, said lever actuating said movable element by a first operation of said hand-lever, a frame mounted on the machine and carrying a medium impregnated with color, a flexible backing to said medium, said backing also carried by said frame, means for moving said frame and medium to an operative position in which said medium is between the said die elements and said backing extends across said female die element and means for moving said medium towards said fixed die element by a second similar operation of the said hand lever whilst said backing covers said female die element.

5. A hand-operated embossing machine comprising a fixed male die element, a movable female die element co-operating therewith, said die elements being arranged vertically with the movable die element above the fixed die element, means for depressing said female die element on said fixed male die element, and a frame carrying a color-impregnated ribbon and a flexible backing for said ribbon, said frame being mounted on the movable die element and vertically movable therewith, said frame being also displaceable from an inoperative position to an operative position to bring the said ribbon and backing immediately under said movable die element.

6. A hand-operated embossing machine comprising a fixed male die element, a movable female die element, means for depressing said female die element on to said male die element for the embossing operation, a color ribbon hav-

ing a flexible backing and carried by said movable die element so as to move up and down therewith, and means for bringing said ribbon and backing into position between said die elements with said backing immediately across said movable die element.

7. A hand-operated embossing machine comprising a fixed male die element, a movable female die element, means for depressing said female die element on to said male die element for the embossing operation, a color ribbon having a flexible backing and carried by said movable die element, said backing and ribbon although movable with said female die element being displaceable with relation thereto, and means for controlling by hand the position of said backing and ribbon.

8. A hand-operated embossing machine including co-operating and vertically disposed male and female die elements, the male element being fixed and the female element being movable, means for depressing said female die element for the embossing operation, a carrier for a color ribbon and a backing for said ribbon, said carrier mounted on the female die element so that it moves up and down with the vertical movements of said female die element, and means for displacing said carrier from an inoperative position to a position in which said ribbon and backing are below the female die element with the ribbon immediately above the male die element.

9. A hand-operated embossing machine having co-operating and vertically disposed male and female die elements, the male element being fixed and the female element being movable, a hand-lever for depressing said female die element for the embossing operation to cause the material treated to remain on said male element, a carrier for a color ribbon and a backing for said ribbon, parallel rods mounted on the carrier and guided in holes in said female element, and a hand-operated control lever for sliding said rods through said female die element to bring said ribbon and backing from an inoperative position to a position immediately below said female die element.

10. A hand-operated machine for embossing materials comprising a fixed male die element, a movable female die element, means for depressing said female die element on to said male die element for the embossing operation, a color ribbon having a flexible backing and carried by said movable die element so as to move up and down with said female die element, and a control lever for bringing said ribbon and backing into operative position between said die elements, so that on a depression of said female die element, the said ribbon will be applied to the previously embossed material.

11. A machine for embossing materials and comprising a fixed male die element, a movable female die element, with hand-operated means for actuating said female die element to perform the embossing operation on the material, a carrier mounted on said female die element and having a color ribbon and a backing thereto, said color ribbon and backing being connected with said female die element so as at all times to move therewith, and means for displacing said carrier from an inoperative position alongside the female die element so as to interpose said color ribbon and backing in an operative position between said movable and fixed die elements.

12. A device for coloring the tops of material in relief embossed by co-operating male and female die elements, comprising a carrier for a color-impregnated ribbon, a backing for said ribbon, and means for interposing said ribbon and backing between the said male and female die elements with said ribbon facing the male die element.

13. A hand-operated machine for coloring the tops of material in relief embossed by co-operating male and female die elements, comprising a carrier for a color-impregnated ribbon, a backing for said ribbon and means for interposing said ribbon and backing between the said male and female die elements, said carrier provided with rollers for the ribbon and means for automatically advancing one of said rollers, said ribbon-advancing means being actuated by the operation of the embossing dies.

14. A hand-operated machine for coloring the tops of material in relief embossed by co-operating male and female die elements, comprising a carrier for a color-impregnated ribbon, a backing for said ribbon and means for interposing said ribbon and backing between the said male and female die elements, said flexible backing being provided upon its face adjacent to the ribbon with a thin layer of resilient material.

15. A hand-operated machine for coloring the tops of material in relief embossed by co-operating male and female die elements, comprising a carrier for a color-impregnated ribbon, a backing for said ribbon and means for interposing said ribbon and backing between the said male and female die elements, and a spring-fitted pad device consisting of a frame pivoted to the machine and acted on by coiled springs, each spring bearing on an arm of said frame at an intermediate point in the length of said arm and below the level of the said pivot.

16. In a hand-operated machine for embossing material in relief and including co-operating male and female die elements one of which is movable towards the other for the embossing of the material by means of a pivoted hand lever, the combination with said movable die element of a color-imparting device carried by said movable die element, and of a control member for interposing said color-imparting device in the path of said movable die element so that when in such interposed position the color can be applied to the portions of the material in relief by means of a second operation of said pivoted hand-lever.

17. A device for coloring the tops of material in relief formed by an embossing machine having co-operating die-elements, comprising a carrier, a color-impregnated ribbon and a backing therefor, said ribbon and backing mounted on said carrier, means for interposing said ribbon and backing in a position between said die-elements and means for automatically retracting said ribbon and backing from said position.

18. A device for coloring the tops of material in relief formed by co-operating male and female die-elements, and comprising a carrier, a color-ribbon arranged on said carrier, hand-operated means for moving said carrier to bring said ribbon across said male die and means also arranged on the said carrier for simultaneously covering and protecting the incised portions of said female die-element.

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