

May 5, 1959

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2,884,853

DIFFERING STENCILS FORMING DEVICE

Filed April 10, 1956

2 Sheets-Sheet 1

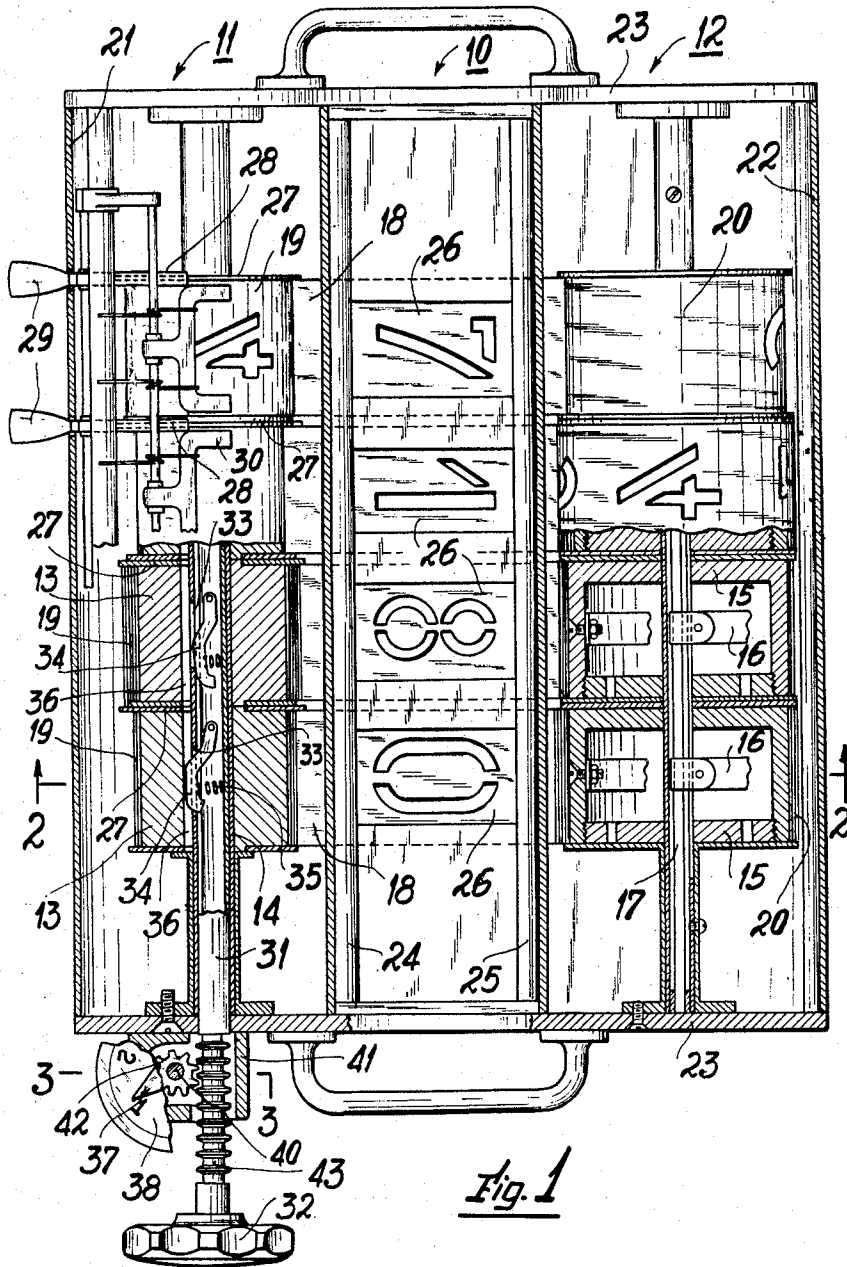


Fig. 1

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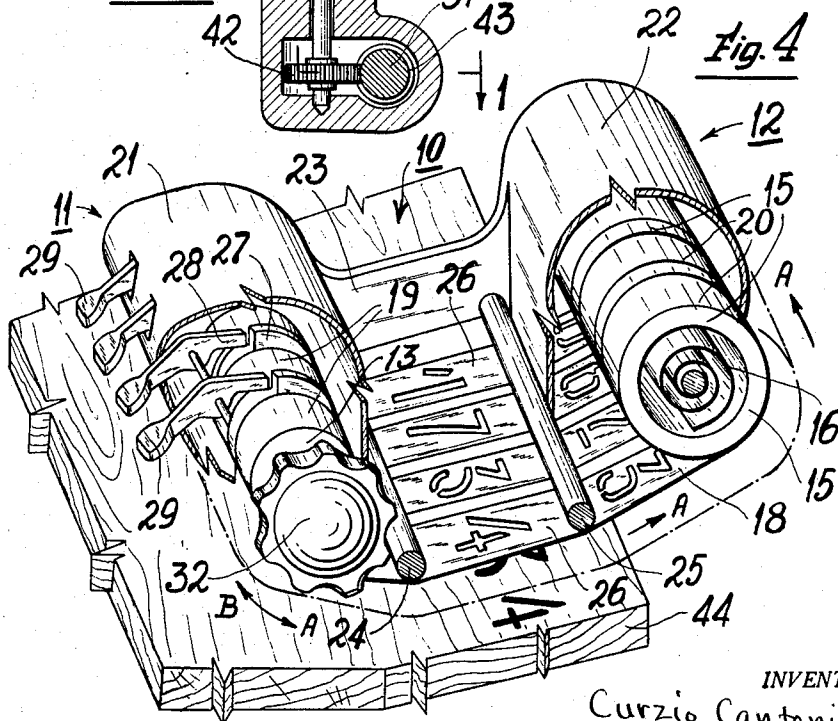
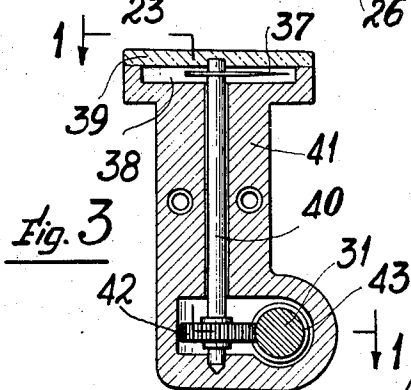
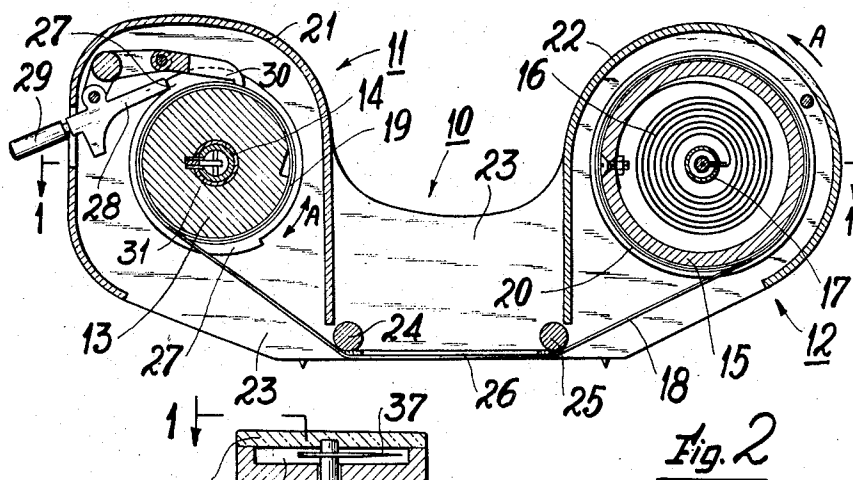
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2 Sheets-Sheet 2



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DIFFERING STENCILS FORMING DEVICE

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Application April 10, 1956, Serial No. 577,337

Claims priority, application Italy April 12, 1955

13 Claims. (Cl. 101—112)

This invention relates to a variable or differing stencils forming device and, more particularly, it is concerned with a new and highly advantageous device designed for actuating a plurality of differing stencils of the type mainly but not exclusively intended for marking shipments, boxes, crates and like casing means.

The gist of this invention and the outstanding advantages thereof will be best understood upon a brief consideration of what belongs to prior art and it is known to those skilled in the art to which this invention appertains, as follows: it is known that a large plurality of goods and/or of containers for goods are readably marked either with addresses and/or with other markings pertinent to the goods, say with letters, abbreviations, figures and so on. Progressive or differing variable numbering is often required on crates, boxes, bags and other casing or shipment means. Proper and uniform patterns, spacings and size of the markings is most desirable for good, prompt and sure readableness of same.

In view of the above requirements, such markings are in general performed by making use of stencils, i.e. of plate or sheet means provided with proper cuts, neatly made through the sheet material of said means; said stencils are juxtaposed on the casing surface to be marked and a proper paint or special marking ink is applied to the outer face of the stencil and over the cutouts therein to thus apply paint or the ink to the surface, where it is uncovered by said cuts. Of course, differing stencils are required for differing markings and said differing stencils may be made by properly cutting sheet materials or by joining together in proper combination and arrangement a plurality of single letter or figure forming stencils.

In the case that the shipping organization or those who are interested in performing the marks are compelled to perform a large plurality of markings, a correspondingly large plurality of stencils must be at disposal, if the use of adjustable stencils, say of stencils formed by joining together a plurality of single stencils as above, is not desired. The latter use is however objectionable in consideration of the noticeable cost of such mode of stencilling which requires each time the arrangement and/or mounting of the individual stencils in proper sequence.

A particular case of making use of stencils is subject to the most serious objections when the currently produced and adopted stencils are used. The case considered occurs when a progressive numbering of goods or of the containers thereof is required. In many practical applications three, four, five and even more figures must be combined for progressive numbering of crates and other casing means and such marking requires great care in progressive numbering of shipments, for the necessary progressive substitution of each stencil during the marking operation.

In the above considerations, the marking of crates, boxes and like shipments only has been considered, but

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it will be understood that any other actual application of stencils for marking purposes is to be considered as of interest in the field of the instant invention.

The principal object of this invention is therefore to provide a device designed to be used as an actual stencil means, adapted to be juxtaposed on the surface which is supposed to have the marking painted on and to have said marking performed by applying the paint or ink by making use of a proper brush means, by spraying the paint, or by applying the paint in any manner as known in the art, the device according to the invention being provided with an actual stencil forming operator-controlled means movably supported in and by a frame and having a plurality of differing patterns forming cuts therethrough, so that the said operator may move the said stencil forming means in a plurality of differing positions in the frame in each one of which one of said patterns is set in one operative position.

Owing to said feature, the device produced according to this invention may be set in condition for marking any one desired marking pattern comprised in the said plurality of differing patterns forming cuts.

In particular, the principal object of the invention is attained by the provision of stencil forming pliable strip means of sheet material, i.e. of thin steel sheet or of other suitable material, having a plurality of differing patterns forming cuts spacedly arranged in the length thereof, and of a frame having a central portion wherein the strip means is guided in a plane and in a position adapted for juxtaposition thereof on the surface to be marked and uncovered at both its faces for application of the paint or of the ink, and having two lateral portions wherein two parallel rollers are rotatively supported and adapted for having the strip means wound and unwound thereabout, operator-controlled means being provided to rotate the rollers and to move thereby the strip means lengthwise into the central portion.

Another important object of this invention is to provide, in a device as above, a plurality of adjacent and co-planar strip means independently arranged as above in said frame, each provided with a plurality of patterns forming cuts and co-operating with operator-controlled means, for thereby making the device capable of actual formation of any desired stencil means as resulting from any possible combination of any one of patterns forming cuts comprised in any one of said independently movable strip means.

A further object of this invention is to provide, in a device provided with a plurality of strip means as above, and particularly intended for numbering shipments and other objects, strips means having a plurality of patterns forming cuts shaped to represent the figures "0" to "9," respectively, and evenly spaced along the length of any strip means, for thereby making the device adapted for stencilling any desired number comprising as many figures as strip means are comprised in the device.

A still further object of this invention is to provide, in a device having differing patterns forming strip means co-operating with roller means as above said, spring means connected to rotate in one direction one of roller means so that the said strip means tends to be wound thereabout, operator-controlled means adapted to move the strip means in the direction at which the strip means unwinds from said one roller means and to thereby load the spring means, and operator controlled stop means connected to the other of said roller means for preventing the rotation thereof and adapted to release the latter and thereby allowing the strip means to move under the action of said spring means.

In a preferred form of embodiment of this invention, the operator-controlled stop means is constructed and connected to said other roller means as a conventional

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escapement of clockworks, and it is provided with control means adapted for having said other roller means rotatably released, at any action exerted on the said control means, but for an amplitude corresponding to a linear motion of said strip means equal to one spacing between any adjacent two patterns forming cuts, so that upon one action exerted on said control means the cut actually set in the central portion of the device will be substituted by the successively adjacent cut. Such provision makes the device particularly adapted for progressive increasing of the number to be marked by making use of a figure-marking device as above.

A still other object of the invention is to provide, in a device having a plurality of strip means as above, one operator-controlled handle means and operator-controlled connecting means adapted to alternately connect each one of said strip means to said one handle means, for moving said strip means, as required.

The novel features which are considered as characteristics for the instant invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and as the mode of operation thereof, will be best understood from the following detailed description of a preferred form of embodiment thereof as embodied in a four-figures numbers stencil forming device for the purposes above described, and when read in connection with the accompanying drawings, forming an essential component of this disclosure, and wherein:

Figure 1 is partly a plan view of the device, and partly an horizontal sectional view thereof, taken in the planes defined by lines 1—1 of Figs. 2 and 3, and seen in the direction of the arrows;

Figure 2 is a cross-sectional view of same device, taken along the line 2—2 of Fig. 1;

Figure 3 is a cross-sectional view of an ancillary feature comprised in the device of Fig. 1, and taken along line 3—3 of same Fig. 1; and

Figure 4 is a perspective view illustrating in a somewhat simplified construction the device of Figs. 1 and 2, but its ancillary device of Fig. 3, for better understanding of the mode of operation thereof; in said Fig. 4 the various casing or covering means of the device are partly broken away for making apparent the various elements arranged therein.

In the drawings, like reference numerals refer to like or operatively equivalent elements and members. Further, in the several figures of the accompanying drawings the merely structural details and certain elements and features which, but as in their combination with other elements and features of the invention, are known in the art, are omitted, for avoiding undue complexity in the drawings, said omitted elements and features, to which reference will be hereinafter made as this description proceeds, being easily conceivable by those skilled in the art.

Referring now to the drawings in general, the device constructed according to this invention consists of an easily hand-carried and operated unit, adapted to be handled, brought and juxtaposed on and against the various surfaces of crates, boxes and in general of objects to be marked. Such unit comprises a structure having three main portions, say a central portion indicated in general by reference numeral 10 and two lateral spaced and parallel portions 11 and 12, respectively.

The central portion 10 is hollow and flat, and it is adapted for juxtaposition thereof on the surface to be marked; the bottom wall of said central portion is formed with openings over which the stencil forming strip means, described below extend.

In the form of embodiment shown, the lateral portion 11 of the device comprises four rollers 13 arranged co-axially, side-by-side and rotatably supported about a tubular shaft 14, which in turn is rotatably supported between two parallel side wall members 23, forming part

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of the device's frame. In the other lateral portion 12 of the device other four rollers 15 are likewise arranged co-axially, side-by-side and rotatably supported about another shaft 17, parallel to said tubular shaft 14 and fixedly connected to and supported between the same parallel members 23.

Each of the rollers 15 is rotatively connected to the shaft 17 by a clockwork spring 16, connected and wound for rotating its related roller 15 in direction A. Each of the rollers 13 co-operates with one roller 15 for winding one strip means 18, the end portions 19 and 20 of which are connected to and wound about the roller 13 and respectively the roller 15. Said strip means 18 tends therefore to move also in direction A, upon the action of the spring 16 related to the roller 15 about which same strip means may be wound.

Said rollers 13 and 15 are enclosed and protected by cover members 21 and 22, respectively, forming part of the device structure and constituting the outer walls of the portions 11 and 12 of the device, respectively. Said members 21 and 22 may be made totally or partly removable from the side walls forming members 23 for assembly of the device, or for repairing purposes.

The portion of any strip means 18, comprised between its end portions 19 and 20 actually wound about the rollers 13 and 15, respectively, is urged by suitable guide means, i.e. by guide rollers 24 and 25, to lie and run flat on the bottom of said central portion 10 of the device. The portion at which any strip means 18 crosses said central portion 10 is indicated by reference numeral 26. The four portions 26 of the strip means are coplanar and uncovered in the device at both their upper and lower faces, at least for the prevailing part of their width and length. The structural bottom wall of said portion 10 of the device may be formed by a plate member, provided with openings arranged to uncover said portions 26 of the strip members 18, but at their longitudinal edge portions.

Any one of said strip means 18 is constructed of pliable and wear resisting sheet material, and preferably of thin sheet steel. In the length of any one of said strip means 18 a plurality of evenly spaced cuts is provided, the cuts being shaped for representing the numbers from "0" to "9" inclusive, any cut pattern being sized to be comprised in the uncovered portion 26 of the strip, and the described elements being arranged so that only one cut pattern of any strip means may be set at a time to form the portion 26.

From the above and consideration of the accompanying drawings it will be readily understood that, upon proper rotation of said rollers 13 and 15, the various strip means may be moved as to form in the portion 10 of the device any desired numeral stencil readable as a number from "0" to "9999" inclusive. For example, in Fig. 1 the device of the invention appears to be set for forming the stencil of the number "7180," while in Fig. 4 the same device is set for marking the number "1734"; preferably the pattern cuts in any strip means 18 are arranged to represent progressively increasing figures in its portion 26 as the said strip member is moved in direction A upon the action of spring 16 connected to the roller 15 related thereto.

Any one of said rollers 13 is prevented to rotate in direction A, under the tension of the strip means 18 related thereto and owing to the spring 16 connected to the roller 15 co-operating therewith, by an operator-controlled releasable stop means operating as an escapement of a conventional clockwork. Said stop means consists in a ratchet wheel 27 connected to the roller 13, each tooth of which may abut on a member 28 pivotally supported by the frame of the device and connected to a control means, i.e. to a push-button 29 arranged outside the covering 21 of said portion 11 of the device. The teeth of wheel 27 are spaced about the latter so that, as said member 28 is moved free from the tooth it engages, the roller 13 may rotate in direction A until the same member 28 abuts on

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the successive tooth, the amplitude of such rotation corresponding to a linear movement of the related strip means adapted to bring in the portion 26 the pattern cut which follows the pattern cut previously set in said portion 26. At any pressure exerted on said button 29, therefore, the number formed in the stencil forming portion 10 of the device is consequently increased by one unit, until the figure "9" appears on the portion 26. After this occurs, the strip means might be brought back to its initial position by winding back the strip means about its related roller 13.

The winding back of any one of said strip means 18 about their related rollers 13 is performed, in the form of embodiment shown, by operating one handle means 32. The tight winding of the strip means is assured by a pressure fork-like member 30 resiliently urged against the outer surface of the wound portion 19 of any single strip means. Conventionally constructed and arranged spring means are used for urging the members 30 against the portion 19 and for bringing back and keeping the members 28 in their abutting relationship with the teeth of ratchet wheel 27.

The handle means 32, which may be constructed in the shape of a turning knob, as shown, is fixedly connected to one end portion of an inner shaft 31, slidably and rotatably traversing one of said side wall forming members 23 axially movable inside the tubular shaft 14. The latter shaft 14 is provided with a plurality of elongated openings 33 spacedly arranged in the length of said shaft 14 and evenly positioned with respect to the several rollers 13. Said rollers 13 are provided with longitudinal grooves 36 directed toward the shaft 14 and adapted to face said openings 33.

Inside and along the inner shaft 31 four lever members 34 are pivotally supported at one end thereof and urged by springs 35 towards and inside the elongated openings 33. Said lever members 34 are evenly spaced lengthwise the said shaft, and the spacings between said lever members are slightly shorter than the spacings between the elongated openings 33, so that as the free end of one of said levers 34 faces one of said openings 33 it is pushed by the spring into one groove 36 (thereby rotatively connecting said shaft 31 and i.e. said handle means 32 to the one roller 13 provided with said one groove) and so that any other lever member 34 is not in facing relationship with any other opening 33. The shaft 31 and the knob 32 may therefore be rotatively connected with but one of said rollers 13. By imparting a small axial motion to the shaft 31 (by acting on the knob 32), of an amplitude corresponding to the difference between said spacings, another of said lever members 34 may be set in facing relationship with another opening 33, thereby rotatively connecting another roller 13 to said shaft 31, while said one lever member 34 actually traversing said one opening 33 is urged to come thereout.

Upon the provision of said feature, any one of said rollers 13 might therefore be independently connected to said knob 32, for the purpose of bringing back the related strip means 18 in direction B (Fig. 4), opposite to direction A, loading the spring 16 operatively related thereto.

In the embodiment shown in the accompanying drawings the device produced according to the invention is further provided with an ancillary device designed for making readily apparent which of the rollers 13 is actually rotatively connected to the handle means formed by said knob 32. Such ancillary device may be obviously substituted by other equivalent means.

In the embodiment shown, said ancillary device consists of a rotatable hand 37 (Figs. 1 and 3) turnable on a face 38, provided with marks designed for reference to the various rollers 13 and strip means 18, and protected by a transparent disk member 39 (Fig. 3). Said hand 37 is connected to and driven by a shaft 40, rotatably supported in a body 41 of the said ancillary device,

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and which is further connected to a pinion 42 in mesh with a rack forming portion 43 of said shaft 31. Said rack is formed by a plurality of teeth forming annular grooves evenly spaced along said portion 43, thereby actuating a meshing relationship between said pinion 42 and said portion 43 notwithstanding the rotation of said handle member 32, and making the position of said hand 37 depending on the axial position of said knob only. Said ancillary device has therefore the function to indicate the strip means to be moved by acting on the knob 32.

Obviously, in the case that it is desired to have at disposal a device capable of actuating larger stencils, say five, six or even more figures numbers, the device produced according to the invention may be provided with a corresponding number of strip means co-operating with a corresponding number of pairs of rollers 13 and 15. Further, one, or more, or every strip means may be provided with patterns cut to represent letters and/or other signs. Wider strip means may be easily provided for stencilling abbreviations or other signs the marking of which might be desired, according to the gist of the invention.

From the above and by a consideration of the accompanying drawings, and in particular of Fig. 4 thereof, the mode of making use of a device produced according to the invention will be readily apparent to those skilled in the art. Supposing that a certain number of crates or other shipment means are to be progressively numbered by painting readable numeral markings thereon, for example, from "1734" up, the device will first be set as to form such number in its central portion 10. Said setting will be performed by rotating the knob 32 upon axial setting thereof in the various axial positions where-in the same will be made connected with the several rollers 13, the one after the other.

Upon said setting of the device, the same will be applied against the surface to be marked (which is represented in Fig. 4 as a lumber 44, for example, which may be considered as a portion of a crate's cover) and then, by making use of conventional means, say a brush, the paint or the ink is applied inside the portion 10 of the device, on the outer face of its bottom wall partially formed by said portions 26 of the several strip means 18. The required numeral marking will be therefore painted on the surface of said lumber 44.

The successive crate, to be marked "1735," will be marked by the same device, upon exertion of one pressure on the button 29 located at the right side of the device, so that the escapement means described will allow the first strip means (from the right side) to move in direction A, under the action of the related spring 16, and thereby substituting in portion 26 the cut having the shape of a "4" with the successive pattern cut, which has the shape of a "5," and so on. Upon marking of numeral "1739," a pressure applied to the second button 29 will modify the second last figure of the number from "3" to "4" and, by handling the knob 32, the first strip means 18 (from right side) will be brought back in direction B until the pattern cut "0" will appear in portion 26.

From the above it will be readily understood that I have constructed a very useful device which corresponds, from the standpoint of the use thereof, to a very large set of conventional stencils, because the described device may actuate for operation any one of the stencils to form any possible combination of patterns cut in the strip means with which the device is provided.

It will be further apparent that the new device of the invention may be advantageously constructed as to make the variation of the combined stencil actually formed in the portion 10 thereof in an expedient manner and according to a predetermined progression, in particular for numbering purposes.

While the invention has been hereinbefore described

and shown but in one form of embodiment thereof, it is intended to be not limited to the details shown, and it will be understood that each of the new elements described above, or two or more together, may also find useful application in stencil actuating devices for marking purposes differing from the one described.

Without further analysis, the foregoing will so fully reveal the gist and aim of this invention that others can, by applying current knowledge, readily adapt it for various application without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the spirit and range of equivalents of the invention as defined in and by the appended claims.

Having thus described the invention and the principal advantages thereof, what I claim as new and desire to have protected by Letters Patent is:

1. In a stencilling apparatus, in combination, a frame formed with an opening; at least one pair of rollers mounted on said frame spaced from each other and respectively on opposite sides of said opening for turning movement about substantially parallel axes; a stencil strip having a longitudinal row of stencil openings therein equally spaced from each other, said stencil strip extending between said rollers over said opening of said frame so that one of said stencil openings is in register with said opening in said frame, one end portion of said strip being wound about one of said rollers and the other end thereof being fastened to the other of said rollers; drive means operatively connected to said other of said rollers for turning the same about its axis so that by turning of said other roller said strip is moved in one direction; and releasable locking means operatively connected to said rollers, said releasable locking means being movable between a locking position in which said locking means prevents turning of said rollers and a releasing position in which said locking means releases said rollers for turning movement about their axes through a given arc so that a point on the periphery of said rollers moves through a distance equal to the spacing between successive stencil openings in said strip, whereby by alternately moving said releasable locking means between said locking and releasing positions thereof said strip will be moved stepwise by said driving means over said opening in said frame and successive stencil openings in said strip will be successively brought into register with said opening in said frame.

2. In a stencilling apparatus, in combination, a frame formed with an opening; at least one pair of rollers mounted on said frame spaced from each other and respectively on opposite sides of said opening for turning movement about substantially parallel axes; a stencil strip having a longitudinal row of stencil openings therein equally spaced from each other, said stencil strip extending between said rollers over said opening of said frame so that one of said stencil openings is in register with said opening in said frame, one end portion of said strip being wound about one of said rollers and the other end thereof being fastened to the other of said rollers; drive means operatively connected to said other of said rollers for turning the same about its axis so that by turning of said other roller said strip is moved in one direction; and releasable locking means operatively connected to said one roller, said releasable locking means being movable between a locking position in which said locking means prevents turning of said one roller and a releasing position in which said locking means releases said one roller for turning movement about its axis through a given arc so that a point on the periphery of said one roller moves through a distance equal to the spacing between successive stencil openings in said strip, whereby by alternately moving said releasable locking means between said locking and releasing positions thereof said strip will be

moved stepwise by said driving means over said opening in said frame and successive stencil openings in said strip will be successively brought into register with said opening in said frame.

3. In a stencilling apparatus, in combination, a frame formed with an opening; at least one pair of rollers mounted on said frame spaced from each other and respectively on opposite sides of said opening for turning movement about substantially parallel axes; a stencil strip having a longitudinal row of stencil openings therein equally spaced from each other, said stencil strip extending between said rollers over said opening of said frame so that one of said stencil openings is in register with said opening in said frame, one end portion of said strip being wound about one of said rollers and the other end thereof being fastened to the other of said rollers; spring means operatively connected to said other of said rollers and tending to turn the same about its axis so that by turning of said other roller said strip is moved in one direction; and releasable locking means operatively connected to said one roller, said releasable locking means being movable between a locking position in which said locking means prevents turning of said one roller and a releasing position in which said locking means releases said one roller for turning movement about its axis through a given arc so that a point on the periphery of said one roller moves through a distance equal to the spacing between successive stencil openings in said strip, whereby by alternately moving said releasable locking means between said locking and releasing positions thereof said strip will be moved stepwise to said spring means over said opening in said frame and successive stencil openings in said strip will be successively brought into register with said opening in said frame.

4. In a stencilling apparatus, in combination, a frame formed with an opening; at least one pair of rollers mounted on said frame spaced from each other and respectively on opposite sides of said opening for turning movement about substantially parallel axes; a stencil strip having a longitudinal row of stencil openings therein equally spaced from each other, said stencil strip extending between said rollers over said opening of said frame so that one of said stencil openings is in register with said opening in said frame, one end portion of said strip being wound about one of said rollers and the other end thereof being fastened to the other of said rollers; spring means operatively connected to said other of said rollers and tending to turn the same about its axis so that by turning of said other roller said strip is moved in one direction; and releasable locking means including a ratchet wheel fixed to said one roller coaxially therewith and having ratchet teeth equally spaced from each other a peripheral distance corresponding to the spacing between successive stencil openings in said strip, and a locking pawl movable between a locking position in which said locking pawl engages one of said teeth and prevents turning of said one roller and a releasing position in which said locking pawl releases said one roller for turning movement about its axis, whereby by alternately moving said locking pawl between said locking and releasing positions thereof said strip will be moved stepwise by said spring means over said opening in said frame and successive stencil openings in said strip will be successively brought into register with said opening in said frame.

5. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction nor-

mal to said axes with said rollers of said second set of rollers; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; turning means for turning the rollers of one set of rollers; and coupling means for selectively coupling each roller of said one set of rollers to said turning means, whereby the stencil openings in said strips may be brought selectively in register with said openings.

6. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; manually operable turning means for turning the rollers of one set of rollers; and coupling means for selectively coupling each roller of said one set of rollers to said turning means, whereby the stencil openings in said strips may be brought selectively in register with said openings.

7. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers arranged coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers arranged coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a hollow shaft mounted on opposite ends thereof on said frame and supporting said first set of rollers for turning movement about said first axis; a second shaft substantially parallel to and spaced from said first shaft and mounted at opposite ends thereof on said frame, said second shaft supporting said second set of rollers for turning movement about said second axis; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; manually operable turning means including a rod located in said hollow shaft and movable in longitudinal directions thereof for turning the rollers of one set of rollers; and coupling means operatively connected to said rod for selectively coupling each roller of said one set of rollers to said turning means by moving said rod in longitudinal direction thereof, whereby the stencil openings in said

strips may be brought selectively in register with said openings.

8. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers arranged coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers arranged coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a hollow shaft mounted on opposite ends thereof on said frame and supporting said first set of rollers for turning movement about said first axis; a second shaft substantially parallel to and spaced from said first shaft and mounted at opposite ends thereof on said frame, said second shaft supporting said second set of rollers for turning movement about said second axis; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; manually operable turning means including a rod located in said hollow shaft and movable in longitudinal directions thereof and projecting with one end thereof beyond said hollow shaft outwardly of said frame, and a turning knob fixed to said one end of said rod for turning the rollers of one set of rollers; and coupling means operatively connected to said rod for selectively coupling each roller of said one set of rollers to said turning means by moving said rod in longitudinal direction thereof, whereby the stencil openings in said strips may be brought selectively in register with said openings.

9. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers arranged coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers arranged coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a hollow shaft mounted on opposite ends thereof on said frame and supporting said first set of rollers for turning movement about said first axis; a second shaft substantially parallel to and spaced from said first shaft and mounted at opposite ends thereof on said frame, said second shaft supporting said second set of rollers for turning movement about said second axis; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; manually operable turning means including a rod located in said hollow shaft and movable in longitudinal directions thereof and projecting with one end thereof beyond said hollow shaft outwardly of said frame, and a turning knob fixed to said one end of said rod for turning the rollers of one set of rollers; and coupling means including a plurality of latch means operatively connected to said rod for selectively coupling each roller of said one set of rollers to said turning means by moving said rod in longitudinal direction thereof,

each of said latch means being coordinated with one of said rollers of said first set of rollers and being movable between a coupling position in which said one latch means engages the roller coordinated thereto and an uncoupling position in which said one latch means is disengaged from said roller coordinated thereto, and means for selectively moving each of said latch means between said coupling and uncoupling positions thereof, whereby the stencil openings in said strips may be brought selectively in register with said openings.

10. In a stencilling apparatus, in combination, a frame formed with an opening, a first set of rollers arranged coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers arranged coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a hollow shaft mounted on opposite ends thereof on said frame and supporting said first set of rollers for turning movement about said first axis, said hollow shaft being formed with a plurality of elongated slots therethrough spaced from each other in longitudinal direction of said shaft a given distance substantially equal to the width of the rollers mounted thereon; a second shaft substantially parallel to and spaced from said first shaft and mounted at opposite ends thereof on said frame, said second shaft supporting said second set of rollers for turning movement about said second axis; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; manually operable turning means including a rod located in said hollow shaft and movable in longitudinal directions thereof and projecting with one end thereof beyond said hollow shaft outwardly of said frame, and a turning knob fixed to said one end of said rod for turning the rollers of one set of rollers; a plurality of latches located in the interior of said hollow shaft and fastened to said rod spaced from each other a distance different from said given distance, each of said latches being coordinated with one of said rollers of said first set of rollers and being movable between a coupling position in which said one latch is in register with and moves through one of said slots in said hollow shaft and engages the roller coordinated with said latch and an uncoupling position in which said one latch is disengaged from said roller coordinated thereto; and a spring operatively connected to each of said latches and tending to move said latch to said coupling position thereof, whereby by moving said rod in longitudinal direction thereof said latches may be selectively brought into register with said slots, respectively, so that one of said latches will move through one of said slots to engage and to couple the roller coordinated thereto with said rod.

11. A stencilling apparatus, comprising, in combination, a frame formed with an opening, a first set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a plurality of

stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; turning means for turning the rollers of said first set of rollers; coupling means for selectively coupling each roller of said first set of rollers to said turning means; spring means operatively connected to the rollers of said second set of rollers and tending to turn the same about the axis thereof; and a plurality of releasable locking means respectively operatively connected to each roller of said second set of rollers, each of said releasable locking means being movable between a locking position in which said locking means prevents turning of the roller connected thereto and a releasing position in which said locking means releases said roller for turning movement about its axis through a given arc so that a point on the periphery of said roller may move through a distance equal to the spacing between successive stencil openings in said strip, whereby by alternately and selectively moving said releasable locking means between said locking and releasing positions thereof said strips may be selectively moved stepwise by said spring means over said opening in said frame in one direction so that successive stencil openings in each strip will be successively brought into register with said openings and whereby said strips may be selectively moved in opposite direction by turning said turning means.

12. A stencilling apparatus, comprising, in combination, a frame formed with an opening, a first set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a first axis and located on one side of said opening in said frame; a second set of rollers mounted on said frame coaxially with and adjacent to each other for turning movement about a second axis substantially parallel to said first axis and located on the other side of said opening, said rollers of said first set of rollers being respectively aligned in direction normal to said axes with said rollers of said second set of rollers; a plurality of stencil strips having each a longitudinal row of stencil openings therein equally spaced from each other, said strips extending, respectively, between aligned rollers so that one of the stencil openings in each strip is in register with said opening in said frame, one end portion of each strip being wound about one of said rollers of said first set of rollers and the other end thereof being fastened to one of the rollers of the second set of rollers aligned with said roller of the first set; turning means for turning the rollers of said first set of rollers; coupling means for selectively coupling each roller of said first set of rollers to said turning means; spring means operatively connected to the rollers of said second set of rollers and tending to turn the same about the axis thereof; a plurality of releasable locking means respectively operatively connected to each roller of said second set of rollers, each of said releasable locking means being movable between a locking position in which said locking means prevents turning of the roller connected thereto and a releasing position in which said locking means releases said roller for turning movement about its axis through a given arc so that a point on the periphery of said roller may move through a distance equal to the spacing between successive stencil openings in said strip; and brake means mounted on said frame and acting on the end portions of said strips wound about the rollers of said first set of rollers, whereby by alternately and selectively moving said releasable locking means between said locking and releasing positions thereof said strips may be selectively moved stepwise by said spring means over said opening in said frame in one direction so that successive stencil openings in each strip

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will be successively brought into register with said openings and whereby said strips may be selectively moved in opposite direction by turning said turning means.

13. In a stencilling apparatus, in combination, a frame formed with an opening; at least one pair of rollers mounted on said frame spaced from each other and respectively on opposite sides of said opening for turning movement about substantially parallel axes; a stencil strip having a longitudinal row of stencil openings therein equally spaced from each other, said stencil strip extending between said rollers over said opening of said frame so that one of said stencil openings is in register with said opening in said frame, one end portion of said strip being wound about one of said rollers and the other end thereof being fastened to the other of said rollers; spring means operatively connected to said other of said rollers and tending to turn the same about its axis so that by turning of said other roller said strip is moved in one direction; releasable locking means operatively connected to said one roller, said releasable locking means being movable between a locking position in which said locking means prevents turning of said one roller and a releasing position in which said locking means releases

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said one roller for turning movement about their axes through a given arc so that a point on the periphery of said one roller moves through a distance equal to the spacing between successive stencil openings in said strip, whereby by alternately moving said releasable locking means between said locking and releasing positions thereof said strip will be moved stepwise to said spring means over said opening in said frame and successive stencil openings in said strip will be successively brought into register with said opening in said frame; and turning means operatively connected to said one roller so that said strip may be rewound on said one roller and said spring means tensioned thereby.

References Cited in the file of this patent

UNITED STATES PATENTS

230,621	Edison	Aug. 3, 1880
949,558	Wight	Feb. 15, 1910
2,499,472	Dyal	Mar. 7, 1950

FOREIGN PATENTS

8,385	Great Britain	of 1884
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