Oct. 1, 1968 W. R. BLACKWOOD 3,403,623

METHOD AND APPARATUS FOR MARKING SYMBOLS AND OTHER SUBJECT MATTER ON CHARTS, GRAPHS AND THE LIKE

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Fig. 1.

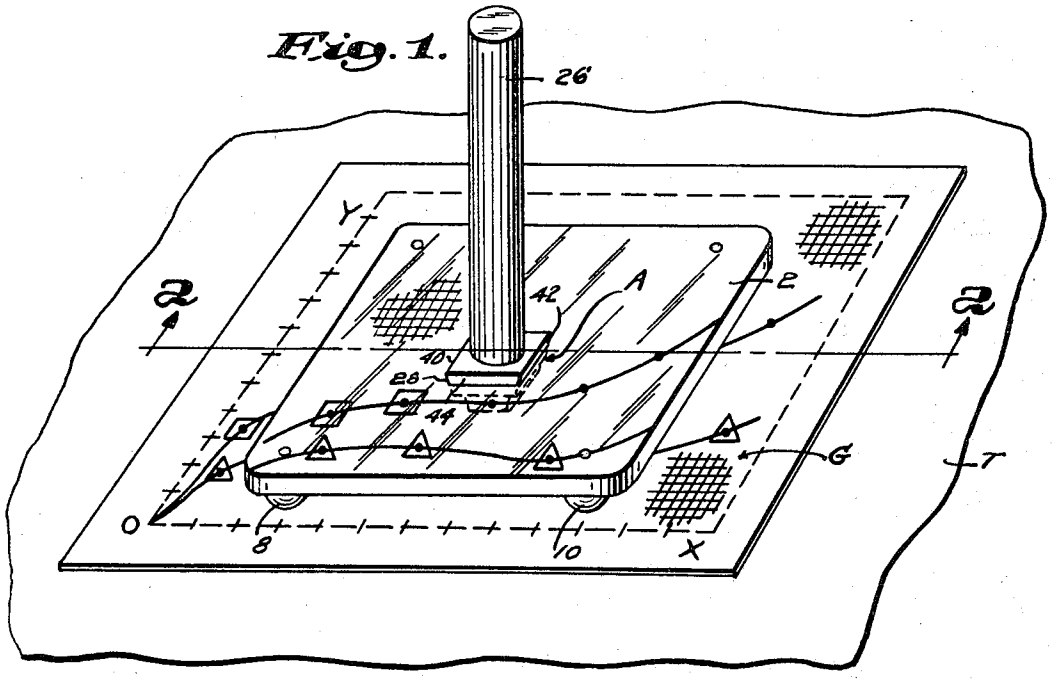

Fig. 2.

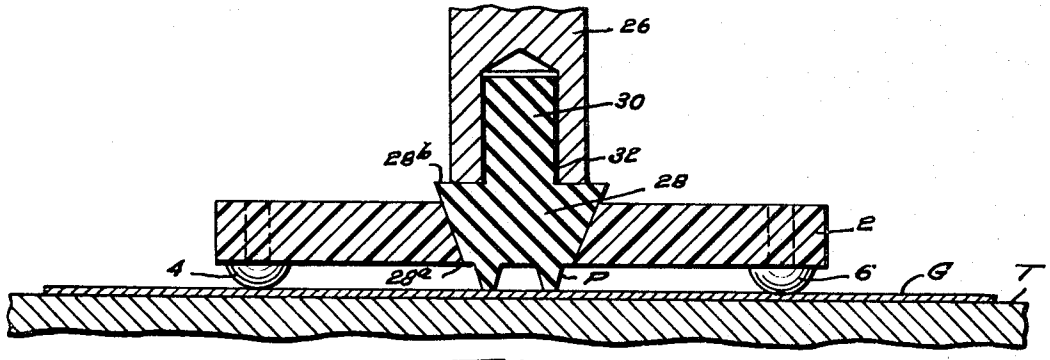

Fig. 3.

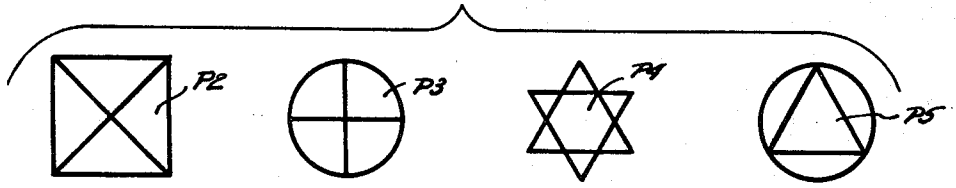

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Fig. 3.

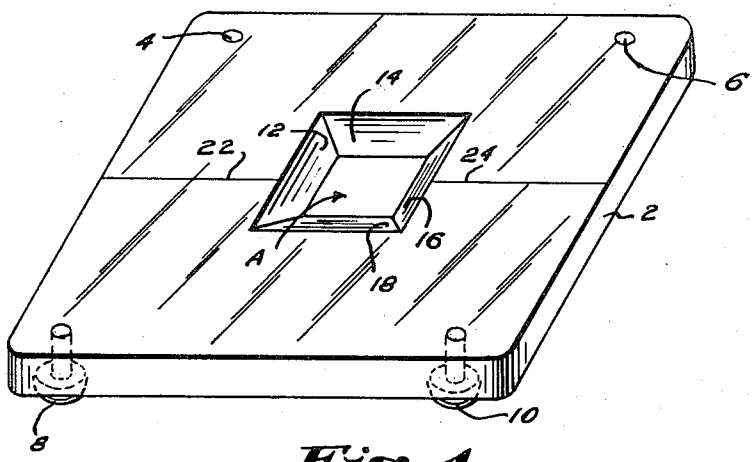


Fig. 4.

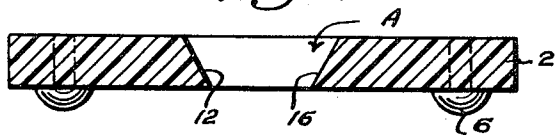


Fig. 5.

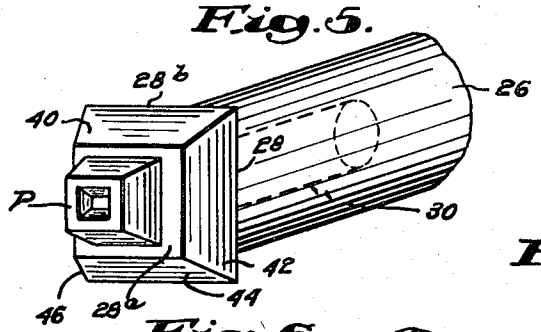


Fig. 6.

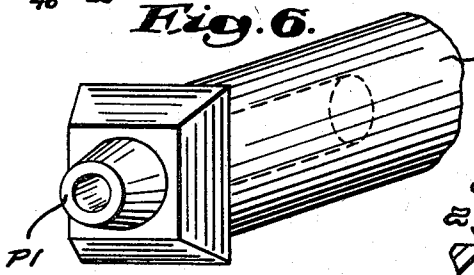
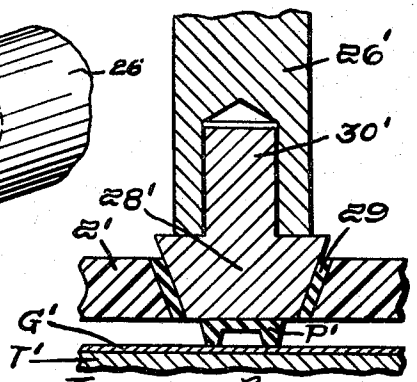


Fig. 8.



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METHOD AND APPARATUS FOR MARKING SYMBOLS AND OTHER SUBJECT MATTER ON CHARTS, GRAPHS AND THE LIKE

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4 Claims. (Cl. 101—368)

ABSTRACT OF THE DISCLOSURE

The subject matter of the invention deals with a stamping apparatus for printing coded symbols on a chart or map and includes a stamp member having relieved printing characters and a stamp guide in which the samp member may be received and guided. The stamp guide consists of a translucent guide plate provided with cutout symbol apertures, each of which apertures are defined by angled stamp guiding surfaces. The stamp member is formed with a resilient stop portion having one or more wedging surfaces correspondingly angled to mate with the angled stamp guide surfaces and provide for limited movement of the stamp through the stamp guide aperture. By this arrangement the relieved printing characters may be stamped against a printing surface with a controlled pressure to provide a relatively small sharply defined ink impression which is quickly and accurately located at a plotted point or other desired locus without excessive transfer of ink.

This invention relates to a method and means for applying printed subject matter to a desired surface and, more particularly, to a stamping device for applying an inked impression in the form of a symbol or other printed character or mark. In one specific aspect the invention is concerned with a form of stamping device which can be utilized in stamping coded symbols on a chart or graph to indicate co-ordinate graph points through which a curve or curves may be drawn. Such coding is used especially to differentiate one curve from another and facilitate chart reading procedures.

In conventional application of coded symbols to a map or chart, size becomes a factor since a relatively small sharply defined impression is desired. To apply small symbol impressions in accurately registered relationship by means of standard type rubber stamps is not always satisfactory since the stamps are of a size not easily oriented with a plotted point. Moreover, there is a tendency for excessive ink transfer to occur with uncontrolled hand stamping of small symbols. A practice followed by many engineers and scientists in preparing a chart or graph is to substitute for the rubber stamp a template formed with a number of cutout coded symbols with a required point having been plotted on a chart member. The template is placed over the chart and the desired symbol aperture brought into register with the point. Thereafter the user inserts a pencil or inking member through the symbol aperture and moves the pencil or inking member about in the aperture until the symbol is fully blocked in. The template is then moved to another position and the operation is repeated.

In such a template usage the inscribed coded symbols vary in quality and shape from one another since they are made by hand and in many cases the resulting chart appearance is lacking in professional quality. In addition, since each point has to be hand inscribed, the operation is time consuming and tiresome.

It is a chief object of the present invention to provide an improved method and means for applying printed subject matter to a desired surface and to devise a novel

stamping apparatus by means of which uniform high quality inked impressions of required symbols or code marks in relatively small sizes may be rapidly and accurately located thereby improving the quality and speed of chart making.

Another object of the invention is to devise an apparatus of the class described in which means are provided for regulating the amount of pressure which is exerted in forming an ink impression to avoid blurred and distorted symbol formation on a chart or graph.

Still another object is to provide the combination of a translucent template formed with angled stamp guiding surfaces and a stamp member having similarly angled stop surfaces whereby controlled pressure, together with highly accurate registering of the stamp member may be realized.

Still another object is to provide a combination template and stamp arrangement in which a template aperture is formed of a relatively small size at one side of the template and of a relatively large size at the other side of the template.

The nature of the invention and its other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which:

FIGURE 1 is a perspective view illustrating a chart member located on a suitable supporting surface and further illustrating the stamping apparatus of the invention being used to apply an ink impression of a desired symbol;

FIGURE 2 is a cross sectional view taken approximately on the line 2—2 of FIGURE 1;

FIGURE 3 is a perspective view showing one of the components of the stamping apparatus consisting of a translucent template member;

FIGURE 4 is a cross sectional view of the structure shown in FIGURE 3;

FIGURES 5 and 6 show additional components of the stamping apparatus shown with means for reproducing two different types of symbols;

FIGURE 7 is a view illustrating more in detail different configurations for required chart symbols; and

FIGURE 8 is a cross sectional view showing a modification of the invention.

With the foregoing object and related problems in mind, I have conceived of a method of controlled symbol stamping in which a raised translucent guide plate is employed in cooperating relationship with a manually applied stamp to obtain a highly precise register of a stamp character with a desired point on a map, chart or other printing surface while at the same time regulating the amount of pressure which is transmitted through the stamp character to the printing surface.

An important feature of the invention method is the manner of positioning and applying the guide plate and stamp with respect to a predetermined point on a printing surface. In use the guide plate is normally supported in a slightly raised position and is formed with apertures having angled stamp guiding surfaces which extend all the way through the plate and which are cut or shaped in such a way as to provide a relatively large opening or sight at the upper side of the plate and a relatively small opening or sight at the bottom side of the plate. This arrangement provides a picture frame effect which greatly facilitates rapid registering of the plate over a desired point on a map or chart since the operator while looking down through the relatively large opening can center the relatively small opening very accurately over the point to be marked.

I further provide a compressible stamp member of

rubber or yieldable plastic material formed with angled stop portions which are complementary with the angled sides of the plate apertures. With a relatively small opening of the guide plate having been centered over a desired point as described above, the stamp member may be entered through the relatively large opening into contact with the angled surfaces of the aperture. The stamp may then be pressed down through the opening until its printing character contacts the printing surface with the angled stop surfaces of the stamp member being engaged against the correspondingly angled sides of the aperture. The angled surfaces of the stamp function as a stop to limit and control the amount of pressure with which the printing character is actually engaged against the printing surface. The amount of pressure exerted may be varied in accordance with the spacing of the plate above its printing surface, as well as the size and yieldability of the stamp body.

Considering these parts in greater detail, FIGURE 1 illustrates the guide plate and stamp in position to apply a symbol on a graph sheet G mounted on a table T. Numeral **2** denotes the guide plate of the invention which may be comprised by a translucent material such as glass, plastic sheet or the like. As is most clearly shown in FIGURE 3, the guide plate **2** is preferably made of rectangular shape and is normally maintained in a raised position by means of corner supports as **4**, **6**, **8** and **10**. The corner supports may be separately attached or formed as an integral part of the guide plate body and it may be further desired to incorporate in these supports elevating screw means or other devices for adjusting the plate at different heights above a printing surface.

Located centrally through the guide plate **2** is a stamping aperture A which, as shown in FIGURE 3, is defined by angled sides **12**, **14**, **16** and **18**. These angled sides form a relatively small opening or sight at the bottom side of the plate, and a relatively large opening at the upper side of the plate as suggested in FIGURE 4. There is thus realized a picture frame effect whose depth is determined by the thickness of the guide plate employed. An important feature is that the relatively small opening can be very quickly registered over a desired point in more accurately centered relationship than would be the case with a larger stamp opening. Hair lines **22** and **24** are formed at one side of the plate as shown in FIGURE 3 to facilitate correct orientation with graph paper lines.

In combination with this apertured guide plate described, I further provide a novel stamp construction as is more clearly shown in FIGURES 1, 2 and 3. My improved stamp construction includes a holder portion **26**, for example, of cylindrical shape and a relatively larger stamp body **28** which may be detachably engaged to the holder in some convenient manner. One preferred arrangement consists in forming the stamp body **28** with a reduced upper stud portion **30** and locating this stud portion in a recess **32** formed in the holder **26** as is more clearly shown in FIGURE 2. This arrangement permits convenient substitution of other stamp bodies in the holder.

The lower end of stamp body **28** is formed with a relieved printing character P which may be a rectangularly shaped symbol, for example, as shown in FIGURE 5 and which projects downwardly from a bottom part of the stamp body **28** as indicated in FIGURE 5. In FIGURE 6 another stamp symbol **P1**, in a stamp body **28'**, is shown in holder **26**. Various other printing characters may be employed as indicated diagrammatically in FIGURE 7 by designs **P2**, **P3**, **P4** and **P5**.

In accordance with the invention, I further provide stamp body **28** with specially formed stop means defined by angled stop surfaces as **40**, **42**, **44**, **46**. These angled stop surfaces **40**, **42**, **44**, **46** are formed substantially similar in angularity to the plate surfaces **12**, **14**, **16** and **18** and are arranged to meet and form a lower stamp end **28*a*** of the stamp body **28**. This lower stamp end **28*a*** is made of a size slightly larger than the relatively small opening in plate **2** at the bottom of the aperture A and also made appreciably smaller than the relatively large opening of aperture A at the upper side of the plate **2**.

As a result of the arrangement described, it will readily be appreciated that the lower stamp end **28*a*** may be conveniently passed down through the top of the aperture A into a position such as shown in FIGURE 2 so that character P may engage the graph sheet G and apply a printed image. The stop surfaces **40**, **42**, **44** and **46** extend upwardly from the lower end **28*a*** for distances appreciably greater than the thickness of the plate **2** as shown in FIGURE 2 and thus form an upper enlarged end **28*b*** which constitutes a stop exceeding the opening at the top of the aperture A.

Therefore, the character P contacts the graph sheet G with a controlled pressure since the stop surfaces **40**, **42**, **44**, **46** prevent the stamp from being forced downwardly beyond a predetermined point and excessive pressure of the character P against the graph sheet G is avoided and a sharply defined image may consistently be applied.

The stop means because of the limiting action on movement of the stamp through the guide plate controls the pressure of the stamp against the chart or map. This controlled pressure may vary in accordance with change in several limiting conditions such as change in the height of the guide plate, the thickness of the plate, the size of the stop surfaces and the over-all resiliency characteristic of the stamp body.

It will be apparent from the above disclosure that by utilizing the translucent guide plate of the invention and its cooperating stop member a desirable range of printing effects may be realized and a symbol or other character may be simply and quickly applied to furnish a professional appearance. The translucent character of the plate facilitates register. A convenient adjustability feature of the printing stamp subject matter is afforded by the method of attachment to the holder described and shown in the drawings and various other types of marks and symbols may be employed. In addition, I may desire to vary the angled stamp guiding surfaces in the plate by utilizing conical type surfaces, triangularly arranged surfaces and various other configurations.

Still another modification is illustrated in FIGURE 8 in which the holder **26'** is fitted to a member **30'** which may be formed of a relatively rigid or incompressible material. The member **30'** is formed with angled side portions to provide a part **28** which is larger in size than a liner member **29** of resilient material such as foam rubber or the like. The resilient member **29** may be arranged to extend all the way around the aperture in the plate **2'** and thus constitutes a yieldable stop means for allowing the printing member P' to be brought into contact with a surface G' with a limited degree of pressure. It may also be desired to construct the plate itself of a relatively more yieldable material for acting as a limit or stop in receiving the printing member **28'**.

While I have shown preferred embodiments of the invention, it will be understood that changes and modifications may be practiced within the scope of the appended claims.

I claim:

1. An improved stamp apparatus comprising in combination a stamp member including a handle and a guide plate having a stamp guiding aperture formed therein for receiving the stamp member, said aperture being characterized by angled stamp guiding surfaces which define a relatively small bottom opening and a relatively large top opening at respective lower and upper sides of the guide plate, said stamp member being formed at its bottom with a relieved printing character and an intermediate stop portion located above the relieved printing character, said stop portion presenting angled sides which are complementary with the angled stamp guiding surfaces

of the guide plate and which have a vertical dimension exceeding the thickness of the said guide plate, and said stamp member being connected with said handle and removable therewith upon removal of said handle after a stamping operation.

2. A structure according to claim 1 in which the plate member is provided with support means for locating the plate in a raised position relative to the said graph sheet.

3. A structure according to claim 1 in which the stop means includes a resilient body located in the stamp guiding aperture for yieldably receiving the stamp member therein.

4. A structure according to claim 1 in which the stop means includes a relatively incompressible stop portion

formed on the stamp member and said stamp guiding aperture being formed of a yieldable material.

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