United States Patent

Ratcliff

[15] **3,664,913**

[45] **May 23, 1972**

[54] INDICIA APPLYING ARTICLE AND METHOD

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[22] Filed: **May 31, 1968**

[21] Appl. No.: **733,684**

[52] **U.S. Cl.**.....**161/167,** 156/2, 156/7, 156/240, 161/406, 161/413

[51] **Int. Cl.**.....**C09j 1/00,** C23f 1/02

[58] **Field of Search**.....156/2, 7, 10, 8, 240; 117/3.1, 117/3.3; 161/167

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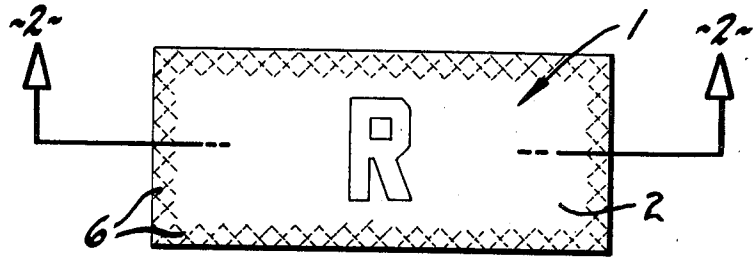
Primary Examiner—Jacob H. Steinberg

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[57] **ABSTRACT**

An articles and method for applying identifying or decorative indicia to a parent body, such as the metal surface of an industrial tool or the like. Indicia forming material, for removing a portion of the parent body or for building up such parent body in a predetermined pattern, is carried in a self-supporting unit which isolates the indicia forming material prior to use. Etching acid solutions thickened to a gel or paste-like consistency so as to be substantially self-supporting, or substances capable of bonding themselves to the parent body, are employed to react with the parent body to form the desired indicia thereon.

7 Claims, 10 Drawing Figures



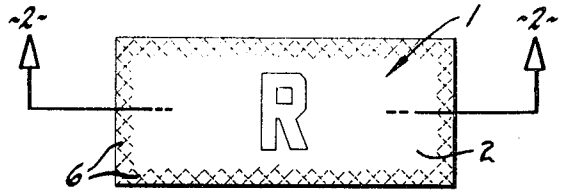


FIG. 1

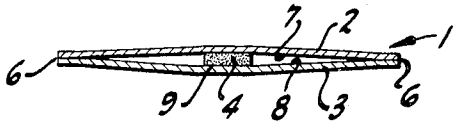


FIG. 2

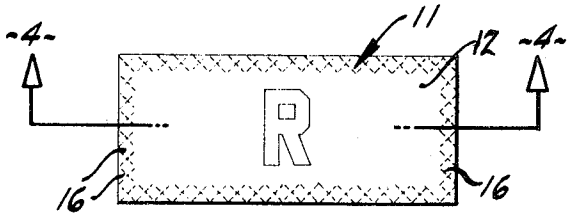


FIG. 3

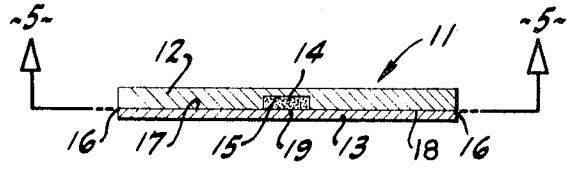


FIG. 4

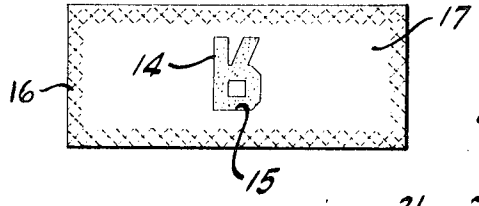


FIG. 5

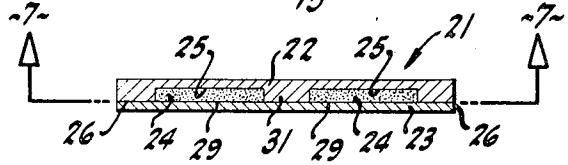


FIG. 6

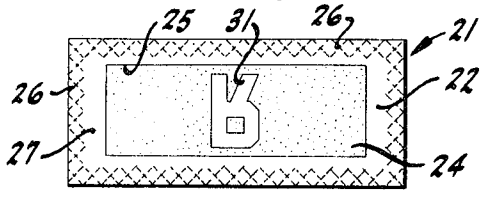
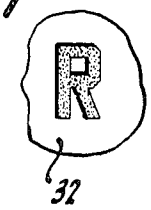


FIG. 7

FIG. 8



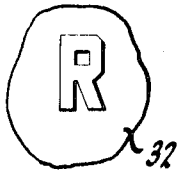


FIG. 9

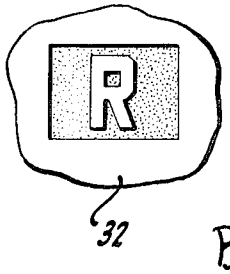


FIG. 10

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INDICIA APPLYING ARTICLE AND METHOD

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to the field of effectively and easily applying identifying or decorative indicia to parent bodies which heretofore have been difficult to identify or decorate. In its preferred form, the indicia formed is substantially permanent, although less than permanent indicia may be formed if preferred, depending upon the indicia forming material employed.

Manufacturers of various products normally wish to identify their products with their trademarks or trade names in a manner which will be long lasting so that satisfied users will remain aware of the source of such products after extensive use. Heretofore, however, such indicia frequently was applied by means which produced only temporary identification, for example, by painting or by the application of non-permanent decalcomanias (decals) which wear off during use over a short period of time.

More permanent indicia has been applied during the manufacture of certain articles, for example by stamping or by casting the same directly into the parent body during the manufacturing procedures. However, such permanent indicia forming procedures are not possible with all devices because of particular problems encountered in conjunction with the manufacture of certain products, thereby necessitating use of painted or decal type indicia as noted above. For example, in producing load supporting devices such as hand-operated chain hoists, it is normally very difficult and sometimes impossible to form the molds from which the casings of such hoists are formed with suitable indicia therein. As a result, indicia cannot always be provided for on such casings at the time the casings are cast or otherwise formed from metal.

By means of the present article and its method of use, indicia may be applied to a parent body, such as the illustrative metal hoist casing mentioned above or any other type of parent body, after manufacture thereof so that problems heretofore encountered in applying such indicia at the time of manufacture are obviated. Such indicia may be applied on a gradual basis over an extended period of time by a selection of a suitable indicia forming material, or alternatively, on a rapid basis over a short period of time, also depending upon the selection of a suitable indicia forming material.

The desired indicia may be formed with this invention either by removing material from the parent body or, alternatively, by building up the parent body, in accordance with a predetermined pattern determined by the arrangement of the indicia forming material on the article carrying the same.

2. Description of the Prior Art

So far as it is known, temporary indicia for identifying or decorating a parent body after manufacture thereof heretofore has been applied by means of decals or other adhesively maintained devices, such as labels or the like; also painting has been used heretofore. Even when modern paints are used, which have more durability than previously known paints, indicia thus applied is relatively short lived, particularly in conjunction with products which are subjected to rugged handling during use, such as hand operated chain hoists and the like. Similarly, decals, labels and like adhesively applied indicia means, wear off after a short period of time, leaving the products substantially unidentified thereafter. As noted previously, permanent indicia formed by stamping or casting during manufacture, are not always formable because of problems inherent in the manufacture of many devices.

With the subject invention, substantially permanent indicia may be readily and simply applied to a parent body, whether such body is formed of metal, wood, glass or the like, by the selection of a suitable indicia forming material which is reactive with the material of the parent body to be identified or decorated.

With the exception of the heretofore known identification procedures mentioned above, no durable indicia applying procedures capable of producing the simple yet effective results obtained with the present invention are known to applicant, nor is applicant aware of any prior use of self-supporting readily handled articles of the type disclosed herein.

SUMMARY OF THE INVENTION

The present invention relates to an indicia applying article and procedure for affixing indicia to a parent body for the purpose of identifying or decorating such body over a substantial period of time, preferably during the useful life thereof. More particularly, this invention relates to a self-supporting indicia applying article which includes therein a quantity of indicia applying material which is reactive with the parent body to which the indicia is to be applied to effect change in the appearance of the body in accordance with the pattern of the indicia being applied thereto. The exact indicia applying material chosen will be determined by the nature and makeup of the material from which the parent body is formed so that the indicia forming material will effectively react with the parent body to produce the long lasting results desired.

To this end, this invention comprises a readily handleable self-supporting article of extremely simple construction, yet one which is fully effective for its intended purpose. Such article is readily and easily usable by unskilled persons so that such persons may apply indicia to parent bodies in substantially fool-proof fashion.

From the foregoing, it should be understood that objects of this invention include; the provision of an improved highly effective indicia applying article, and a procedure or method for utilizing such an article; the provision of an indicia applying article for forming long lasting, substantially permanent indicia on a parent body, either by removing material from the parent body under controlled conditions or by bonding such material in raised fashion to a parent body under similar conditions; the provision of an indicia applying article comprised of a carrier for the indicia forming material and protective means for temporarily covering and isolating such material prior to its use; the provision of a carrier for an indicia applying article, and protective covering means therefore, which together are effective to isolate indicia forming material supported by the carrier prior to separation of the protective means to prepare the article for application to a parent body; and the provision of a carrier in such an article which includes adhesive means thereon to secure the carrier to a parent body while the indicia forming material is reacting therewith. These and other objects of this invention will become apparent from a study of the following detailed disclosure in which reference is directed to the appended drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of one embodiment of an indicia applying article of the present invention.

FIG. 2 is a sectional view of the article taken in the plane of line 2—2 of FIG. 1.

FIG. 3 is a plan view of a modified embodiment of the indicia applying article.

FIG. 4 is a sectional view of the modified embodiment taken in the plane of line 4—4 of FIG. 3.

FIG. 5 is a sectional view of the modified embodiment taken in the plane of line 5—5 of FIG. 4 showing the inner surface of the carrier of the article.

FIG. 6 is a sectional view of another modified embodiment of the subject article taken in generally the same reference location as in the embodiment shown in FIG. 4.

FIG. 7 is a sectional view through the other modified embodiment taken in the plane of line 7—7 of FIG. 6 showing the inner surface of the carrier thereof.

FIGS. 8, 9, and 10 are plan views of parent bodies to which indicia has been applied by utilizing the respective articles of the type illustrated in the preceding figures.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Indicia applying articles of the present invention may take various forms, yet preferably the form selected will incorporate the simple construction characteristic of the several embodiments illustrated and disclosed herein. In that regard, the preferred embodiments shown are substantially similar in construction in that each employs a sandwich type construction defined by a simple combination of a suitable indicia forming material supported on a carrier, and protective means removably adhered to the carrier and covering the indicia forming material so that the same is isolated and protected until time for use of the article arrives. As described hereinafter in greater detail, the indicia forming material is formed from materials or substances chosen for most effective reaction with the parent body to be identified.

Referring first to the embodiment shown in FIGS. **1** and **2**, the article illustrated comprises a sandwich construction, generally designated **1**, defined by a carrier **2** and protective means **3** between which a predetermined quantity **4** of indicia forming material is positioned. In the illustrated embodiment, the carrier and protective means each comprise a generally flat strip or sheet corresponding in size to each other and releasably secured to each other by means of a line of suitable adhesive **6** extending around the peripheries of the sheets, as illustrated by the shaded areas in FIG. **1**. Thus the inner surfaces **7** and **8** of the carrier **2** and protective backing sheet **3** are secured in generally face-to-face relationship with the indicia forming material **4** interposed therebetween.

To prepare article **1** for use, it is merely necessary to peel the protective backing sheet **3** from engagement with carrier **2** thereby exposing the indicia forming material **4**. Adhesive **6** preferably is of the pressure sensitive type to permit such separation. To insure separation of the backing sheet **3** without removal of the indicia forming material therewith, a suitable release coating, the nature and type of which is determined by the nature and type of the indicia forming material being utilized, may be interposed between the indicia forming material **4** and the backing sheet in the area **9** of contact therebetween, as shown in FIG. **2**.

Upon removal of the protective sheet **3** it is merely necessary for the carrier, with the indicia forming material still adhered thereto, to be applied adhesively to the parent body to be identified. The same adhesive **6** utilized to maintain sheets **2** and **3** together prior to use of the article provides the means for securing the carrier and the indicia applying material therewith to the surface of the parent body to be identified.

The indicia pattern to be applied to a given parent body may vary in form, from one or more letters of the alphabet to company names or trademarks in the form of letters, words, symbols, or the like. In the illustrated embodiment, indicia is provided in a pattern comprising the letter R, which is shown for purposes of illustration only. In this regard, it is preferable, although not necessary, that the carrier **2** on its outer surface is provided with printed indicia corresponding to that to be applied to a parent body by the indicia forming material **4**. That is, as seen in the illustrated embodiment, the letter R appears on the outer front face of the carrier so as to be visible prior to and during attachment of the carrier to the parent body for the purpose of identifying the indicia being applied to the parent body and also for the purpose of providing identifying indicia on the body while the mass of indicia applying material **4** is reacting with the body for its intended purpose.

In the FIG. **1** embodiment the indicia forming material **4** is provided by a substance which is sufficiently self-supporting so as to withstand normal handling during packaging, shipment, and preparation for use so as not to lose its identity or to distort appreciably from the configuration to be applied thereby to the parent body. As will be described hereinafter, the nature of such material may vary with the nature of the indicia to be applied thereby.

An alternative construction is shown in FIG. **3**, **4** and **5**. In basic principle this embodiment is essentially the same as that described previously but means are incorporated therein to provide additional support and confinement for the indicia forming material carried thereby. This modified embodiment, generally designated **11**, comprises a carrier sheet **12**, protective means in the form of a backing sheet **13**, and a quantity of indicia forming material **14** interposed therebetween. Adhesive of the type described previously is applied around the border between the carrier and backing sheets as shown at **16**.

This embodiment differs from that described previously in that the carrier **12** is provided with recessed portions **15** in its inner surface **17**. As seen in FIG. **5**, the recessed portions define the configuration or pattern of the indicia to be applied by the article to the parent body. In the illustrated embodiment, such recessed portions define the letter R.

With this embodiment, the recessed portions permit backing sheet **13** to contact the carrier sheet directly in a flush relationship so that the indicia forming material **14** may be securely restrained within the recessed portions, thereby permitting use of an indicia applying material which is less self-supporting than is true of the material employed in the FIG. **1** embodiment.

If necessary or desired, a release coating may be provided between the indicia applying material and the inner surface **18** of backing sheet **13** in the area of contact **19** therebetween as seen in FIG. **4**.

A further modification is illustrated in FIGS. **6** and **7**. In construction the article of this modification, generally designated **21**, comprises a carrier **22** and backing sheet **23** adhesively secured thereto by a line of adhesive **26** in the manner described previously. A quantity of indicia forming material **24** is received in recessed portions **25** formed in the inner surface **27** of the carrier and is retained therein by the backing sheet **23** in the manner described previously with respect to FIGS. **3** through **5**. A release coating may be employed in the area **29** between the indicia forming material and the inner surface of the backing sheet **23**.

The recessed portions **25** in this embodiment differ from those described previously in that they are formed with a generally regular outline and surround a non-recessed portion **31** which defines the indicia, in the form of the letter R in the illustrated embodiment shown, to appear on a parent body. That is, the carrier is recessed in the area surrounding the indicia, leaving the indicia itself generally flush or co-planer with the inner surface of the carrier, for the purpose to be described.

In its various embodiments, the article of this invention is designed to provide indicia on a parent body in one of two alternative fashions, namely by removing portions of the parent body thereby leaving a depressed or recessed indicia forming pattern visible thereon, or by building up the parent body thereby providing a raised indicia forming pattern on the surface thereof. The particular result desired is obtained by selecting a particular type of indicia forming material to be carried by the article therein during its manufacture. In this regard, the embodiments shown in FIGS. **1** through **5** are suitable for providing either depressed indicia or raised indicia. The embodiment shown in FIGS. **6** and **7** is better adapted to provide a modified depressed indicia.

In this regard, as shown in FIGS. **8** and **9**, the depressed and raised types of indicia, respectively, are shown on a parent body generally designated **32**. Such indicia may be formed by either of the embodiments shown in FIGS. **1** through **5**. In FIG. **10**, the modified depressed indicia formed by an article having the construction of FIGS. **6** and **7** is illustrated on the parent body **32**. In that connection, it should be noted from FIG. **10** that the indicia comprising the letter R is generally coplaner with the surface of the parent body while the area surrounding the letter is depressed or recessed.

The procedure for applying indicia with any of the articles shown is a simple one. By selecting an article of the particular type desired having a predetermined indicia pattern carried thereby and defined by the mass of indicia forming material thereon, it is merely necessary to remove the backing sheet

from the carrier and to adhesively apply the carrier with the indicia forming material sppported thereby directly to the surface of the parent body to be identified. The same adhesive which maintained the carrier and the backing sheet adhered prior to use holds the carrier against the parent body to maintain the indicia forming material in place while it is reacting with the surface of the parent body. In this latter regard, the carrier may be allowed to remain in contact with the parent body until the same wears off through use, or the carrier may be intentionally removed after a pre-determined time when it is known that the indicia has been formed in or on the surface of the parent body.

The material chosen to provide the indicia is selected from groups known to be reactive with the material from which the parent body is formed. For example, for metal parent bodies an etching acid solution would be chosen from the group of well known acids which are well known to be reactive with the particular metal. By way of further example, when the parent body is formed from a ferrous metal, a hydrochloric or sulfuric acid solution would be suitable.

Obviously, however, conventional acid solutions, because of their fluidity, would be unacceptable for general use. Therefore, the acid solution to be employed as an indicia forming etching material is thickened to a gel or paste-like consistency to adapt the same to be self-supporting or substantially self-supporting so as to be usable in the manner described previously. Thickening products are available on the open market with which such acid solution may be thickened to a gel or paste-like consistency. For example, an inert binder material formed of super fine silica is marketed under the trademark CAB-O-SIL by the Cabot Corporation, 125 High Street, Boston, Mass. Such thickening material is described in the Cabot Corporation brochures Nos. 2382/5611, 2325/569, and 2313/761, and comprises 99.8 percent pyrogenic silica of small particle size.

By choosing the desired strength acid solution for a particular job, that is, one intended to be fast acting or slow acting, and thickening the same to the desired consistency, a generally self-supporting indicia forming material is provided which may be employed in the manner described previously. Such acid solution is held ready for use in the isolated condition by the carrier and backing sheets.

If a strong or concentrated acid solution, either hydrochloric or sulfuric for example when etching ferrous metals, is selected, the etching process will proceed rapidly. However, with weaker or dilute acid solutions, the etching procedure will continue over an extended period. In either event, the carrier need not be removed during the normal course of the etching procedure, thereby protecting the persons handling the parent body being etched and also serving to identify the parent body during the time the carrier is adhered to the body.

In either event, the acid solution carried by the article to form the indicia by etching the parent body is provided in measured amounts sufficient only to etch to the depth required without interferring with the structural strength of the parent body. For purposes of safety, a weak acid solution protected by a sturdy carrier may be employed to produce the etched indicia over an extended period of time.

To provide raised indicia on the parent body, such as one having a ferrous surface, material which is reactive with and bondable to the surface should be employed as the indicia forming material. Such material is presently available on the market. For example, Woodhill Chemical Corporation, 18,731 Cranwood Parkway, Cleveland, Ohio, markets a product bondable to metal surfaces such as a ferrous parent body under the trademark LIQUID STEEL as disclosed in its catalog sheet No. LS–63C. Such material comprises atomized steel powder and vinyl resins premixed in putty form. Although primarily designed as a metal mending material because of its ability when exposed to the air to dry metal hard in a period of hours, such material is also usable by way of its reactive properties with metal to form the raised indicia described herein. Another material usable for forming raised indicia on metals is marketed by Devcon Corporation of Danvers, Massachusettes under the trademarks DEVCON and PLASTIC STEEL. As disclosed in Devcon Corporation Bulletin NI 104, PLASTIC STEEL comprises 80 percent steel particles and 20 percent epoxy plastic binders and is bondable to metal as well as other materials, such as plastic and wood.

Irrespective of the indicia forming material chosen, it is important that the same be maintained isolated from air exposure and generally inert until ready to use, both for safety reasons and to preclude reaction or hardening of the material in the presence of air. To this end, various materials for the carrier and backing sheets of the subject article may be employed, provided such materials are sturdy enough to perform their intended purpose while resisting the reactive nature of the indicia forming material enclosed thereby, particularly when the same is an etching acid solution. In this regard, it is comtempleted that carrier and backing sheets formed of thin glass fiber strips or sheets, depending upon the size of the indicia to be applied, may be employed. Glass fibers and the resins commonly employed to bond the fibers together are sufficiently acid resistant to provide suitable isolation prior to use of the indicia forming material carried thereby. When indicia forming materials other than acid solutions are employed, other materials, such as metal foils, selected from groups which are non-reactive with the particular indicia material chosen, may be employed as determined by particular need.

While several preferred embodiments of this invention have been illustrated herein, it should be understood that the disclosure and accompanying drawings are illustrative of the novel concept in which this invention desirably is incorporated but are not restrictive thereof. Having thus made a full disclosure of this invention, reference is directed to the appended claims for a determination of the scope to be afforded thereto.

I claim:

1. A self-supporting article for applying substantially permanent indicia to a parent body by an etching procedure without the application of external heat, comprising

A. a carrier,

B. indicia forming material comprising an acid solution thickened to a paste like consistency by a generally inert binder to prevent running thereof,

1. said acid solution being chemically reactive with said parent body without requiring external heat to provide said indicia thereon by etching said parent body,

2. said acid solution being supported by said carrier in a predetermined pattern and being reactive with said body to etch the same in accordance with said pattern when said carrier is applied to said body to bring said acid solution into contact therewith,

C. protective means removably adhered to said carrier covering said acid solution and retaining the same isolated and ready for use until said protective means is removed, and

D. means for retaining said carrier adhered to said parent body while said acid solution is reacting therewith to etch the same.

2. The etching article of claim **1** in which said acid solution comprises a dilute slow acting etching acid solution.

3. The etching article of claim **1** in which said acid solution comprises a concentrated rapid acting etching acid solution.

4. The etching article of claim **1** in which said carrier includes

1. recessed portions formed in a surface thereof in a predetermined pattern defining the indicia pattern to be applied to said parent body,

2. said acid solution being received in and substantially filling said carrier recessed portions so that said carrier may be applied generally flush with said parent body when said protective means is removed to expose said acid solution.

5. The etching article of claim **1** in which said carrier includes

1. an adhesive along at least its edge margins by which said protective means is removably engaged therewith and by which said carrier may be held in contact with said parent body after removal of said protective means while said acid solution is reacting with said body.

6. The etching article of claim 1 in which

E. said carrier and said protective means are each formed from a material which is immune to attach by said acid solution, whereby

1. said acid solution is completely isolated by said carrier and said protective means prior to removal of said protective means from said carrier.

7. The etching article of claim 1 in which said carrier includes printed identifying indicia on its outer surface which is visible while said carrier is engaged with said body and said indicia is being etched in said parent body by said acid solution.

* * * * *