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Pekko et al.

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[54] **DESTRUCTIBLE LABEL SYSTEM**

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[52] **U.S. Cl.** ..... **40/2 R**, 283/8, 117/1, 161/145, 161/147, 161/167, 161/413, 292/307

[51] **Int. Cl.** **G09f 3/03**

[58] **Field of Search** ..... 161/167, 145, 147, 406 T, 161/5, 413; 292/307; 70/440; 117/122 P

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[57] **ABSTRACT**

There is provided a tamper proof label system consisting of an adhesive printable fragile label base and an overlapping transparent adhesive self-supporting protective film. The surface of the label is printable and at least a portion is masked with a material having essentially no adhesivity for the protective film. In use, the label base is printed and applied to a substrate and the adhesive protective film applied as an overlapping overlay to protect but not support the imprinted surface. Removal of the adhesive overlay film will expose the fragile label which cannot be removed from the substrate without destroying the physical integrity of the label base. Simultaneous removal of both results in a separation of the overlay film from the label base.

15 Claims, 2 Drawing Figures

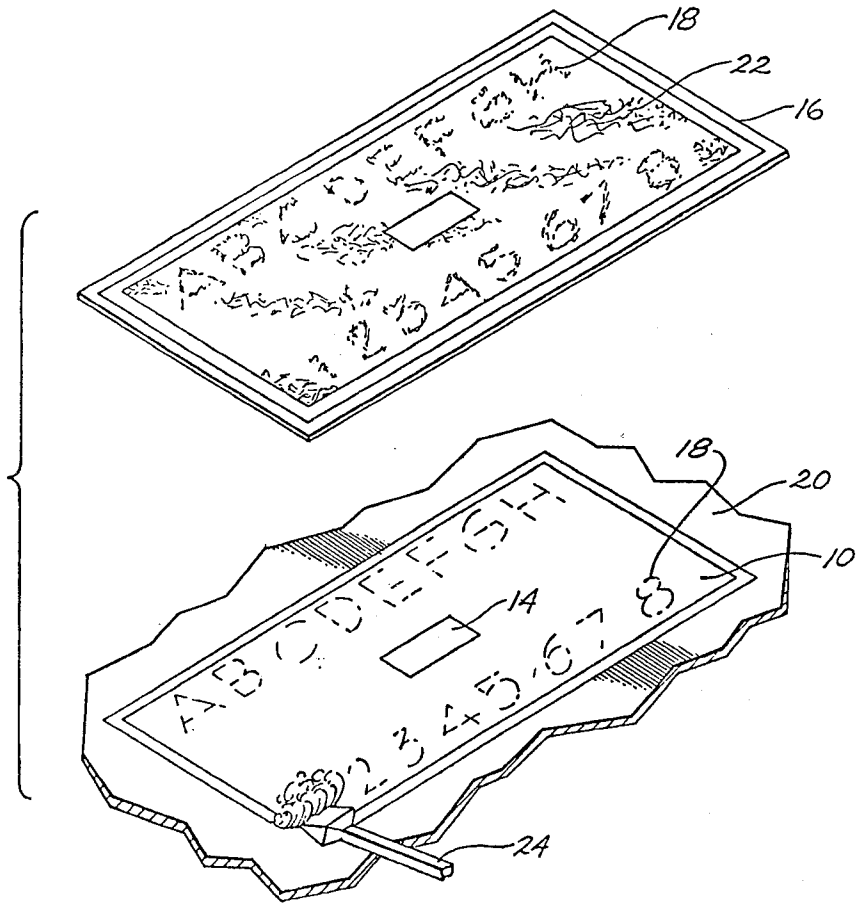


FIG. 1

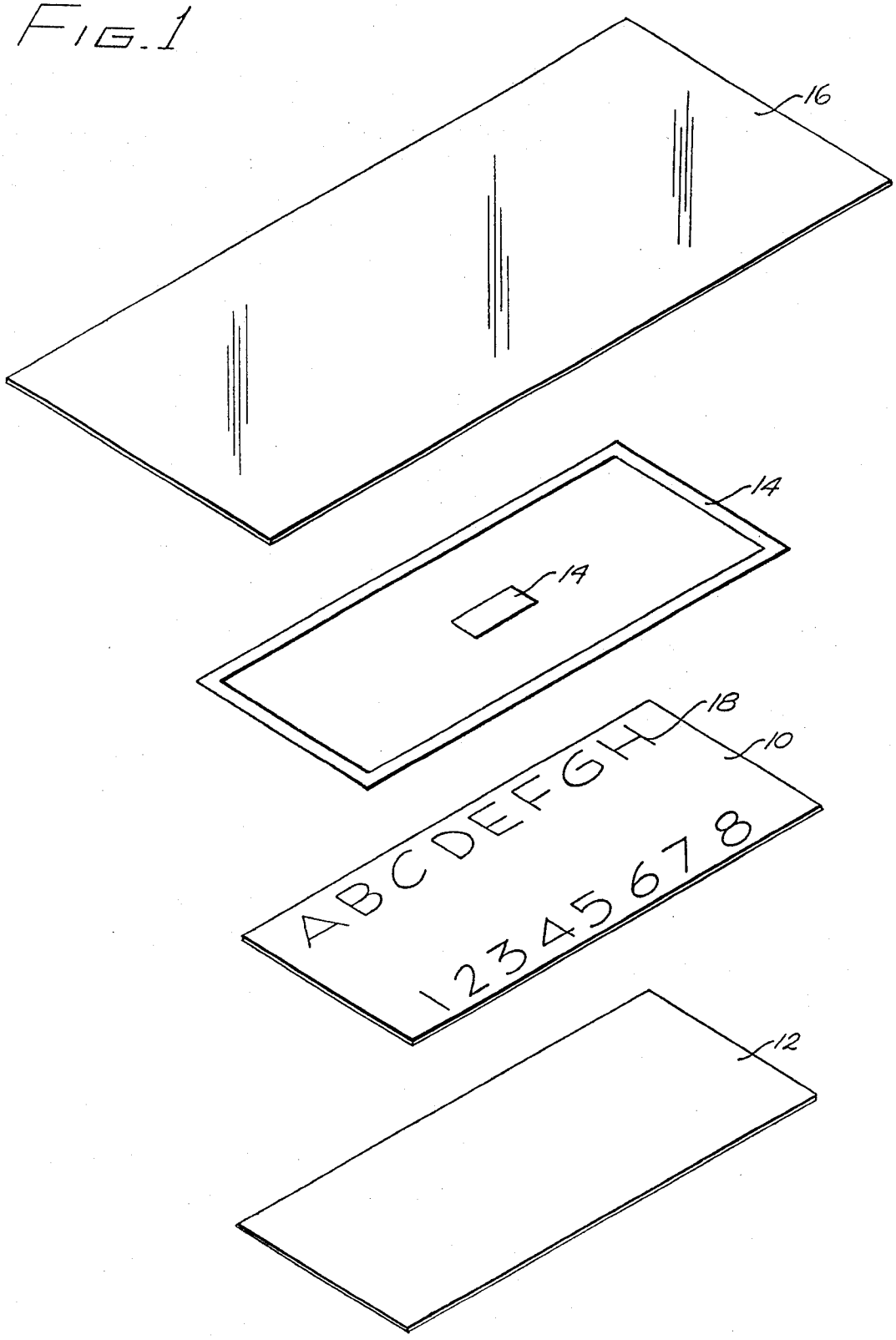
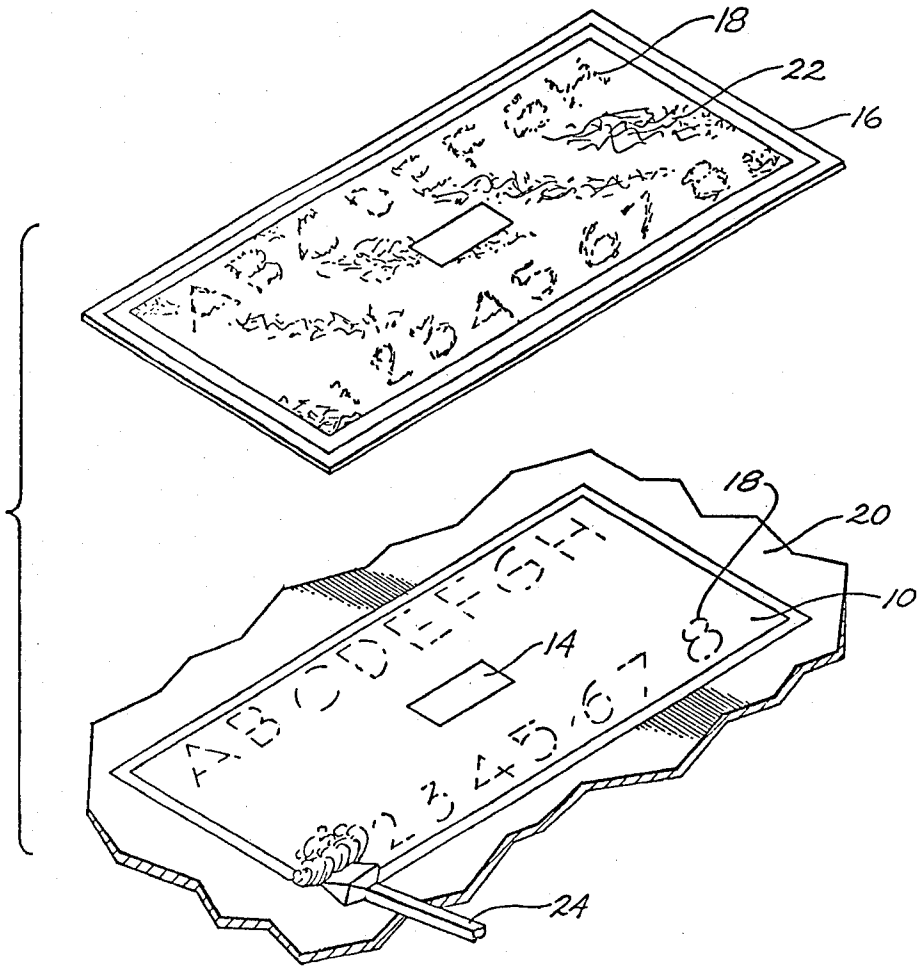


FIG. 2



DESTRUCTIBLE LABEL SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to tamper proof labels particularly labels which must be permanently applied to a substrate.

Recently the Unites States Federal Highway Administration developed a regulation requiring all manufacturers of motor vehicles to provide serial number, date and year of manufacture on a certification label permanently applied to the vehicle. This label certifies that the vehicle meet all applicable federal safety standards enabling purchasers to determine by the imprinted date of manufacture which standards are applicable to that particular vehicle. The regulation includes imported vehicles and requires the certification label to be affixed by the foreign manufacturer who is in the best position to know the foreign characteristics of the vehicle. The label required must remain in place and be legible for life of the vehicle and not easily transferrable to another vehicle. To prevent easy transferability to another vehicle the label must, however, be essentially tamper proof.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a two component tamper proof label system in which after permanent application to a substrate, removal of a transparent adhesive self-supporting protective film component will expose a fragile printed label base which will destruct when removed from the substrate.

The first component of the system is a printable fragile label base in adhesive contact with an adhesive layer typically a pressure sensitive adhesive. The adhesive bond of the adhesive layer to the substrate to which the label is to be applied exceeds the tear strength of the label base. The second component of the system is an adhesive self-supporting protective film adapted to be applied in overlapping relation over the label base to protect but not support the label base.

At least a portion of the fragile label base is preferably masked with a substance having substantially no adhesivity to the adhesive portion of the protective overlay. This allows the adhesive protective film to readily separate from and expose the label base when it is removed.

In application, the label base is printed and permanently applied to a substrate and covered with the overlapping adhesive self-supporting film which also adheres to the substrate. When the protective film is removed, the masking surface will cause the protective film to separate from and expose the label base. Due to the fragile nature of the label base, any attempt to remove it will result in its destruction. In addition, any attempt to simultaneously remove both the protective self-supporting film and label base will result, generally, in buckling or separation of the label base from the self-supporting film.

In a preferred construction, the masking surface is applied at the borders of the label base. This allows separation of the protective self-supporting film but also provides partial adhesive contact with the adhesive self-supporting protective film. When the protective film is removed, there is removed with it some portion of the surface of the label base disrupting thereby printed visual indicia.

DRAWINGS

FIG. 1 is an expanded illustration of the several elements of the preferred label construction of this invention.

FIG. 2 is an illustration of the nature of the destruction which occurs when a protective film overlay is removed from the preferred label construction of this invention.

DESCRIPTION

According to the present invention, there is provided a tamper proof label system comprising a printable adhesive label base and an overlapping adhesive self-supporting protective film. The printable label base is fragile and in a preferred construction, at least a portion is masked with a substance such as a silicone release agent which has poor adhesion to the overlapping adhesive self-supporting protective film.

After both the label base and the overlapping protective film are applied in adhesive contact to the substrate, removal of the overlapping protective film will expose the printed fragile label base which cannot be removed without destruction. This is because it has a lower tear strength than the adhesivity of the adhesive to the substrate.

With reference now to FIG. 1, the preferred destructible label system of this invention comprises a fragile printable surface **10** and adhesive layer **12** which is adhesive both with respect to surface **10** and the substrate to which the label is to be applied.

The nature of the fragile printable surface **10** is not narrowly critical although its tear strength must be less either than the cohesive strength of adhesive layer **12** or its adhesive strength to the substrate to which it is to be applied. It may, for instance, be a friable surface such as a weak paper; a sintered plastic; a fibrous surface bonded by a weak adhesive or resinous matter; or a particulate microspherical particle surface which will yield visual indicia when struck with a force sufficient to rupture indicia-producing microspheres and the like.

It may also be a brittle surface such as a thin unplasticized vinyl polymer; an acrylic polymer; a thin epoxy polymer layer or the like. The surface must, however, have sufficient integrity to accept printing or visual indicia formed by a strike, or other printing means.

Label base **10** may be transparent or opaque, natural, colored or tinted. Independent of natural appearance it is preferably surface coated with a contrast color for reasons set forth below.

Preferably, over at least a portion of the surface of label base **10** there is applied a mask **14** of a substance having little or no adhesivity to an adhesive self-supporting film **16.** Although any pattern may be applied, a preferred mask pattern is one which borders the perimeter of label base **10** for reasons set forth below. It may, however, completely cover label base **10.** Useful mask materials include amongst others waxes; oils; silicone release agents; inks to which the adhesive of the self-supporting film has essentially no adhesivity; sprayed non-adherent film forming coatings, such as Teflon; self-supporting films, such as a polyethylene film, which has limited or no adhesivity to the label base and/or the adhesive of protective film; and the like.

As indicated, the second component of the system is a self-supporting protective film **16** which is adhesive

on one side for contact to the fragile label base **10** and is adapted for application in overlapping relationship to label base **10** to also adhere to the substrate to which the label is to be permanently applied. It is, however, substantially nonadhesive with respect to masking surface **14.**

Self-supporting film **16** may be constructed of a variety of materials. Desirably, however, it is constructed of a material which has strong resistance to the elements so that it will provide long term protection for label base **10** and any imprinted visual indicia thereon.

Among the materials which may be used, for the construction of the protective film **16,** there may be mentioned normally solid polymers including among others ethylene polymers such as polyethylene; propylene polymers such as polypropylene; acrylic polymers; vinyl polymers such as polyvinyl acetate, polyvinyl chloride, polyvinyl fluoride and the like; cellulose acetate; polycarbonates; polyesters; polyethers; polysulfones, styrene polymers and the like.

Protective film **16** must be at least transparent where any visual indicia applied to label base **10** is to appear but may be colored, tinted or otherwise printed as desired.

Although masking surface **14** may be applied or in contact with the fragile label base **10** it may, in addition, be applied to or part of the self-supporting protective film **16.** It may be applied thereon as a coating or a self-supporting film having, for instance, good adhesion to film **16** but poor or no adhesion to label base **10.** It may also be conveniently provided by selectively coating for film **16** with its adhesive as by the use of a masking pattern during manufacture so as to make a portion of its adhesive surface void of adhesive. In this instance the film **16** should be indexed such as with marking bars to indicate its proper positioning with respect to label base **10.**

Preferably, however, the relatively nonadhesive masking surface **14** is applied over all or part of label base **10.** In the instance where surface label base **10** has been provided with contrast colored coating, which is fragile or provided with fragile visual indicia **18,** it is preferred to utilize only a limited mask and more preferably along the borders of label base **10.** In this arrangement the protective self-supporting film **16** may be advantageously provided with an adhesive surface which has some affinity for the color coating and/or printed indicia available on the surface of label base **10.** Removal of the applied protective self-supporting film will then result in removal of part of the surface unprotected by masking surface **14** providing at least random surface disruptions which will hinder reuse of the base by applying another protective film as the disruptions will be displayed therethrough. In addition, it will inhibit replacement of the original protective film as proper alignment would be most difficult to accomplish.

The tamper proof label system of this invention may be provided for application to a substrate as a single composite dual component system. A label base **10** with adhesive layer may be, for instance, printed with any desired indicia and the protective overlapping film **16** applied immediately thereon using a common release coated paper base as an initial support prior to application to a substrate. When used, both adhesive base label and protective overlayer may be applied directly as a unit to the substrate. A composite such as this is particularly useful for applications where indicia such as code numerals can be printed in a sequence and later coded to reveal the recipient of the numeral. Here, a composite system would find ideal application in license plate applications, identifying bumper stickers such as those used in factories and schools and validation stickers. This system is useful, too, where there is applied to or used at the fragile label base image forming microspheres. In this instance the visual indicia may be formed directly within the composite assembly by printing on the self-supporting film **16.**

Where, however, the label must be printed with indicia which is critical to identifying the substrate to which it is applied the label system is conveniently provided as a two component system, the first component consisting essentially of the label base **10** having available adhesive surface **12** preferably a pressure sensitive adhesive protected by a release paper (not shown) and preferably, mask **14.** The second component is the adhesive self-supporting protective film **16** which may also be initially protected by a release coated paper. The adhesive fragile label base may be provided in a suitable manner with any desired standard visual indicia and later with indicia necessarily peculiar to the substrate to be labeled. This two component system is particularly utile to meet the recent Federal Highway regulations concerning tamper proof labels. After the label is imprinted with indicia **18** peculiar to the substrate to which the label is to be applied, label base **10** is then attached to the substrate by means of the available lower adhesive surface of adhesive layer **12** and protective film **16** applied thereover.

In reference now to FIG. **2,** there is illustrated the nature of destruction which will occur when any attempt is made to remove a label, having the preferred construction of this invention, from the substrate **20** to which it is applied. As the transparent protective film **16** overlaps label base **10,** it will have to be removed first. When it is removed, there is ideally removed with it a portion of a fragile surface **22** of fragile label base **10** along with a portion of the printing **18** which is fragile or which falls on a fragile area. This disrupts the uniformity of the surface of label base **10** except in the areas where mask surface **14** appears. This gives a direct indication that the label surface now has two parts, a disrupt area and an undisrupted area and indicates the surface has been tampered with. This accomplishes two functions. First, as the transparent film **16** is lifted, it will, initially, appear that it will lift cleanly from label base **10** carrying no portion with it. However, as removal is continued a portion of the fragile surface on label base **10** in adhesive contact with self-supporting film **16** lifts with film **16** thereby disrupting label uniformity leaving thereby a disrupted portion of the label and an undisrupted portion of the label as protected by masking surface **14.** The pattern of disruption is random making it nearly impossible to reapply protective layer **16.** Secondly, it exposes the fragile label base **10** which will be destroyed when an attempt is then made to remove it.

With reference again to FIG. **2,** when an attempt is then made to remove label base **10** from substrate **20** using an object such as knife edge **24** the fragile surface of label base **10** having a lower tear strength than adhesive layer **12** will destruct destroying thereby applied visual indicia and preventing transfer to another substrate.

If any attempt is made to simultaneously remove both the protective self-supporting film and label base there will generally result a buckling or separation of the label base from the protective self-supporting film.

What is claimed is:

1. A destructible label system comprising:

a. a fragile label base at least one surface of which is imprintable with visual indicia;

b. an adhesive layer having first adhesive surface for adhesive contact with the surface opposed to the imprintable surface of the fragile label base and a second adhesive surface for adhesive contact with at least one substrate, the adhesivity of the second adhesive surface to the substrate exceeding the tear strength of said fragile label base; and

c. a self-supporting film at least transparent where visual indicia are to appear on said fragile label base said self-supporting film dimensioned to cover said fragile label base in overlapping relationship and having an adhesive surface for contact with said fragile label base and the substrate a portion of the adhesive surface of said self-supporting film being substantially non-adhesive with respect to a portion of said fragile label base.

2. A destructible label system as claimed in claim **1** in which the fragile base layer is friable.

3. A destructible label system as claimed in claim **1** in which the fragile base layer is brittle.

4. A destructible label system comprising:

a. a fragile label base at least one surface of which is imprintable with visual indicia;

b. a masking surface in contact with a portion of the printable surface;

c. an adhesive layer having a first adhesive surface for adhesive contact with the surface of said fragile label base opposed to the imprintable surface and a second adhesive surface adapted for adhesive contact with at least one substrate, the adhesivity of said second adhesive surface to the substrate exceeding the tear strength of said fragile label base;

d. a self-supporting film at least transparent where visual indicia are to appear on said fragile label base, said self-supporting film dimensioned to cover said fragile label base in overlapping relationship and having adhesive surface for contact with said masking surface, said fragile label base and the substrate to which the label is to be applied said masking surface preventing adhesive contact of said adhesive surface with the masked portion of said fragile label base.

5. A destructible label system as claimed in claim **4** in which the fragile base layer is friable.

6. A destructible label system as claimed in claim **4** in which the fragile base layer is brittle.

7. A destructible label system as claimed in claim **4** in which the masking surface is in contact with at least the perimeter of said fragile base layer.

8. A destructible label system as claimed in claim **4** in which the masking surface covers the entire label base.

9. A destructible label system as claimed in claim **4** in which the masking surface is a silicone release agent.

10. A destructible label system as claimed in claim **7** in which the masking surface is a silicone release agent.

11. A destructible label system as claimed in claim **8** in which the masking surface is a silicone release agent.

12. A destructible label system as claimed in claim **1** in which the self supporting film is a normally solid polymer.

13. A destructible label system as claimed in claim **4** in which the self supporting film is a normally solid polymer.

14. A destructible label system as claimed in claim **12** in which the normally solid polymer is selected from the group consisting of vinyl polymers, propylene polymers and polyesters.

15. A destructible label system as claimed in claim **13** in which the normally solid polymer is selected from the group consisting of vinyl polymers, propylene polymers and polyesters.

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