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(54) **SELECTIVE CHROMING**

SELEKTIVES CHROMIEREN

CHROMAGE SÉLECTIF

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• **None**

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EP 3 055 115 B1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to an injection molded assembly that has chrome.

BACKGROUND OF THE INVENTION

[0002] Known components with chrome have issues with delaminating and flaking of the chrome/paint and the processes known for making the components are also time consuming, labor intensive, and often results in a higher component piece price. Typical chrome parts, such as vehicle brand badges, are known to have warranty issues stemming from delaminating and/or flaking paint on paint-over chrome vehicle badges, which is aesthetically displeasing and expensive to replace. One disadvantageous manufacturing process chromes all of the molded parts, e.g., chromes the entire vehicle badge, then masks the parts before painting only portions of the vehicle badge, e.g., such as painting only the letters. This results in increased manufacturing costs, labor, and time, and warranty issues. In one known attempt to remedy the aforementioned issues, a snap together design for a vehicle badge was employed with no painting, however, multiple parts with assembly are required. Such a design is more expensive and manufacturing of the snap together component is slow and expensive. JP 2002 111 368 A discloses a two shot injected assembly having predetermined selectively plated surface and pathway therefor.

[0003] Accordingly, a process is desired which is operable for molding a final assembly that eliminates paint and reduces areas of wasted chrome material, while improving manufacturing cost and time.

SUMMARY OF THE INVENTION

[0004] The present invention provides a final injection molded assembly for a motor vehicle with the features defined in claim 1. There is provided a final injection molded assembly having at least two parts; an injection molded part made of non-plateable material and an overmolded part made of plateable material. An injection molding tool is provided for selectively injecting a shot of each material. A chroming line path is also provided for selectively chroming only the plateable material. The injection molded assembly has at least one pathway operable to create a surface path to at least one area for the application of chrome to the desired plateable areas. Forming of the injection molded assembly provides the pathway through the assembly and the features operable for selectively applying an electric current. As the injection molded assembly passes through the chroming line the electric current is applied to the assembly and only the plateable material accepts the chrome.

[0005] Further areas of applicability of the present in-

vention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating the preferred embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention as defined in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present invention will become more fully understood from the detailed description and the accompanying drawings, wherein:

Fig. 1 is a front elevation view of a first injection molded part formed of a non-plateable material, in accordance with the present invention;

Fig. 2 is a front elevation view of a second injection molded part formed of a plateable material, in accordance with the present invention;

Fig. 3 is a front elevation view of a final injection molded assembly, in accordance with the present invention;

Fig. 4 is a rear elevation view of the first injection molded part depicted in Fig. 1, in accordance with the present invention;

Fig. 5 is a rear elevation view of the second injection molded part depicted in Fig. 2, in accordance with the present invention;

Fig. 6 is a rear elevation view of the final injection molded assembly depicted in Fig. 3, in accordance with the present invention;

Fig. 7 is a front perspective view of the final injection molded assembly depicted in Figs. 3 and 6, in accordance with the present invention; and

Fig. 8 is a rear perspective view of the final injection molded assembly depicted in Figs. 3, 6 and 7, in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0007] The following description of the preferred embodiment(s) is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses.

[0008] A final injection molded assembly is provided having one or more injection molded parts made of non-plateable material, one or more injection molded parts made of plateable material, and a pathway and incorporated features to direct flow path of chrome material to specific areas, and process for making same. The final injection molded assembly is manufactured using multiple shot injection molding for processing multiple parts of various materials in a single mold. There is depicted an assembly for a motor vehicle configured to reduce wasted chrome while directing chrome to areas that need chrome, in accordance with the present invention. Fig-

ures 1-8 show a vehicle badge/emblem to illustrate an exemplary molded assembly and process for making same that utilizes two shot injection molding with a rotary tool to produce a complete molded assembly in a single mold with particular part features that will reduce wasted chrome on the backside of the part and eliminate the need for paint or chrome resist coatings. The features and process described herein are suitable to allow application to any other vehicle assemblies where chroming is desired. Such applications include, but are not limited to, exterior/interior decorative trim, headlamp/fog lamp housings, and exterior grills.

[0009] Referring generally to Figures 1-8, there is provided a final injection molded assembly, shown generally at 10, having at least two parts; a first injection molded part 12 formed of a first material that is non-plateable and a second injection molded part 14 formed of a second material that is plateable. The first material is a plastic material with a predetermined high gloss appearance that will resist chrome material and pass predetermined performance specifications, e.g., for use in exterior vehicle applications as a replacement for paint. This eliminates paint and the issue of paint delamination and/or flaking on vehicle emblems and badges. This also helps to reduce chrome material waste since the first material resists chrome. The second material will accept chrome material.

[0010] The final injection molded assembly 10 includes at least one mounting feature operable for attachment to a motor vehicle. In accordance with one embodiment, Figures 4, 6 and 8 illustrate the backside of the first injection molded part 12 having at least two mounting features, shown generally at 16, each for receiving a respective attachment fixture 18 (Fig. 8) operable for mounting the final injection molded assembly 10 to the vehicle, e.g., clip for a snap fit engagement on the exterior of the vehicle such that the vehicle badge is prominently displayed.

[0011] The second injection molded part 14 forms a pathway, generally shown at 24, that provides a surface path for directing chrome to areas that need chrome. In one embodiment, the first injection molded part 12 has an opening 20 formed through the part in a location operable to align with another opening 22 formed through the second injection molded part 14, the second injection molded part 14 forming the pathway 24 that provides a surface path for directing chrome to areas that need chrome. The opening 20 is sized and configured to allow the second injection molded part 14 to extend through the opening 20 and have an overhang or lip 30 around the outer front side of the opening 20.

[0012] The pathway 24 is integrally formed with the front side 32 and the backside 34 of the second injection molded part 14. However, the pathway 24 is not located on the perimeter 36 of the component assembly 10. The pathway 24 is located inward and/or centrally from the perimeter 36 formed by the second injection molded part 14. Most preferably, the pathway 24 connects features

or areas that are to be chromed that are not connected to the perimeter 36 on the class A side of the molded assembly 10. By way of non-limiting example, the "O" of the vehicle badge depicted in the figures having the pathway 24 is not connected to the perimeter 36 on the front side 32, Class A side, of the molded assembly 10, but is connected on the back side 34, non-show surface, with various paths, shown generally at 38, leading to the pathway 24.

[0013] The backside 34 of the second injection molded part 14 has at least one tab 26 that is operably configured and located for attaching the tab 26 of the final injection molded assembly 10 to a chroming path, e.g., for operably attaching to a rack that moves along a chroming process line, and for receiving a predetermined electric current. The second injection molded part 14 has a plurality of gaps, generally shown at 28, or areas with no material and the second injection molded part 14 is overmolded such that show surfaces of the first injection molded part 12 are viewable in the final injection molded assembly 10.

[0014] Making the final injection molded assembly 10 includes the steps of providing an injection molding tool and injecting a first shot of the first material that is non-plateable to form the first injection molded part 12 and overmolding the first injection molded part 12 with the second shot of the second material of the second injection molded part 14. The second material is operably plateable for accepting chrome. The at least one tab 26 is operably releasably attached to a chroming rack, e.g., attached to part of a rack configured for moving along a chroming path. The injection molded assembly is ran through a chroming process line where only the second material will accept the chrome being delivered. As the injection molded assembly travels along the chroming line path the pathway 24 provides a surface path to the areas that need chrome while the electric current is applied through the tabs 26 to allow the chrome to apply to the desired areas on the final injection molded assembly 10.

[0015] The first shot of material is non-plateable. This means that the material will not accept chrome. Most preferably, the non-plateable material is polycarbonate (PC). The second shot of material is plateable. This means that the material will accept chrome material. Most preferably, the plateable material is a PC acrylonitrile butadiene styrene (ABS).

[0016] The design features described herein will be implemented on any other chromed plastic part application suitable for reducing wasted chrome material on the backside of chromed parts and eliminate paint.

Claims

1. A final injection molded assembly (10) for a motor vehicle, comprising:

- at least one first injection molded part (12) of a first material that is non-plateable, the first injection molded part (12) including an opening (20); at least two mounting features (16) integrally formed on a backside of said at least one first injection molded part (12) and each including an attachment feature (18) for attachment to said motor vehicle;
- at least one second injection molded part (14) of a second material that is plateable, wherein the at least one first injection molded part (12) is partially overmolded by the at least one second injection molded part (14), said second injection molded part (14) having another opening (22) aligned with said opening (20) of said first injection molded part (12), and said second injection molded part (14) forming a lip (30) around an outer front side of said opening (20) of said first injection molded part (12); and
- wherein said second injection molded part (14) forms a pathway (24) through the opening (22) and the pathway (24) provides a predetermined surface path which directs the flow path of chrome material to predetermined desired areas when a predetermined electric current is applied, wherein the pathway (24) is integrally formed with a front side (32) and a backside (34) of the second injection molded part (14), and wherein the pathway (24) is connected on the backside (34), which is a non-show surface side, by a plurality of paths (38) leading to the pathway (24).
2. The final injection molded assembly of claim 1, further comprising at least one tab (26) integrally formed on a backside (34) of said at least one second injection molded part (14) for operably coupling to a rack movable along a chroming path while the electric current is applied through the at least one tab (26) to allow chrome to apply to the desired areas.
 3. The final injection molded assembly of claim 1 or 2, wherein the first material does not accept the chrome material and has a high gloss appearance, and the second material is polycarbonate acrylonitrile butadiene styrene that accepts the chrome material.
 4. The final injection molded assembly of any one of claims 1 to 3, wherein the final injection molded assembly (10) is selected from the group consisting of a vehicle badges/emblems, exterior decorative trims, interior decorative trims, headlamp housings, fog lamp housings, and/or exterior grills.
 5. The final injection molded assembly of claim 1, wherein the pathway (24) is not located on the perimeter (36) of the final injection molded assembly

(10).

6. The final injection molded assembly of claim 1, wherein the plurality of paths (38) are integrally formed with the front side (32), which is a show surface side, of the second injection molded part (14).

Patentansprüche

1. Fertige spritzgegossene Baugruppe (10) für ein Kraftfahrzeug, welche umfasst:

wenigstens ein erstes spritzgegossenes Teil (12) aus einem ersten Material, welches nicht plattierbar ist, wobei das erste spritzgegossene Teil (12) eine Öffnung (20) aufweist;

wenigstens zwei Montageelemente (16), die auf einer Rückseite des wenigstens einen ersten spritzgegossenen Teils (12) angeformt sind und jeweils ein Befestigungselement (18) zur Befestigung an dem Kraftfahrzeug aufweisen;

wenigstens ein zweites spritzgegossenes Teil (14) aus einem zweiten Material, welches plattierbar ist, wobei das wenigstens eine erste spritzgegossene Teil (12) durch das wenigstens eine zweite spritzgegossene Teil (14) teilweise überspritzt ist, wobei das zweite spritzgegossene Teil (14) eine weitere Öffnung (22) aufweist, die mit der Öffnung (20) des ersten spritzgegossenen Teils (12) fluchtet, und wobei das zweite spritzgegossene Teil (14) eine Lippe (30) um eine äußere Vorderseite der Öffnung (20) des ersten spritzgegossenen Teils (12) herum bildet; und

wobei das zweite spritzgegossene Teil (14) einen Durchgang (24) durch die Öffnung (22) hindurch bildet und der Durchgang (24) einen vorbestimmten Oberflächenweg bereitstellt, welcher den Strömungsweg von Chrommaterial zu vorbestimmten gewünschten Bereichen lenkt, wenn ein vorbestimmter elektrischer Strom angelegt wird, wobei der Durchgang (24) mit einer Vorderseite (32) und einer Rückseite (34) des zweiten spritzgegossenen Teils (14) einstückig ausgebildet ist und wobei der Durchgang (24) auf der Rückseite (34), welche eine nicht sichtbare Oberflächenseite ist, mit mehreren Wegen (38) verbunden ist, die zu dem Durchgang (24) führen.

2. Fertige spritzgegossene Baugruppe nach Anspruch 1, welche ferner wenigstens eine Lasche (26) umfasst, die auf einer Rückseite (34) des wenigstens einen zweiten spritzgegossenen Teils (14) zur betriebsfähigen Kopplung mit einem Gestell angeformt ist, das entlang eines Weges des Verchromens bewegbar ist, während der elektrische Strom über die

wenigstens eine Lasche (26) angelegt wird, um das Aufbringen von Chrom auf die gewünschten Bereiche zu ermöglichen.

3. Fertige spritzgegossene Baugruppe nach Anspruch 1 oder 2, wobei das erste Material das Chrommaterial nicht annimmt und ein hochglänzendes Aussehen hat und das zweite Material Polycarbonat/Acrylnitril-Butadien-Styrol ist, welches das Chrommaterial annimmt. 5
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4. Fertige spritzgegossene Baugruppe nach einem der Ansprüche 1 bis 3, wobei die fertige spritzgegossene Baugruppe (10) aus der Gruppe ausgewählt ist, welche aus Markenabzeichen/Emblemen eines Fahrzeugs, äußeren Zierleisten, inneren Zierleisten, Scheinwerfergehäusen, Nebelscheinwerfergehäusen und/oder äußeren Grillen besteht. 15
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5. Fertige spritzgegossene Baugruppe nach Anspruch 1, wobei sich der Durchgang (24) nicht auf dem Umfang (36) der fertigen spritzgegossenen Baugruppe (10) befindet. 25
6. Fertige spritzgegossene Baugruppe nach Anspruch 1, wobei die mehreren Wege (38) mit der Vorderseite (32) des zweiten spritzgegossenen Teils (14), welche eine sichtbare Oberflächenseite ist, einstückig ausgebildet sind. 30

Revendications

1. Ensemble final moulé par injection (10) pour un véhicule à moteur, comprenant : 35
 au moins une première partie moulée par injection (12) d'un premier matériau ne pouvant pas être plaqué, la première partie moulée par injection (12) comprenant une ouverture (20) ; 40
 au moins deux éléments de montage (16) formés d'un seul tenant sur une face arrière de ladite au moins une première partie moulée par injection (12) et comprenant chacun un élément de fixation (18) pour la fixation audit véhicule à moteur ; 45
 au moins une seconde partie moulée par injection (14) d'un second matériau pouvant être plaqué, l'au moins une première partie moulée par injection (12) étant partiellement surmoulée par l'au moins une seconde partie moulée par injection (14), ladite seconde partie moulée par injection (14) ayant une autre ouverture (22) alignée avec ladite ouverture (20) de ladite première partie moulée par injection (12), et ladite seconde partie moulée par injection (14) formant une lèvre (30) autour d'un côté avant ex- 50
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térieur de ladite ouverture (20) de ladite première partie moulée par injection (12) ; et ladite seconde partie moulée par injection (14) formant un passage (24) à travers l'ouverture (22) et le passage (24) fournissant un trajet de surface prédéterminé qui dirige le trajet d'écoulement du matériau chromé vers des zones souhaitées prédéterminées lorsqu'un courant électrique prédéterminé est appliqué, le passage (24) étant formé d'un seul tenant avec un côté avant (32) et un côté arrière (34) de la seconde partie moulée par injection (14), et le passage (24) étant relié sur le côté arrière (34), qui est un côté de surface non exposé, par une pluralité de trajets (38) menant au passage (24).

2. Ensemble final moulé par injection selon la revendication 1, comprenant en outre au moins une languette (26) formée d'un seul tenant sur une face arrière (34) de ladite au moins une deuxième partie moulée par injection (14) pour un couplage opérationnel à un support mobile le long d'un trajet de chromage tandis que le courant électrique est appliqué à travers l'au moins une languette (26) pour permettre au chrome de s'appliquer aux zones souhaitées.
3. Ensemble final moulé par injection selon la revendication 1 ou 2, le premier matériau n'acceptant pas le matériau chromé et ayant un aspect très brillant, et le second matériau étant du polycarbonate acrylonitrile butadiène styrène qui accepte le matériau chromé.
4. Ensemble final moulé par injection selon l'une quelconque des revendications 1 à 3, l'ensemble final moulé par injection (10) étant choisi dans le groupe constitué par les écussons/emblèmes de véhicule, les garnitures décoratives extérieures, les garnitures décoratives intérieures, les boîtiers de phares, les boîtiers d'antibrouillards, et/ou les grilles extérieures.
5. Ensemble final moulé par injection selon la revendication 1, le passage (24) n'étant pas situé sur le périmètre (36) de l'ensemble final moulé par injection (10).
6. Ensemble final moulé par injection selon la revendication 1, la pluralité de trajets (38) étant formée d'un seul tenant avec le côté avant (32), qui est un côté de surface exposé, de la deuxième partie moulée par injection (14).

FIG. 1

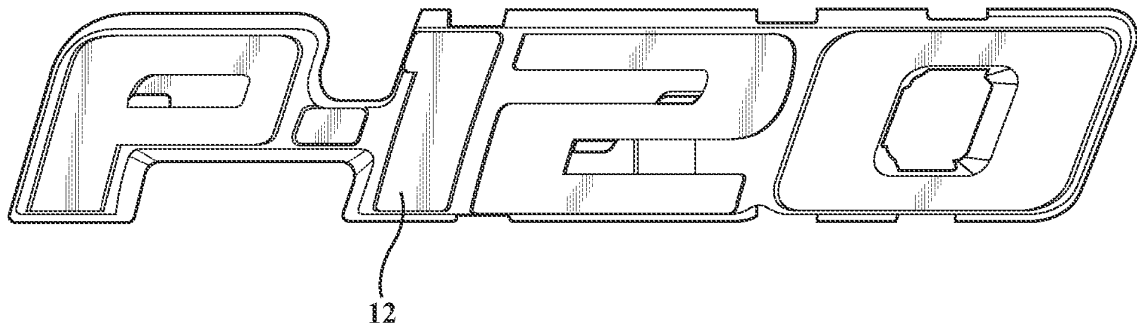


FIG. 2

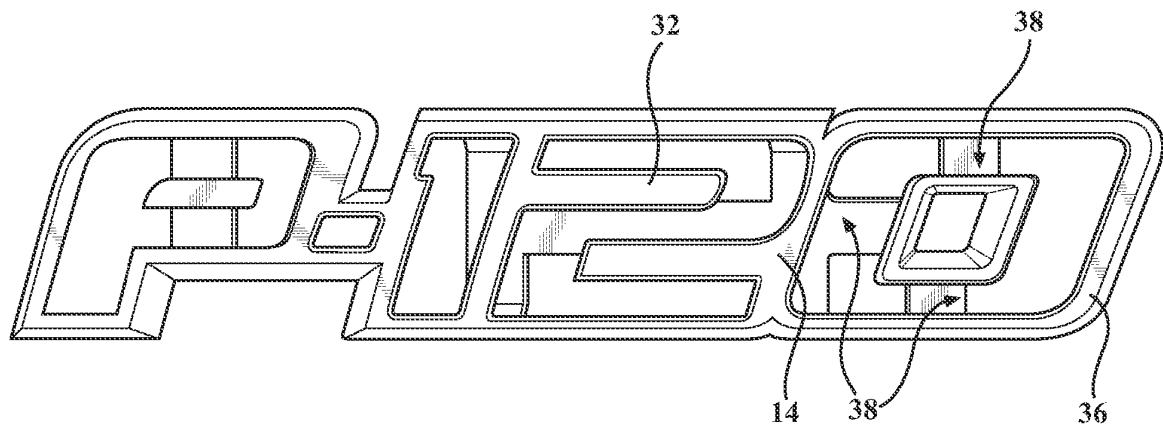


FIG. 3

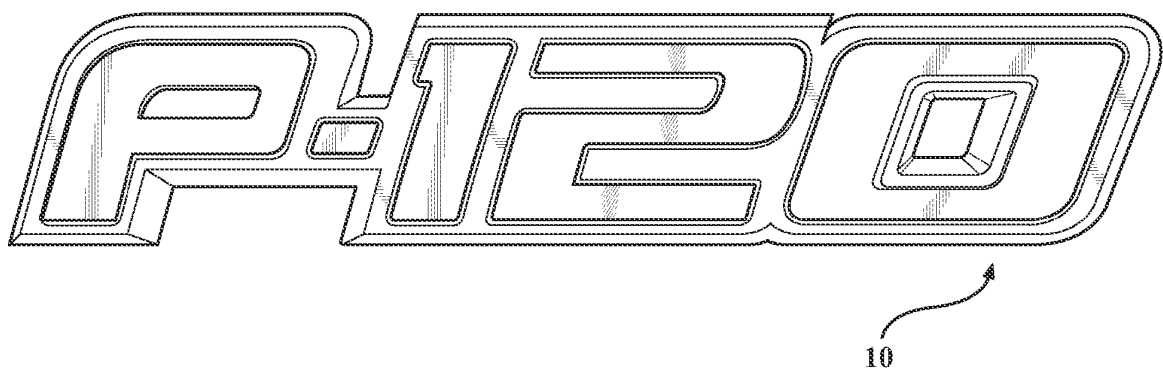


FIG. 4

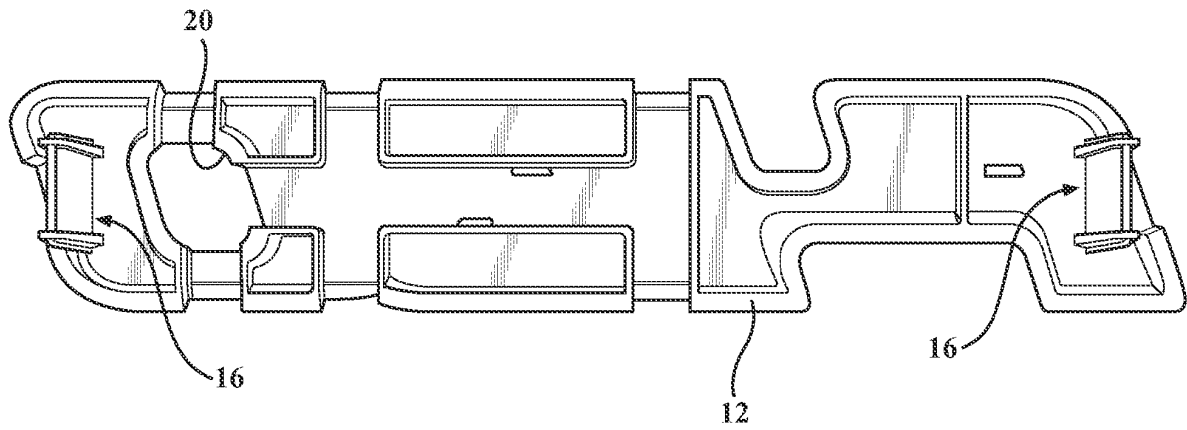


FIG. 5

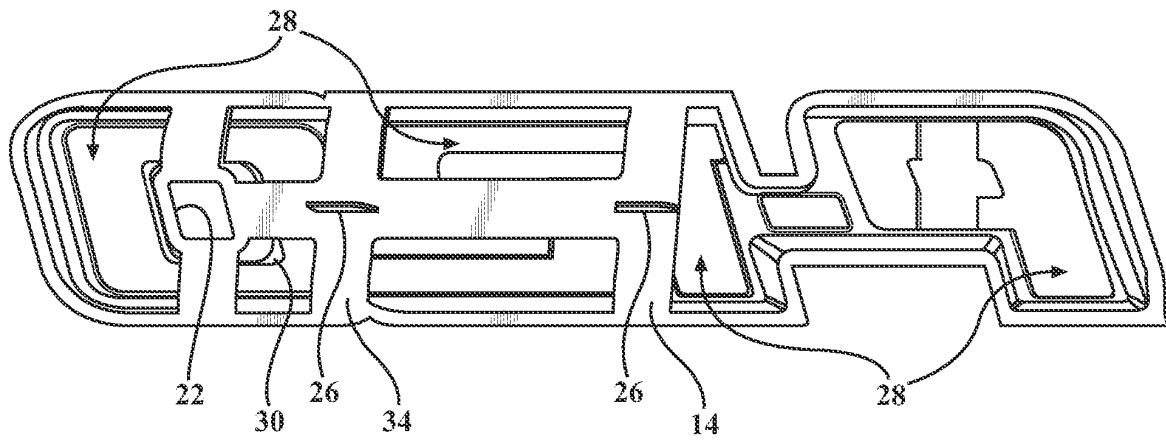


FIG. 6

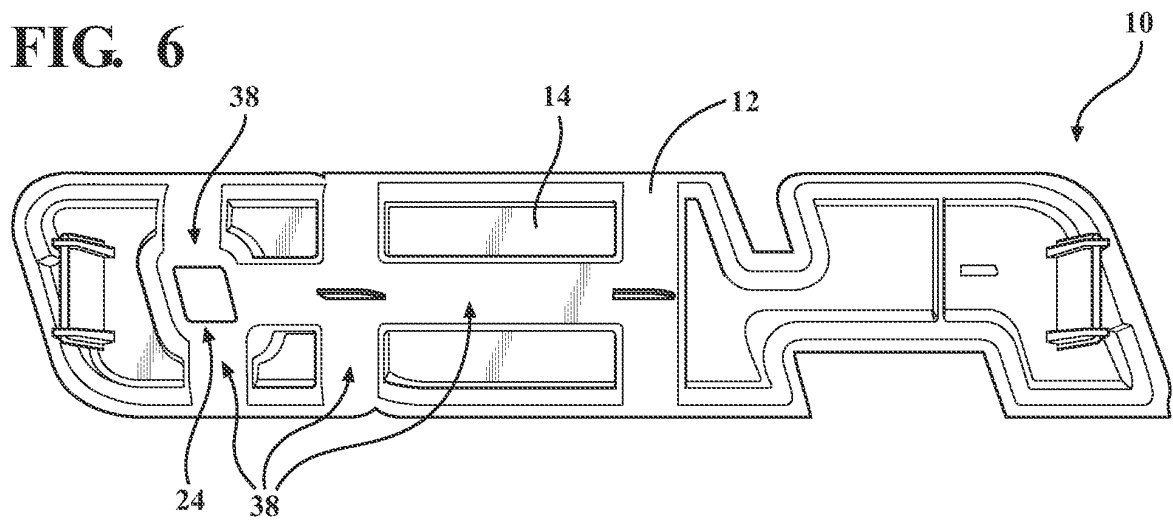
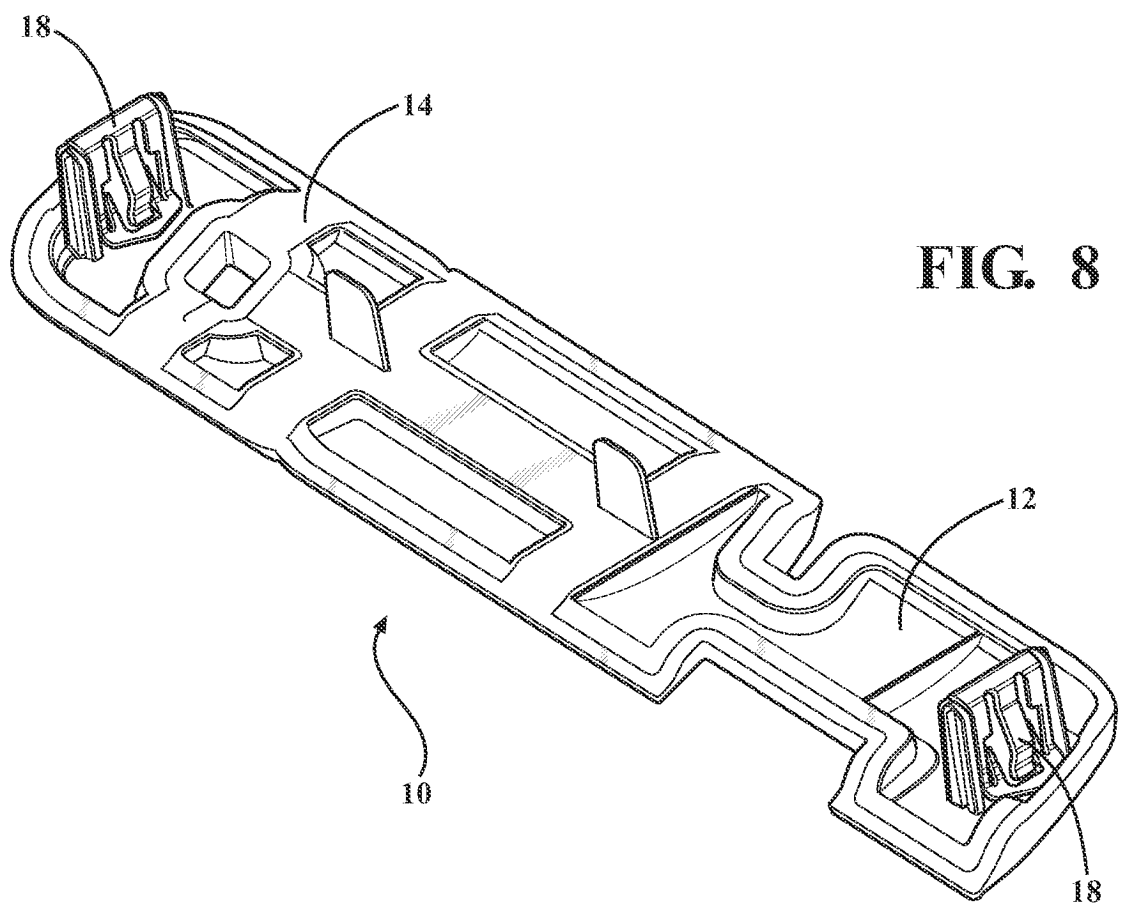
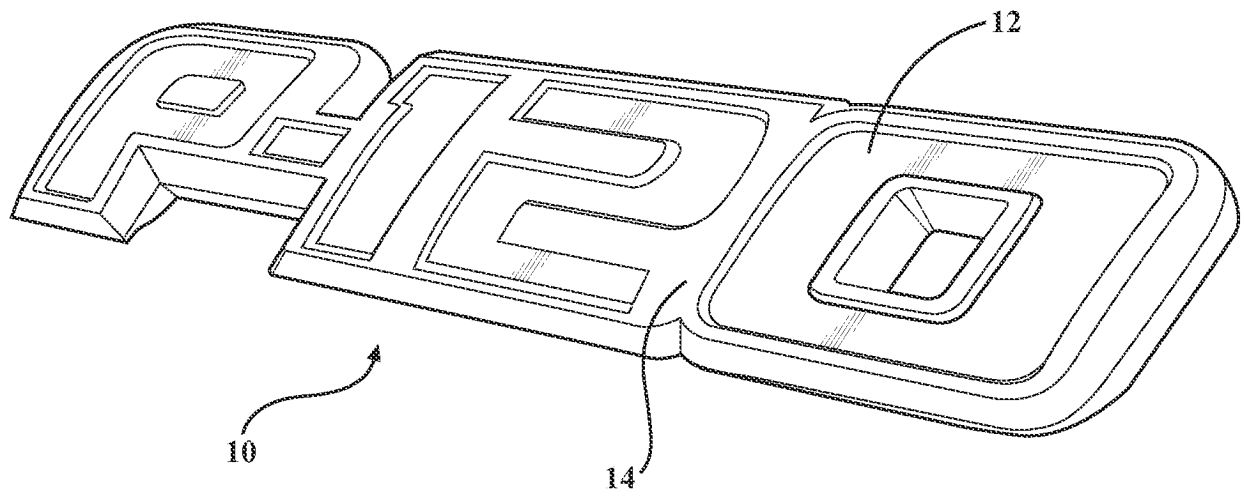


FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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