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(54) **ATTACHMENT ELEMENT FOR ELONGATE OBJECTS**

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(57) **ABSTRACT**

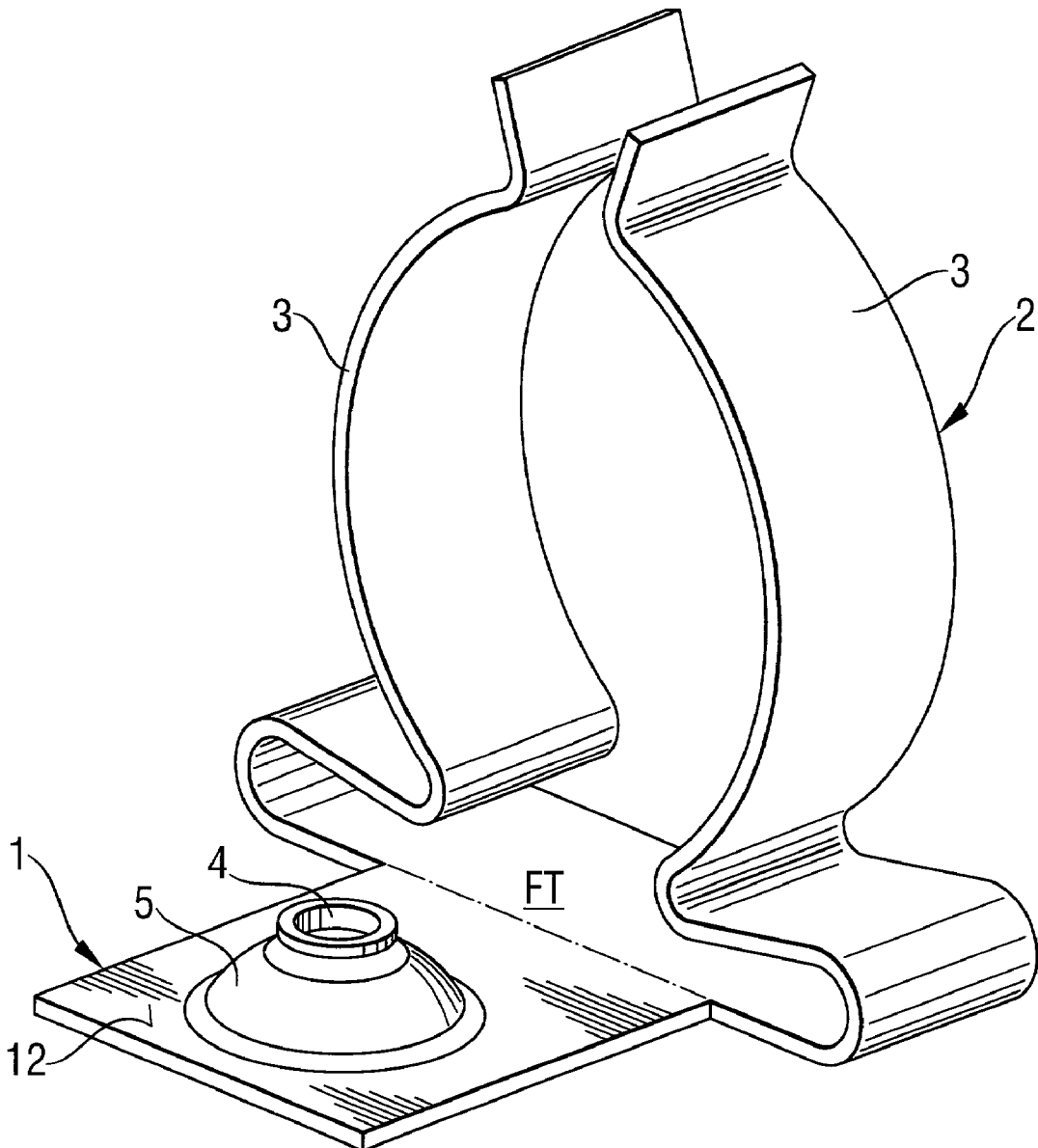
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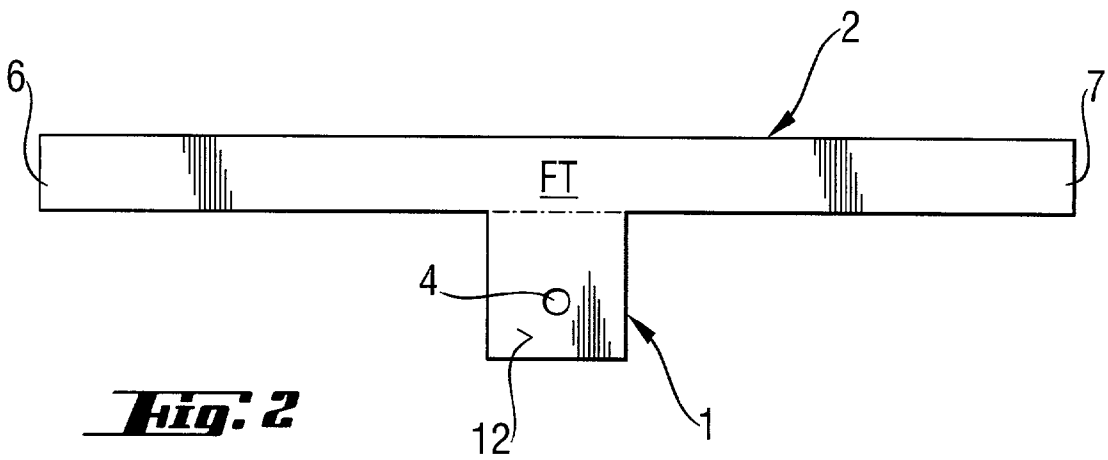
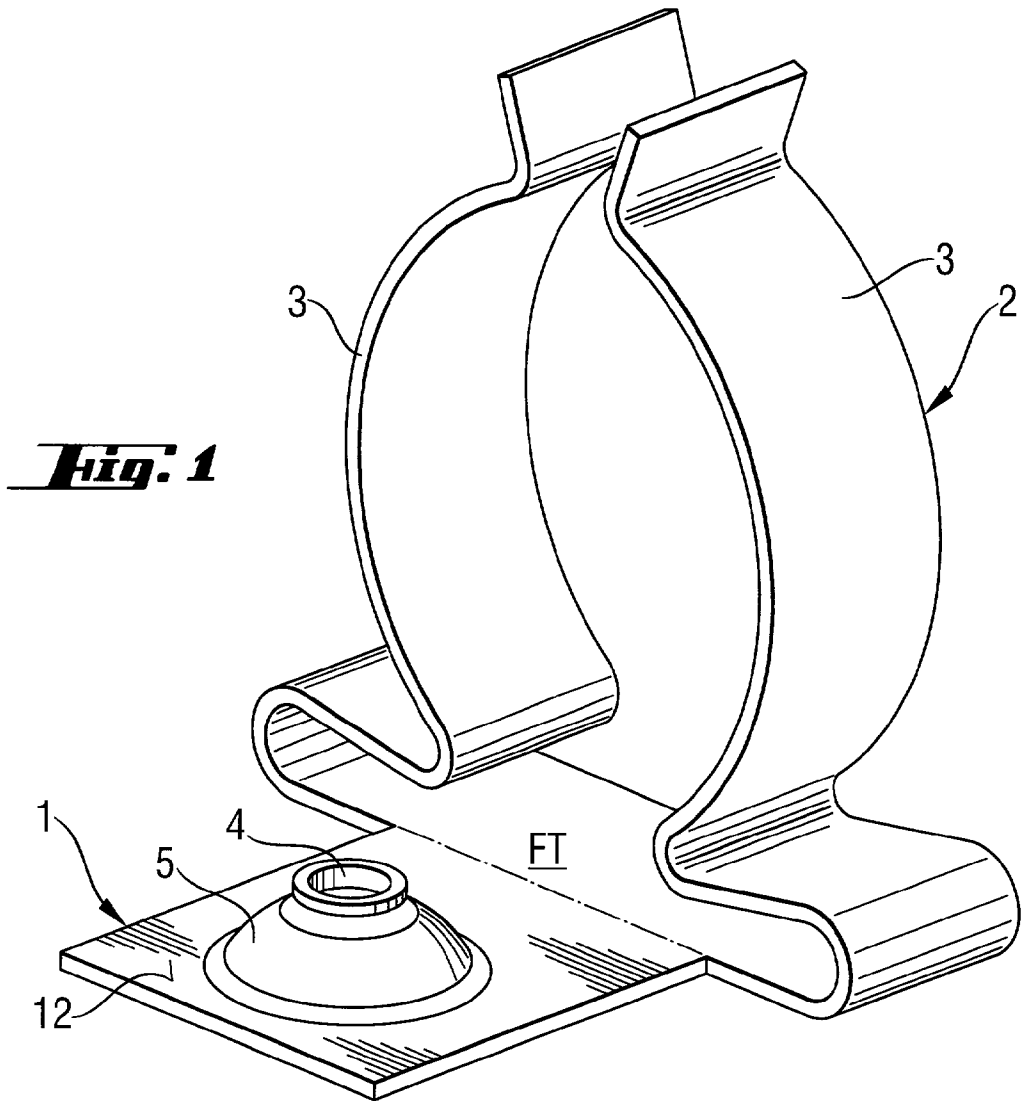
An attachment element having a holding part (1) securable to a constructional component; and a connection part (2) adjoining the holding part (1) outside of a projection plane of the connection part (2) and extending perpendicular to a plane of the holding part (1), intersecting same along its end side along which the connection part (2) adjoins the holding part (1), with the connection part (2) having a bottom (FT) and two resilient clamping legs (3) projection from the bottom (FT) for receiving an elongate object, and with the holding and connection parts forming a one-piece member.

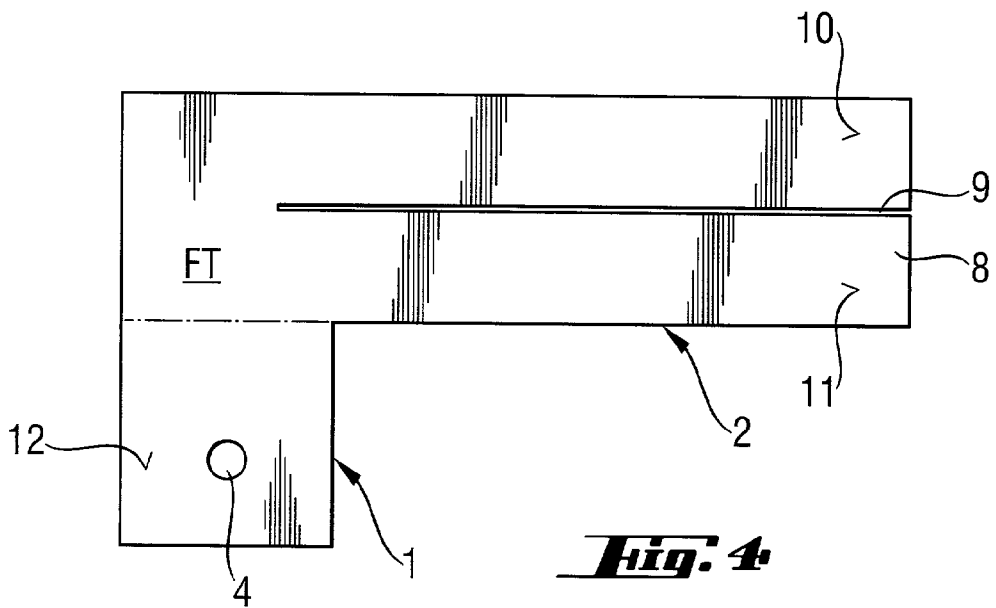
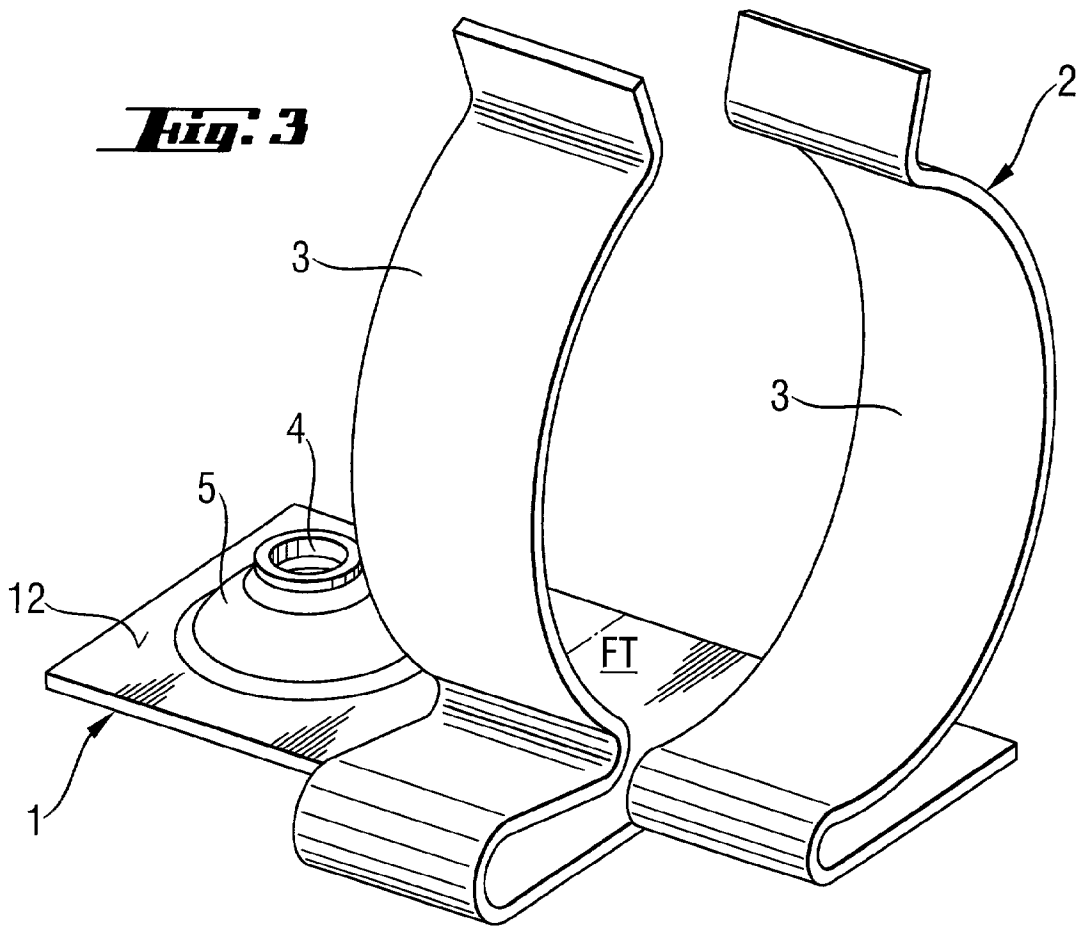
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## ATTACHMENT ELEMENT FOR ELONGATE OBJECTS

### BACKGROUND OF THE INVENTION

#### [0001] 1. Field of the Invention

[0002] The present invention relates to an attachment element for securing elongate objects to constructional components and including a holding part securable to a constructional component, and a connection part adjoining the holding part outside of a projection plane of the connection part and extending perpendicular to a plane of the holding part, intersecting same along its end side along which the connection part adjoins the holding part, with the holding and connection parts forming a one-piece member.

#### [0003] 2. Description of the Prior Art

[0004] Known, clip-like attachment elements are used for securing elongate objects such as, e.g., electrical conductors, water hoses and the like to constructional components.

[0005] These attachment elements have each a plate-shaped holding part securable to a constructional component, e.g., with nails or screws. The connection part, which is connected with the holding part, serves for releasably connecting an elongate object with the constructional component. German Publication DE 1775414 discloses an attachment element having a holding part and an attachment part. The plate-shaped holding part has a plurality of bores for securing the holding part to a constructional component. The connection part lies outside of a projection plane of the connection part and which extends perpendicular to a plane of the holding part, intersecting same along its end side along which the connection part adjoins the holding part. The connection part has essentially a shape of a hook.

[0006] The advantage of the known attachment element consists in that the arrangement of the connection part relative to the holding part permits to attach an object to a constructional component without any difficulty by simply attaching the holding part to the constructional component. This is because the connection part does not prevent access to the bore in the holding part or does not make the access completely impossible.

[0007] However, a drawback of the known attachment element consists in that the object cannot be secured in any arbitrary mounting position by the connection part, as the object first has to be inserted into the hook-shaped connection part.

[0008] Accordingly, an object of the present invention is to provide an attachment element that can be economically produced and, at the same time, provides for a simply attachment of an object.

### SUMMARY OF THE INVENTION

[0009] This and other objects of the present invention, which will become apparent hereinafter, are achieved by providing a connection part having a bottom and two resilient clamping legs projecting from the bottom for receiving the object. The two resilient clamping legs insure an easy insertion of an object. Further, the two resilient clamping legs insure a substantially arbitrary alignment of the receiving space formed by the two legs. This insures an easy handling of the attachment element.

[0010] Advantageously, the bottom of the connection part is aligned with the holding part, which insures a stable structure of the attachment element.

[0011] The clamping legs advantageously extend substantially perpendicular to the holding part, which permits to effect the attachment process in one step. Thereby, it is possible, simultaneously, to secure the attachment element to the constructional component, on one side, and to insert an object between the clamping legs, on the other side. Further, the arrangement of the clamping legs insures a manual insertion of the object therebetween.

[0012] Advantageously, each clamping leg has a substantially M-shaped cross-section, which insures an optimal retention of an object. However, dependent on the outer profile of an attachable object, the clamping legs can have another cross-sectional shape corresponding to the profile of the object.

[0013] For manufacturing the attachment element, advantageously, a sheet blank is subjected to stamping and bending processes. These processes provide for a time-saving and simple and, thereby, economical manufacturing of the attachment element.

[0014] Advantageously, for forming the attachment elements, T-shaped or L-shaped sheet blanks are used, which insures formation of the attachment element by a very easy bending process. This again contributes to an economical production of the attachment elements.

[0015] When the attachment element is formed of a T-shaped sheet blank, the bending step includes bending-off of opposite free ends of the T-shaped sheet blank in order to form the clamping legs. By forming the clamping legs by bending off opposite free ends of a T-shaped sheet blank, a substantial economy of material is achieved.

[0016] When the attachment element is formed of an L-shaped sheet blank, there is formed in a free end of the L-shaped sheet blank, a slot extending from a free end surface of the free end up to a sheet section corresponding to the holding part, and bending off of sections located on opposite sides of the slot from a remaining portion of the sheet blank is effected to form the two clamping legs.

[0017] When the L-shaped sheet blank is used for forming the attachment element, both sheet sections, which correspond to holding and connection part, respectively, have a shape of a rectangle. This insures a material-saving manufacturing of the attachment element.

[0018] The novel features of the present invention, which are considered as characteristic for the invention, are set forth in the appended claims. The invention itself, however, both as to its construction and its mode of operation, together with additional advantages and objects thereof, will be best understood from the following detailed description of preferred embodiments, when read with reference to the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The drawings show:

[0020] **FIG. 1** shows a perspective view of an attachment element for elongate objects according to a first embodiment of the present invention;

[0021] FIG. 2 shows a plan view of a sheet blank for forming the attachment element according to the present invention and shown in FIG. 1;

[0022] FIG. 3 shows a perspective view of an attachment element for elongate objects according to a second embodiment of the present invention, and

[0023] FIG. 4 shows a plan view of a sheet blank for forming the attachment element according to the present invention and shown in FIG. 3.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0024] An attachment element according to the present invention, which is shown in FIGS. 1-4, has a plate-shaped part 1 securable to a constructional component (not shown), and a connection part 2 adjoining the holding part 1 along an end side of the holding part 1. The connection part 2 adjoins the holding part 1 outside of a projection plane of the connection part 2 which extends perpendicular to the plane of the holding part 1 and interests the same along the adjoining end side of the holding part 1. The holding part 1 and the connection part 2 form a one-piece element. The connection part 2 has a bottom FT and two clamping legs 3 extending substantially perpendicular to the plane of the holding part 1. The clamping legs 3 have each a substantially M-shaped cross-section.

[0025] The holding part 1 has a bore 4 for securing the holding part 1 to the constructional component. The holding part 1 has, in the region of the bore 4, a cap-shaped bulging 5, with the bore 4 being located centrally with respect to the bulging 5.

[0026] FIGS. 1-2 show an embodiment of an attachment element formed by bending of a substantially T-shaped sheet blank shown in FIG. 2. The two opposite end sections 6 and 7 of the T-shaped sheet blank form the two clamping legs 3.

[0027] FIGS. 3-4 show a second embodiment of an attachment element according to the present invention which is formed of a substantially L-shaped sheet blank. A free end 8 of the L-shaped sheet blank has a slot 9 for forming the two legs 3. The slot 9 is open at the free end of the sheet blank and extends longitudinally over the entire length of the long leg of the L-shaped blank.

[0028] The attachment element is formed of a sheet metal, e.g., by stamping and bending process. Firstly, a T-shaped and L-shaped blanks are stamped out, respectively, for the attachment elements according to the first and second embodiments.

[0029] In both sheet blanks, a bore 4 is formed in blank sections corresponding to the holding part 1. In a further step, the clamping legs-forming tabs 6, 7 and 10, 11, respectively, are so bent that they acquire a substantially M-shaped cross-section, shown in FIGS. 1 and 3, respectively. Finally, the tabs 6, 7 and 10, 11 are bent transverse to the bottom FT.

[0030] Though the present invention was shown and described with references to the preferred embodiments,

such are merely illustrative of the present invention and are not to be construed as a limitation thereof, and various modifications to the present invention will be apparent to those skilled in the art. It is, therefore, not intended that the present invention be limited to the disclosed embodiments or details thereof, and the present invention includes all of variations and/or alternative embodiments within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. An attachment element for securing elongate objects to constructional components, comprising a holding part (1) securable to a constructional components; and a connection part (2) adjoining the holding part (1) outside of a projection plane of the connection part (2) and extending perpendicular to a plane of the holding part (1), intersecting same along an end side thereof along which the connection part (2) adjoins the holding part (1), the connection part (2) having a bottom (FT) and two resilient clamping legs (3) projecting from the bottom (FT) for receiving an elongate object, and the holding and connection parts forming a one-piece member.

2. An attachment element according to claim 1, wherein the bottom (FT) of the connection part (2) is aligned with the holding part (1).

3. An attachment element according to claim 1, wherein the clamping legs (3) extend substantially perpendicular to the holding part (1).

4. A method of producing an attachment element including a holding part (1) securable to a constructional component, and a connection part (2) adjoining the holding part (1) outside of a projection plane of the connection part (2) and extending perpendicular to a plane of the holding part (1), intersecting same along an end side thereof along which the connection part (2) adjoins the holding part (1), the connection part (2) having a bottom (FT) and two resilient clamping legs (3) projecting from the bottom (FT), with the holding and connection parts forming a one-piece member, the method comprising the steps of stamping out of a sheet metal a sheet blank having sections corresponding to holding and connection parts; bending the sheet blank to form the attachment part.

5. A method according to claim 4, wherein the stamping-out step comprises stamping out a T-shaped sheet blank.

6. A method according to claim 5, wherein the bending step includes bending off opposite free ends (6, 7) of the T-shaped sheet blank to form the clamping legs.

7. A method according to claim 4, wherein the stamping-out step comprises stamping out an L-shaped sheet blank.

8. A method according to claim 6, comprising forming, in a free end of the L-shaped sheet blank, a slot extending from a free end surface of the free end up to a sheet section corresponding to the holding part, and wherein the bending step comprises bending off of sections located on opposite sides of the slot from a remaining portion of the sheet blank to form the two clamping legs (3).

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