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Tömlőbilincs

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

Description

[0001] The invention relates to a hose clamp with a clamping band, a clamping device and a positioning arrangement for positioning the hose clamp on a hose,
5 wherein the positioning arrangement comprises at least two positioners.

[0002] A hose clamp of this type is known, for example, from the documents US 3 407 448 A, US 3 477 106 A, US 3 454 996 A and EP 1 445 526 A1.

10 [0003] Another hose clamp is known from WO 2004/044474 A1. The positioning arrangement comprises a positioner which is attached to the clamping band or is integrally formed in one piece with the clamping band. The positioner has two claw-like mouldings which can be pressed into the circumferential wall of a hose.

15 [0004] A hose clamp is primarily used to fasten the end of a hose on a connection piece. The hose is pushed onto the connection piece and the hose clamp, which expediently has already been mounted on the hose before the hose is pushed onto the connection piece, is tensioned by actuating the clamping device. This procedure has to be repeated relatively frequently in the manufacture of an automobile.

20 [0005] The tensioning of the hose clamp usually requires the use of a tool. It is favourable in this connection if the clamping device is arranged in a certain position. In order to ensure this position, the positioning arrangement is provided by means of which the hose clamp can be held on the circumference of the hose in
25 a predetermined angular position.

[0006] The use of such a positioning arrangement has already made it easier to some extent to fasten a hose on a connection piece. Nevertheless, a certain skill is required to actuate the clamping device.

30 [0007] It is the object of the invention to simplify the mounting of a hose.

[0008] In a hose clamp of the type mentioned initially, this object is solved whereby

one of the positioners is fixedly mounted in a circumferential direction on the clamping band and the at least one further positioner is movable in the circumferential direction relative to the clamping band and the movable positioner is arranged on a sheet metal bridge which is arranged inside the clamping band,
5 wherein the sheet metal bridge is configured as a spring.

[0009] Using two positioners, it is not only possible to secure the angular position of the hose clamp and, thus, the position of the clamping device in the circumferential direction of the hose. It is also possible to adjust with greater
10 certainty the angular position which is assumed by the clamping band with respect to the circumferential direction of the hose. As a result, a tilting of the hose clamp with respect to the hose is reduced or even avoided, so that a "skew" tightening of the hose clamp can be avoided. The person who is mounting the hose with the hose
15 clamp on the connection piece has to exercise less care in order to tighten the hose clamp in the desired manner. A non-uniform axial deformation of the material of the hose can be avoided or reduced.

[0010] Preferably, two positioners are arranged at a distance from each other in circumferential direction of at least 120°. In the case of such an angular distance,
20 the risk of the clamping band tilting relative to the circumferential direction of the hose is relatively small.

[0011] Preferably axial stops are arranged in the circumferential direction on both sides of at least one positioner. Tilting of the hose clamp with respect to the
25 circumferential direction of the hose in almost all directions can thus be reliably prevented.

[0012] According to the invention, one of the positioners is fixedly mounted in the circumferential direction on the clamping band and the at least one further
30 positioner is movable in the circumferential direction with respect to the clamping band. Thus, the hose clamp has a fixed positioner and a positioner mounted in a "floating manner". It can thus be achieved that the floatingly mounted positioner can remain in a fixed position on the hose during tensioning of the clamping band

even when the internal diameter of the clamping band is reduced. The floatingly mounted positioner travels relative to the clamping band to the extent that the internal diameter of the clamping band is reduced.

5 [0013] According to the invention, the movable positioner is arranged on a sheet metal bridge which is arranged in the interior of the clamping band. The sheet metal bridge has several advantages. On the one hand, the sheet metal bridge supports the positioner in the circumferential direction at two positions with respect to the clamping band, so that tilting of the clamping band with respect to the
10 circumferential direction of the hose can be avoided even if the positioner is not yet arranged directly at the clamping band. On the other hand, it can be ensured that the positioner can be mounted from the outset at the correct position on the hose because the positioner can actually have a certain distance from the clamping band in the untensioned state.

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[0014] According to the invention, the sheet metal bridge is configured as a spring. This assists the spreading of the hose clamp when the hose clamp is being disassembled. The movable positioner is preferably constructed integrally with the sheet metal bridge. This simplifies manufacture. For example, the positioner and
20 the sheet metal bridge can be punched as a common piece. The sheet metal bridge is preferably arranged in the area of the clamping device. The sheet metal bridge can thus be used for another purpose, namely for covering the material gap in the area of the clamping device. The two ends of the clamping band must overlap, wherein the inner end of the clamping band is pushed onto the circumferential
25 surface of the hose when the clamping band is tensioned. If the sheet metal bridge is now arranged in this area, the inner end is not pushed directly on the material of the hose when the clamping band is tensioned, but rather the inner end can travel on the outer side of the sheet metal bridge. The risk of the hose being damaged by the tensioning is therefore kept small.

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[0015] It is also an advantage that the hose clamp has a nominal dimension and a distance between the sheet metal bridge and a diametrically oppositely located section of the clamping band is smaller than the nominal dimension. This

configuration has the result that in the untensioned state of the clamping device, the hose clamp is already held on the circumference of the hose with a certain pretension. The hose is so to speak clamped between the sheet metal bridge and the diametrically oppositely located section of the clamping band. The clamping forces
5 produced in this case need not be large. They only have to be sufficient for a "prepositioning" of the clamp.

[0016] The invention is described hereinafter with reference to a preferred exemplary embodiment in conjunction with the drawings. In the figures:

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Fig. 1 shows a front view of a hose clamp;

Fig. 2 shows a perspective view of the hose clamp;

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Fig. 3 shows the hose clamp mounted on a hose and

Fig. 4 shows the hose clamp on the hose from a different viewing angle.

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[0017] The hose clamp 1 has a clamping band 2 whose ends are placed one on top of the other in such a manner that an inner end 3 and an outer end 4 are obtained. The two ends 3, 4 are connected to each other by a clamping device 5. The clamping device 5 is fixedly connected to the inner end 3 of the clamping band and has a tensioning screw 6 which is in engagement with a threaded embossment 7 on the outer side of the outer end 4 of the clamping band. By turning the tightening screw,
25 the outer end 4 is displaced in the circumferential direction with respect to the inner end 3 of the clamping band 2.

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[0018] Located diametrically opposite the clamping device 5 is a first positioner 8 which is connected fixedly to the clamping band 2. The positioner can for example be welded, soldered or glued to the clamping band 2, or can be connected to the clamping band 2 by clinching or embossing. It is also possible to construct the first positioner 8 in a single piece with the clamping band 2.

[0019] As can be seen in particular from Figs. 2 to 4, the first positioner 8 has a fastening section 9 extending transversely to the circumferential direction of the clamping band 2, which projects in the axial direction of the clamping band 2 by a predetermined distance beyond the clamping band 2. The fastening section 9 is bent at the projecting end into a U-shape so that a base 10 and a leg 11 are formed. The leg 11 has two tips 12, 13 which can dig into the inner wall 14 of a hose 15 to some extent, on the circumferential wall 16 whereof the hose clamp is mounted. The projection of the fastening section 9 defines an axial distance which is assumed by the hose clamp 1 with respect to the end face 17 of the hose 15.

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[0020] A second positioner 18 is arranged diametrically opposite the first positioner 8. The second positioner 18 is constructed in one piece with a sheet metal bridge 19 which is mounted on the clamping band 2 in a floating manner. In other words, the sheet metal bridge 19 has at both its ends a pair of bent lugs 20, 21 which embrace the clamping band 2 in such a manner that the sheet metal bridge 19 can be displaced relative to the clamping band 2.

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[0021] The sheet metal bridge is manufactured of a resilient material, preferably of spring steel. The sheet metal bridge is located at a distance with respect to a diametrically oppositely section of the clamping band 2, i.e. with respect to a section where the first positioner 8 is arranged, this distance being smaller than the diameter of the hose 15 for which the hose clamp 1 is provided. In the untensioned state, the sheet metal bridge 19 is then already slightly bent outwardly, so that the sheet metal bridge 19 rests in the area of the second position 18 with a certain tension against the circumference of the hose 15.

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[0022] The sheet metal bridge 19 has an axial protrusion 22 whose axial length corresponds approximately to the length of the projection of the fastening section 9 of the first positioner. The second positioner 18 is bent in a U-shape at the axial end of the projection 22, so that once again two tips 23 (only one is visible in Fig. 2) are formed which can claw into the inner wall 14 of the hose 15.

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[0023] The sheet metal bridge 19 has an axial stop 24, 25 in the circumferential

direction on both sides of the second positioner 18, which cooperates with the end face 17 of the hose 15 when the hose clamp 1 is mounted. The two axial stops 24, 25 have the same distance from the sheet metal bridge 19 in the axial direction as the base 26 of the U of the second positioner 18. The base 10 of the first positioner 8 is also arranged at the same axial position so that, when the hose clamp 1 has been pushed onto the circumference of the hose 15, it can be supported at a total of four positions on the end face 17 of the hose 15. This effectively avoids tilting of the hose clamp 1 with respect to the circumferential direction of the hose 15.

10 [0024] The tips 12, 13 and/or 23 simultaneously prevent rotation of the hose clamp 1 on the circumference of the hose 15, so that the preassembled hose clamp 1 remains in the position it has assumed until the hose clamp 1 is tightened on the hose 15.

15 [0025] The sheet metal bridge 19 is arranged in the circumferential direction in that area where the clamping device 5 is also located. During tensioning, the inner end 3 of the clamping band 2 moves with respect to the outer end 4. This movement is kept away from the circumferential wall 16 of the hose 15 because the inner end 3 slides on the outer surface of the sheet metal bridge 19 when the hose clamp 1 is tensioned.

20 [0026] A movement of the two ends 3, 4 of the clamping band 2 is possible despite the second positioner 18 because the sheet metal bridge 19 is mounted in a floating manner on the clamping band 2. The clamping band 2 can therefore move with respect to the sheet metal bridge 19.

25 [0027] Additionally arranged at the inner side of the clamping band 2 is a spring device 26 which holds the hose clamp under tension even when the tensioning force of the hose clamp 1 would otherwise be diminished as a result of a thermally induced diameter change. Such a spring arrangement is already known per se from DE 41 27 017 C1.

[0028] During tensioning of the hose clamp 1, the sheet metal bridge 19 is placed

around the circumference of the hose 15. Since the sheet metal bridge 19 is made of a resilient material, it assists the spreading of the clamping band 2 when the clamping device 5 is released, so that it is easier to disassemble the hose 15 from a connection piece.

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[0029] Two positioners 8 and 18 are shown with tips 12, 13 and/or 23. Naturally, it is also possible to use positioners of a different type.

SZABADALMI IGÉNYPONTOK

1. Tömlőbilincs (1) szorítószalaggal (2), szorítóeszkővel (5) és a tömlőbilincs (1) tömlőn (15) történő elhelyezésére alkalmas pozícionáló elrendezéssel, amely pozícionáló elrendezés tartalmaz legalább két pozícionálót (8, 18), azzal jellemezve, hogy a pozícionálók (8, 18) egyike a szorítószalagon (2) rögzítve van elhelyezve kerület mentén, és a legalább egy további pozícionáló (18) a kerület mentén a szorítószalaghoz (2) képest elmozdítható, továbbá a mozdítható pozícionáló (18) egy, a szorítószalagon (2) belül elhelyezett fémlemez hídon (19) van elrendezve, továbbá a fémlemez híd (19) rugóként van kialakítva.
2. Az 1. igénypont szerinti tömlőbilincs (1), azzal jellemezve, hogy két pozícionáló (8, 18) egymástól kerületi mentén legalább 120° távolságra vannak elrendezve.
3. Az 1. vagy 2. igénypont szerinti tömlőbilincs (1), azzal jellemezve, hogy legalább egy pozícionáló (18) mindkét kerületi irányú oldalán tengelyirányú ütközők (24, 25) vannak elrendezve.
4. A fenti igénypontok bármelyike szerinti tömlőbilincs (1), azzal jellemezve, hogy a mozdítható pozícionáló (18) a fémlemez híddal (19) együtt egy darabból van kialakítva.
5. A fenti igénypontok bármelyike szerinti tömlőbilincs (1), azzal jellemezve, hogy a fémlemez híd (19) a szorítóeszköz (5) tartományában van elrendezve.
6. A fenti igénypontok bármelyike szerinti tömlőbilincs (1), azzal jellemezve, hogy a tömlőbilincsnek (1) van névleges mérete, továbbá a fémlemez híd (19) és a szorítószalag (2) átmérő-irányban átellenesen elhelyezkedő szakasza közötti távolság kisebb a névleges méretnél.
7. A fenti igénypontok bármelyike szerinti tömlőbilincs (1), azzal jellemezve, hogy a szorítószalagon (2) belül rugós eszköz (26) van elrendezve.

Fig. 2

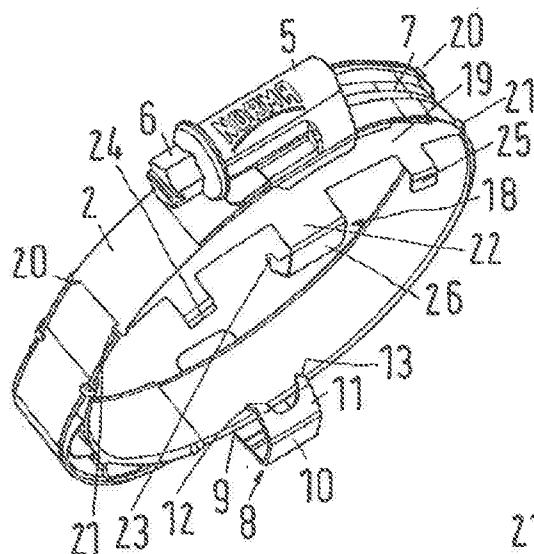


Fig. 1

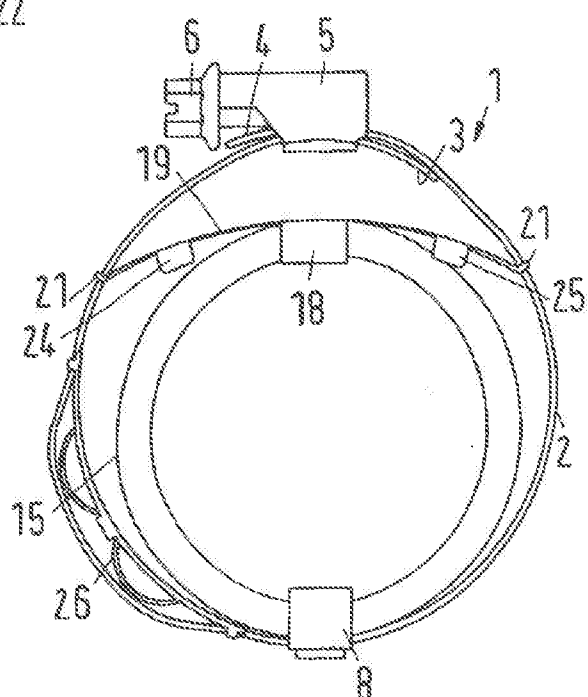


Fig. 3

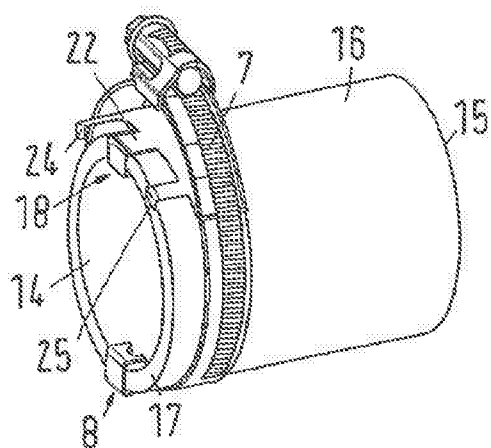


Fig. 4

