The invention relates to a fastening arrangement for a hose pipe (14) on a component (upper part 10) of a household appliance comprising a receiving connecting piece (18) on which the hose pipe (14) is to be placed and comprising a securing element (16) which is to be arranged on the outer circumference side of the hose pipe (14) placed thereon for fixing with respect to the receiving connecting piece (18). wherein the receiving connecting piece (18) and the securing element (16) are configured as a one-piece fastening element (12).
ASSEMBLY FOR FIXING A HOSE TO A COMPONENT OF A DOMESTIC APPLIANCE

[0001] The invention relates to a fastening arrangement for a hose pipe on a component of a household appliance of the type specified in the preamble of claim 1.

[0002] Such a fastening arrangement can already be deduced as known, for example from DE 101 16 832 A1 in which a plurality of receiving connecting pieces are provided, these being formed as integral components of a flushing-in compartment of a washing machine. In addition, a large-format hose retainer is formed in the area of the receiving connecting pieces, comprising a respective securing element for each of the two hose connections. The respective securing elements each have two web-like walls which are arranged at a distance from the respectively corresponding receiving connecting piece for the respective hose pipe. The two web-like walls of each securing element are spaced or oriented in such a manner that a holder or fixing of the hose pipes is provided on the corresponding receiving connecting pieces.

[0003] Another fastening arrangement can already be deduced as known, for example from EP 1 297 778 A2 in which a hose pipe arranged at one end of a circulating pump of a dishwasher is to be plugged at the other end onto a receiving connecting piece of a continuous-flow heater configured as a flange. For fixing the hose pipe plugged onto the flange, a sleeve is provided on the side of the hose end of the continuous-flow heater which surrounds the hose pipe around the outer circumference. A hose clip is to be slid over the collar to fix the sleeve or the hose pipe with respect to the receiving connecting piece.

[0004] A disadvantage with this known fastening arrangement should be seen in that the fastening arrangement requires a plurality of components, namely the flange, the sleeve and the hose clip, to fix the hose pipe securely on the continuous-flow heater. This is not only responsible for a high material price but also to a correspondingly high expenditure on assembly.

[0005] It is thus the object of the invention to provide a fastening arrangement of the type specified initially whereby a particularly reliable or effective fixing of the hose pipe on the relevant component can be achieved.

[0006] The object is achieved according to the invention by a fastening arrangement having the features of claim 1. Advantageous embodiments with expedient and non-trivial further developments of the invention are obtained from the dependent claims.

[0007] It should first be stated that in the present case the receiving connecting piece and the securing connection are configured as a one-piece fastening element. In other words, the receiving connecting piece and the securing element are combined to form one part which can accordingly be produced cost-effectively in one production step, for example, made of plastic. In addition, the hose pipe can be mounted extremely simply on a one-piece fastening element since the securing element is not configured as a separate component, for example, as a hose clip, but rather is already in place relative to the receiving connecting piece.

[0008] Another advantage of the fastening element is that the securing element is arranged in a defined position relative to the receiving connecting piece. Incorrect mounting can thus no longer take place with the present fastening element.

[0009] A particularly cost-effective, simple and effective fixing of the hose pipe on the receiving connecting piece can now be achieved in that the securing element comprises two securing arms which are to be connected to one another for fixing the hose pipe placed on the receiving connecting piece. Such securing arms can be moulded on particularly simply and joined to one another very easily, for example, in a fastening element made of plastic.

[0010] In another embodiment of the invention, it has also proved to be advantageous that the fastening element is configured in one piece with the component of the household appliance, in particular with a component of a flushing-in compartment of a washing machine. Since the fastening element is thus an integral part of the component or the flushing-in compartment itself, the costs for producing the component or the fastening element can be further reduced.

[0011] An additional saving on components can also be achieved if the two securing arms each have a tensioning means at their ends facing one another, which means are to be joined to one another to form a tensioning closure. Whilst hose clips with an additional set-screw are frequently used in securing elements known from the prior art, in contrast the tensioning means are formed integrally on the securing elements of the fastening element according to the invention.

[0012] A particularly simple connection of the two tensioning means can be achieved if these at least comprise a cooperating locating means. If, however, a plurality of locating means are provided per tensioning means, the two securing arms can be connected to one another in different securing positions. It is hereby possible to adapt the two securing arms to tolerance-induced variations in the cross-section or outer circumference of the hose pipe.

[0013] If one of the two securing arms comprises a receiving jaw in which the other securing arm can be inserted with one end region, a particularly reliable positioning or a secure locking of the two securing arms can be achieved. The region of the receiving jaw facing the hose pipe in this case ensures particularly advantageous guidance of the opposite securing arm.

[0014] It has also proved advantageous if the two securing arms each have a tool gripping mechanism via which the two allocated tensioning means can be moved towards one another. By this means, for example, it is possible to engage in the respectively relevant securing arms with suitably shaped pliers and move these towards one another for tensioning or away from one another for opening the securing element.

[0015] If the receiving connecting piece projects from the relevant retaining wall which runs at a distance from the securing element, a stop can be simply provided for an end of the hose pipe projecting with respect to the securing element. This projecting end provides particularly secure fixing of the hose pipe on the receiving connecting piece by means of the securing element.

[0016] It has also proved advantageous if the receiving connecting piece has one end projecting with respect to the securing element. By this means a hose clip can be simply fastened in this region of the receiving connecting piece if, for example, the securing element has been damaged. Equally, it would naturally also be possible to arrange such a hose clip between the retaining wall of the receiving connecting piece and the securing element.

[0017] Finally, it has been shown to be advantageous to make the fastening element of a plastic. Such a part is not only...
simple in terms of production technology and accordingly inexpensive to produce but a plastic also has the necessary flexibility or elasticity, for example, for the securing arms.

Further advantages, features and details of the invention are obtained from the following description of a preferred exemplary embodiment and with reference to the drawings; these show in:

FIG. 1 a schematic side view of an upper part of a flushing-in compartment of a washing machine, shown as cut away, comprising a fastening element comprising a receiving connecting piece projecting from a retaining wall on which a water-carrying hose pipe shown merely by dashed lines in the present case is to be placed and fixed by means of a securing element formed in one piece with the fastening element; and in

FIG. 2 a schematic sectional view through the upper part of the flushing-in compartment of the washing machine along the line III-II in FIG. 1, shown in cutaway view, where the hose pipe placed on the receiving connecting piece can be substantially be recognised, this being surrounded on the circumference side by two securing arms of the securing element to be joined to one another.

FIG. 1 shows a schematic side view of an upper part of a flushing-in compartment of a washing machine, shown partly in cutaway view. A fastening element 12 for a water-carrying hose pipe 14 shown merely by dashed lines in the present case is formed in one piece with the upper part 10 of the flushing-in compartment, comprising as substantial components a securing element 16 and a receiving connecting piece 18. The receiving connecting piece 18 projects from a relevant retaining wall 20 and is formed in one piece with said wall. In this case, the retaining wall 20 also forms a boundary wall of the upper part 10 of the flushing-in compartment of the washing machine. The receiving connecting piece 18 is provided with a chamfering 22 at its end facing away from the retaining wall 20 for ease of sliding on the hose pipe 14. In the present exemplary embodiment, the hose pipe 14 can be slid onto the receiving connecting piece 18 until it abuts against the retaining wall 20. Thus, fresh water can enter into the flushing-in compartment of the washing machine via the hose pipe 14 and the receiving connecting piece 18 which is configured as hollow, in order to entrain detergent provided here into the tub of the washing machine not shown.

When viewed together with FIG. 2 which shows the fastening element 12 used to fix the hose pipe 14 along the line III-II in FIG. 1 in an enlarged sectional view compared with FIG. 1, the structure of the securing element 16 in particular is illustrated in detail. The securing element 16 is formed in one piece with the base plate 24 of the upper part 10 or the fastening element 12 and comprises two securing arms 26 which are arranged on the external circumference side of the hose pipe 14 placed on the receiving connecting piece 18. In this case, the securing arms 26 are used for fixing or locating the hose pipe 14 which has been placed or slid onto the receiving connecting piece 18. In addition, the securing arms 26 are also used to seal the hose pipe 14 towards the receiving connecting piece 18 by connecting these to one another in such a manner that the hose pipe 14 is forced against the receiving connecting piece 18 with a corresponding retaining pressure on the circumference side.

For connection with one another, the two securing arms 26 each comprise a tensioning means 28 at their ends, facing one another, which can be connected to form a tensioned closure. In this exemplary embodiment, a plurality of locating means 30 having a tooth-shaped cross-section are arranged one after the other in a row on each of the two tensioning means 28, whereby the tensioning means 28 or the securing arms 26 can be joined to one another in different securing positions. Accordingly, the securing arms 26 or their tensioning means 28 can be adjusted in different securing positions according to the cross-section of the hose pipe 14. It is thereby possible to compensate for tolerance-dependent variations in the cross-section of the hose pipe 14 in a simple manner. In an extremely simple embodiment, merely one locating means 30 can be provided per tensioning means 28 of the relevant securing arm 26.

In the present case, the left securing arm 26 shown in FIG. 2 comprises a receiving jaw 32 in which the end of the other securing arm 26 can be inserted. At the same time, the receiving jaw 32 provides a jaw region 34 which ensures particularly good guidance of the end of the opposing securing arm 26. In addition, the jaw region 34 ensures that during tensioning of the securing element 16, the right securing arm 26 in FIG. 2 is not moved directly on the hose pipe 14.

In the present case, both securing arms 26 each have a tool gripping mechanism 36 in the form of a circular cross-sectional opening in which, for example, special pliers can engage. It is thereby possible to interconnect or tension both tensioning means 28 of the securing arms 26 in a simple manner to produce the necessary retaining force for the secure fixing and sealing of the hose pipe 14 with respect to the receiving connecting piece 18. By means of the tool gripping mechanisms 36 it is optionally also possible to move the two tensioning means 28 of the securing arms away from one another or separate them if necessary. Since the two securing arms 26 in the present exemplary embodiment are made of plastic jointly with the fastening element 12 or the entire upper part 10, they exhibit the required flexibility or elasticity for the tensioning. However, the fastening element 12 could also be made of a different material.

Finally it can be seen from FIG. 1 that the receiving connecting piece 18 has one end 38 projecting with respect to the securing element 16 or the two securing arms 26. It is hereby possible, for example, if the securing element 16 or the securing arms 26 are damaged, to use a hose clip to fix the hose pipe 14 securely on the receiving connecting piece 18. The hose clip can also be used in addition to the securing element. The hose clip could also be arranged in the region between the retaining wall 20 and the securing element 16 or its securing arms 26.

10. (canceled)

11. A fastening arrangement for a hose pipe on a component of a household appliance having a receiving connecting piece for telescoping receipt of the hose pipe, the fastening arrangement comprising a securing element configured for disposition about an outer circumference of a hose pipe placed thereon for fixing with respect to the receiving connecting piece, wherein the receiving connecting piece and the securing element are configured as a one-piece fastening element, and wherein the securing element includes two securing arms configured for connection to one another for releasably retaining the hose pipe on the receiving connecting piece.

12. The fastening arrangement according to claim 11 wherein the fastening element is configured in one piece with the component of the household appliance, in particular with a component of a flushing-in compartment of a washing machine.
13. The fastening arrangement according to claim 11 wherein and further comprising two tensioning arrangements with a tensioning arrangement disposed at each facing end of each of the two securing arms with each arm configured for selectively mating to the respective other arm thereby forming a tensioning closure.

14. The fastening arrangement according to claim 13 wherein the two tensioning arrangements each include at least one locating assembly configured for cooperation with at least one cooperating locating assembly disposed on a respective other one of the two tensioning arrangements.

15. The fastening arrangement according to claim 14 wherein each tensioning arrangement includes a plurality of locating elements another defining a plurality of different securing positions for connecting the securing arms to one another at a selective one of a plurality of securing locations.

16. The fastening arrangement according to claim 11 wherein one of the securing arms includes a receiving jaw for receipt of the other securing arm.

17. The fastening arrangement according to claim 13 wherein the securing arms each include a tool gripping mechanism by which the two selected tensioning arrangements can be moved towards one another.

18. The fastening arrangement according to claim 11 wherein the receiving connecting piece projects from a relevant retaining wall which is spaced a distance from the securing element.

19. The fastening arrangement according to claim 11 wherein the receiving connecting piece includes one end projecting outwardly from the securing element.

20. The fastening arrangement according to claim 11 wherein the fastening element is formed from plastic.

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