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- (72) Inventor; and
- (71) Applicant : ZANCHETTIN, Roberto [IT/IT]; Via Trento, 5, I-31100 Treviso (IT).
- (74) Agent: D'AGOSTINI GROUP SRL; Viale Mazzini, 142, I-00195 Roma (IT).
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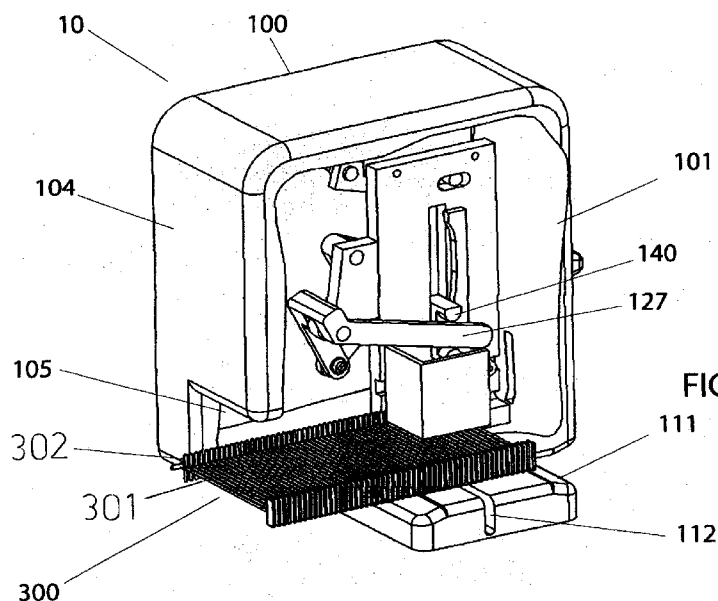
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(54) Title: DEVICE FOR HOUSEHOLD USE FOR COUPLING STOCKINGS AND SOCKS TO BE PUT THROUGH A WASHING CYCLE



(57) Abstract: Coupling device for household use for coupling stockings and socks during the washing cycle, which includes a container body (100) fixable to a wall, which is provided laterally with an operating cursor (120), and frontally with a "C" -shaped section driving and fixing seat (110) of the pair of socks, said operating cursor (120) by means of lever articulated means and rotomechanical parts (160, 170, 171, 180) internal to the container body (100), being able to cause a first movement which consists in the vertical descent of the taking needle (200) followed by the taking of the nylon thread (301), in such a way as to introduce said nylon thread (301) passing through the pair of socks and then to release it, said second movement comprising at least the rise of the needle (200) and the advancement in a feeder channel of the cartridge holder (300) of nylon threads (301) above and near said "C"- shaped section guiding and fixing seat (110).

**DEVICE FOR HOUSEHOLD USE FOR COUPLING STOCKINGS
AND SOCKS TO BE PUT THROUGH A WASHING CYCLE**

5 [0001] This invention relates to a household device, fixable to a wall, for the coupling of the socks or the stockings to be put through a washing cycle.

Domain

10 [0002] The socks are known. They are clothing items with protective and aesthetic purposes, diffusely used in a lot of countries. In this description the words stockings and socks refer to all pairs of covering sheathes for the right and left legs, which are disjoined from each other.

[0003] Both the socks and the stockings are commercialized today in

15 packagings, where each packaging contains a pair of stockings or socks. In some cases, especially in the big market chains today the socks are sold coupled to each other, by means of an adhesive clamp placed astride of the openings of the socks, with sometimes in correspondence of the foot a connecting means between the same which consists of the

20 nylon thread. The word thread means the thread conventionally used for the tagging, in the packaging of the new product, and generally made of a single body, mainly in nylon, with a central part given by the shank and two ends, parallel to each other and transverse with respect to the shank, a first end of which having a round section similarly to that of the

25 shank, and a second end having a flat shape. Variants in the

configuration of the thread may consist in the length of the shank, more or less long, according to the destinations, as well as in the form of the ends, which in one case have the same shape, for example in the case of joining of the socks to be commercialized, consisting in a short
5 transverse segment with respect to the shank and with a similar round section.

[0004] The purchase of new socks or stockings is one of the habits of everyone. These clothes once used have to be also washed.

Consequently, if one changes them once a day, rounding up it makes
10 some twenty-one pairs of stockings and socks each week, eighty-four pairs of socks each month to wash, dry and iron. Obviously the numbers may change, but it is a large number of pairs to wash.

Drawbacks

15 [0005] The user having familiarity with the housework knows well what it means to wash a so large number of socks, not so much for the washing in itself, but above all for the work and the following objective difficulty to recouple them. It is true that each pair of socks or stockings are of the same colouring, and it is also true that each pair of socks or
20 stockings and other clothes, once introduced in the washing-machine in bulk together with other pairs of stockings or socks must be recoupled and dried or vice-versa after washing. The recoupling phase, in principle, must take two criteria into account, on the one hand the socks of the same colouring and size must be recoupled, but also the same condition
25 of wear must be considered.

[0006] A lot of people in fact usually buy socks or stockings of the same colouring and characteristic of the tissue, this happens above all today, where the big distribution chains offer to the public a large number of socks or stockings at particularly advantageous prices.

5 Consequently it happens that once temporarily no longer used the socks or the stockings are thrown in bulk in the washing-machine, getting mixed up with other socks, of both the same hue and similar hues. For example very often we are not able to distinguish dark blue from black, but also from other different hues, and also very often we couple a sock

10 or stocking which has already been washed several times with a sock that has been bought more recently despite being of the same hue. The difference of wear between an older sock and a more recent one is for example possible to perceive only in the case in which there is a considerable time distance between them, in the sense that in one case

15 one will be more abraded or faded than the other in certain points, but this is not possible however in the cases where the time between them is relatively short. As a consequence there is the objective risk that once recoupled in a non uniform way, it is possible to have a pair of socks or stockings where the two pieces are of different hue and also of a

20 different condition of wear. In the latter case there is then the objective risk of a non uniform wear, for each pair, and in some cases an early wear for a sock or stocking or the other, so much as to make the couple of socks or stockings unusable because uncoupled.

[0007] In conclusion, one can reasonably agree that that the phase of recoupling of the socks, once they have been washed, is quite time-consuming.

5 **Prior art**

[0008] Naturally, this being a very common and widespread problem, different solutions have been adopted even though with poor results. In ancient times, a first empiric attempt to solve the problem was to knot the socks or stockings between each other before being thrown among
10 the dirty clothes or directly in the washing-machine. A part from the fact that the sock must be long enough to allow the execution of the knot, the problem remains that once knotted and washed, the knot portion of the pair of stockings or socks is not sufficiently treated with the consequence of having a washed portion and a non washed portion.

15 [0009] A search among patents, carried out by means of the most used public databases on the territory, has allowed to identify different solutions which may have bearing on the observed problem, without apparently find any important document. More particularly said documents consist in:

20 **D1** EP0125075A2 refers to a pneumatically activated tagging gun, introduced and interchangeable in a container, provided with a seat for the insertion of the garment to be tagged

D2 US2006213963A1 is a bag provided with many seats and retaining means inside which the socks to be washed are introduced and then
25 dried

D3 WO2006095370A1 is a bag provided with many seats and retaining means inside which the socks to be washed are introduced and dried

D4 WO2008146247A2 is a circular supporting device provided with radial openings in the centre through which a part of the pair of socks

5 passes

D5 CN201243625Y the sock has a hole made along the edge of the opening in such a way as to introduce in it the other sock to be coupled

D6 JP2000225008A refers to an eyelet-like device or clip through which to pass the openings of the sock and to tighten said device in

10 such a way as to keep said socks coupled

D7 JP10295991A is an elastically yielding clip with respective teeth on the retaining surfaces that clamps both socks

D8 US2005144765A1 is a double clip for clamping the socks

D9 GB2278390A is a device made by an opposing-action double clip,

15 each clip clamping the respective sock

D10 MX2007007160A is a particular button to keep the socks coupled

D11 FR2840511A1 refers to an automatic male or female button applied to a side of the sock

D12 CN2827025Y is a device made by a string fixed along the edge of the sock, provided with a button in such a way as to be joined to a

20

second and similar sock

D13 JP2004298584A is a rigid device with two pairs of velcro tapes foldable on themselves to retain the socks

D14 CA1083753A1 provides the use of velcro in correspondence of the

25 edge of the opening of the socks to keep them coupled

D15 NL1026412C2 provides the use of velcro bands, the seam of buttons or slots for the coupling of the socks

D16 CN2894955Y is a variant of tagging gun, with handle and rectilinearly moving needle, the movement being obtained by means of a
5 lever hinged to the handle

D17 CN2834801Y is a tagging gun, with handle and rectilinearly moving needle, the movement being obtained by means of a lever hinged to the handle

D18 CN2368787Y is a tagging gun with side linear charger.

10 [0010] Given the foregoing, one can reasonably agree that to solve the problem, starting from the common purpose, which is to prevent the uncoupling of the pairs of socks when they are dirty and must be put aside to be successively introduced in the washing-machine, the following devices and systems are known:

- 15
- ☐ manual empiric systems, for example by means of a knot;
 - ☐ devices which join the socks by means of buttons or equivalents;
 - ☐ devices which support in series the socks in pairs;
 - ☐ bags containing the pairs of socks;

20 Always in relation to the object of the invention, one may also agree that the threads for tagging are known, namely those nylon connecting elements intended to join the informative tag generally to a cloth product, and equally known is the tagging gun, traditionally used in the systems for tagging.

25 **Drawbacks**

[0011] As for the solutions which adopt retaining mechanical devices such as buttons or clips, see for example from D6 to D17, they refer to devices which are difficult to use. Clips must always be on hand in a sufficient number to allow the ready recoupling of other
5 dirty socks, in the sense that once utilized for the previous socks already washed they must be removed and collected, relocated in a specific place to be easily found and therefore again made available to the user. Moreover, in the course of time, above all in consideration of the temperatures and of the washing conditions of
10 the socks and of the stockings, they tend to lose their functionality, both in the elasticity and in consideration of the retaining capacities of the same socks. In case of the solutions involving buttons, as well as those suggested using Velcro, it is observed that in the course of time they tend to reduce the retaining capacity as well, above all
15 considering that the tissues during the washing often release residues of yarn, which tend to accumulate in zones able to retain them, as can be the male of the Velcro itself or the female in the case of the automatic button, circumstances which by all evidence prevent the correct functioning of the device relatively to the
20 retaining effectiveness and this also and in consideration of the stresses the items are subject to during the conventional functioning of the washing-machine.

[0012] As for the supporting devices for more pairs of socks, as those listed by D2 to D6 they refer to complex applicative systems

not particularly easy for the user, which do not allow a complete and accurate washing of the sock.

[0013] All this considered the need is reasonable for identifying innovative solutions which are able to overcome at least the above
5 mentioned problems.

Summary of the invention

[0014] These and other aims are reached by the present invention according to the characteristics as in the included claims, solving the
10 above problems by means of a coupling device for household use for coupling stockings and socks during the washing cycle, where said coupling device includes a container body which is fixable by its back to a wall by means of screws or adhesive means, which container body is laterally provided with an operating cursor, and frontally in
15 the low part of said container body, with a "C"-shaped section guiding and fixing seat for the pair of socks, said operating cursor, by means of lever articulated means and rotomechanical parts internal to the container body, being able to cause a first and a second movement to the taking and fixing means of the nylon
20 thread, said first movement consisting in the vertical descent of the taking needle followed by the taking of the nylon thread, in such a way as to remove the nylon thread from said cartridge holder, and to introduce said nylon thread passing through the pair of socks and then to release it, said second movement comprising at least the rise
25 of the needle and the contextual advancement step by step in a

feeder channel of the cartridge holder of nylon threads above and near said "C"-shaped section driving and fixing seat of the pair of socks.

5 **Aims**

[0015] In this way, thanks to the considerable creative contribution whose effect constitutes an immediate and not negligible technical progress, different and important aims are achieved.

[0016] A first aim was that of allowing in a rapid and intuitive way
10 the connection of the socks or the stockings by means of the nylon thread, when they are thrown and before being thrown among the items to be washed, or in the washing-machine. It is an easy operation which is carried out near the clothes hamper where the coupling device can be preferably placed in a safe way, introducing
15 inside it a part of the pair of socks and therefore carrying out the coupling by means of the cursor. The coupling of the socks or the stockings by means of the nylon thread is a very effective system which prevents them from uncoupling even in condition of particular stress due to the washing, also turning out to be particularly
20 resistant also at conventional operating temperatures of a usual washing-machine.

[0017] A second aim is also to allow to keep the socks in a constrained condition between each other also in the drying phase of the items by a stable connection means which can be removed only
25 manually by means of pulling or by a cutting device. Indeed the pair

of socks so joined can be easily introduced in a drier, or otherwise easily unfurled on the traditional clotheshorse, whether rigid or flexible, placing astride of the clotheshorse the nylon thread which joins them, without the need to use conventional clothes pins.

5 [0018] Specific advantages if compared to the above mentioned known solutions can concern different aspects. More particularly if compared to the buttons or clips of D6-D17, the application by means of a device of the connecting nylon thread is very easy and intuitive, fastening firmly each sock to the other without running the
10 risk to carry out a connection which may turn out not to be effective. In particular, there is no risk that the retaining effectiveness may be altered if originally not due to the incorrect coupling of the socks in the passage across the coupling device, which by the way may be easily detected by the user before they
15 are thrown together in the clothes hamper or in the washing-machine. Another advantage with respect to the solutions D6-D17 is that the nylon thread used is a throwaway thread, so it does not require the accuracy which is necessary by the user in the recovery of the conventional fixing devices to be reused.

20 [0019] With respect to the solutions D2-D6 the object of this invention allows a more careful washing on all the surface of the socks because it does not require any interposing of wraps intended to hold the pairs of socks, moreover reducing substantially the encumbrances in the drum of the washing-machine with equal pairs
25 of socks to be washed.

[0020] D20-D22 are the conventional tagging guns, and in principle they can be used for the coupling of the socks. However, the tagging gun is not configured in such a way as to allow the guide and the careful and safe positioning of the pair of socks to be joined, because it is a tool which manually requires particular expertise. The solution suggested by D1 could have some importance, but it is not functional, because it requires a container, which apparently is not easily fixable to a wall, inside which a tagging gun must however be introduced, which is movable with respect to said container. Still more in particular, it is the tagging gun which moves by means of a drawer, while the coupling device which is the object of this invention is of static-type integrating the dynamic part of the movement of the needle and of the translation of the cartridge holder inside said device. In other words D1 suggests as many as two different movements, respectively a first raising movement of the gun drawer, in order to push the trigger that determines the movement of the needle, and a second and different movement inside the gun that causes a stroke of the taking and releasing needle of the nylon thread. In the solution object of this invention, there is a substantial reduction of the forces and stresses with a significant reduction of noise and elimination of the pneumatic feeding, which is known to be never available in households. Furthermore for charging the tagging gun with the cartridge holder each time it is necessary to open the container and remove the conventional gun. In the solution object of this invention, the

coupling device is integrated and it is sufficient to insert the cartridge holder laterally to said device without any practical intervention. In the case of D1 the connection with the driving member of the tagging gun must also be considered, which would be particularly complex, little practical and which involves the positioning of said gun inside a movable drawer stressed by a pneumatic device that acts on the drawer from the lower side, determining the pressure on the trigger. Differently, as already observed in the coupling device object of this invention the connection to a pneumatic apparatus is not needed, because it is the movement of the cursor alone which allows the translation movement of the cartridge holder and of the needle, by means of a lever articulation.

[0021] In conclusion, these advantages have the non negligible value of obtaining a coupling device for the socks with a good technological content and a system for the easy and more comfortable coupling of said socks.

[0022] These and other advantages will appear from the following detailed description of a preferred embodiment with the aid of the enclosed schematic drawings whose execution details are not to be considered limitative but only and exclusively illustrative.

Content of the drawings

- Figure 1 is a front view of the coupling device for socks and stockings, in a resting condition;

- Figure 2 is a front view of the coupling device of the previous figure, in an intermediate dynamic condition of coupling of the socks;
- Figure 3 is a front view of the coupling device of the previous figures, in a condition of end of stroke in the phase of coupling of the socks;
- Figure 4 is a view of a front section of the coupling device, as from Figure 3;
- Figure 5 is a view of a section from the back side of the coupling device of Figure 4;
- Figure 6 is a view of a front section of the coupling device of Figure 1;
- Figure 7 is a view of a section from the back side of the coupling device of Figure 1.

Practical execution of the invention

[0023] The present innovation refers to a coupling device (10) (Figs. 4, 5) for preventing the uncoupling of socks and stockings during the washing cycle, consisting of a box-like container body (100), fixable to a carrying structure, such as for example a wall, closed in correspondence of the front part (101) and of the back (102) which is removable. The back (102) is provided with eyelet holes or adhesive means to allow the fixing of said coupling device (10) for example to a wall, in such a way as to offer toward the user the front part (101), which at the low part has a "C" shaped section

guiding and fixing seat (110) for the pair of socks which is provided in between with respect to the support base (111) with a transverse hollow (112) with respect to said support-base (111).

[0024] In correspondence of the right side (103) (Fig. 5) of the coupling device (10) is an operating means as the cursor (120) which is grasped by the user and translates along a vertical guide slit (130) in such a way as to slide back-and-forth, from a high position, Figure 1, which corresponds to a static condition of the coupling device (10) and then along the path within said coupling device (10) carrying out a first and a second movement in sequence of the taking and fixing means (200, 300) of the nylon thread (301), to a position, Figure 3, which closes the coupling cycle of the socks to return to the initial condition of Figure 1.

[0025] The translation of the cursor (120), (Figs. 1, 2 and 3) occurs along the path defined by said vertical guide slit (130) and lever articulation and rotomechanical parts are connected to said cursor (120) in such a way as to make the taking and fixing means (200, 300) of the nylon thread (301) carry out a first and a second movement. In particular the translation of said cursor (120) causes both the movement of the taking and releasing needle (200) of the nylon thread (301) and the non-continuous movement step by step of the cartridge holder (300) of nylon wires (301) which supplies said needle (200) of the coupling device (10). Still more in particular the cartridge holder (300) consists of nylon threads (301) connected to one another and placed as a rack, in such a way as to

be introduced through the entrance (105) of the feeder channel which is obtained in the low part of the coupling device (10) along the left side (104) (Fig. 4). In this way said cartridge holder (300) is substantially parallel to and above the guiding seat (110) with at least the first end (302) of the nylon thread (301), placed at the head and contained inside the coupling device (10) in such a way as to be aligned with respect to the path of the needle (200).

[0026] Even more in particular, the cursor (120) (Fig. 3) includes from the side facing the inside of the container body (100) of the coupling device (10), a housing (121) inside of which the ball joint (122) is inserted of a first lever arm (123) integral with a second lever arm (124) that hinging a third lever arm (125) moves the lever (126) to which the rod (127) is constrained. The rod (127) (Fig. 6) stressed by the articulation (122, 123, 124, 125, 126) by means of the translation of the cursor (120) moves the slide (140) which is movable with respect to the driving support (150) which is integral with respect to the container body (100). In this case the rod (127) is placed through the slide (140) which is astride of said rod (127) in such a way as to go freely in abutment on the teeth (141, 142) to make said slide (140) run vertically driven by the vertical slit (151) of said driving support (150). To the slide (140) said taking and releasing needle (200) of the nylon thread (301) is constrained in its lower part (Figs. 1, 2) in such a way as to carry out a stroke that is perpendicular and through with respect to the guiding and fixing seat (110) of the couple of socks, up to the hollow (112).

[0027] Close to the driving support (150) laterally with respect to the vertical slit (151) an oscillating lever (160) is vertically placed, as part of the second movement, which has a shaped profile (161) from the side facing the slide (140). The slide (140) which supports
5 the needle (200) while going downward vertically along the slit (151) of the driving support (150) insists by the end of stroke against said shaped profile (161) of the oscillating lever (160), provoking a lateral movement that translates horizontally the rack rod (170) engaged to the gear-wheel (180) for the advancing step
10 by step of the cartridge holder (300), cooperating with the locking rocker arm lever (171) and in such a way as to place the first nylon thread (301) in correspondence of the path of the needle (200).

[0028] With reference to Figures 1, 2 and 3, translating the cursor (120) downward, by means of the lever articulation means (122, 123, 124, 125, 126, 127) the slide (140) supporting the needle
15 (200) begins to go down according to a vertical path, until intercepting with its eye the end (302) of the first nylon thread (301) taking it (Fig. 1, 2) and dragging it further downward in the guiding seat (110) passing through the tissue of the couple of socks introduced along the perimeter through said guiding and fixing seat
20 (110) (Fig. 3). Contextually the oscillating lever (160) having been stressed by the slide (140) in its end of stroke, has caused a rotation of the gear-wheel (180) which drags the cartridge holder (300) in a single direction placing the second nylon thread (301) in
25 correspondence of the path of the needle (200). The release of the

cursor (120) or its restoration upwardly allows the relocating of the needle (200) in a resting condition.

[0029] In a variant of the coupling device shown above, the motorization of the first and second movement may be provided both in descent and vice-versa of the needle (200) and in advancement of the cartridge holder (300) of nylon threads (301). Still more in particular, the container body (100), in the internal portion which remains at the side respectively of the lever articulation means (122, 123, 124, 125, 126, 127), slide (140), driving support (150), has a suitable area to house a ratio-motor of small size. Said ratio-motor not shown, of the type supplied by electrical network or accumulator, by means of transmission mechanisms stresses the lever articulation means (122, 123, 124, 125, 126, 127), slide (140) and oscillating lever (160), in such a way as to obtain said first and second movement in an automatic way. A pressure operating means, as for example an ON/OFF key, also lighted, placed on the front part of the container body (100) allows the activation of the coupling device (10). The lighting of said key, varying the colour, for example from red to green, represents the conditions of use of the coupling device (10) which in a further variant may also integrate, always in the front part of the container body (100), a display also lighted which provides basic information to the user, such as in addition to the operating phase and the state of the possible batteries, also the need to charge said coupling device (10) with a new cartridge holder (300).

References

- (10) coupling device
- (100) container body
- 5 (101) front part of the container body
- (102) back
- (103) right side
- (104) left side
- (105) feeding entrance of the cartridge holder
- 10 (110) guiding and fixing seat of the pair of socks
- (111) support base
- (112) transverse hollow
- (120) cursor
- (121) housing
- 15 (122) ball joint
- (130) vertical guide slit
- (200) taking and releasing needle
- (301) nylon thread
- (300) cartridge holder
- 20 (301) nylon threads
- (302) first end of the nylon thread
- (123) first lever arm
- (124) second lever arm
- (125) third lever arm
- 25 (126) lever

- (127) rod
- (140) movable slide
- (150) driving support
- (141, 142) teeth
- 5 (151) vertical slit of the driving support
- (112) hollow
- (160) oscillating lever
- (161) shaped profile
- (170) rack rod
- 10 (171) rocker arm lever
- (180) gear-wheel

CLAIMS

1. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, **characterised in that** it includes a container body (100) fixable to a supporting structure, said container body (100) being
5 provided with operating means, and frontally with a "C"-shaped section driving and fixing seat (110) of the pair of socks, said operating means being intended to make the taking and fixing means (200, 300) of the nylon thread
10 (301) carry out a first and a second movement, said first movement consisting in the vertical descent of the taking needle (200) followed by the taking of the nylon thread (301), in such a way as to take the nylon thread (301) out of said cartridge holder (300), and to insert said nylon
15 thread (301) passing through the pair of socks and then to release it, said second movement comprising at least the rise of the needle (200) and the advancement step by step in a feeding channel of the cartridge holder (300) of nylon threads (301) above and near said "C"-shaped
20 section driving and fixing seat (110) of the pair of socks.
2. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to

claim 1, **characterised in that** said operating means are connected with the lever articulations (122, 123, 124, 125, 126, 127) and rotomechanical parts (160, 170, 171, 180) in such a way as to cause a first and a second movement of the taking and fixing means (200, 300) of the nylon thread (301), said first movement consisting in the descent of the taking needle (200) and the release of the nylon thread (301), said second movement including the movement step by step of the cartridge holder (300) of nylon threads (301) which supplies said needle (200) of the coupling device (10), and furthermore in which the articulation (122, 123, 124, 125, 126, 127) moves the slide (140) supporting the needle (200) with respect to the driving support (150) integral with respect to the container body (100) while the rotomechanical parts (160, 170, 171, 180) move one way the cartridge holder (300) in such a way as to arrange the nylon thread (301) in correspondence of the path of the needle (200).

3. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claims 1 and 2, **characterised in that** an operating

means is a cursor (120), which translates along the vertical guiding slit (130).

4. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claim 1, 2 and 3 **characterised in that** the cursor (120) and the vertical guiding slit (130) are obtained in correspondence of a side (103, 104) of the container body (100).
5. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claims 1, 2 and 3 **characterised in that** the entrance (105) of the cartridge holder (300) is obtained in the low part of the coupling device (10) along the side in such a way that said cartridge holder (300) is substantially parallel to and above the guiding seat (110) with at least the first end (302) of the nylon thread (301) being placed at the head and contained inside the coupling device (10) aligned with respect to the path of the needle (200).
6. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claim 1, **characterised in that**, in the container body

(100), a ratio-motor is housed in such a way as to make the taking and fixing means (200, 300) of the nylon thread (301) carry out a first and a second movement.

- 5 7. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claim 1 and 6 **characterised in that** the operating means is a pressure ON/OFF key, also lighted, placed on the front part of the container body (100).
- 10 8. Coupling device for preventing the uncoupling of socks and stockings during the washing cycle, according to claim 1 and 6, 7 **characterised in that** it integrates, in the front part of the container body (100), a display lighted as well which provides information to the user.
- 15 9. Household use system for coupling the dirty socks and stockings to be washed, of the type including removable means for joining the socks and stockings during the washing cycle, said removable means consisting of nylon threads (301), in which each nylon thread (301) is applied to each pair of socks by means of a coupling device (10) which includes a container body (100) fixable to a supporting structure, said container body being provided with operating means of the taking and fixing means
- 20

(200, 300) of the nylon thread (301), and frontally with a "C"-shaped section guiding and fixing seat (110) of the pair of socks, said operating means being intended to make the taking and fixing means (200, 300) of the nylon thread (301) carry out a first and a second movement, said first movement consisting in the vertical descent of the taking needle (200) followed by the taking of the first nylon thread (301), in such a way as to take the nylon thread (301) out of said cartridge holder (300), and to introduce said nylon thread (301) passing through the pair of socks and then to release it, said second movement comprising at least the rise of the needle (200) and the advancement step by step in a feeding channel of the cartridge holder (300) of nylon threads (301) above and near said "C"-shaped section guiding and fixing seat (110) of the pair of socks, in such a way as to place the second nylon thread (301) in correspondence of the path of the needle (200).

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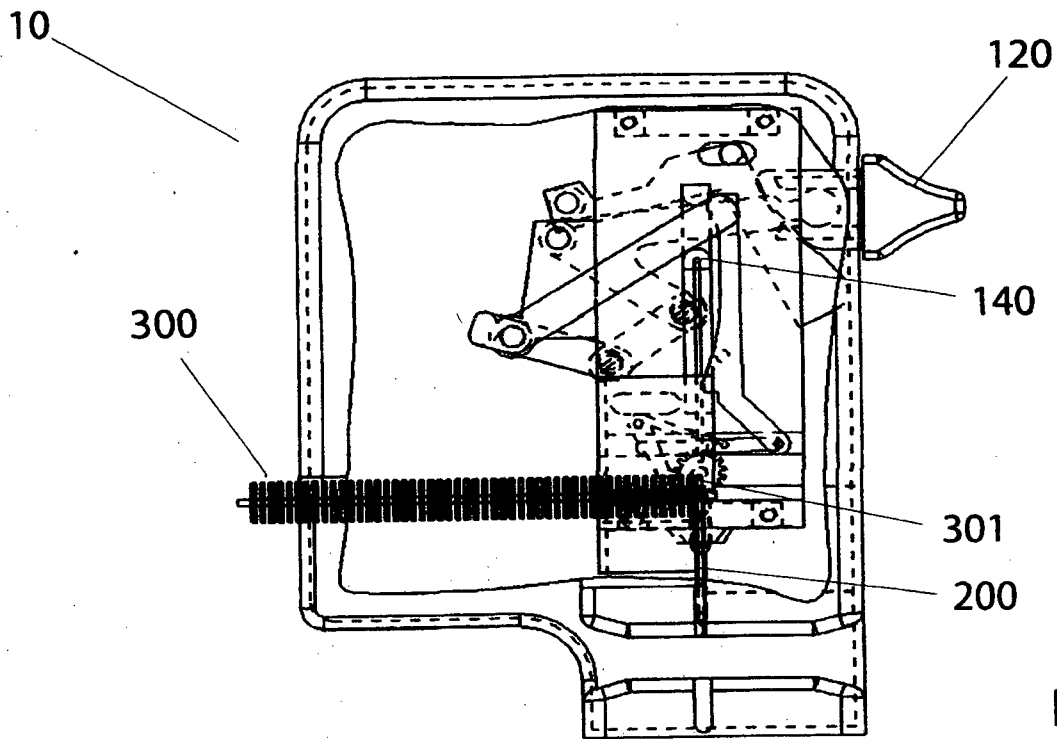


FIG. 1

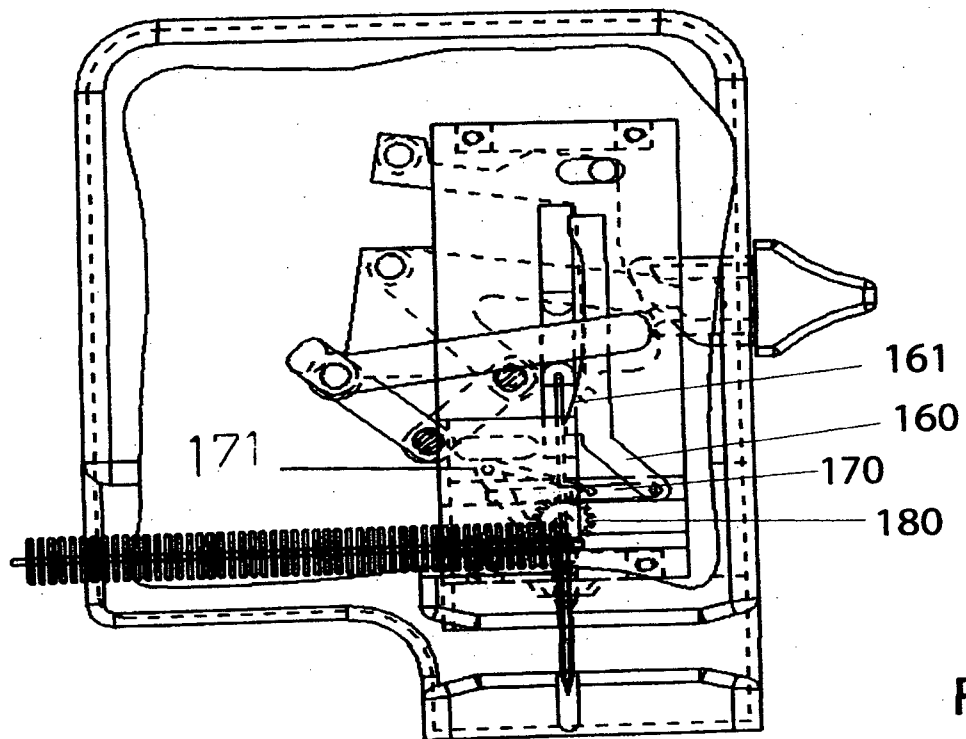


FIG. 2

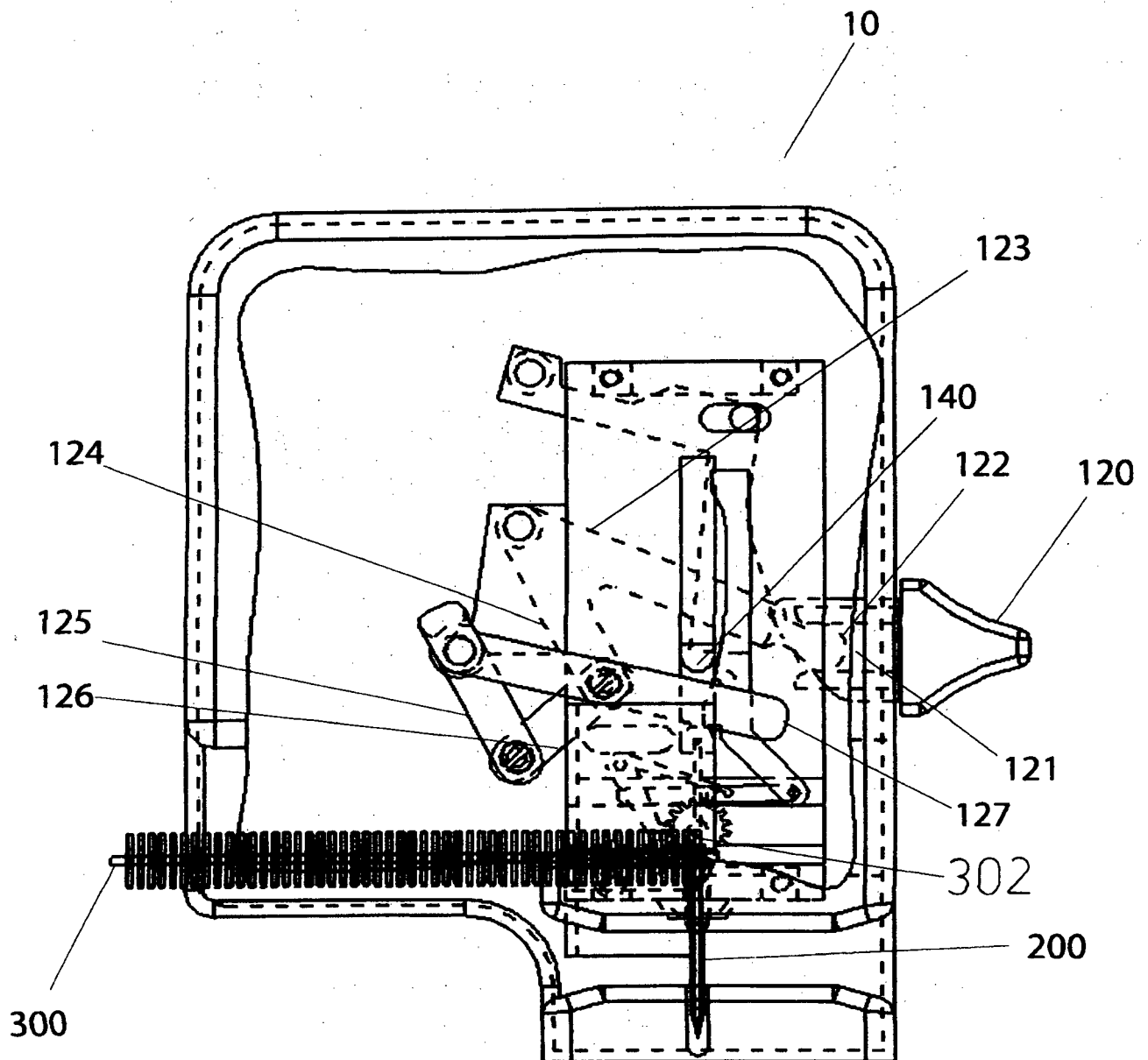


FIG. 3

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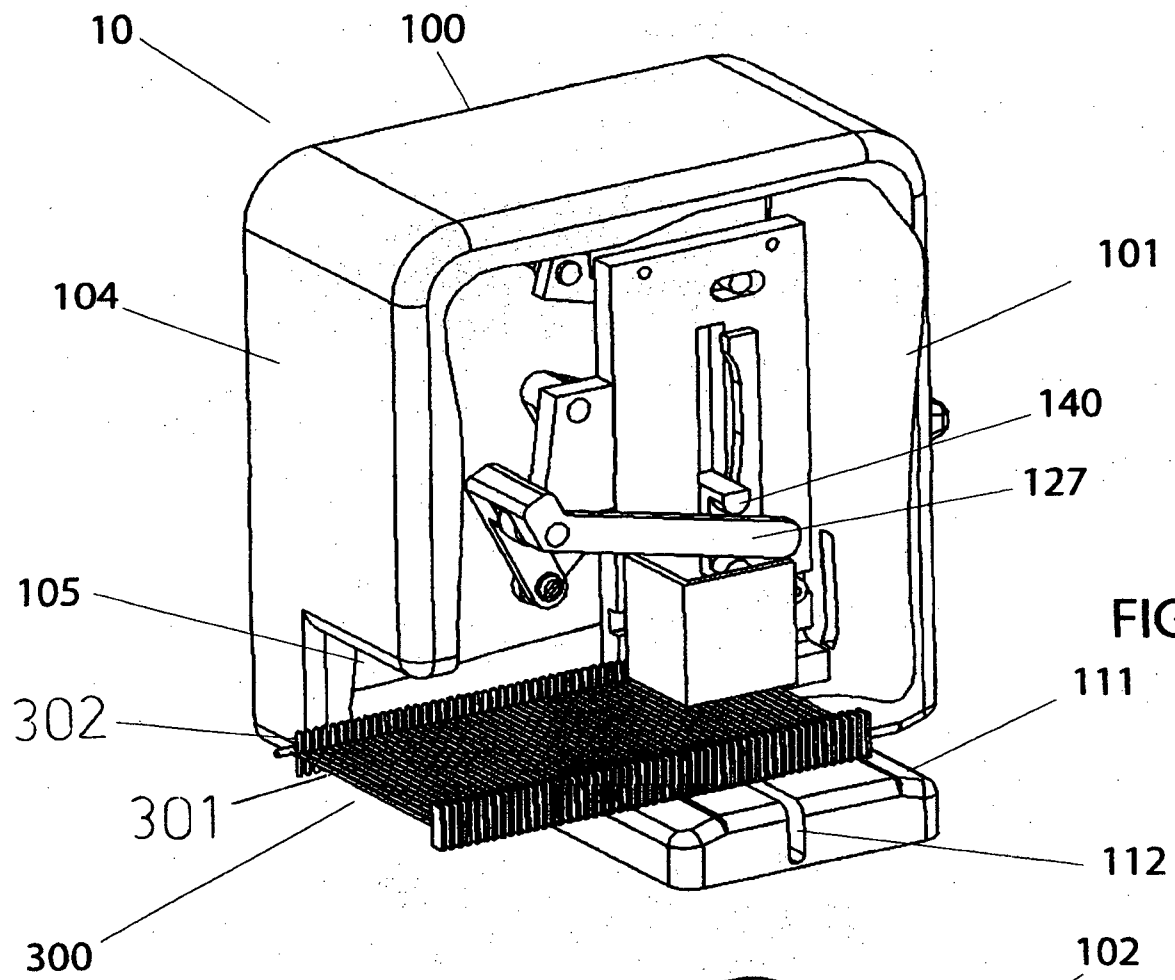


FIG. 4

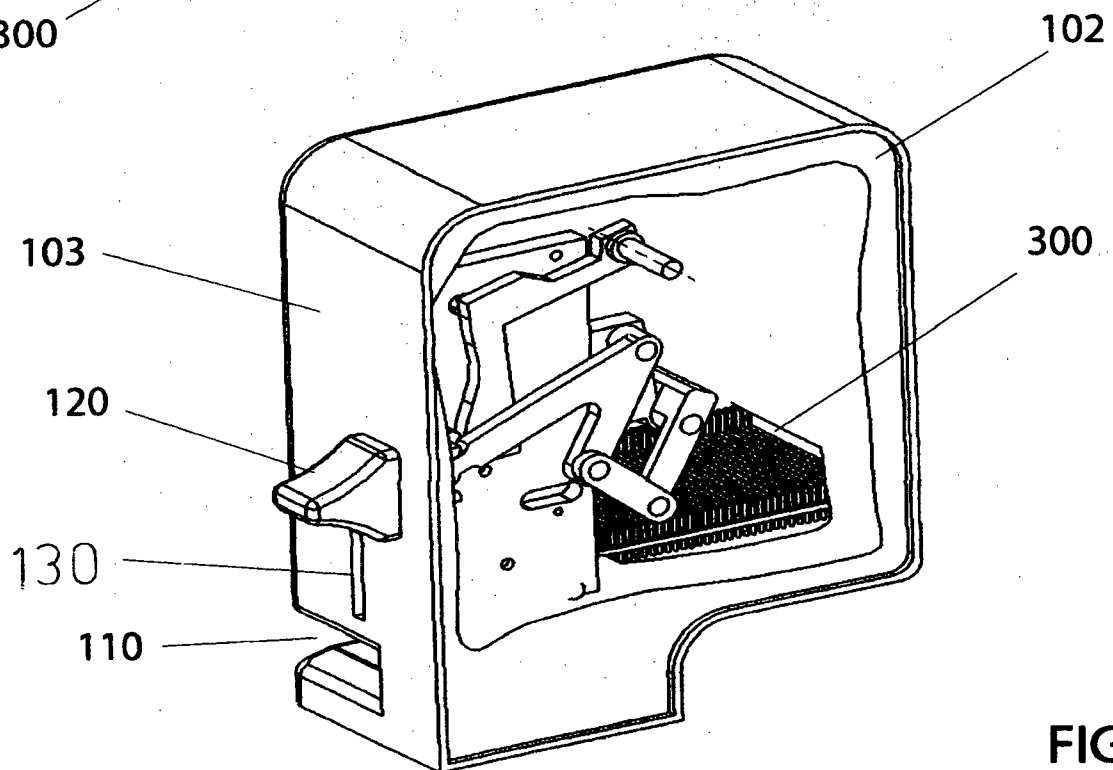


FIG. 5

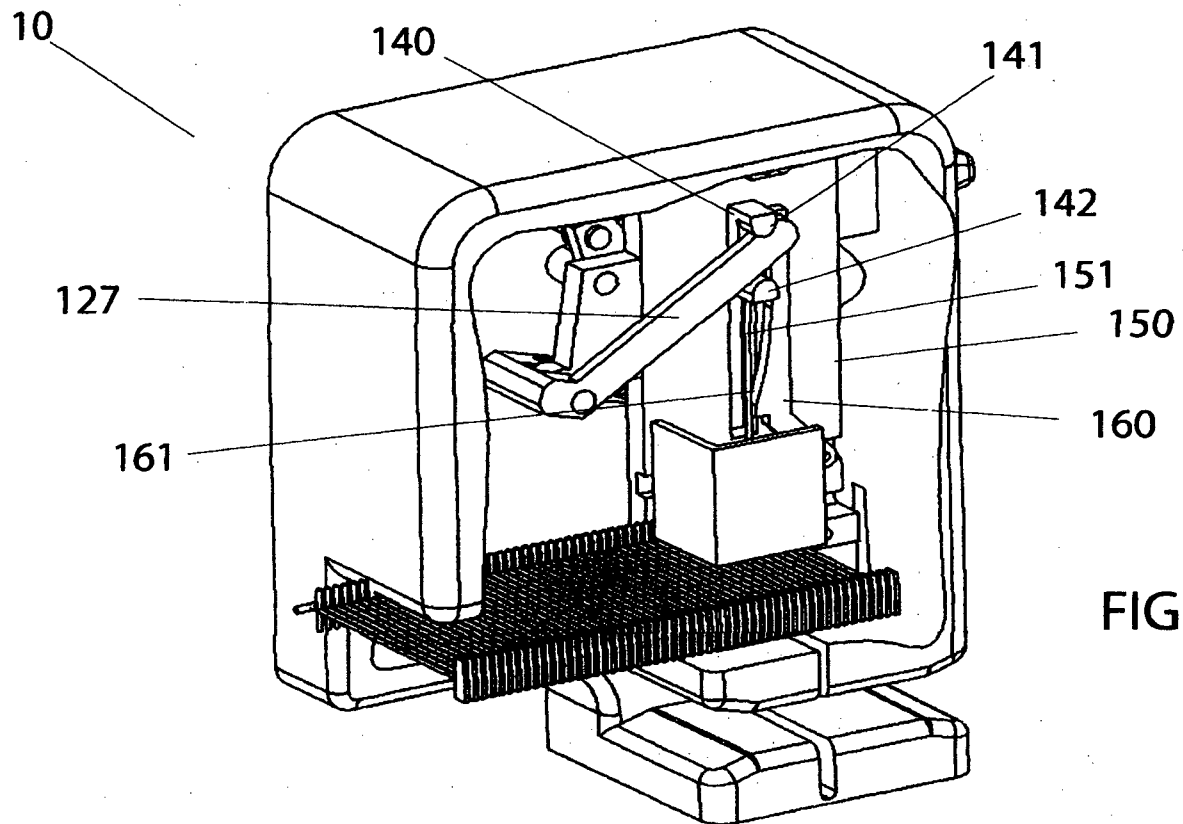


FIG. 6

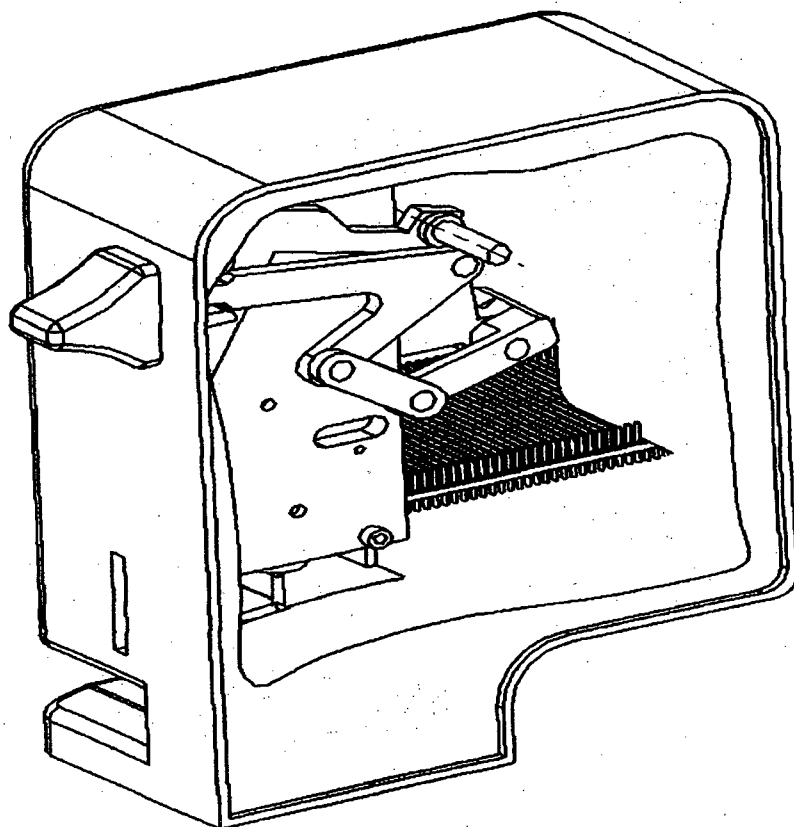


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/000464

A. CLASSIFICATION OF SUBJECT MATTER
INV. D06F95/00 B65C7/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D06F B65C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	WO 2008/057322 A2 (AVERY DENNISON CORP [US]; COOPER WILLIAM J [US]; EARLEY JOHN [US]; RAY) 15 May 2008 (2008-05-15) page 9, lines 5-8 page 11, line 29 - page 13, line 16; figures 1,6,8,9	1-9
A	----- US 4 237 779 A (KUNREUTHER STEVEN [US]) 9 December 1980 (1980-12-09) column 1, lines 1-8 column 7, line 39 - column 8, line 18; figures 1-3	1,6,7,9
A	----- US 3 598 025 A (COTTON ABE) 10 August 1971 (1971-08-10) figures 1,2,5,7,8 ----- -/-	1,9

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

18 April 2012

Date of mailing of the international search report

25/04/2012

Name and mailing address of the ISA/
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

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Kising, Axel

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/000464

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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