March 10, 1936. A. SIGNORINI 2,033,854

HOSE SUPPORTING CLASP

Filed Jan. 28, 1935 2 Sheets-Sheet 1

Fig. 1

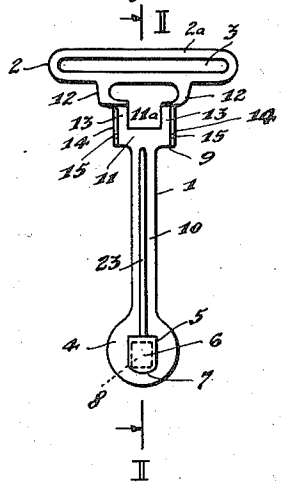


Fig. 2

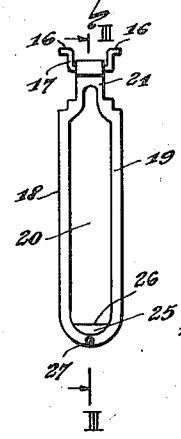


Fig. 3

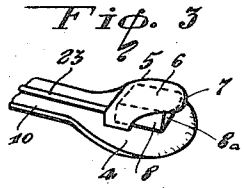


Fig. 4

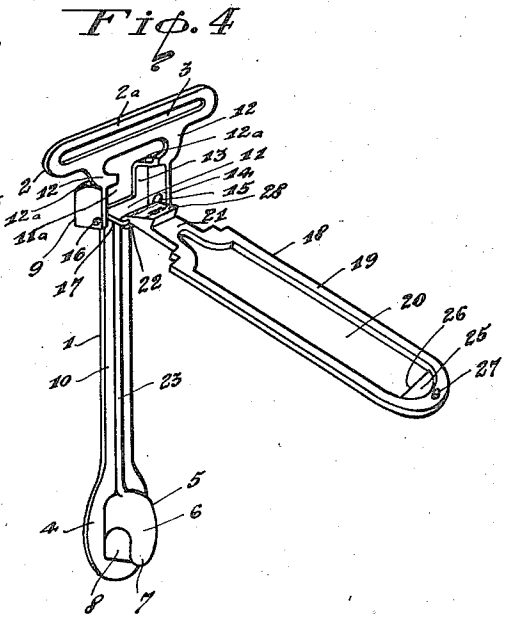


Fig. 5

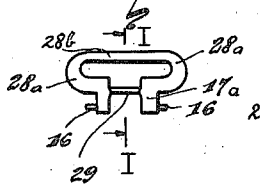


Fig. 6

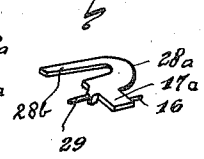


Fig. 7

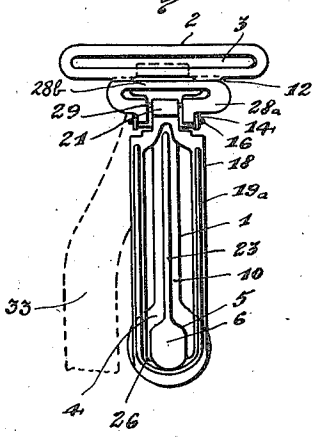
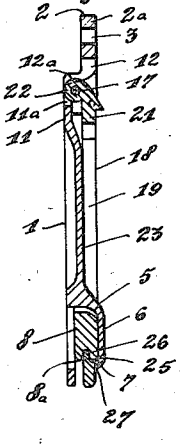


Fig. 8



A. Signorini
INVENTOR

By: Marks & Clerk
Attys.

March 10, 1936. A. SIGNORINI 2,033,854

HOSE SUPPORTING CLASP

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Fig. 9

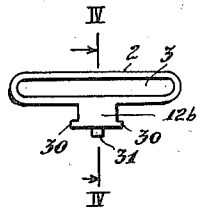


Fig. 10

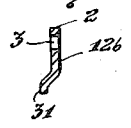


Fig. 11

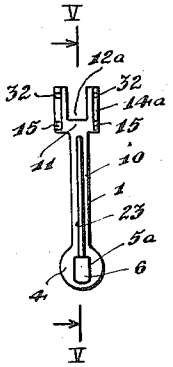


Fig. 12

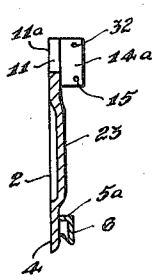


Fig. 13

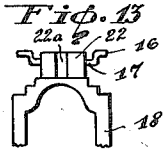


Fig. 14

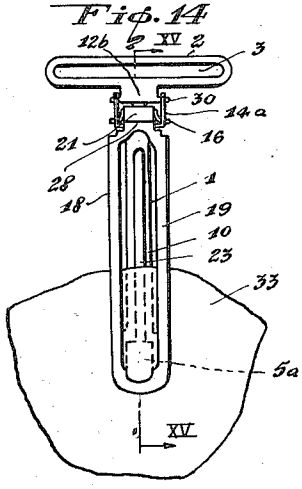
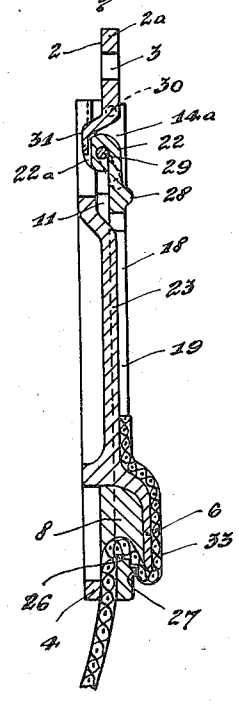


Fig. 15



A. Signorini
INVENTOR

By: Marks & Clerk
ATTYS

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2,033,854

UNITED STATES PATENT OFFICE

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HOSE SUPPORTING CLASP

Alberto Signorini, Buenos Aires, Argentina

Application January 28, 1935, Serial No. 3,849
In Argentine Republic August 29, 1934

7 Claims. (Cl. 24—246)

The invention relates to clasps or supporting devices more particularly of the kind usually employed for supporting hose and similar articles of personal wear.

Such clasps comprise essentially a base portion provided at one end with an attachment element and at the other end with a button or stud adapted to co-operate with a clamping loop secured to or forming part of the attachment element.

Hitherto such clasps have been constructed with the base portion made of flexible material e. g. fabric or rubber carrying a button having a shank and a head of diameter larger than that of the shank. The end of the clamping loop adapted to be cooperated with the button is generally made a tight sliding fit on the shank of the latter, the upper part of the loop being widened so as to allow the head of the button to pass freely even when covered by a portion of the article to be supported. Such narrowing of the loop at its operative end is conditioned by the fact that the base is flexible and that the pull of the supported article cannot be relied upon by itself to maintain the base under sufficiently continuous tension to hold the shank of the button hard against the inner edge of the loop during use. For the same reason the head of the button has to be dimensioned so that it projects at least on both sides over the clamping loop, since a mere lip overlapping the extreme end of the loop would not serve to maintain the clasp fastened in the event of the base being accidentally moved upwards while being worn.

If the base is itself of rubber, the button is generally made integral therewith, and to prevent its being too readily torn off the shank and consequently the head must be generously dimensioned. When a fabric base is employed, the button is generally formed with a metal shank and head rigidly secured to a button plate provided with openings through which the fabric base is threaded. To prevent damage to the hose to be supported by clamping it directly between two metal parts (button and loop) either or both of these parts is covered, the button being sheathed at least as to its shank in rubber and the loop being sheathed in a fabric covering.

From the above details, and bearing in mind the considerable strains to which such clasps are subjected in use, it will readily be seen that in either of the above cases, not only must the clasp as a whole be relatively bulky but the button will be relatively high when measured from the base. In fact the minimum height of button found in known clamps of the type described is as much as eight mms. This is of considerable practical importance especially in clasps intended for ladies wear, as such buttons will give rise to unsightly prominences in the skirt or the like, which are particularly objectionable in connection with evening dress.

Furthermore the known types of clasp are troublesome both to fasten and to unfasten and owing to the aforementioned tight fit of the loop around the shank of the button are liable even in spite of the cushioning effect of the sheathing to damage the supported article, and are a frequent cause of laddering.

The present invention has for its principal object the provision of an improved clasp or supporting device especially adapted for hose, in which both base and clamping loop are rigid, the latter being coupled to the former by a crank-hinge.

Another object of the present invention is to provide a clasp in which the button overlaps the loop only at its extreme end, thus having rather the form of a hook.

Another object is to provide a clasp based on the dead-centre principle and having a snap-action release.

A further object is to provide a clasp of a relatively cheap and simple construction, which shall overcome the disadvantages set forth above.

Other objects and advantages of the present invention will be made apparent in the course of the following description.

The essential feature of the present invention is the employment of a rigid base and a rigid clamping loop operatively coupled together by means of a hinge the pin of which has the general form of a crank, thus permitting the loop to be locked in its clamping position by causing the crank to remain at rest in a position beyond one of its dead centres, as will hereinafter be more fully explained.

By reason of the rigidity of both the base and the loop and of the locking of the latter as indicated above, it is possible to use as a button, a device of the general nature of a hook with which the operative end of the loop is adapted to engage. To prevent damage to the article to be supported and likewise to permit of the aforesaid locking action the hook (which for the sake of clearness will hereinafter be referred to as the hook-button) is provided with a resilient loop-engaging member. A further advantage which said resilient loop-engaging member has

is that it gives, as will be explained, a snap-action release.

The adoption of the crank-type hinge-pin has enabled hook-buttons to be used the height of which above the base may be reduced to the sum of the thicknesses of the clamping loop, the article to be supported and the lip of the hook-button. In practice it has been found that perfectly satisfactory results may be obtained with a hook-button the height of 3 to 4 mms. or half of that of the smallest button used on known clasps.

In the drawings, Fig. 1 is a plan of a base with attachment element and hook-button according to the present invention.

Fig. 2 is a plan of a clamping loop with one form of crank-type hinge-pin.

Fig. 3 is a perspective view of the end of a base carrying the hook-button.

Fig. 4 is a perspective view of an assembled clasp with the clamping loop in the released position.

Fig. 5 is a plan of a modified form of crank-type hinge-pin.

Fig. 6 is a partial perspective view of the hinge-pin of Fig. 5 from the section along the line I—I of Fig. 5.

Fig. 7 is a plan of an assembled clasp fitted with a hinge-pin according to Fig. 5, shown in the closed position.

Fig. 8 is a longitudinal section of an assembled clasp in the closed position, the section being taken along the lines II—II of Fig. 1 and III—III of Fig. 2.

Fig. 9 is a plan and Fig. 10 a section along the line IV—IV of Fig. 9, of a modified form of attachment element.

Fig. 11 is a plan and Fig. 12 a section along the line V—V of Fig. 11, of a base modified for use with the attachment element of Fig. 9.

Fig. 13 is a fragmentary rear plan of the upper portion of a clamping loop modified for use with the attachment element of Fig. 9.

Fig. 14 is a plan of a modified form of clasp comprising the parts shown in Figs. 9 to 13, and shown as clamping a portion of hose, and

Fig. 15 is on an enlarged scale a longitudinal section along the line XV—XV of Fig. 14.

With reference to Figs. 1 to 4, the improved clasp comprises a base 1 to one end of which (hereinafter called the upper end) is secured an attachment element 2 consisting of a frame 2*a* surrounding a slot 3, through which the attachment strap or tape (not shown) is intended to be passed. The other end of the base 1 (hereinafter called the lower end) is widened to form a clamping surface 4 which carries the hook-button 5. That face of the base which carries the hook-button will hereinafter be referred to as the front face, the opposite face being termed rear face. The hook-button may therefore be considered to project forwardly.

As best seen from Figs. 3, 8, 12, and 15, said hook-button 5 forms a hollow chamber open at least on the side remote from the upper end of the base 1 and having side-walls 5*a* and a roof 6. The free edge of the roof extends well beyond the side-walls 5*a* to form a projecting lip 7. The opening of said chamber is adapted to receive a resilient loop-engaging member 8 which as shown in the drawings may be a small piece of rubber or alternatively may be a strip of metal or the like corrugated or otherwise formed to give a spring-like resiliency. The loop-engaging member 8 is adapted to be held in position principally by frictional engagement with the side-walls 5*a*, especially when it is of rubber, but it may also be positively secured thereto. The length of said member 8 measured along the centre-line of the base is preferably such that when secured in said hook-button, its face 8*a* remote from the upper end of the base (hereinafter called operative face) is nearer to the upper end of the base than the edge of lip 7.

The hook-button 5 may be pressed up from the material of the base as indicated in Figs. 8 and 15 or it may be made as a separate part and soldered or otherwise secured to the base, as indicated in Fig. 12.

The upper end 9 of the base 1 is likewise enlarged thus forming a coupling platform 11 and between this platform and the clamping surface 4, an intermediate narrow portion 10. Two arms 13 parallel to the longitudinal axis of the base 1 extend upwardly from said platform the inner sides of said arms thus defining a substantially rectangular recess 11*a*. A wall 14 extending along the outer side of each of the arms 13 projects forwardly and at right angles to said platform and is pierced in the neighbourhood of the free corner nearest to the lower end of the base to provide a bearing 15 for the end journals 16 of the hinge-pin 17 (Fig. 2).

The attachment element 2 is secured to the upper end of the base 1 in such wise that it lies in a plane parallel to that of the base but spaced forwardly therefrom.

The connection between the attachment element 2 and the base may be either rigid as in Figs. 1, 4, 7, and 8 or pivotal as in Figs. 14 and 15.

According to the embodiment illustrated in Figs. 1 to 8, the attachment element 2 is provided with a pair of coplanar connecting members 12 integral with and depending symmetrically from the outer edge of the lower of the longer sides of the frame 2*a*. These connecting members 12 merge into a pair of risers 12*a* which extend forwardly from the upper ends of arms 13 of platform 11. Preferably the risers, connecting members, arms 13 and frame 2*a* are formed of one piece of material as by stamping, die casting or the like but it is understood that they may be formed or built up in any other suitable or convenient manner. The walls 14 may be formed in the blank as lateral wings and subsequently bent up or the box-like housing constituted by the platform, walls, risers and connecting members may be pressed out to form a seamless structure.

It will be seen that between the depending connecting members 12 is left a central section of the lower side of the frame 2*a* and this may be utilized as indicated in dotted lines in Fig. 7 for securing a strip of material 33 intended to lie behind the base 1 so as to interpose a fabric flap between the clasp and the person of the wearer in order to avoid metal to flesh contact.

The clamping loop 18 comprises a frame 19 the central opening 20 of which is substantially rectangular and is of width sufficient to allow the hook-button 5 to pass easily therethrough. From the upper end of the loop extends an integral coupling plate 21 the free or upper end of which is formed into a hinge-bearing 22 (Figs. 4 and 8) adapted to accommodate the crank pin portion of the crank-type hinge-pin 17. The width of plate 21 is such that it will fit easily between walls 13 of platform 11.

The lower end of frame 19 is preferably rounded externally to avoid sharp corners but is internally provided with a straight button-engag-

ing edge 26. If desired a portion of the frame lying between the outer rounded edge and the button-engaging edge 26 may be slightly depressed to form a button-engaging surface 25. In order to prevent possible cutting of the article to be supported between edge 26 and lip 7 of the hook-button, a central pip is formed on the lower end of frame 19 at such distance from edge 26 that in the clamping position of the clasp said pip comes under lip 7.

Both the base with its appendages and the clamping loop are made of thin relatively rigid material, as for example, sheet metal, synthetic resins with or without reinforcement or other mouldable compositions, and the loop may alternatively be formed of stiff wire or thin rod. When very thin material is used a stiffening rib or ribs 23 may be formed along the intermediate portion 10 of base 1 and another 19a around the frame 19 of the loop as indicated in Figs. 1 and 7 respectively. When the loop is thus stiffened, a separate pip 27 need not be provided as the corresponding portion of the rib 19a replaces it.

For the purpose of facilitating manual operation of the loop, particularly in the closing or clamping movement, a projection 28 may be provided on the neck 21 as shown best in Fig. 4. This projection as well as other convenient parts of the clasp may if desired be ornamented as by enamels or precious or semi-precious stones or the like.

The clamping loop 18 is assembled to the base 1 by introducing the end-journal 16 of the crank-type hinge-pin 17 into the bearing holes 15 in the walls 14. The clasp will then in its open position have the appearance shown in Fig. 4.

Starting from the open position shown in Fig. 4, the clasp is applied in practice by placing a suitable portion of the article to be supported over the hook-button 5 and allowing clamping loop 18 to drop thereover. In that position the hinge-pin 17 is at a point just before its lower dead-centre. If now the lower end of the loop 18 be lightly held against the clamping surface 4 (which is of course then covered by the material of the hose or other article to be supported) and the loop be moved upwards that is towards the attachment element 2, by pressing against the projection 28, the crank-type hinge-pin 17 will rotate in bearings 15 first to lift the upper end of the loop and then after having drawn up the loop so that the neck portion 21 lies between walls 14 said hinge-pin will on continuing to rotate move the upper portion of the loop rearwardly towards the base. The parts are dimensioned so that when the loop has been drawn up and lies against the base the hinge-pin 17 will have passed through its upper dead-centre and edge 26 will have entered into engagement with operative face 8a of the resilient loop-engaging member 8 as shown in Fig. 8. In this position the rear portion of the hinge-bearing 22 will lie just above or within the recess 11a of platform 11 and consequently will be accessible to the tip of a finger applied from the rear of the clasp. Upon exerting sufficient pressure in this way upon the hinge bearing to force the hinge-pin over its dead-centre, a snap-action release of the loop is obtained due to the return of the resilient loop-engaging member 8 to its normal unconstrained position.

In Figs. 5, 6, and 7 is shown a modified form of hinge-pin. The modified hinge-pin 17a is provided at about the level of the crank-pin portion 29 with lateral wings 28a which extend laterally a sufficient distance to project beyond the connecting members 12 of the attachment element, when the clasp is assembled. These wings may be used together with or instead of the projection 28 to facilitate operation of the clasp. The end-journals 16 of the hinge-pin fit as before in the bearings 15 in walls 14. An additional advantage of this modified form of hinge-pin is that if the wings 28a are joined above the crank-pin portion 29 to form a cross-bar 28b the attachment element 2 may be eliminated and the attachment strip or tape may be secured directly to said cross-bar.

A further modification of the novel clasp is shown in Figs. 9 to 15, according to which the attachment element 2 is pivotally coupled to the base 1 and carries a short depending tongue adapted upon oscillation of the attachment element to engage with the rear portion of the hinge bearing 22 for the purpose of forcing the crank-type hinge-pin over the dead centre in order to release the clasp.

This construction necessitates modification of certain details of the base and loop which will now be described. From Figs. 9 and 10 it will be seen that in this embodiment of the invention the pair of connecting members 12 of Fig. 1 are replaced by a connecting plate 12b provided with lateral pivots 30. From the mid-point of the lower (free) edge of said connecting plate depends a tongue 31 rearwardly offset as shown in Figs. 10 and 15. Said pivots 30 are adapted to be journalled in an additional pair of bearing holes 32 provided in the neighborhood of the free corner of walls 14 remote from the lower end of base 1, said holes 32 being at approximately the same level as the bearing holes 15 for the end-journals 16 of the crank-type hinge pin 17.

In order that in the clamping position of the clasp, the tongue 31 may not project rearwardly beyond the base 1 and thus give rise to unintentional release of the loop 18, the hinge bearing 22 of the latter has cut in its rearwardly facing portion a slot 22a (Fig. 13) in which the tongue 31 lies in the normal portion of the attachment element 2.

From Figs. 14 and 15 it will readily be understood that with the clasp in clamping position the attachment element 2 may be oscillated about its pivots 30 so as to cause tongue 31 to move forward and force hinge-pin 17 over its upper dead centre thus releasing the clamping loop.

From the foregoing it is believed that the construction, operation and advantages of the device may be readily understood by those skilled in the art and I am aware that changes may be made in the details disclosed without departing from the spirit of the invention as expressed in the appended claims.

What I claim is:

1. A hose-supporting clasp comprising a rigid base having an upper and a lower end and front and rear faces, said upper and lower ends being enlarged to form respectively a coupling platform and clamping surface and a relatively narrow intermediate portion therebetween, a hook-button on the front face of said clamping surface open at least on the side facing the lower end and having a roof parallel to said base but spaced forwardly therefrom a resilient loop-engaging member positioned between said base and the roof of said hook-button, a pair of parallel arms having outer and inner sides and extending upwardly from said coupling platform and coplanar therewith, said inner sides defining a substantially

rectangular recess, a pair of walls extending along said outer sides and projecting forwardly with respect to said base and at right angles to said coupling platform, said walls being pierced in the neighbourhood of their free corners nearest to the lower end of the base to provide a pair of bearing holes, a rigid clamping loop having an upper end formed to provide a hinge-bearing, and a crank-type hinge-pin having a crank-pin portion journalled within said hinge-bearing and a pair of journal ends journalled in said bearing holes, the width of said hinge-bearing being such as to allow it to pass freely between said walls.

2. A hose-supporting clasp comprising a rigid base having an upper and a lower end and front and rear faces, said lower end carrying a hook-button and said upper end being enlarged to form a coupling platform, a pair of parallel arms having inner outer and upper sides and extending upwardly from said platform and coplanar therewith, said inner sides defining a substantially rectangular recess, a pair of walls extending along said outer sides and projecting forwardly with respect to said base and a pair of risers extending forwardly from said upper sides, an attachment element including a frame having relatively long upper and lower bars and relatively short side bars, a pair of symmetrically positioned connecting members depending from said lower bar and coplanar with said frame, said connecting members merging into said risers, a rigid clamping-loop terminating at one end in a hinge-bearing, and a crank-type hinge-pin journalled in said hinge-bearing and hingedly connecting said clamping-loop to the upper end of said base between said walls.

3. In a hose-supporting clasp comprising a rigid base having an upper and a lower end and front and rear faces, a hook-button on the front face of said lower end open at least on the side remote from said upper end and including a roof parallel to and forwardly spaced from said base, a resilient loop-engaging member positioned between said base and the roof of said hook-button, attachment means for said clasp in the neighbourhood of the upper end thereof, and a rigid clamping-loop, a crank-type hinge-pin hingedly connecting said clamping loop to the upper end of said base, said crank-type hinge-pin comprising a crank-pin portion, a pair of depending crank-arms, a pair of lateral end-journals and a pair of wings extending laterally from said crank-arms substantially parallel to said end-journals.

4. A hose-supporting clasp comprising a rigid base having an upper and a lower end and front and rear faces, a hook-button on the front face of said lower end, open at least on the side remote from said upper end and including a roof parallel to and spaced forwardly from said base, a resilient loop engaging member positioned between said base and the roof of said hook-button, a coupling platform, a pair of parallel arms extending upwardly from said platform and coplanar therewith, a pair of lateral walls perpendicular to said arms extending forwardly with respect to said base, a pair of bearing holes in said walls, a rigid clamping loop having an upper end terminating in a hinge-bearing, and a crank-type hinge-pin having a crank-pin portion, a pair of depending crank-arms a pair of end-journals journalled in said bearing holes and a pair of wings extending laterally from said crank-arms and joined together on the side of said crank-pin portion remote from said end-journals by a cross-bar adapted to act as an attachment element for said clasp.

5. A hose-supporting clasp comprising a base having an upper and a lower end and front and rear faces, a hook-button on the front face of said lower end open at least on the side remote from said upper end and including a roof parallel to and forwardly spaced from said base, a resilient loop-engaging member positioned between said base and the roof of said hook-button, said upper end being enlarged to form a coupling platform, a pair of arms extending upwardly from said platform and having inner and outer sides, said inner sides defining a substantially rectangular recess, a pair of walls extending along said outer sides and projecting forwardly with respect to said base, and having upper and lower free corners, a pair of bearing holes provided in the neighbourhood of said lower free corners and a pair of pivot bearings provided in the neighbourhood of said upper free corners, a rigid clamping loop having an upper end terminating in a hinge bearing, a crank-type hinge-pin having a crank-pin portion journalled in said hinge-bearing and a pair of end-journals journalled in said bearing holes, and an attachment element comprising a frame having relatively long upper and lower bars and relatively short side bars, a coplanar connecting plate depending centrally from the lower bar and having a pair of laterally extending pivots journalled in said pivot bearings and a rearwardly off-set tongue depending centrally from the edge of said connecting plate remote from said frame.

6. A hose-supporting clasp comprising a base having an upper and a lower end and front and rear faces, a hook-button on the front face of said lower end open at least on the side remote from said upper end and including a roof parallel to and forwardly spaced from said base, a resilient loop-engaging member positioned between said base and the roof of said hook-button, said upper end being enlarged to form a coupling platform, a pair of arms extending upwardly from said platform and having inner and outer sides, said inner sides defining a substantially rectangular recess, a pair of walls extending along said outer sides and projecting forwardly with respect to said base, and having upper and lower free corners, a pair of bearing holes provided in the neighbourhood of said lower free corners and a pair of pivot bearings provided in the neighbor-hood of said upper free corners, a rigid clamping loop having a lower end and an upper end terminating in a hinge-bearing, a crank-type hinge-pin having a crank-pin portion journalled in said hinge-bearing, a pair of end journals journalled in said bearing holes, and an attachment element comprising a frame having relatively long upper and lower bars and relatively short side bars, a coplanar connecting plate depending centrally from the lower bar and having a pair of laterally extending pivots journalled in said pivot bearings and a rearwardly off-set tongue depending centrally from the edge of said connecting plate remote from said frame, and a raised pip formed on the face of the lower end of said clamping-loop which in the assembled condition of the clasp is remote from said base.

7. A hose-supporting clasp comprising a base having an upper and a lower end and front and rear faces, a hook-button on the front face of said lower end open at least on the side remote from said upper end and including a roof parallel to and forwardly spaced from said base, a resilient loop-engaging member positioned between said

base and the roof of said hook-button, said upper end being enlarged to form a coupling platform, a pair of arms extending upwardly from said platform and having inner and outer sides, said inner sides defining a substantially rectangular recess, a pair of walls extending along said outer sides and projecting forwardly with respect to said base, and having upper and lower free corners, a pair of bearing holes provided in the neighbourhood of said lower free corners and a pair of pivot bearings provided in the neighbourhood of said upper free corners, a rigid clamping-loop having an upper end, a coplanar neck extending upwardly from said upper end and terminating in a hinge-bearing, a crank-type hinge-pin having a crank-pin portion journalled in said hinge-bearing and a pair of end journals journalled in said bearing holes, and an attachment element comprising a frame having relatively long upper and lower bars and relatively short side bars, a coplanar connecting plate depending centrally from the lower bar and having a pair of laterally extending pivots journalled in said pivot bearings and a rearwardly off-set tongue depending centrally from the edge of said connecting plate remote from said frame, said neck having a projection formed on the face thereof which in assembled condition of the clasp is remote from the base.

ALBERTO SIGNORINI.