

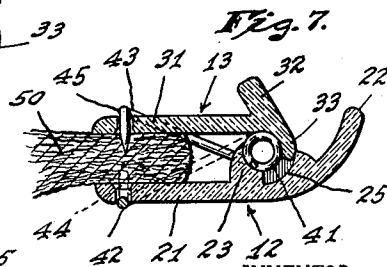
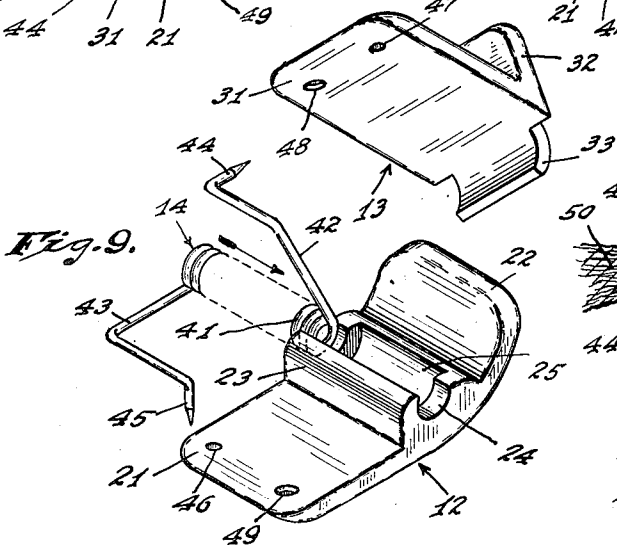
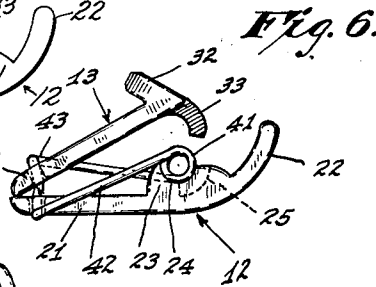
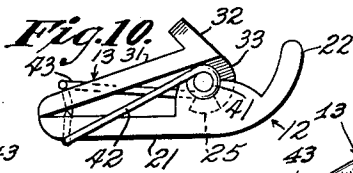
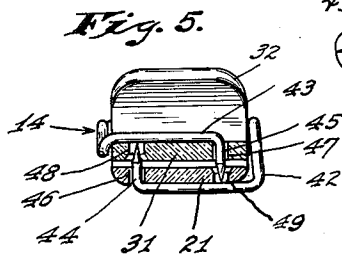
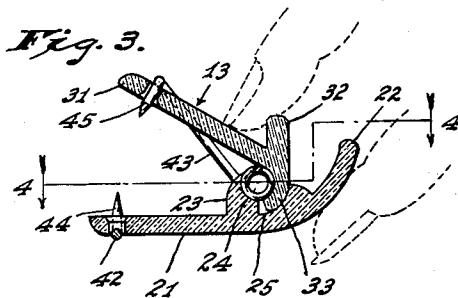
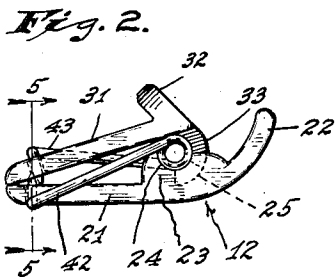
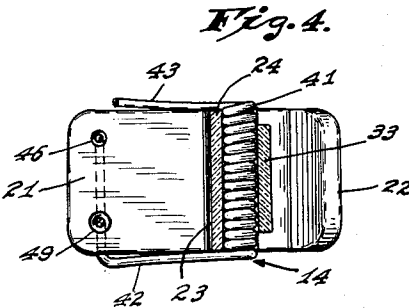
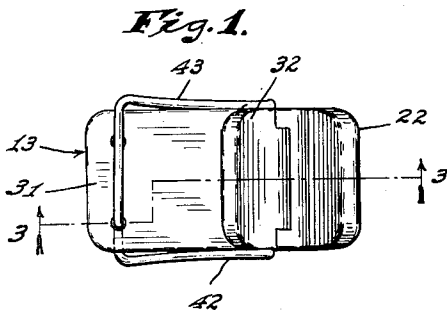
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C. P. DUKE

2,671,256

CLOTHES CLAMP

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INVENTOR.
CARL P. DUKE,

BY
Schley, Trask & Jenkins
ATTORNEYS.

UNITED STATES PATENT OFFICE

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CLOTHES CLAMP

Carl P. Duke, Indianapolis, Ind.

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It is the object of my invention to provide a simple, durable, effective, and safe clothes clamp, which will firmly hold fabric articles in place, such as clothing and bed clothing and more especially diapers and babies' blankets and bibs, will not tear the fabric or scratch the user, can be operated easily and quickly both in opening and closing, will not open or come apart accidentally, and requires mature intent both for opening and for disassembling.

The accompanying drawing illustrates my invention: Fig. 1 is a plan of a complete clothes clamp embodying my invention; Fig. 2 is a side elevation of that clothes clamp, with the parts in closed position; Fig. 3 is a vertical longitudinal section on the line 3—3 of Fig. 1, but with the clothes clamp in wide-open position; Fig. 4 is a horizontal longitudinal section on the line 4—4 of Fig. 3; Fig. 5 is a vertical transverse section on the line 5—5 of Fig. 2; Fig. 6 is a side elevation somewhat like Fig. 2, but with the parts partially disassembled; Fig. 7 is a vertical section somewhat similar to Fig. 3, but with the clothes clamp in clamping position on several layers of fabric; Fig. 8 is an isometric view of the upper clamp-part; Fig. 9 is an isometric view of the lower clamp-part and the torsion spring, with the torsion spring just entering axially into the spring socket in assembling; and Fig. 10 is a side elevation generally similar to Fig. 2 but showing a modification in which the two clamp-parts can not be separated while the torsion spring is in place.

My new clothes clamp consists of three parts: a lower clamp-part 12, of Fig. 9; an upper clamp-part 13, of Fig. 8; and a torsion spring 14, shown in all the figures except Fig. 8. The two clamp-parts are pivoted to each other, on the torsion spring as a fulcrum; and the torsion spring acts to press the clamping ends of the two clamp-parts together and to lock those clamp-parts against separation when in use. In being made of three parts—two clamp-parts and a torsion-spring—my clothes clamp has a superficial resemblance to a widely used type of clamping clothes-pin; but the resemblance is only superficial, for my clothes clamp has actions and capabilities not possessed by that clamping clothes-pin.

The lower clamp-part 12 has at one end a flat underlying plate 21, for underlying the layers of fabric to be clamped, and at the other end a finger-piece 22, desirably curved, extending upward from the plate 21 at an obtuse angle. Between the plate 21 and the finger-piece 22 this lower clamp-part 12 has an upwardly projecting

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socket-part 23 to provide a spring-socket 24. Internally this spring-socket 24 is generally in the form of a cylinder-segment open at the top and extending somewhat more than 180°—conveniently about 210° more or less—to make it impossible to insert or remove the helix of the torsion spring 14 otherwise than axially of the socket. On its side toward the finger-piece 22 the spring-socket 24 has a recess 25 in the general shape of an angularly-shorter segment of a somewhat larger cylinder than the socket 24 itself.

The upper clamp-part 13 has a flat overlying plate 31, for overlying the layer of fabric to be clamped; a finger-piece 32 projecting upwardly at its rear end, desirably at a slightly acute angle to the plate 31 and to the clamping plane, as is clear from Fig. 7, and at a more acute angle to the plate 21 when the clothes clamp is closed as shown in Fig. 2; and a somewhat narrowed downward locking extension 33 in the general shape of a segment of a cylinder and of such length and thickness and curvature that it has an angularly slidable fit in the recess 25 and swings up and down in that recess as the upper clamp-part 31 is moved between the closed and open positions shown respectively in Figs. 2 and 3.

Each of the clamp-parts 12 and 13 is desirably made in one piece, of any desired fairly rigid, strong, and tough material. That material may be wood or metal, for instance; but I prefer to make the clamp-parts of a plastic which can be molded into the desired shape and sets in that shape, and which may be given any desired color. Examples of suitable molded plastics are "Lucite," "Bakelite," and "Vinylite."

The torsion-spring is made of spring wire, and has a central helix 41 which fits fairly closely in the socket 24 and upon which the rear end of the upper clamp-part 13 and its downward extension 33 fits fairly closely, as is clear from Figs. 2, 3, 6, and 7. The helix 41 is the fulcrum on which the two clamp-parts swing. The helix 41 can be inserted into and removed from the spring-socket 24 only by relative movement axially of both helix and socket, as is clear from Fig. 9.

As is shown in Fig. 10, the angular length of the locking extension 33, and of the recess 25 which receives it, may be made great enough so that that locking extension at least partially underlies the helix 41 for all positions of the assembled clamp, from the fully closed position of that Fig. 10 to the wide-open position. With that construction, when the helix 41 is in place

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in the socket 24 the upper clamp-part 13 can not be put in place on or removed from the lower clamp-part 12 at all, for any relative position of the two clamp-parts. This construction makes it necessary (a) that in assembling the clamp the two clamp-parts be put in assembled position first, and that the helix 41 then be inserted axially into the socket 24, from behind as seen in Fig. 10 so that the spring arm 42 (to be described) will clear the socket-part 23, and (b) that in disassembling the clamp the helix 41 be withdrawn axially, toward the rear as shown in Fig. 10, from the socket 24 before the two clamp-parts are separated.

But I prefer to make the angular length of the locking extension 33 somewhat less than that, as shown in Figs. 2, 3, 6, 7, and 8, so that it extends around the helix 41 only slightly more than 90° from the plane of the upper clamping part 13 and thus locks with the in-place helix 41 and prevents assembling and disassembling of the two clamp-parts when those two clamp-parts 12 and 13 are in the clamping position of Fig. 7 or the wide-open position of Fig. 3, while permitting the upper clamp-part 13 to be swung upward from the lower clamp-part 12, as shown in Fig. 6, and to be snapped downward upon that lower clamp-part 12, when the clothes-clamp jaws are fully closed.

From the ends of the central helix 41 of the torsion spring 14 project two arms 42 and 43, which when the parts are assembled and the torsion spring is torsionally stressed extend generally along, and obliquely across the planes of, the plates 21 and 31 at their respective edges nearly to the ends of those plates, and then extend almost across those two plates 21 and 31 on their outerfaces, to spring-press the two clamp-parts 12 and 13 together at their ends. These arms 42 and 43 have bent fabric-gripping end-points 44 and 45, which extend loosely through holes 46 and 47 in the plates 21 and 31 to and slightly beyond the inner faces of those plates, and into any fabric 50 lying between the plates as shown in Fig. 7. When the clothes-clamp is closed as shown in Fig. 2, with little or no fabric in it, those end-points 44 and 45 are received, desirably loosely, in holes 48 and 49 in the plates 31 and 21 respectively, but do not project through those holes, so that they cannot scratch or tear.

The parts 12, 13, and 14 are assembled in the position shown in Figs. 1 to 7 inclusive, in the manner already indicated; with the helix 41 in the socket 24, with the rear end of the upper clamp-part 13 resting on that helix 41 so that the downward extension 33 extends into the recess 25, and with the pins 44 and 45 extending through the holes 46 and 47 respectively and into the holes 48 and 49 respectively. The clamp is normally in the closed position shown in Figs. 1 and 2. It can be moved to open position by grasping the finger-pieces 22 and 32 between the thumb and finger, as shown in dotted lines in Fig. 3, and squeezing those finger-pieces together. When the clothes clamp is thus opened, the desired layers of fabric 50, such as overlapping parts of a diaper or of a baby's blanket, may be inserted between or removed from between the clamping plates 21 and 31; and any layers of fabric between the clamping plates are clamped together on the fabric 50, as is shown in Fig. 7, upon releasing the pressure of the fingers upon the finger-pieces 22 and 32. The end-points 44 and 45 penetrate into and usually

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partly or wholly through the layers of fabric, and to a greater or less extent may project into the holes 48 and 49; and this penetration prevents the fabric and the clothes-clamp from slipping. But the end-points 44 and 45 are guarded by being located within the holes 48 and 49, so that there is no danger of their tearing or scratching.

The clothes-clamp as a whole may readily be tied in place, as to a baby's waist or to apart of a chair or crib, by a string or ribbon passed through the helix 41. Two or more of the clothes-clamps may be tied together by such a string or ribbon, as for holding a bib in place.

The angles of the finger-pieces 22 and 32 are such that pressure upon the clothes clamp as a whole tends to increase the clamping pressure rather than to open the clamp. Thus if the clothes clamp is used as a diaper clamp, and the baby rolls over on to it, the pressure produced by the baby's weight on the finger-pieces 22 and 32, and on the clothes clamp as a whole, can not open the clothes-clamp but tends instead to increase the closing pressure of that clamp.

In order to open the clothes clamp, it is necessary to squeeze the two finger-pieces 22 and 32 together with considerable force; which can not be done by an infant or small child, and can only be done by someone of sufficient maturity to understand.

In order to take the clothes-clamp apart, or to put it back together, it must be in the closed position of Figs. 2 and 6. Then the upper clamp-part 13 may be snapped off (Fig. 6) or on the lower clamp-part 12 if the downward locking extension 33 is made of sufficiently short angular extent to permit that. In any case, whether that downward locking extension is that short or longer, the end-points 44 and 45 of the spring-arms 42 and 43 may be disengaged from the holes 46 and 47, and the helix 41 then slid axially out of or into the socket 24, to permit the separation and the putting together of the two clamp-parts.

I claim as my invention:

1. A clothes-clamp, comprising two opposed clamping plates each having a fulcrum-socket, a helical torsion spring upon the helix of which the fulcrum-sockets of said two clamping plates bear for pivotal movement of the two clamping plates relative to each other, said helix having two projecting arms which overlie the respective clamping plates and both press their forward ends together and press said clamping plates as a whole upon said helix, said clamping plates having spaced operating fingers at their rear ends, and the end of each projecting arm of said helical spring projecting through and beyond the clamping plate it overlies, and into a hole in the opposed clamping plate when said forward ends are together.

2. A clothes-clamp, comprising two opposed clamping plates each having a fulcrum-socket, a helical torsion spring upon the helix of which the fulcrum-sockets of said two clamping plates bear for pivotal movement of the two clamping plates relative to each other, said helix having two projecting arms which overlie the respective clamping plates and both press their forward ends together and press said clamping plates as a whole upon said helix, said clamping plates having spaced operating fingers at their rear ends, one of said fulcrum-sockets extending around said helix more than 180° so that only axial in-

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sertion and removal of the helix in that fulcrum-socket is possible.

3. A clothes-clamp, comprising two opposed clamping plates each having a fulcrum-socket, a helical torsion spring upon the helix of which the fulcrum-sockets of said two clamping plates bear for pivotal movement of the two clamping plates relative to each other, said helix having two projecting arms which overlie the respective clamping plates and both press their forward ends together and press said clamping plates as a whole upon said helix, said clamping plates having spaced operating fingers at their rear ends, one of said fulcrum-sockets extending around said helix more than 180° so that only axial insertion and removal of the helix in that fulcrum-socket is possible, the clamping plate which has the other fulcrum-socket having a locking extension which projects partially around the helix.

4. A clothes-clamp, comprising two opposed clamping plates each having a fulcrum-socket, a helical torsion spring upon the helix of which the fulcrum-sockets of said two clamping plates bear for pivotal movement of the two clamping plates relative to each other, said helix having two projecting arms which overlie the respective clamping plates and both press their forward ends together and press said clamping plates as a whole upon said helix, said clamping plates having spaced operating fingers at their rear ends, one of said fulcrum-sockets extending around said helix more than 180° so that only axial insertion and removal of the helix in that fulcrum-socket is possible, the clamping plate which has the other fulcrum-socket having a locking extension which projects more than 90° from the

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plane of that clamping plate around the helix at the rear.

5. A clothes-clamp, comprising upper and lower clamping plates each having a fulcrum-socket, a helical torsion spring upon the helix of which the fulcrum-sockets of said two clamping plates bear for pivotal movement of the two clamping plates relative to each other, said helix having two projecting arms which overlie the respective clamping plates and both press their forward ends together and press said clamping plates as a whole upon said helix, said upper and lower clamping plates having at their respective rear ends two spaced operating fingers which are together project respectively obliquely forward and upward and obliquely backward and upward, so that downward pressure on the clothes-clamp as a whole tends to push said forward ends together.

CARL P. DUKE.

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