Feb. 27, 1951 H. L. RATCHFORD 2,543,336

CLOTHESPIN

Filed July 7, 1948

FIG. 1

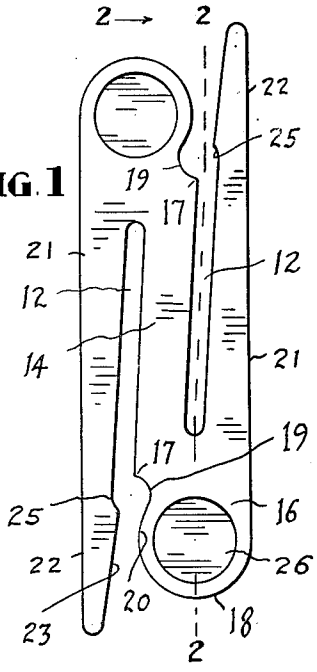


FIG. 2

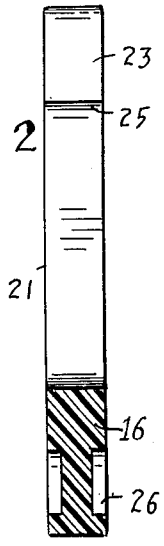


FIG. 3

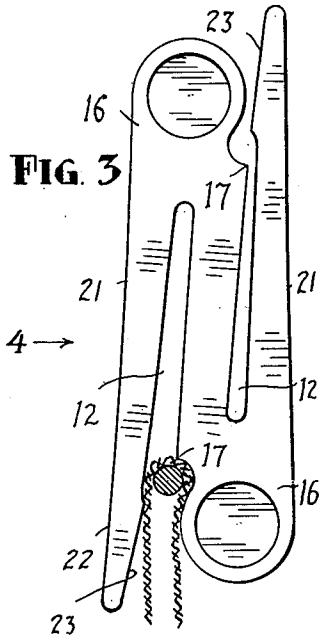


FIG. 4

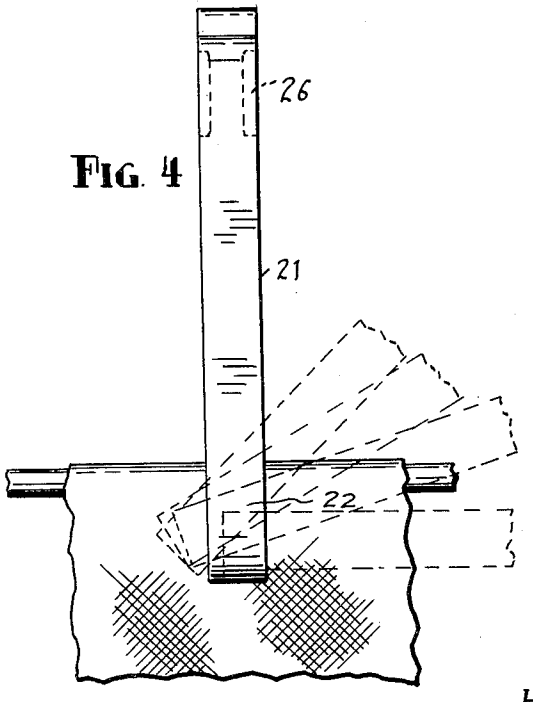
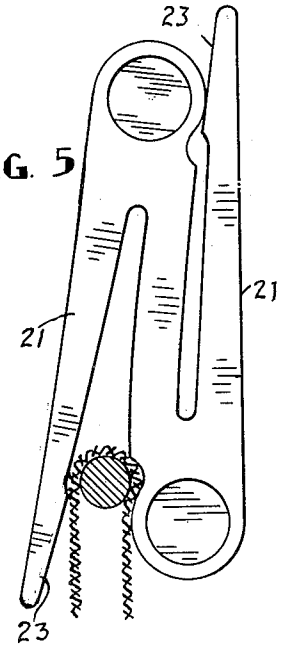


FIG. 5



INVENTOR

HARRY L RATCHFORD

By Thomas D. Ryan

ATTORNEY

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CLOTHESPIN

Harry L. Ratchford, Muncie, Ind.

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4 Claims. (Cl. 24—81)

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This invention relates to improvements in clothespins.

Objections to a pin of the bifurcated type as hitherto devised are, that in the effort to make the pin sufficiently secure in holding position, the wedging of same against the fabric that is supported by the clothesline, involves liability of injury to the fabric, and of impairment of the pin. Moreover the said pin being not effectively resistant against tendency to become loosened due to stresses to which the fabric is subjected, as by abuse and or by the wrenching forces of wind and storm, there is again the liability of marring the fabric and of even the dislodgement of the pin and also the fabric, from the line.

My invention is based upon the concept of providing a resilient pin with the arms thereof so formed with relation to each other and to the body of the pin and to the line to be engaged, that whereas the pin is capable of being easily applied in its holding position and without overstrain on any part thereof, its clamping power is so utilized that while the pin is capable of maintaining dependably a tenacious hold upon the fabric without injury to same, it will have become fastened against any tendency to work loose from its holding position, and at the same time it is easily removable by the user, and without liability of injury to the fabric or to the pin.

To provide a pin affording the above-named advantages, and to so embody the invention that the pin is of minimum weight and dimension, is durable and dependable and easy to manipulate, and at the same time is capable of being manufactured economically, and will lend itself to convenience in all the phases of merchandising and handling of same, are the objects, broadly stated, of my invention.

The said objects, as well as more specific aims which will presently be apparent, are accomplished by and my invention is contained in the new construction, combination and arrangement of parts described in the following specification and illustrated in the accompanying drawings.

In the drawings—

Figure 1 is a side view of my new clothespin.

Figure 2 is a longitudinal sectional view taken on broken line 2—2 in the direction of arrow 2 in Figure 1.

Figure 3 is a side view indicating the appearance of the pin in position holding the fabric, as on a conventional metal line, the fabric and the said line being shown in cross section.

Figure 4 is an elevational view taken in the direction of arrow 4 in Figure 3, the fabric being shown fragmentarily, and the broken lines indicating the position to which the pin is transposed

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in the transaction of removing the pin from its holding engagement.

Figure 5 is a side view indicating the appearance of the pin in operative position holding the fabric, as on a rope line or a metal line of a larger diameter.

My new clothes pin is made of plastic having the properties especially desirable. The said plastic, as polystyrene and which lends itself to thermo-setting is injected into molds made from a gated pattern especially designed therefor for economical quantity production. The said molds and the means for filling same are operable by known procedures in the molding art, and the article when taken from the mold is complete in form, structure and finish. It is dense of structure, desirably resilient, light in weight and of attractive appearance in color and finish, and is possessed of ample tensile strength for its intended purpose. It is resistant to extremes of seasonal temperatures, is not adversely affected by moisture, and does not tend to accumulate dirt particles nor to abrade the fabric with which it is in contact. It does not become corroded, roughened or pitted, and the pins in mass do not become interconnected or tangled.

In the pin here presented, same being a replica of the pattern from which it is formed in the mold, the body is rectangular in cross section and is formed with spaced substantially longitudinal clefts 12 and 12 which are directed inwardly from the opposite ends of said body. The median body portions thus formed I designate as central arm 14. The end portions of said central arm and which are of rounded formation are designated as heads 16 and 16. The peripheral face 18 of each of said heads is of rounded formation and is provided at its inner portion 20 with an arcuate notch 19 the outboard portion of said notch flowing curvately into the portion 20 of the said peripheral face, the inboard portions of said notch 19 and one side of the cleft 12 intersecting at the line 17. The remaining portions of the said body form longitudinal side arms 21 and 21, the terminal portions 22 and 22 thereof extending beyond the transverse plane of the ends of the adjacent heads 16.

The inner face 23 of the terminal portion of each of said side arms is tapered at an angle inclined toward the adjacent head 16, and it terminates at an offset 25 having a radius equal to the radius of curvature of said notch 19, said offset being located in diametric alignment with said notch 19.

Each of the said clefts 12 is of such length that the head ends of the central arm 14, as well as the said central arm, are of ample cross section

area to afford suitably substantial strength in these portions, the cross section area of each of the side arms being slightly less than the cross section area of the central arm. Recesses 26 and 26 formed in the opposite sides of the said heads 16 and 16 afford convenience in the applying by the user of a finger or fingers to the pin in the transaction of inclining the pin in the direction of the clothesline (see broken lines in Figure 4) and in the removing of the pin from the line. By the structure thus described it will be seen that the confronting notch faces 19 and offset faces 25 are in spaced parallel relation, and that the peripheral faces 18 of the heads 16, and the tapered faces 23 and 23 of the said side arms are in confronting relation.

My new pin, in the example shown, is about two and one half inches in length, and is suitable for use in connection with a conventional wire line or a conventional rope line, as indicated in Figures 1 and 5 respectively.

Procedure in using the invention consists simply in placing the fabric, as of an article of wearing apparel or the like on the line, then applying the pin to place, the line becoming engaged in the crotch formed by the face 23 of the side arm and the peripheral face 18 of the head of the pin. Then as the pin is pressed against the fabric and the line, strain is imposed on the engaged arm, the effect on the pin is, that in a yield of the central arm in the portion thereof near the notch 19, the strain so imposed as aforesaid on the engaged arm is effectively distributed through the engaged arm and the central arm, and the reaction of said central arm and said engaged arm maintains a firm and tenacious engagement by the said arm against the fabric and line.

The pin now held, as it is, by the inboard corner 17 of the notch 19, against further urge toward the line, entry of the line into the cleft is avoided and overstrain of the pin is prevented. The pin being now secured as against any stress imposed upon the fabric tending to affect its position on the line, the clasping action of the arm is so utilized that liability of excessive gripping action of the pin is eliminated.

The clasp action of the pin being coextensive with approximately one half of the circumference of the line at the head side of the pin, and approximately one fourth of the circumference of the line at the arm side of said pin, the fabric is held effectively against any tendency to shift either longitudinally or transversely. Whereas the pin is held as against force tending to pull or swerve the fabric in any direction, it lends itself to being easily removed by the user. To remove the pin from the installed position just described, the user simply applies a finger or fingers at the head of the pin and swings it to one side or the other of the perpendicular (see Figure 4) and downwardly in the direction of the clothes line the offset 25 of the arm 21 and the notch 19 of the central arm riding smoothly the fabric and sliding free from the fabric and from the line.

A clothes pin according to my invention while relatively small in size is of strength to withstand effectively all strains imposed upon it as such, and it is operable regardless of which end thereof is applied to the line. When the pin is used in connection with a line of unusually larger diameter, the changed flexure of the central arm, and the changed flexure of the engaged arm appear as indicated in Figure 5, and additional strain is imposed against the engaged arm, the yield in the central arm in the portion thereof near the notch 19 is increased, and the said central arm in the deflection thereof, comes to position with its head portion engaged with the face 23 of the outboard end of the free arm.

In the functioning just described, the central arm will have sprung at its portion in proximity with the notch that engages the line and it will have been flexed toward and impinged at its head against the face 23 of the free end of the adjacent side arm; and the engaged arm will have sprung at its portion near the other head of said central arm and will have become flexed outwardly. In this status the free arm acts in combination with the flexed central arm and the flexed engaged arm, as a cantilever, and, in the consequent mutual reaction of the several parts, the pin is enabled to effectively withstand the strain imposed upon it and to maintain a firm and secure clasping hold on the fabric and line.

It will be understood that the invention as embodied in the form and construction herein described and illustrated, is subject to minor modifications without departure from the spirit or principle of the invention, and that same is to be construed as of the scope defined in the claims.

What I claim as my invention is:

1. A clothespin consisting of a resilient elongated body rectangular in cross section and with spaced substantially longitudinal parallel clefts directed inwardly from opposite ends of said body, the median portion of said body forming a central arm embodying opposed heads, the peripheral faces of each being of rounded formation and each face provided at its inner portion with an arcuate notch, the outboard end thereof rounded, the remaining portions of said body forming longitudinal side arms, each being of less area in cross section than the area in cross section of the central arm, the terminals thereof extending beyond the heads of said central arm and each being provided at its inner face with an arcuate offset of length shorter than that of the notch of the adjacent head of said central arm, the said offset being of curvature struck with a radius equal to the radius with which the curvature of said notch is struck, and said offset being in diametric alignment with said notch.

2. A clothespin of the kind described consisting of an elongated resilient rectilinear body with spaced substantially longitudinal parallel clefts directed inwardly from opposite ends of said body, the median portion of said body forming an intermediate arm embodying opposed heads with peripheral faces of rounded contour, each of said faces at its inner portion having an arcuate notch, the outboard end of said notch being rounded, the remaining portions of said body forming tapered longitudinal side arms, the terminal portions thereof being tapered and extending beyond the heads of said intermediate arm, and each provided at its inner face with an offset shorter than the notch of the adjacent head of said intermediate arm, but struck with a radius of length the same as that with which the said notch is struck, said offset being in diametric alignment with said notch.

3. A clothes pin consisting of an elongated body made of thermo-setting plastic, said body having spaced substantially longitudinal parallel clefts directed inwardly from opposite ends of said body, the median portion of said body forming an intermediate arm substantially square in cross section and embodying opposed heads with pe-

ripheral faces of rounded contour, each of said faces at its inner portion having an arcuate notch the outboard end of said notch being rounded, the remaining portions of said body forming tapered longitudinal side arms rectangular in cross section area less than the cross section area of said intermediate arm, and each provided at its inner face with an arcuate offset whose arc is shorter than the arc of the notch of the adjacent head of said intermediate arm, but struck with a radius the same as that of the arc of said notch, said offset being in diametric alignment with said notch.

4. A device of the kind described, consisting of an elongated body of thermo-setting plastic, said body having spaced substantially longitudinal parallel clefts directed inwardly from opposite ends of said body, the median portion of said body forming a central arm substantially square in cross section and embodying opposed heads with peripheral faces of rounded contour, each of said faces at its inner portion having a curvate notch, the outboard end of said notch being rounded, the remaining portion of said body forming longitudinal side arms each being of less area in cross section than the area in cross section of said central arm, the terminal

portions of said side arms extending beyond the heads of said central arm and each being provided at its inner face with a curvate offset which is in diametric alignment with the notch of the adjacent head of said central arm, the said curvate offset having an arc which is shorter than that of the notch of said adjacent head, and having the same radius as that of said notch.

HARRY L. RATCHFORD.

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