May 24, 1949. C. CASTELLI 2,471,141

CLOTHESPIN

Filed May 28, 1947

Fig.1

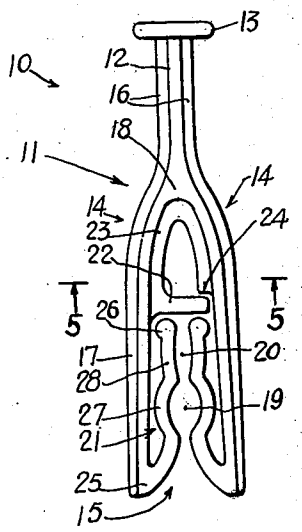


Fig.2

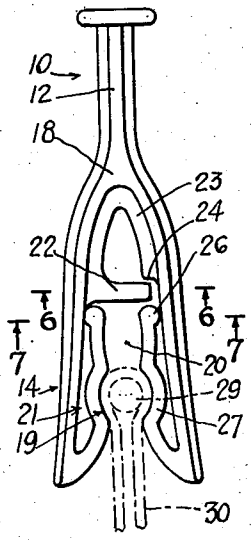


Fig.3

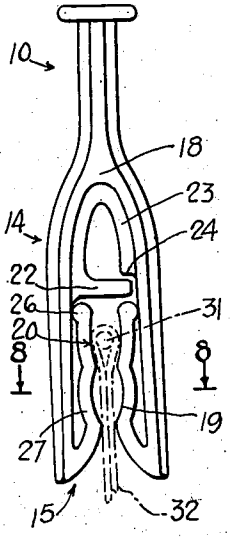


Fig.4

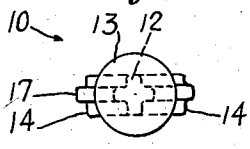


Fig.6

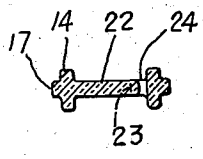


Fig.8

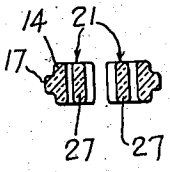


Fig.9

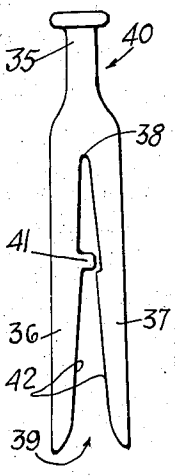


Fig.5

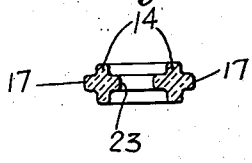
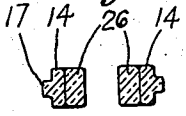


Fig.7



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CLOTHESPIN

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Application May 28, 1947, Serial No. 750,980

3 Claims. (Cl. 24—138)

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This invention relates to securing devices or clips and has particular reference to clothespins.

One object of the invention is to provide a device of the character described having improved means for engagement with articles or clothes lines of different sizes.

Another object of the invention is to construct a device of the type mentioned having improved means for preventing a clothespin or the like from being accidentally split at the bight thereof.

Another object of the invention is to furnish a device of the nature set forth having improved means comprising parts of different degrees of resilience coordinated so that one of the parts may reenforce or support another according to the varying strains produced in gripping large and small articles.

According to the invention, an improved clothespin is produced of plastic material to afford greater smoothness, neatness and cleanliness. It has been known to make clothespins of this material and to provide for their engagement with ropes of different thicknesses. Because plastic material possesses a low tensile strength, such clothespins have often been broken or split at the bight when the clothespin is pressed down hard on a thick rope. It is one object of the invention to avoid this difficulty. Since the resilience of plastic material is rather limited, another difficulty that was encountered was that the clothespin would oftentimes be strained beyond the elastic limit so that it assumed a permanent set which reduced the efficiency of the clothespin and permitted it to easily slip off the line. It is therefore another object of the invention to overcome this drawback and to furnish a structure which cannot be strained beyond a predetermined point, thereby avoiding any possibility of permanently distorting the device or of splitting the same, while maintaining an ample range of deflections to engage lines of different thicknesses.

Another object of the invention is the provision of a device of the class alluded to which is particularly simple and inexpensive to manufacture, durable, and highly efficient in use.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention comprises the novel features, combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

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In the drawing:

Figure 1 is a view in front elevation showing a device such as a clothespin embodying the invention.

Fig. 2 is a similar view of the device, but showing the same applied to hold an article on a thick clothesline as indicated in dot-dash lines.

Fig. 3 is a similar view of the device but illustrating the same as applied to hold an article on a relatively thin clothesline as indicated in dot-dash lines.

Fig. 4 is a top plan view of the device.

Fig. 5 is a sectional view on the line 5—5 of Fig. 1.

Figs. 6 and 7 are sectional views taken respectively on the lines 6—6 and 7—7 of Fig. 2.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 3.

Fig. 9 is a view in elevation showing a modification.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined, but useful embodiments may be produced involving less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing a preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a securing device such as a clothespin embodying the invention. The same may be made of any suitable material of a resilient nature, but the advantages thereof are best exemplified in making it of plastic, preferably as a one-piece structure. The device 10 can be formed in a simple mold as will be apparent to anyone skilled in the art.

The device 10 comprises a body member 11 having a finger piece portion at one end which may include a neck 12 carrying a head 13. Below the neck, the body member 11 is enlarged to provide a pair of elongated spaced jaws 14 which afford a suitable entrance 15 at the opposite end of the body member. Reenforcing ribs may extend continuously from the head along the neck 12 at 16 and along the outer sides of the jaws at 17. The jaws 14 are of substantial length, and they have a bight intercon-

nection at 18; they are preferably continuously resilient from the bight 18 to the entrance end 15.

Between the jaws 14 is an auxiliary clamping or gripping means affording seating portions for articles or ropes of different sizes. Thus a seating area 19 for a clothes line of standard size is afforded at 19 adjacent to the entrance 15, and a seating area 20 for a clothes line of lesser thickness is afforded inward of the area 19. The reference to the ropes or lines is intended to include the clothes or other articles which are carried thereby and are secured by the clothespin. The auxiliary gripping means includes one or more auxiliary jaws or fingers 21 and a stop element 22. The latter is connected to the body member 11, for example to one of the jaws 14. If desired, the adjacent portions of the jaws 14 may include a reenforcing rib 23 above the stop element 22, this rib continuing adjacent to the bight 18 and merging into the stop element 22. The rib 23 may afford a shoulder 24 to limit upward deflection of the stop element 21. The auxiliary jaws 21 may be connected at their lower ends to the adjacent ends of the main jaws 14 as at 25, and they may terminate in free end portions 26 which are disposed in relative proximity to the stop element 22. The dimension of the latter is sufficient in a direction transverse to the clothespin to cooperate with the auxiliary jaws 21 to prevent a clothes line or rope from slipping beyond the free end portions 26 of the auxiliary jaws. In consequence, the stop element 22 bridges virtually the entire gap or space. Each of the auxiliary jaws 21 is provided with a bowed or curved seating portion 27 directly adjacent to the entrance 15 and spaced from the adjacent jaw 14. The companion portions 27 of the auxiliary jaws thus cooperate to provide the seating area 19 for a clothes line or rope. Each of the auxiliary jaws 21 is also provided with a slightly curved portion 28 between portions 26 and 27. The complemental portions 28 of the different auxiliary jaws cooperate to provide the seating area 20 for a relatively thin clothes line or rope. The elements 21 and 22 lie in a common plane with the main jaws 14 and the latter are adapted to be resiliently deflected toward and away from each other, and at the same time the auxiliary jaws 21 which are spaced from each other and from the main jaws are adapted to be deflected in a resilient manner with respect to each other and to the main jaws.

Certain features of the construction will be more clearly apparent upon considering the mode of operation of the device 10. According to Fig. 2, the clothes line or rope of standard size or thickness is indicated at 29 and a fragmentary showing of an article such as clothing or the like carried by the line is indicated at 30. The clothespin 10 is applied to hold the article 30 on the line 29. This is done in the usual manner, with the entrance serving to facilitate expansion of the clothespin in a cam-like manner. The expansion shown involves a resilient deflection of the main jaws 14 substantially throughout the entire length thereof, and it also involves a relative expansion of the auxiliary clamping means, with the jaws 21 thereof moving apart from each other. A significant feature herein indicated, is that the free end portions 26 of the auxiliary jaws 21 come into direct lateral contact or abutment with their respective adjacent main jaws 14; this may be facilitated by constructing the free end portions 26 of knoblike form. Another important feature of the construction is indicated in that the auxiliary jaws 21 are much smaller in cross section than the main jaws 14 and are therefore somewhat weaker and possess less stiffness than the latter. Accordingly, compactness is assured, and nevertheless the strength of the main jaws is available for supporting or stiffening of the auxiliary jaws 21 by the lateral abutment of the free end portions 26 as herein indicated.

It will be noted that the stop element 22 is spaced at a substantial distance from the bight 18, and thus a practical exemplification involves the use of auxiliary jaws such as 21 which may be only a little bit longer than one-half the length of the main jaws 14. The practical utility of this construction will now be apparent upon further consideration of Fig. 2. If the operator should accidentally press down very hard upon the clothespin, the rope 29 might be forced further upwardly to enter the second area 20 to be gripped between the portions 28 of the auxiliary jaws, but further movement would be resisted by the stop element 22, thus preventing a severe strain at the bight 18 which might cause breakage or splitting of the clothespin. Between the gripping area 20 and the bight 18 there is a substantial length of the main jaws 14 which is adapted for deflection within the elastic limit so that the full and complete operativeness of the device is maintained even under the most unfavorable conditions. In practical operation it is not contemplated that the thick rope at 29 shall enter the gripping area 20, the latter being reserved for a relatively thin clothes line such as 31 carrying a garment or other article 32 as shown in Fig. 3. However, the utility of the clothespin even under the very worst conditions has been clearly indicated.

Referring to Fig. 3, the line 31 and the article carried thereby are passed through the entrance 15, past the opening 19 and into the clamping area 20 so as to be gripped between the portions 28 of the auxiliary jaws 21, and with the free end portions 26 contacting or abutting the main jaws 14 to be supported by the latter, regardless whether or not the main jaws are sufficiently stressed to be expanded. According to the thickness of the relatively thin rope 31 or of the clothing carried thereby, the main jaws 14 may have any satisfactory accommodating expansion. It is with the use of the relatively thin clothes line 31 that the stop 22 is of particular utility. If the line 31 slipped beyond the free end portions 26, the clamping engagement would be lost, and the article of clothing would be capable of sliding off from the line, particularly when subjected to a strong wind. Also the clothespin might slip along the line in an objectionable manner. It is in this sense that the stop element 22 may be considered as a part of the auxiliary means hereinbefore referred to which is disposed between the main jaws 14 for holding the articles. In another sense, the stop element 22 may be considered functionally independent of the auxiliary jaws except in that it limits the inward movement of the line 31 under certain particular conditions. It will be appreciated that if the stop element 22 were removed or accidentally broken, the clothes line would be able to exert a powerful wedging action against the rib 23 and thus split the clothespin. Since plastic is relatively expensive as compared for example with wood, it is desirable to make the clothespin as thin as possible, and the resultant reduction in strength is herein offset by the avoidance of undue stresses thereon. If preferred, the stop element 22 may be arranged to extend axially from the bight 18,

but the molding is simplified and less plastic is used by the transverse arrangement shown. In the operation of the jaw elements 21, it will be perceived that the portions thereof intermediate of their ends are always spaced from the main jaws 14 so that these elements 21 form springs supported at their ends, the resultant structure being somewhat in the nature of a hollow spring consisting of the parts 14 and 21 having an opening therebetween. By making the elements 21 free-ended they are advantageously adapted for elongation upon deflection, thus promoting the resilience of the device. If desired, the clothespin 10 could be arranged to receive only one size of clothes line, but all the advantages are best realized by a construction adapted to engage clothes lines of different thicknesses. By making the portions 28 relatively straight, as distinguished from the substantially curved portions 27, there is greater room for transverse deflection of the jaw elements 21, and the importance of the stop 22 as a seating element for a clothes line is correspondingly increased as the rope 31 might be readily pushed against the stop. It is to be noted that a clothespin is subjected to considerable abuse, is oftentimes rammed down upon the clothes line with excessive force, and this invention is intended to render the device foolproof under all conditions.

Certain advantages of the invention may be obtained by omitting one of the jaw elements 21, and if necessary forming rope seating portions in the opposed jaw 14 complemental to those on the jaw element 21. However, the range of deflection would be materially reduced and the danger of breakage and of straining beyond the elastic limit would be increased.

In Fig. 9 is shown a modified clothespin 35 of simplified form to more clearly show the utility of a stop element such as 22. This clothespin 35 may be made of plastic, wood, or other suitable material. It comprises a body member having spaced jaws 36, 37, forming a bight 38 at one end and an entrance 39 at the opposite end. The body portion is also formed with a finger piece 40. Formed on the body member or connected to one of the jaws is a stop element 41 disposed at a substantial distance from the bight 38, it being understood that the jaws are resilient substantially throughout the length thereof, including the portions between the stop element of the bight. Between the stop element and the entrance 39, the confronting faces 42 of the jaws may have a slope sufficient to operatively engage clothes lines of different thicknesses. These surfaces may be roughened or undulated in a well-known manner for selectively seating a clothes line at different points. If the clothespin 39 is rammed down hard on a clothes line, the stop element arrests its travel, and prevents it from reaching the bight 39 and splitting the clothespin, the line being stopped at a point where the jaws possess the requisite resilience to avoid any tendency to splitting. Further, the location of the stop element 41 and its relation to the jaws 42 may be such that deflection beyond the elastic limit will be substantially avoided so that the clothespin may not acquire a permanent set in deformed position.

I claim:

1. As a new article of manufacture a plastic clothespin comprising an elongated body member having a finger piece portion at one end and a pair of generally parallel main jaws extending toward an entrance on the clothespin at the other end of the body member forming a bight between said jaw members, generally parallel auxiliary jaws between the main jaws, the auxiliary jaws formed to provide therebetween rope receiving transverse openings of different sizes, the larger opening being adjacent said entrance, the smaller opening being spaced inwardly toward said bight, the auxiliary jaws having free ends adjacent the smaller openings and being integral with the respective main jaws adjacent said entrance, the jaws being resilient, the main jaws being of substantially greater length than the auxiliary jaws, and a stop element integrally formed with one of said main jaws, said stop element lying in proximity to and over said free ends of the auxiliary jaws serving to prevent a rope from traveling inwardly beyond the auxiliary jaws, said stop element being substantially spaced from the bight and free of the other main jaw to permit resilient deflection of the latter between the stop element and the bight.

2. The clothespin as defined in claim 1 in which the inner adjacent portions of the main jaws are formed with a rib extending from the stop element on one of the main jaws around the bight portion and along the other main jaw terminating short of the free end of the stop element.

3. The clothespin as defined in claim 1 in which the inner adjacent portions of the main jaws are formed with a rib extending from the stop element on one of the main jaws around the bight portion and along the other main jaw terminating short of the free end of the stop element, and said rib termination and said free end of the stop element being so constructed and arranged that the rib termination forms a shoulder to limit upward deflection of the stop element.

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