Jan. 12, 1954 C. A. MORGAN 2,665,466

HINGED MEMBER RESTRAINING MEANS

Filed Jan. 20, 1951

2 Sheets-Sheet 1

FIG. 1.

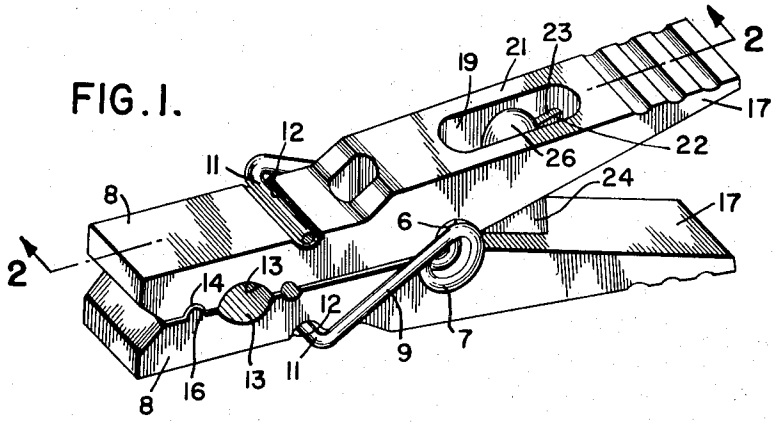


FIG. 2.

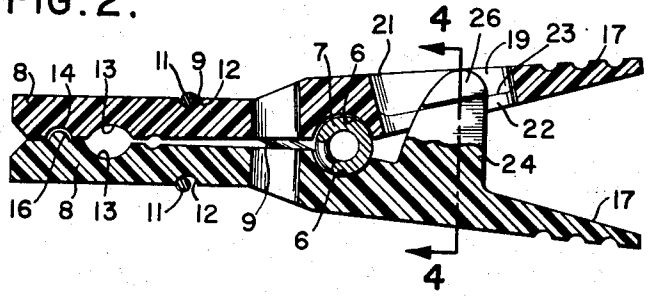


FIG. 4.

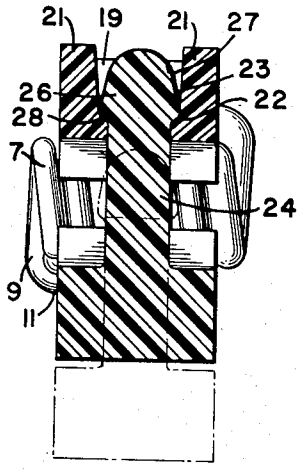
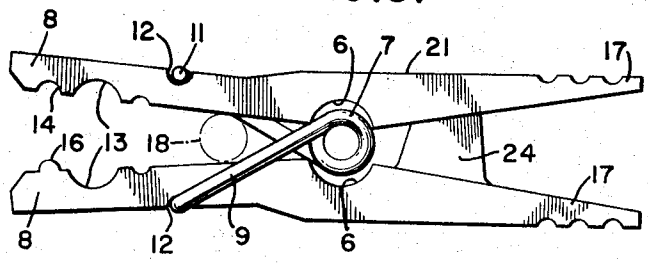


FIG. 3.



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FIG. 5.

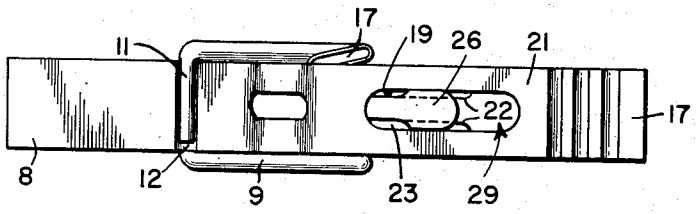


FIG. 6.

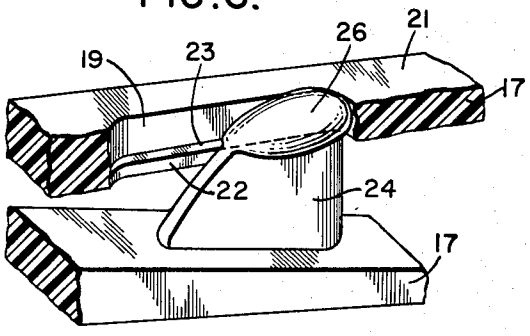


FIG. 7.

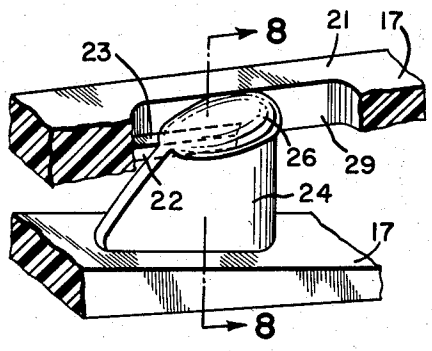
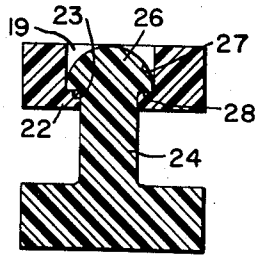


FIG. 8.



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HINGED MEMBER RESTRAINING MEANS

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Original application July 5, 1949, Serial No. 103,011, now Patent No. 2,590,881, dated April 1, 1952. Divided and this application January 20, 1951, Serial No. 206,995

2 Claims. (Cl. 24—137)

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This invention relates to means for confining relatively hinged members within a prescribed range of movement and has particular reference to the restraining of lever handle members such as are employed in clothespins of the spring clamp type. The present invention embodies improvements over the structure shown and described in my prior application Serial No. 45,956, filed August 24, 1948.

An object of the invention is to provide improved motion-limiting means for interposition between hinged members, such as the lever handle elements of a spring clamp clothespin, which can in no way pinch and injure the fingers of the user during manipulations of the clothespin.

Another object of the invention is to provide, in a structure of the type referred to, an improved limiting means designed to materially expedite assembly of the relatively movable parts of the clothespin.

A further object of the invention is to provide an improved movement limiting means of the class described which will not only securely lock the relatively movable members against forcible displacement beyond a prescribed limit but which is possessed of maximum strength to withstand, without breakage, even greatly magnified abnormal stresses which may be imposed on the members in deliberate efforts to destructively separate the latter.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to the drawings:

Figure 1 is a perspective view of a clamp type clothespin embodying the improved restraining means of my invention.

Figure 2 is a vertical sectional view taken in the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a side elevational view of the structure illustrated in Figure 1 showing the relative positions of the clamp jaws and associated handle levers when the former are caused to engage too deeply in the gullet therebetween a cord member or other such element to be gripped by the jaws.

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Figure 4 is an enlarged scale vertical sectional view taken in the plane indicated by the line 4—4 of Figure 2.

Figure 5 is a top plan view of a clamp type clothespin in which is included a modified form of the restraining means of my invention.

Figure 6 is an enlarged scale perspective view of a portion of the clothespin of Figure 5 showing the relative positions of the lever members of the clothespin during inception of the operation for relatively assembling the lever members. A portion of the view is broken away so as to more clearly disclose internal details of construction.

Figure 7 is a view similar to Figure 6 showing the relative positions of final assembly of the lever members.

Figure 8 is a vertical sectional view taken in the plane indicated by line 8—8 of Figure 7.

This divisional case is directed to the embodiment of the invention disclosed in Figures 5–8 of the drawings.

The structure I have chosen to illustrate one form of my invention, in Figures 1 to 4 inclusive, comprises, basically, a conventional spring-actuated clamp jaw type of clothespin having a pair of similarly shaped operating members each of which is provided intermediate its ends with a transversely disposed semicircular groove 6 confronting the similar groove of the companion operating member to form a cylindriform pocket for the reception of a coiled torsion spring 7, among the functions of which is that of a fulcrum about which the operating members may be rocked toward and from each other. The operating members have comparative end portions thereof arranged to form clamping jaws 8 which are normally contiguously adjacent each other being held in relative engagement by wing extensions 9 of the spring 7 whose extreme end portions 11 are disposed in transverse grooves 12 on the outer sides of the jaw members and forcibly press the latter together. Confronting notches 13 in the relatively facing surfaces of the jaws define grips for engaging a clothesline or member of similar form, and the respective jaws are further provided with an interengageable notch 14 and protuberance 16 between which individual or multiple thicknesses of fabric or other sheet material may be gripped. The operating members are so designed that the opposite ends thereof are spread relatively apart when the jaws 8 are clamped together to form handle levers 17 capable of being moved together under finger pressure to open the jaws 8.

A common disadvantage of the conventional clothespin possessing the form herein illustrated is the tendency of the hinged operating members to become so displaced laterally relative to each other in some instances that in the operation of removing the clothespin from engagement with an object clamped between the jaws thereof the members may be moved laterally apart and completely separated, thus rendering the clothespin unfit for further use unless reassembled, a task not easily performed by the average housewife. This condition arises, as will be evident in Figure 3, by inadvertently passing the article to be gripped, here indicated as a section of clothesline 16, too deeply into the gullet between the jaws 8, with the result that when the handle levers 17 are released the closure pressure of the spring extensions 11 on the jaws will be imposed on the opposite side of the gripped object from the fulcrum point of the operating members. This will cause the seating grooves 6 for the spring 7 to be moved outwardly away from the latter so that the lateral anchoring effect of the sides of the operating members against the inner sides of the spring wing extensions 9 will be lost. Thus it is possible for the operating members to be moved laterally in directions opposite to each other, which oftentimes occurs if the clothespin is roughly handled during the process of removing the latter from engagement with the gripped article, with the result that one or the other of the former may slip out from under the normally restraining end portions 11 of the spring and thereby become completely detached from the other operating members.

In circumventing this I provide one of the operating members with a slot 19 of substantial length extending longitudinally of the former and of a lateral width sufficient to render the side portions 21 of the member bordering the slot capable of a slight degree of lateral flexibility. At this point it should be explained that in order to carry out the operational features of my invention, it would be impractical to construct the operating members of wood as in conventional clothespins due to the likelihood of the latter splitting or breaking during certain assembly operations, and consequently it is preferred that both of the operating members be constructed of more sturdy material such as any of the moldable hard-setting substances commonly classed as plastics. On the longitudinal sides of the slot 19, immediately adjacent the portal of the latter facing the companion operating member, I provide relatively confronting and inwardly extending lips or equivalent protuberances 22 to form substantially horizontal ledge surfaces 23 facing upwardly and outwardly of the slot. The companion operating member has thereon, and preferably comprising an integrally formed part thereof, a tongue or wing member 24 extending toward the opposed operating member to enter the slot 19 thereof. The distal end portion of the wing member 24 within the slot is formed with a laterally widened head 26 having downwarly flaring sides 27 terminating at substantially horizontal shoulder surfaces 28 complementary and engageable with the ledge surfaces 23 of the slot. During assembly of the clothespin, entrance of the laterally wider head 26 into the correspondingly narrower slot is effected by bringing the relatively constricted outer extremity of the head into entering position below the lip bordered portal of the slot and applying

pressure in a direction longitudinally of the wing member 24 to urge the head upwardly through the slot. This pressure will cause the flaring sides 27 of the advancing head to flex the side members 21 of the slot outwardly sufficiently to let the widened end of the head pass between the lips 22 whereupon the latter will spring back to normal unflexed positions and trap the shoulder surfaces 28 above the ledge surfaces 23 thus locking the operating members against separation beyond a prescribed limit of relative outward movement of the members in the normal opening and closing motions of the clothespin.

It will readily be seen, in Figure 3, that if a member 16 to be gripped is inserted too deeply into the gullet between the clothespin jaws 8 the interlocked handle lever members 17 will be prevented from separating outwardly beyond a prescribed degree and since the latter members cannot move relatively laterally the danger of the members becoming relatively detached, as hereinbefore described, will be obviated. It will further be seen that due to the conformation of the wing member 24 and its relationship with the cooperating portions of the handle lever member 17, no relatively overlying parts exist between which the fingers of the user might be painfully pinched in manipulation of the clothespin. Furthermore, the operations of assembly of the parts comprising the improved clothespin of my invention are not perceptibly extended over those necessary to assemble the conventional type of clothespin the only added effort being that to snap the head portion of the motion restraining wing member into engagement with its cooperative slot of the companion handle lever.

Although I have shown the opening 19 in its preferred form as being equipped with opposed lips 22 it is within the scope of the invention to utilize only a single lip cooperating with a single laterally widened portion of the head 26, it being evident to those skilled in the art that such construction would function equally as well as that illustrated.

In Figures 5 to 8 inclusive I have illustrated a modified form of construction for the clothespin operating lever restraining means. In this form of the invention the clothespin structure is identical with that previously described with the exception that the marginal lips 22 which border the opposite longitudinal sides of the slot 19 terminate before reaching the outermost end of the slot nearest the distal portion of the lever member 17 so as to form an entrance opening 29 of unrestricted cross-sectional area extending vertically through and of corresponding lateral width to the slot 19. The head portion 26 of the wing member 24 is substantially of the same general shape as that previously described being possessed of a lateral width which will permit ready insertion of the former into and through the entrance opening 29 and further having the usual shoulder surfaces 28 adapted for cooperative engagement, as hereinbefore explained, with the lips 22. The procedure of assembly necessary with this arrangement to dispose the lever members 17 in relative operative positions is to superpose one lever member over the other in slight longitudinally displaced relationship, as shown in Figure 6, so as to permit the head member 26 to pass freely into and through the entrance opening 29 until the shoulder surfaces 28 are substantially aligned with the ledge surfaces 23 of the lips whereupon the lever

members are shifted longitudinally to occupy their normal relative operative positions, as shown in Figure 7, so as to move the head member shoulder surfaces 28 forwardly of the slot 19 to positions overlying and engaging the ledge surfaces 23. In the subsequent relative approach and recessional movements of the lever members the interlocked portions of the latter will prevent, as before explained, abnormal and destruction-inviting relative separation of the clothespin elements.

As was mentioned previously, although the specific modification shown in Figures 5 to 8 utilizes a pair of opposed shoulder and ledge engaging portions, it is within the scope of the invention to provide only single interengaging shoulder and ledge surfaces to effect the hereinbefore described interlocking arrangement of the operative members of the clothespin.

I claim:

1. In a clothes-pin, a pair of opposed elongated body members having opposed complementary handle and jaw portions at the ends of the members arranged to be supported for transverse movement toward and from each other, one of said members having an opening adjacent the handle portion and elongated longitudinally of the member, said opening being provided with shoulders on opposing sides thereof adjacent one end of the opening whereby the width of such opening adjacent such end will be less than the width of the opening adjacent the other end, a wing formed on the other body member having a shank portion insertable and engaged in said opening between said shoulders, said wing member having a head insertable through the portion of the opening without the shoulders and positioned in the opening to overlie and engage the shoulders, said body members being movable toward and from each other with said head positioned over said shoulders, and means cooperating with both body members and independent of the wing member and the cooperating portions of the opening engaged thereby for guiding said wing member in said opening when the body members are moved to or from each other.

2. In a clothes-pin, a pair of opposed elongated body members arranged to be held for movement toward and from each other, one of said members having an opening elongated longitudinally of the member and provided adjacent one end with a shoulder at a side and base of the opening whereby the width of the opening adjacent such end will be less than the width of the opening adjacent the other end, a wing on the other body member having a shank portion insertable through and engaging in the opening at the portion of narrower width and having a head insertable through the opening portion of greater width and positioned in overlying relation to the shoulder, said shank portion and head movable axially through said opening as said body members are moved to and from each other, the head engaging said shoulder to limit the movement of the body members away from each other, and means pivotally connecting the body members and retaining the wing member in predetermined relation in the opening independent of engagement of the wing member with the sides of the opening or with the shoulder.

CLARENCE A. MORGAN.

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