(No Model.)

T. F. CAVANAGH.

BUCKLE

No. 553,703. Patented Jan. 28, 1896.

Fig. 1,

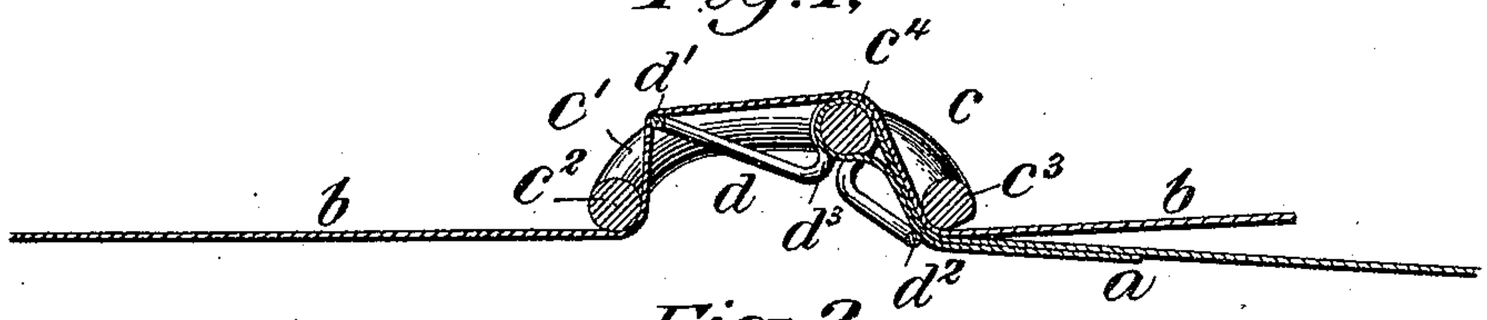


Fig. 2,

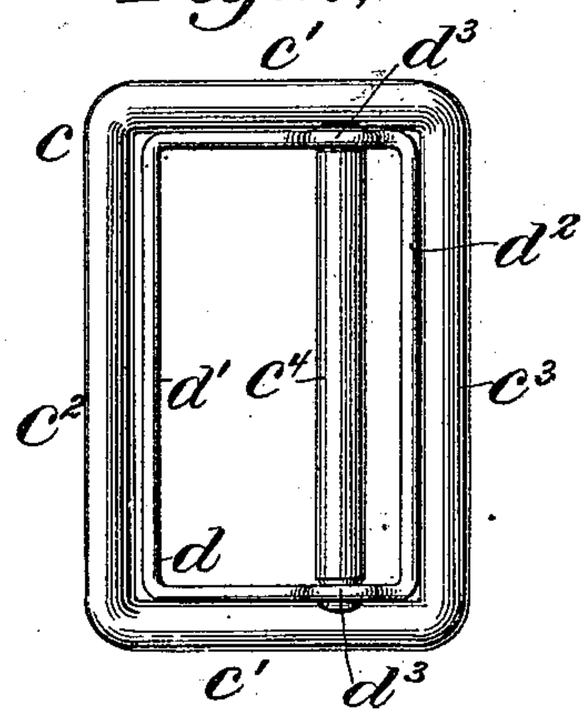


Fig. 3,

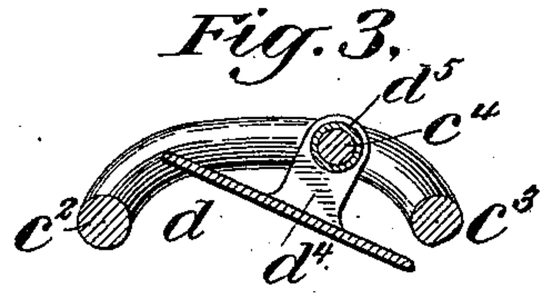
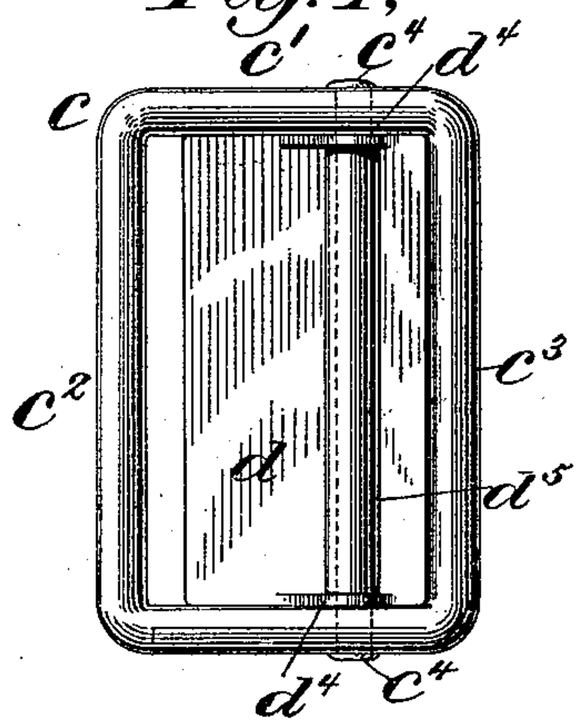


Fig. 4,



Witnesses:-

D. H. Maynard

Herbert H. Gibbs.

Inventor:-

Thomas F. Cavanagh

By Henry D. Williams

Attorney

UNITED STATES PATENT OFFICE.

THOMAS F. CAVANAGH, OF NEW YORK, N. Y.

BUCKLE.

SPECIFICATION forming part of Letters Patent No. 553,703, dated January 28, 1896.

Application filed June 27, 1895. Serial No. 554,193. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. CAVANAGH, a citizen of the United States, and a resident of the city and county of New York, State of New York, have invented certain new and useful Improvements in Buckles, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof.

This invention relates to buckles or adjustable fastening devices for securing together the parts or flaps or ends of a garment, belt or other article, and has for its objects to provide a buckle or fastening device capable of fine and close adjustment and which will not mar or injure the surface of the tab or part held within the buckle, and will not require the forming of perforations or holes in the tab, but will tightly and firmly grip and hold a smooth-surfaced tab at any desired part of its length.

The improved buckle embodying my invention contains two swinging parts, each of said parts having a presser-arm upon which pressure is exerted by a part of the article upon which the buckle is used, so that any strain tending to pull the tab through the buckle causes pressure upon these presser-arms, and each of said parts having a gripper-arm, and these two gripper-arms being arranged to grip between them the tab or end to be held by the buckle. As a result of this construction increased strain tending to pull the tab through the buckle causes increased pressure of the gripper-arms upon the tab, and thus causes the tab to be only the more tightly held in the buckle. I construct the parts so that one or both of the presser-arms is considerably longer than its corresponding gripper-arm, and thereby through leverage of the presser-arms upon the gripper-arms secure a highly-effective gripping action.

My invention includes various other features of construction whereby an effective and reliable fastening action is attained, all of which will now be particularly set forth in describing the accompanying drawings.

In the drawings, Figure 1 is a longitudinal vertical section of a buckle embodying my invention, showing also the fastened end and tab end of a belt held therein. Fig. 2 is a face view or front elevation of the buckle. Fig. 3 is a longitudinal vertical section of a buckle of slightly-modified construction. Fig. 4 is a face view or front elevation of the same.

The buckle as shown in the drawings is adapted for use on waist-belts, a representing the fastened end of such a belt and b the tab end thereof. The buckle is composed of two main parts, a frame c and a swinging lever d, the frame c and lever d being pivoted together.

In the construction shown in Figs. 1 and 2 the frame is in one piece, comprising side bars c' and c', and end cross-bars c^2 and c^3, and intervening cross-bar c^4, and this one piece may be made of metal cast or stamped or otherwise produced in the desired shape. The frame c may be considered as a lever of which the fulcrum is the intervening cross-bar c^4, and the presser-arm is at the left of said fulcrum and includes the left end cross-bar c^2, and the gripper-arm is at the right of said fulcrum and includes the right end cross-bar c^3, and, as shown, the presser-arm is considerably longer than the gripper-arm, so that the pressure applied at the presser-arm will be exerted with largely-increased intensity at the gripper-arm. The intervening cross-bar c^4 is also, as shown, offset beyond or in front of the end cross-bars, and the side bars c' c' are curved to accommodate this advanced position of the intervening cross-bar.

The swinging lever d, as shown in Figs. 1 and 2, may be struck up from a loop of wire, and is in one piece including end cross-bars d' and d^2 and an eye d^3, said eye embracing the intervening cross-bar c^4 of the frame. This swinging lever is within the frame, as shown, and preferably of such width as to just clear the inner surfaces of the side bars c' c' of the frame, and the width of the tab b to be held in the buckle is usually the same as that of the lever d, so that the lever is completely concealed by the tab. The fastened end a of the belt is shown as looped over the intervening cross-bar c^4 of the frame and the looped end may be secured by sewing or otherwise to the part overlapped. Thus the intervening cross-bar c^4 is the fastening cross-bar of the buckle. I preferably slightly groove the intervening cross-bar c^4 of the frame at its ends where inclosed by the eye d^3, so as to bring the outer surface of the eye flush with

the outer surface of the fastened end a of the belt, covering the intervening cross-bar c^4.

The lever d being pivotally connected to or fulcrumed upon the frame c, the part of said lever to the left of the pivotal point, including the cross-bar d', constitutes the presser-arm of said lever, and the part of said lever to the right of the pivotal point, including the cross-bar d^2, constitutes the gripper-arm of said lever, and the presser-arm is considerably longer than the gripper-arm, as shown. The cross-bar d' of the lever presser-arm is shown as arranged so that when in closed position, as shown in Fig. 1, its front or outer surface is in front of or beyond the rear or inner surface of the cross-bar c^2 of the frame presser-arm, so that the tab in passing behind the frame-bar c^2 and in front of the lever-bar d' will be deflected from a straight or flat position, and thus any strain upon the tab tending to pull it out of the buckle will effectually tend to move the frame-bar c^2 and lever-bar d' toward each other, and thus pressures will be exerted in opposite directions against the frame presser-arm and lever presser-arm. It is to be noted, however, that the frame presser-bar c^2 and the lever presser-bar d' work clear of each other and do not in any manner compress the tab between them. Their function is to receive pressure from the tab and not to grip the tab between them. The gripping of the tab is effected at the other end of the buckle, where the lever cross-bar d^2 is arranged so as to move toward the frame cross-bar c^3, and in the closed position, as shown in Fig. 1, presses against said frame-bar c^3, coming directly in contact, however, with the fastened end a of the belt, which is shown intervening between the frame-bar and lever-bar. The tab end b of the belt is passed over or in front of the intervening frame cross-bar c^4 and then behind the end frame cross-bar c^3, and thus the tab passes between the fastened end a of the belt and the frame-bar c^3, so that the pressure of the lever-bar d^2 is exerted through the fastened end of the belt. Thus the pressures imparted to the frame and lever presser-arms are exerted by the frame and lever gripper-arms to tightly grip the tab end of the belt, and by reason of the greater length of the presser-arms the force applied by the tab to these arms is greatly increased through the leverage, and the resulting pressure of the gripper-arms upon the tab is much greater than the pressure applied to the presser-arms by the tab or belt.

When it is desired to release the tab from the buckle it is only necessary to separate the frame gripper-bar c^3 and the lever gripper-bar d^2. This is usually accomplished by grasping the buckle at or near the frame gripper cross-bar c^3 with one hand and inserting the fingers of the other hand between the tab and fastened end of the belt in rear of or beneath the frame gripper cross-bar c^3 and thereby separating the frame gripper-bar and lever gripper-bar, thus removing the pressure from the tab. The tab may then be readily slipped out through the buckle, and as it slips through the pressure is removed from the lever presser cross-bar d', and the long arm of the lever will swing forward or upward, allowing perfect freedom to the tab.

The construction shown with the intervening frame cross-bar, c^4, offset in front of the end frame cross-bars enables the parts of the buckle to be arranged so as to cause no discomfort to the wearer, as there are no inwardly or rearwardly projecting parts, and also provides for guiding the tab over the frame and lever so as to secure effective pressures and gripping action. It is of course evident that this precise construction may be departed from within the purview of this invention and the presser-arms may be otherwise arranged so as to receive pressure from the belt. As shown, a slight corner is formed on the gripping-surface of the frame cross-bar c^3 to assist the gripping action, and the lever, as shown in Figs. 1 and 2, will have a slight spring action, so as to be slightly yielding under pressure without, however, other effect upon its gripping action than a tightening thereof.

It will be noted that in my improved buckle the tab is under tension from one end to the other of the buckle, the gripping-point being at the extreme right hand of the buckle as shown in the drawings, and therefore the tab, as it passes under or in rear of the frame presser cross-bar c^2 and over or in front of the lever presser cross-bar d' and over or in front of the intervening frame cross-bar c^4 and under or in rear of the frame gripper cross-bar c^3, is under full tension and will therefore be held flatly between the points of support and will present a neat and acceptable appearance. It will also be noted that the bends in the tab are at easy angles so as not to cause creasing or other injury thereto, and that the inside or wrong side of the belt is not exposed at any point.

A modified construction which may be employed in some cases is illustrated in Figs. 3 and 4, in which the lever d is a flat plate having perforated lugs d^4 d^4, extending forwardly at each side thereof and the intervening cross-bar c^4 of the frame is a separate pin passed through these lugs d^4 d^4, and through holes in the side bars c' c' of the frame and riveted over outside of the frame, and a sleeve or bush d^5 is fitted over the cross-bar c^4, over which the loop of the fastened end of the belt may be passed, whereby the outer surface of the fastened end covering the sleeve d^5 will be flush with the outer surface of the lugs d^4. The operation of this modified construction of buckle will be substantially the same as above described, and it is of course evident that many other modified constructions may be employed embodying this invention.

It will be evident from the above description that my improved buckle will hold a tab

under any strain that may be exerted tending to pull the tab out of the buckle, and that added strain merely increases the gripping force. Practical trials have shown that my improved buckle will not slip under varying strains or under irregular strains—such, for instance, as strains applied along one edge only or twisting strains—since the strains will first be exerted upon the presser-arms, and will therefore only tighten the grip of the buckle on the tab, and comparatively light strains will nevertheless cause considerable gripping-pressures.

For convenience and clearness in description the words "front" and "rear" have been used in the preceding description and are used in the following claims, these words being applicable to a buckle in the usual or vertical position at the front portion of a waist-belt, and these words are to be understood as relative to such a position of the buckle, and with the buckle in other positions these words are to be understood as modified accordingly.

Without limiting myself to the specific construction shown, what I claim, and desire to secure by Letters Patent, is—

1. A buckle comprising a frame and a lever pivoted thereon, said frame having a presser arm and a gripper arm, and said lever having a presser arm and a gripper arm, a fastening cross bar for attachment to the article offset in front of the presser arm and gripper arm of the frame, said frame and lever being pivoted together at said fastening cross-bar, the presser arm of the lever being located in front of the presser arm of the frame and the gripper arm of the lever being located in rear of the gripper arm of the frame, substantially as set forth.

2. A buckle composed of two swinging parts, a frame and lever, said frame and lever being pivoted together at a fastening cross bar for attachment to the article, said frame having a long presser arm and a short gripper arm and said lever having a long presser arm and a short gripper arm, the presser arm of the lever being located in front of the presser arm of the frame and working clear of the presser arm of the frame, and the gripper arm of the lever being located in rear of the gripper arm of the frame and working against the gripper arm of the frame without material rearward protrusion, and said buckle being open for holding the fastened end of the article at the fastening cross bar and in front of the lever gripper arm and between the gripper arms of the lever and frame, substantially as set forth.

3. A buckle comprising a frame and lever pivoted together, said frame having a presser cross bar and a gripper cross bar and an intervening cross bar for fastening to the article, said fastening cross bar being offset in front of the presser and gripper cross bars of the frame, and said lever having a presser arm and a gripper arm and being pivoted upon the frame at the fastening cross bar thereof, the presser arm of the lever being in front of the presser cross bar of the frame and working clear thereof and the gripper arm of the lever being in rear of the gripper arm of the frame and working against the same, substantially as set forth.

This specification signed and witnessed this 22d day of June, 1895.

THOS. F. CAVANAGH.

In presence of—
HENRY D. WILLIAMS,
HERBERT H. GIBBS.