Nov. 15, 1932. N. STATHAM 1,887,825

ADJUSTABLE FASTENING MEANS

Filed March 16, 1929

Fig. 1

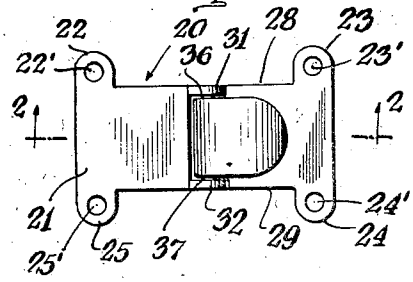


Fig. 4

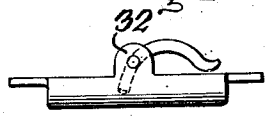


Fig. 6

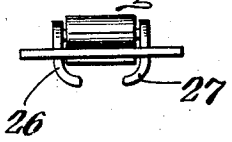


Fig. 2

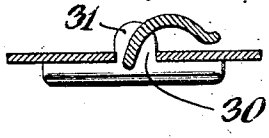


Fig. 5

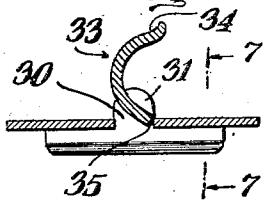


Fig. 7

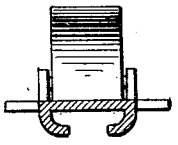


Fig. 3

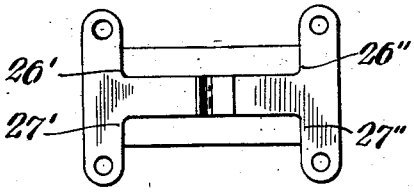


Fig. 9

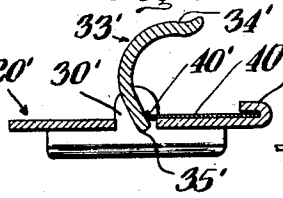


Fig. 10

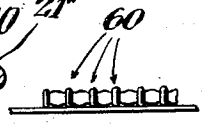


Fig. 8

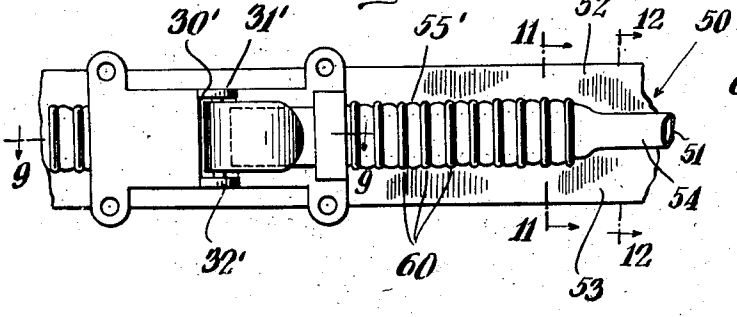


Fig. 11

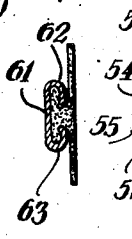
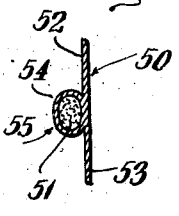


Fig. 12



Inventor
Noel Statham
By his Attorney
Edward M. Evarts

Patented Nov. 15, 1932

1,887,825

UNITED STATES PATENT OFFICE

NOEL STATHAM, OF IRVINGTON-UPON-HUDSON, NEW YORK

ADJUSTABLE FASTENING MEANS

Application filed March 16, 1929. Serial No. 347,472.

My present invention relates to adjustable supporting means or devices, particularly of the sort embodying a series of stops or the like, generally of metal, supported by a supporting tape, and a slider adapted to slide over the stops carried by said supporting tape for adjustable engagement with any desired one of said stops, whereby said supporting means are readily adjustable for convenient use under varied conditions. It is an object of the present invention to provide articles of the general character specified which are simple in construction, which may be readily and conveniently fabricated and assembled, and which embody novel supporting tapes, novel metallic or equivalent stop elements and novel sliders, the devices of the present invention constituting in combination novel adjustable supporting means of the general character specified above characterized by their simplicity in construction, the convenience and economy with which they may be fabricated and assembled, and their convenience in use, such devices having a wide range of adaptability and an equally wide range of devices in connection with which they may be conveniently and satisfactorily employed. Other objects and advantages of the devices of the present invention, particularly as exemplified in the aforesaid illustrative embodiments of the same, will in part be pointed out in detail hereinafter and will in part be obvious to those skilled in the art to which the present invention relates.

In the accompanying specification I shall describe and in the annexed drawing show several illustrative embodiments of the present invention in the form of novel supporting tapes, novel stop elements and novel sliders, also novel combinations of all three of these types of elements. It is, however, to be clearly understood that my invention is not limited to the specific embodiments thereof herein shown and described for purposes of illustration only.

Referring now to the drawing in which I have shown the aforesaid illustrative embodiments of the present invention:

Fig. 1 is a plan view of the upper face of a slider constituting one of the aforesaid illustrative embodiments of the present invention;

Fig. 2 is a longitudinal sectional view, partly in elevation, taken along line 2—2 of Fig. 1 of the drawing;

Fig. 3 is a bottom plan view of the slider illustrated in Figs. 1 and 2 of the drawing;

Fig. 4 is a side view of the slider illustrated in Figs. 1, 2 and 3 of the drawing, said view showing the same in stop-engaging position;

Fig. 5 is a longitudinal sectional view of the slider shown in Figs. 1 to 4, inclusive, of the drawing taken along line 2—2 of Fig. 1 of the drawing showing the slider in non-engaging position with the stop elements;

Fig. 6 is an end view of the slider shown in Figs. 1 to 5, inclusive, of the drawing;

Fig. 7 is a transverse sectional view of the slider shown in Fig. 5 of the drawing, said view being taken along line 7—7 of said figure of the drawing;

Fig. 8 is a top plan view of a modified form of slider showing the same applied to a novel form of supporting tape and novel types of stop elements, also constituting illustrative embodiments of the articles of the present invention, the tape and applied stop elements being shown broken away or in fragmentary condition;

Fig. 9 is a longitudinal sectional view taken along line 9—9 of Fig. 8 of the drawing showing the slider illustrated in Fig. 8 of the drawing in stop-engaging position, in which position it is held by a spring or equivalent element;

Fig. 10 is a side view of the novel form of tape having applied thereto the stop or staple elements, all as shown in Fig. 8 of the drawing;

Fig. 11 is a cross sectional view taken along line 11—11 of Fig. 8 of the drawing showing a novel form of stop or staple element applied to the novel form of supporting tape which latter is compressed by the stops or staples applied thereto so as to provide intermediate bulging and stop-retaining portions; and

Fig. 12 is a cross sectional view taken along line 12—12 of Fig. 8 of the drawing showing the supporting tape in its normal or

uncompressed condition free of the compressing stop or staples.

Referring now to the aforesaid illustrative embodiments of the present invention, and with particular reference to the drawing showing the same, and limiting the present discussion for the time being to the novel form of slider illustrated in Figs. 1 to 7, inclusive, of the drawing, the slider illustrated in the aforesaid figures of the drawing and here generally designated by reference character 20 comprises the main body portion or plate 21 of general rectangular form having the ears or lugs 22, 23, 24 and 25 perforated or slotted as at 22′, 23′, 24′ and 25′ for suitable attachment to the supporting member which is to carry the same, such as one end of a belt, the ends of a pair of suspenders, the end of a strap intended to go around the knee portion of a pair of knickers, etc. etc. It may here be stated that the devices of the present invention have a wide range of applicability intended for use wherever supporting or fastening means are intended to be adjustable in a convenient and expeditious manner for adjusting the length of a fabric, leather or other member.

The main body portion or plate 21 has two channel members 26 and 27 struck in from the same thus providing the indented or inset portions 28 and 29, respectively. The portions 26 and 27 constitute channels or guiding members for receiving the edge portions of the supporting tape and stops or staples carried thereby, as will subsequently be described in considerable detail. It may here be stated that while the channel or guiding members 26 and 27 may have any suitable cross sectional configuration, I prefer to have the same have substantially the rounded or hook-shaped configuration or cross section shown in Figs. 6 and 7 of the drawing.

The main body portion or plate 21 is preferably provided with a slot or equivalent opening 30 adjacent the central portion of the same. Preferably this is done by striking out the lugs or bearings 31 and 32 which serve to receive and support in oscillatable or pivoted position the operating member substantially described. It may here be stated that the lugs or bearings 31 and 32 may be perforated with a small circular opening or the like or may be provided with a depression in the form of a circular or like depression adapted to receive the pins or small stub shafts carried by the operating member, the metal of which the lugs or bearings 31 and 32 are made being preferably springy enough to permit the operating member and the pins or small stub shafts associated therewith to be sprung into position in the openings or depressions with which the lugs or bearings 31 and 32 are preferably provided.

33 designates the operating member, the same comprising the external or handle portion 34 and the lower or engaging portion 35 which is adapted to extend into the slot or other opening 30 for engagement with the stops or staples carried by the supporting tape, as will subsequently be described in considerable detail herein. The operating member 33 carries a plurality of pins or stub shafts 36 and 37. It may here be stated that the parts 34, 35, 36 and 37 may be struck up in a single piece or operation by a suitable stamping, casting or other desirable metal working operation. The arrangement is such that the pins or small stub shafts 36 and 37 are received by the openings or depressions in the lugs or bearings 31 and 32 so as to be supported therein in an oscillatable or pivoted position, the insertion of the operating member 33 being rendered possible by the springy characteristics of the metal of which the parts 21 and 33, or both, are made.

This completes the description of the form of slider constituting one of the aforesaid illustrative embodiments of the present invention and illustrated in Figs. 1 to 7, inclusive, of the drawing. The manner of assembling the slider, as well as its construction, has, it is believed, been fully described in the foregoing portions of the specification. The manner in which such slider operates will, it is believed, be clear from the foregoing description but may be briefly summarized as follows:

With the slider in the position of the parts illustrated in Figs. 1, 2, 3, 4 and 6 of the drawing, the operating member 34 is in engaging position. In this position of the parts the lower end engages the stop or staple elements carried by the supporting tape, all as will be shortly described, and wedges between the adjoining pair of the stop or staple elements against the intervening portion of the supporting tape. This wedging action takes place at the limit of its movement, which is restricted to an angle of from about 90 degrees to about 100 degrees, more or less, so that the tape is located permanently in any adjusted position as desired.

The tape may be released by an upward movement of the catch or operating member 33 in a rotational or pivotal direction opposite to the direction in which the operating member 33 was pivoted or rotated into locking position. The open or released position of the operating member 33 is shown in Figs. 5 and 7 of the drawing. In this position the operating or catch member 33 is maintained by the pressure of the thumb or other finger of the wearer or operator. Upon releasing such pressure the operating member or catch 33 will still be maintained in non-engaging or non-wedging position in either direction of movement of the slider 20 until the thumb or other finger of the operator

or wearer is utilized to depress the catch or operating member 33 into locking or wedging position, as shown in Figs. 1, 2, 3, 4 and 6 of the drawing.

With this type of slider, as also with the type of slider shown in Figs. 8 and 9 of the drawing and shortly to be described herein, the tighter the belt or other article to which the devices of the present invention are applied is stretched when the catch or operating member 33 is in locking or wedging position with the stops or staples and the supporting tape carrying the same, the more positive becomes the locking or wedging action by the catch or operating member 33. In the reverse direction, that is, in the direction where the belt or other device instead of being stretched tighter is loosened or contracted by moving the slider 20 forward, the catch is actuated and released from locking or wedging position so that the slider is thus brought automatically into non-locking or non-wedging position.

It will thus be seen that the slider shown in Figs. 1 to 7, inclusive, of the drawing is freely actuable into non-locking or non-wedging position by the proper movement of the slider 20, as a whole and once in such position is maintained therein until the catch or operating member 33 is positively activated so as to be brought into locking or wedging position.

This completes the description of the aforesaid illustrative embodiment of sliders of the present invention as illustrated in Figs. 1 to 7, inclusive, of the drawing. It will be noted that such sliders are simple in construction and may be readily fabricated and assembled. It will be noted also that such sliders possess the numerous advantages in operation and in use set forth earlier in this specification.

Referring now to the form of slider illustrated in Figs. 8 and 9 of the drawing and to the forms of supporting tape and associated stops or staples illustrated in Figs. 8, 10, 11 and 12 of the drawing, the slider there illustrated and generally designated by reference character 20′ is constructed somewhat similarly to the slider illustrated in Figs. 1 to 7, inclusive, of the drawing, having the main body portion 21′, the lugs or bearings 31′ and 32′ defining the slot or other opening 30′ and the operating member or catch 33′ which has the outer or handle portion 34′ and the inner or stop-engaging portion 35′.

The parts just referred to are substantially similar to or even identical with the corresponding parts of the slider illustrated in Figs. 1 to 7, inclusive, of the drawing. The principal difference is that the slider 20 shown in Figs. 9 and 10 of the drawing is provided with a spring-receiving and retaining portion 21″ preferably formed by bending over a portion of the main body portion or plate 21′. 40 indicates a leaf or other spring clamped or held in position between the parts 21′ and 21″ and having the slightly upturned end portion 40′ which serves to engage and thus maintain in stop-engaging position the lower end 35′ of the catch or operating member 33′ within the slot or other opening 30′ as more clearly shown in Figs. 8 and 9 of the drawing.

This completes the description of the second form of slider constituting one of the aforesaid illustrative embodiments of the present invention as illustrated in Figs. 9 and 10 of the drawing. The manner of assembling such form of slider, as also the manner of constructing the same, will readily appear from the foregoing portions of the specification, corresponding as they do to the form of slider already described and illustrated in Figs. 1 to 7, inclusive, of the drawing. Likewise the manner of operating the slider is illustrated in Figs. 8 and 9 of the drawing will readily appear from the foregoing portions of the specification and may be briefly summarized as follows:

With this form of slider the rotational or pivotal movement of the catch or operating member 33′ is restricted by the leaf or other spring 40 which is engaged by the catch or operating member 33′ at the portion 40′ of the spring 40. By means of the spring pressure exerted by the leaf or other spring 40 at the forward portion 40′ of the same against the lower portion 35′ of the catch or operating member 33′, free movement of the catch or operating member 33′ out of contact with the stops or staples carried by the supporting tape shortly to be described is prevented. Accordingly, the slide may be moved freely in a tightening direction of the belt or other device to which this form of the invention is applied, but for movement in the reverse direction, that is, in the direction of loosening the belt or other device to which this form of the invention is applied, the lower or engaging end 35′ of the catch or operating member 33′ must be lifted out of the slot or other opening 33′ by pressure against the end 40′ of the leaf or other spring 40. In other words, the form of slider 20′ illustrated in Figs. 8 and 9 of the drawing, being spring actuated, will by means of the engaging end 35′ of the catch or operating member 33′ retain contact with the stops or staples until such engaging end 35′ is raised by pressing the upper part of the catch or operating member 33′ back towards the front end of the slider against the pressure exerted by the end 40′ of the leaf or other spring 40, whereupon the belt or other device to which this form of the invention is applied can be extended and the slider permitted to move freely in either direction.

It may be stated that with this form of the slider illustrated in Figs. 8 and 9 of the drawing, as with the form of slider illustrated in

Figs. 1 to 7, inclusive, of the drawing, the tighter the belt or other article embodying such form of slider is stretched with the catch or operating member 33′, as is normally the case when the spring 40 is permitted to act, in engagement with the stops or staples, the more positive becomes the locking action by the catch or operating member 33′. In the reverse direction of movement of the slider 20′, as already indicated, which movement I render possible by the action of the operating member 33′ against the end 40′ of the leaf or other spring 40 against the pressure or such spring, the belt or other device to which this form of slider is applied may be readily contracted into the desired adjusted position.

This completes the description of the second of the aforesaid illustrative embodiments of the present invention. It will be noted that this form of slider, like the first form of slider described is simple in construction and may be readily and conveniently fabricated and assembled. It will be noted also that this form of the device, like the form of the device already described, possess the numerous advantages in construction, mode of assembly, operation, use and applicability referred to in the earlier portions of this specification.

Referring now to Figs. 8, 10, 11 and 12 of the drawing showing the aforesaid novel forms of supporting tapes and of stops or staples constituting the remaining ones of the aforesaid illustrative embodiments of the present invention, 50 indicates generally the aforesaid novel form of supporting tape which preferably comprises a cord 51 with which is associated one or more, here shown as a plurality of longitudinally disposed web portions 52 and 53, there being a substantially tubular portion 54 surrounding the cord 51 and attached to the web portions 52 and 53. I prefer for convenience in operation and for the increase in efficiency and resulting supporting tape 50 that the web portions 52 and 53 and the tubular portion 54 shall be made in a single weaving operation by feeding the cord 51 into a suitable weaving machine, all as will be readily apparent to those skilled in the art to which the present invention relates. In this way the tubular portion 54 containing the cord 51 and the web portions 52 and 53 will be integrally woven in what is preferably a single weaving operation, the web portions 52 and 53 preferably constituting a continuation of each other so as in effect to constitute a single web or tape.

60 indicates a series of stops or staples forming one of the aforesaid illustrative embodiments of the present invention. These stops or staples which are more clearly indicated in Figs. 8, 10 and 11 of the drawing are preferably made of a suitable wire which may be round or oval in cross section. Each of the stops or staples 60 is itself of substantially elliptical cross-section so as to properly fit the curvilinear beading to which it is attached and comprises a central or engaging portion 61 and the inturned clamping or bead engaging portions 62 and 63 which are applied so as to clamp between them and the central portion 61 of each of the stops or staples 60 the associated portion of the bead 55 comprising the tubular web portion 54 and the contained cord 51. This clamping action should be sufficiently strong to substantially prevent any displacement of the stops or staples 60 even under relatively hard usage of the devices of the present invention.

This desired result is aided by the fact that in the application of the stops or staples 60 to the beaded portion 55 of the supporting tape 50 as a result of the clamping action of the portions 62 and 63 in association with the central portion 61 of which each of the stops of staples 60 is preferably made up, the beaded portion 54 of the supporting tape 50 is bulged out at the portions 55′ intermediate successive stops or staples 60.

It may here be stated that I prefer to make the stops or staples 60 of wire, round or elliptical in cross section, since such forms of the stops or staples 60 will facilitate the operation of the device and render the same smoother and more convenient in operation. However, I may use stops or staples which are flat as by being substantially rectangular or square in cross section. In general, so that the supporting tape 50 carrying the stops or staples 60 may be sufficiently flexible, I prefer that the stops or staples 60 shall be so spaced that there is between them a distance of at least about the diameter or width of each of the staples 60. On the other hand, in order to assure easy and convenient engagement between the edges or lateral portions 52 and 53 of the supporting tape 55 and the channel or guide members with which the sliders are provided and which have the rounded receiving corners 26′, 26″ and 27′ and 27″, as more clearly shown in Fig. 3 of the drawing, I prefer that the stops or staples 60 shall not be spaced a greater distance apart than corresponds to about two or three diameters or widths of such staples.

This completes the description of the aforesaid illustrative embodiments of the present invention. The manner of assembling and using such embodiments will, it is believed, appear clear from the foregoing description, together with the construction of such embodiments. Similarly the manner of using such embodiments in connection with one or the other of the forms of sliders illustrated in the drawing and described in the preceding portions of the specification will, it is believed, be equally clear from

the foregoing description but may be briefly elaborated as follows:

With the forms of stops or staples described above, the engagement of the same with the lower or engaging ends of the catches or operating members of the respective sliders will be positive, while in the free or disengaged position such lower ends of the catches or operating members of such sliders will slide freely over the stops or staples due to their substantially circular or elliptical cross section. The supporting tape is ideally suited to receive and retain in fixed position the forms of stops or staples just described.

The device as a whole is ideally suited for the designated purposes, being simple in construction, readily, conveniently and economically assembled and smooth in operation. The devices of the present invention furthermore possess a wide range of applicability which gives them important fields of usefulness as applied to a wide variety of different kinds of devices. Other superiorities and advantages of the devices of the present invention in construction, mode of assembly, operation and use, as well as different types of articles to which the devices of the present invention may be conveniently and successfully applied, will readily occur to those skilled in the art to which the present invention relates.

What I claim as my invention is:

1. A supporting tape for metallic fasteners, stops, staples, and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a lateral woven web portion associated therewith and extending from each side thereof, said cord and surrounding woven member being central of said laterally extending woven web portions.

2. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integral woven member surrounding the same and having a lateral web portion woven integrally therewith and extending from each side thereof, said cord and surrounding woven member being central of said laterally extending woven web portions.

3. A stop element for adustable supporting means and the like, comprising an abutting member of substantially elliptical cross-sectional contour provided with a plurality of inwardly extending clamping portions in combination with a beading support of curvilinear cross-section.

4. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a laterally extending web portion woven integrally therewith, in combination with a series of spaced stop elements each comprising a member of curvilinear cross-sectional contour provided with a plurality of inwardly extending clamping portions applied in clamping position to the substantially tubular integrally woven member.

5. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a plurality of laterally extending woven web portions associated therewith, in combination with a series of spaced stop elements each comprising a member of curvilinear cross-sectional contour provided with a plurality of inwardly extending clamping portions applied in clamping position to said substantially woven surrounding member.

6. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a laterally extending web portion woven integrally therewith, in combination with a series of spaced stop elements each comprising a member of curvilinear cross-sectional contour provided with a plurality of inwardly extending clamping portions applied in clamping position to the substantially tubular integrally woven member.

7. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a plurality of laterally extending woven web portions associated therewith, in combination with a series of spaced stop elements each comprising a member of curvilinear cross-sectional contour provided with a plurality of inwardly extending clamping portions applied in clamping position to said substantially woven surrounding member.

8. A supporting tape for metallic fasteners, stops, staples and the like, comprising a cord and a substantially tubular integrally woven member surrounding the same and having a plurality of laterally extending woven web portions associated therewith, in combination with a series of spaced stop elements each comprising a member of curvilinear cross-sectional contour provided with a plurality of inwardly extending clamping portions applied in clamping position to said substantially woven surrounding member, in combination with a slider for adjustable supporting means and the like, comprising, in combination, a supporting plate member having an opening therein and a plurality of laterally disposed guide members associated therewith, and an operating member pivotally mounted thereon adjacent said opening and having a portion thereof adapted to project into said opening, together with a spring acting against said operating member adjacent said projecting portion thereof to main-

tain the latter in projecting position in said opening so as to maintain the same normally in engagement with a predetermined one of said stop elements.

In testimony, whereof, I have signed my name to this specification this 13th day of Mar., 1929.

NOEL STATHAM.