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1,692,079

J. D'ALO

AUTOMATIC STRAP TIGHTENER

Filed Jan. 19, 1927

Fig. 1.

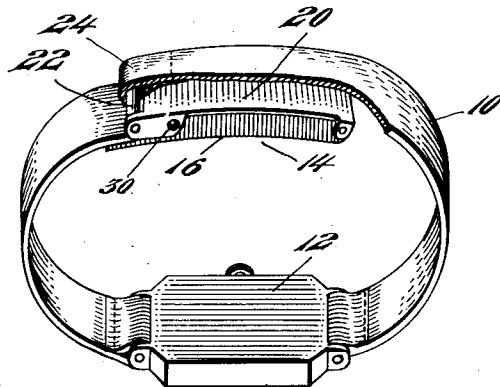


Fig. 3.

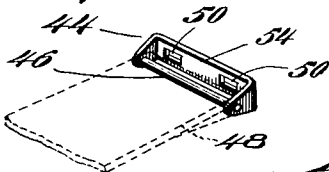


Fig. 4.

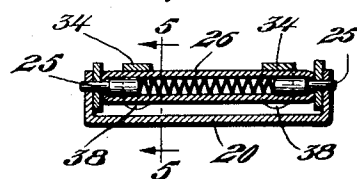


Fig. 2.

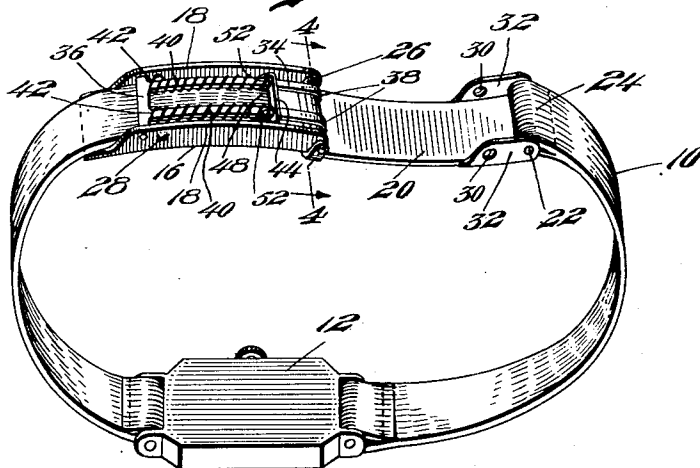
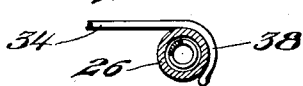


Fig. 5.



Inventor
John D'Alto
By Thomas A. Jewell, Jr.
Attorney

UNITED STATES PATENT OFFICE.

JOHN D'ALO, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO ARTHUR F. BERNARD,
OF PROVIDENCE, RHODE ISLAND.

AUTOMATIC STRAP TIGHTENER.

Application filed January 19, 1927. Serial No. 162,179.

My invention relates to automatic strap tighteners and specifically includes such a device in combination with an inelastic limb encircling strap.

While my invention is adapted for use broadly as a strap tightener it is specifically adapted for use in connection with a limb encircling strap, particularly a wrist watch bracelet. When wrist watches are attached to the wrist by means of inelastic leather straps having the usual type of buckle therein, as the leather of the strap becomes worn in use the wrist watch is apt not to fit tightly around the wrist, thereby causing inconvenience and discomfort to the wearer. The main object of my invention is to provide a flexible strap tightener adapted to be used in connection with a leather strap adapted to pivot to an open position to permit removal of the wrist watch and strap from the wrist and adapted when in closed position to be flexibly, but firmly clasped around to tightly bind the strap to the wrist so that the strap will be bound to the wrist without inconvenience during all movements of the arm. My invention thus operates as a belt strap tightener and as an automatic slack adjuster to at all times tightly bind the belt to the wrist. A further object of my invention is to provide a device of this description which is simple, easy to construct, of ornamental appearance and one normally concealed on the wrist by the strap itself.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of one embodiment thereof as shown in the accompanying drawings.

In the drawings, Fig. 1 is a perspective view of a wrist watch bracelet employing my invention with the automatic strap tightener in closed position, the position my invention normally takes when in use on a wrist.

Fig. 2 is a perspective view similar to Fig. 1 with the connector sections of my improved belt tightener pivoted to an open position to permit the wrist watch strap to be slipped off the wrist.

Fig. 3 is a perspective view of the sliding member I employ in the back connector section having one strap end attached thereto.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is a detail sectional view taken along the line 5—5 of Fig. 4.

In the drawings, wherein like characters of reference indicate like parts throughout, 10 generally indicates an inelastic leather strap adapted to encircle the wrist, 12 generally indicates a wrist watch interposed in the circumference of said strap. Though I have shown my invention in use with a strap having a wrist watch attached it is obvious that any other type of ornament may be used instead, or that the strap may entirely surround the wrist without the interposition of any ornament therein. 14 generally indicates my improved automatic strap tightener. In the preferred embodiment shown my improved strap tightener includes a back connector section 16 preferably provided with forwardly protruding side flanges 18. In the description and the claims I refer to the centre of the strap tightener as that portion indicated by the line 4—4 in Fig. 2. I also provide the front connector section 20, which is normally provided at its outer end with the detachable pivot pin 22 for attaching the end 24 of the strap 10 thereto. The detachable pivot pin 26 is mounted between the side flanges 18 at the inner end of said back connector section for pivotally attaching the inner end of said front connector section 20 thereto. As said back connector section 16 and front connector section 20 are pivotally joined together, it is obvious that when swung to open position the length of the strap is readily increased to permit removal of the strap 10 from the wrist or other object. In use, however, the front connector section 20 is normally superimposed on top of the back connector section 16 and I therefore provide means to clamp the outer end of the front connector section to the outer end of said back connector section when superimposed thereon to closely bind the strap 10 to the wrist. While any means may be employed for this purpose, I preferably provide the side flanges 18 of the back plate with the outwardly protruding lugs 28 adapted to register within the cooperating holes 30 in the side flanges 32 of the front connector section 20. I provide the longitudinal guide rails 34 extending longitudinally of the back connector section 16. In my preferred embodiment I integrally attach said guide rails to the pivot bar 36 pivoted between the back connector section side flanges near the outer ends thereof, the front end of said guide rails being detachably engageable with the connector sec-

tion connecting pivot pin 26 as shown in my preferred embodiment by means of the hook ends 38. The springs 40 are mounted on said guide rails 34 and have their outer ends 42 about the pivot bar 36. I provide the sliding member 44 provided with the bar 46 for attachment thereto of the other strap end 48. Said sliding member 44 is provided with the holes 50 to receive the guide rails 34 therein above said strap end 48. The inner ends 52 of said springs are adapted to abut the outer edge 54 of said sliding member. It is thus obvious that the springs 40 will tend at all times to force the sliding member 44 with the attached strap end 48 inwards to at all times tighten the belt 10. If in use the wrist is moved causing it to expand, it is obvious that the springs 40 will contract, at all times tightly binding the strap 10 to the wrist, the strap end 48 sliding within the back connector section 16 between the guide rails 34 and the rear of the back connector section 16. In order that the front connector section 20 may be readily attached to the back connector section 16 and that the belt end 24 may be readily attached to the front connector section 20, I preferably provide the bars 22 and 26 with the spring tensioned ends 25 (see Fig. 4), receivable within the aligned openings 27 in the side flanges of said front and back connector sections. The hooked ends 38 of the guide rails 34 may if desired be readily lifted off the pivot pin 26, if desired for any purpose, thereby readily permitting the sliding member 44 and springs 40 to be removed from the guide rails 34.

When the device is in closed position, as shown in Fig. 1, it is obvious that the wrist watch or other object will be continuously, closely bound to the wrist and when the front connector section is swung to open position, as shown in Fig. 2 to expand that the strap may be readily removed therefrom. As stated my improved automatic strap tightener is adapted for various uses but is specifically adapted for use with an inelastic limb encircling strap as shown and as hereinafter claimed, I believe I am the first to provide an inelastic strap member adapted to encircle a limb and a flexible strap tightener interposed in the circumference thereof adapted to automatically adjust the length of the strap to the circumference of the limb to continuously, closely bind the strap thereto, also adapted to open up and close to rapidly increase the circumference of said strap for removal or attachment thereto to said limb, thus enlarging the field of uses of inelastic leather straps for binding wrist watches to the arms and for similar purposes.

It is understood that my invention is not limited to the specific embodiment shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A strap tightener adapted to be inserted in a strap for expanding and contracting the length of a strap, comprising a back connector section having forwardly protruding side flanges, a front connector section having a detachable bar on the outer end thereof to attach a strap end thereto, a detachable pivot pin mounted in the side flanges in the inner end of said back connector section for pivotally attaching the inner end of said front connector section thereto, means to clamp the outer end of said front connector section to the outer end of said back connector section when superimposed thereon, longitudinal guide rails mounted on a bearing pivoted between the back connecting section side flanges near the outer ends thereof having its inner end detachably engageable with the connector section connecting pivot pin, springs mounted on said guide rails having their outer ends abutting the pivot bar, a sliding member having means thereon for attachment of the other strap end riding on said guide rails having the outer end thereof abutting the inner ends of said springs whereby the strap end attached to the outer end of the front connector section may normally conceal said front connector section when said front connector section is pivoted to closed position on said back connector section and whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

2. A strap tightener adapted to be inserted in a strap for expanding and contracting the length of a strap, comprising, a back connector section having a base, a front connector section having means at the outer end thereof to attach a strap end thereto, means to pivotally attach the inner end of said back connector section to the inner end of said front connector section, means to clamp the outer end of said front connector section to the outer end of said back connector section when superimposed thereon, longitudinal guide rails mounted over the base of said back connector section, springs mounted on said guide rails having the outer ends abutting a portion of said back connector section near the outer end thereof and a sliding member having means thereon for attachment of the other strap end riding on said guide rails having its outer side abutting the inner end of said springs whereby the strap end attached to the outer end of the front connector section may normally conceal said front connector section when said front connector section is pivoted to closed position on said back connector section and whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

3. A strap tightener adapted to be inserted

in a strap for expanding and contracting the length of a strap, comprising, a back connector section having a base, a front connector section having means at the outer end thereof
 5 to attach a strap end thereto, means to pivotally attach the inner end of said back connector section to the inner end of said front connector section, means to clamp the outer end of said front connector section to the outer
 10 end of said back connector section when superimposed thereon, a member longitudinally slidably mounted over the base of said back connector section having means thereon for attachment of the other strap end, and
 15 means for tensioning said sliding member against sliding movement whereby the strap end attached to the outer end of the front connector section may normally conceal said front connector section when said front connector section is pivoted to closed position on said back connector section and
 20 whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

4. A strap tightener adapted to be interposed in a strap for expanding and contracting the length of the strap comprising a back connector section having a base and a front connector section having their inner ends
 30 hinged together, a connection for one end of said strap on the outer end of the front connector section, and a flexible connection for the other strap end mounted over and expansible longitudinally of the base strap end the back connector section to automatically adjust the length of the strap, and means on the
 35 outer ends of said connector sections to detachably secure them together, whereby the strap end attached to the outer end of the front connector section may normally conceal said front connector section when said front connector section is pivoted to closed position on said back connector section and
 40 whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

5. A strap tightener adapted to be inserted in a strap for expanding and contracting the length of the strap, comprising a back connector section having a base, a front connector section having means thereon to attach a
 50 strap end thereto, means to pivotally attach the inner end of said back connector section to

the inner end of said front connector section, means to clamp the outer end of said front connector section to the outer end of said back connector section when superimposed thereon, longitudinal guide rails mounted over the
 60 base of said back connector section, springs mounted on said guide rails having the outer ends abutting a portion of said back connector section near the outer end thereof and a sliding member having means thereon for attachment of the other strap end riding on
 65 said guide rails having its outer side abutting the inner end of said springs whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

6. A strap tightener adapted to be inserted in a strap for expanding and contracting the length of the strap, comprising, a back connector section having a base, a front connector section having means thereon to attach a
 75 strap end thereto, means to pivotally attach the inner end of said back connector section to the inner end of said front connector section, means to clamp the outer end of said front connector section to the outer end of said back connector section when superimposed thereon, and a member longitudinally slidably mounted over the base of said back connector section having means thereon for
 80 attachment of the other strap end and means to tension said sliding member against sliding movement whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

7. A strap tightener adapted to be interposed in a strap for expanding and contracting the length of the strap comprising, a back connector section having a base and a front connector section having their inner ends
 95 hinged together, a connection for one end of said strap on the front connector section, and a flexible connection for the other strap end mounted over and expansible longitudinally of the base of the back connector section to automatically adjust the length of the strap, and means on the outer ends of said connector sections to detachably secure them together whereby the length of the strap may be increased when said front connector section is pivoted on said back connector section to open position.

In testimony whereof I affix my signature.

JOHN D'ALO.