Sept. 27, 1960 H. W. PATTERSON 2,953,827

TYING AND FASTENING DEVICE

Original Filed Sept. 16, 1953

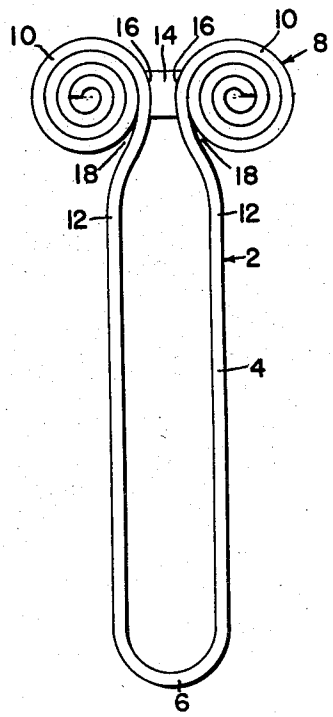


Fig. 1

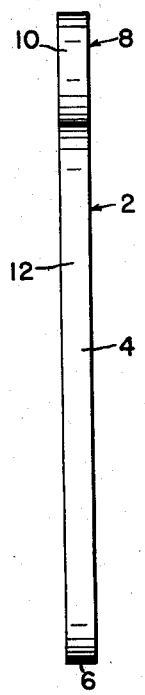


Fig. 2

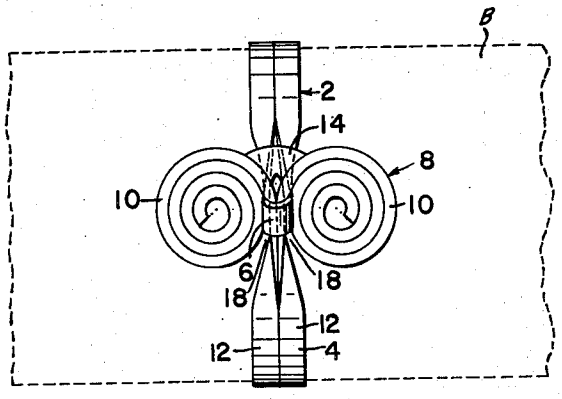


Fig. 3

INVENTOR

Herman W. Patterson

BY John A. Hamilton

Attorney

United States Patent Office 2,953,827 Patented Sept. 27, 1960

2,953,827

TYING AND FASTENING DEVICE

Herman W. Patterson, 7209 W. 65th St., Overland Park, Kans.

Original application Sept. 16, 1953, Ser. No. 380,449, now Patent No. 2,917,423, dated Dec. 15, 1959. Divided and this application Oct. 4, 1957, Ser. No. 688,301

4 Claims. (Cl. 24—16)

This is a divisional application arising from my copending application Serial No. 380,449, filed September 16, 1953, now Patent No. 2,917,423, and entitled Tying and Fastening Device and Method of Making Same.

This invention relates to new and useful improvements in tying and fastening devices, and relates particularly to tying and fastening devices comprising an elongated loop of elastic material having an enlarged head at one end thereof adapted to be pulled through and secured in the bight portion at the opposite end of the loop after the loop has been wrapped about an object or objects to be secured.

The primary object of the present invention is the provision, in a device of the character described, of a head portion so formed as to be securely held or locked in the bight portion of the loop, so as to prevent accidental pulling out or dislodgment of the head from the bight of the loop.

Another object is the provision of a device of the character described wherein the head is formed with relatively movable parts which are operable by the tension of the bight of the loop when said bight is in operative engagement with said head to grip said bight portion firmly.

Other objects are simplicity and economy of construction, efficiency and dependability of operation, ease and convenience of use, and adaptability for use in a wide variety of applications.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

Fig. 1 is an elevational view of a tying and fastening device embodying the present invention.

Fig. 2 is an edge view of the device as shown in Fig. 1, and

Fig. 3 is an elevational view showing the device in operative position about an object to be fastened, with the head inserted through the bight of the loop.

Like reference numerals apply to similar parts throughout the several views, and the numeral **2** designates a narrow strip of rubber or other elastic material arranged to form an elongated band or loop **4**. At one end of the loop, the elastic strip forms an open bight **6**, and at the opposite end of the loop, the longitudinal reaches **12** thereof are secured respectively to the opposite ends of a spacer block **14**, which is also elastic rubber or the like. The lines of connection between loop reaches **12** and spacer block **14** are designated at **16**, and may be accomplished by cementing, vulcanizing, or any other suitable process.

Also attached to the loop in alignment with spacer block **14** is a head **8** comprising a pair of flat knobs **10** disposed in the plane of the loop and respectively at the distal sides of loop reaches **12**. These knobs may conveniently be formed by extending each reach **12** of the loop and coiling the extended portions into a tightly wound spiral, the convolutions thereof being secured together by cementing, vulcanizing or other suitable process. Obviously, the entire structure thus far described could also be formed by extruding it in tubular form, the knobs **10** forming ribs on the tube, then cutting the tube into short lengths. Also, the knobs **10** could be applied as separate elements cemented or vulcanized to the loop. By whatever process produced, it will be seen that a V-shaped notch **18** is formed between each knob **10** and the adjacent portion of the associated reach **12** of the loop. The walls of these notches converge toward spacer block **14** and terminate at or slightly below said spacer block, for a purpose which will appear.

In use, the loop **4** is tensioned and passed around an object or objects B to be secured, the head **8** being pulled through bight **6** of the loop, as shown in Fig. 3. The object B may be, for example, the stalks of a bundle or bunch of vegetables to be fastened together for marketing. Other exemplary uses are to secure vines or the like to wires, lattices or other supporting structures, or to secure a lady's hair in the "ponytail" style of hairdress. The applications and uses of my devices are too numerous to list, and no limitation is intended by the examples given.

The bight portion **6** of the loop passes around both of the reaches **12** of the loop just below spacer block **14**, and engages in both of notches **18**, being urged into the upper extremeties of said notches by the tension of the band. This engagement tends to prevent the head from turning so that its plane corresponds to the opening between the reaches **12** of the loop, in which position it could easily pull through the bight **6** by accident. Also, since the head is enlarged and substantially planar, it tends to lie flat against the bundle B of objects secured, or to engage said bundle. This further tends to prevent rotation of said head to a position as described above where it could pull through the bight.

As seen in Fig. 3, the tension of bight **6** of the loop where it passes around the reaches **12** of the loop, forces said reaches together just below spacer block **14**. This causes the spacer block **14** to bend or flex yieldably as shown, forcing the knobs **10** to move downwardly and inwardly to press firmly against bight portion **6** of the loop, gripping said bight portion tightly to further prevent it from being easily disengaged from the head. The upper or closed ends of notches **18** must as previously discribed be disposed at or below the lower edge of spacer **14**. If they extend so far as to be disposed directly at opposite sides of the spacer, said spacer would be placed under direct compression, rather than bending or flexing as described. On the other hand, extending said notches as closely adjacent the lower edge of the spacer as is consistent with the proper flexing thereof provides the greatest possible angular movement of the knobs, and hence the greatest possible gripping force on bight **6**.

It is desirable also, in order to provide still greater gripping force of the knobs on bight **6**, that knobs **10** be relatively hard or rigid as compared to loop **4** and spacer **14**, since the gripping force will not then be weakened by the yieldability of the knobs themselves. This hardening may be accomplished in the device as shown by cementing the convolutions of the knobs with a cement capable of hardening the adjacent rubber, or by introducing a hardening agent between the convolutions prior to vulcanizing. If the device is produced by extrusion, the hardening agent could be injected into those portions of the extrusion die producing the knobs, and if the knobs are attached as separate elements, the material used therefor could be initially harder than that used for the loop and spacer.

While I have shown and described a specific embodiment of my invention, it will be apparent that many minor changes of structure and operation could be made

without departing from the spirit of the invention as defined by the scope of the appended claims.

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

1. A tying and fastening device comprising a strip of elastic material, a spacer block also of elastic material, said block being disposed between and connected to the end portions of said strip whereby to form an elongated loop and whereby the opposite reaches of said strip are spaced apart adjacent said block, and a head comprising a pair of knobs disposed respectively at distal sides of said loop reaches at opposite sides of said spaced block, a notch being defined between each of said knobs and the adjacent portion of the associated reach of said elastic strip, each of said notches being taperingly narrowed toward the end of said loop joined by said spacer block, and terminating adjacent the edge of said spacer block closest to the opposite end of said loop.

2. A tying and fastening device as recited in claim 1 wherein said knobs are enlarged and substantially planar.

3. A tying and fastening device as recited in claim 1 wherein said knobs are enlarged and substantially planar, and lie substantially in the plane of the loop formed by said elastic strip.

4. A tying and fastening device as recited in claim 1 wherein said knobs are formed of a material which is relatively hard and inelastic as compared to said strip and said spacer block.

References Cited in the file of this patent

UNITED STATES PATENTS

1,161,297	Faust	Nov. 23, 1915
2,648,879	Patterson	Aug. 18, 1953
2,772,469	Staller et al.	Dec. 4, 1956

FOREIGN PATENTS

394,334	Great Britain	June 21, 1933