J. H. O'BRIEN.

SPRING FOR FLEXIBLE CONNECTIONS.

APPLICATION FILED JAN. 20, 1910.

975,274. Patented Nov. 8, 1910.

Fig. 1.

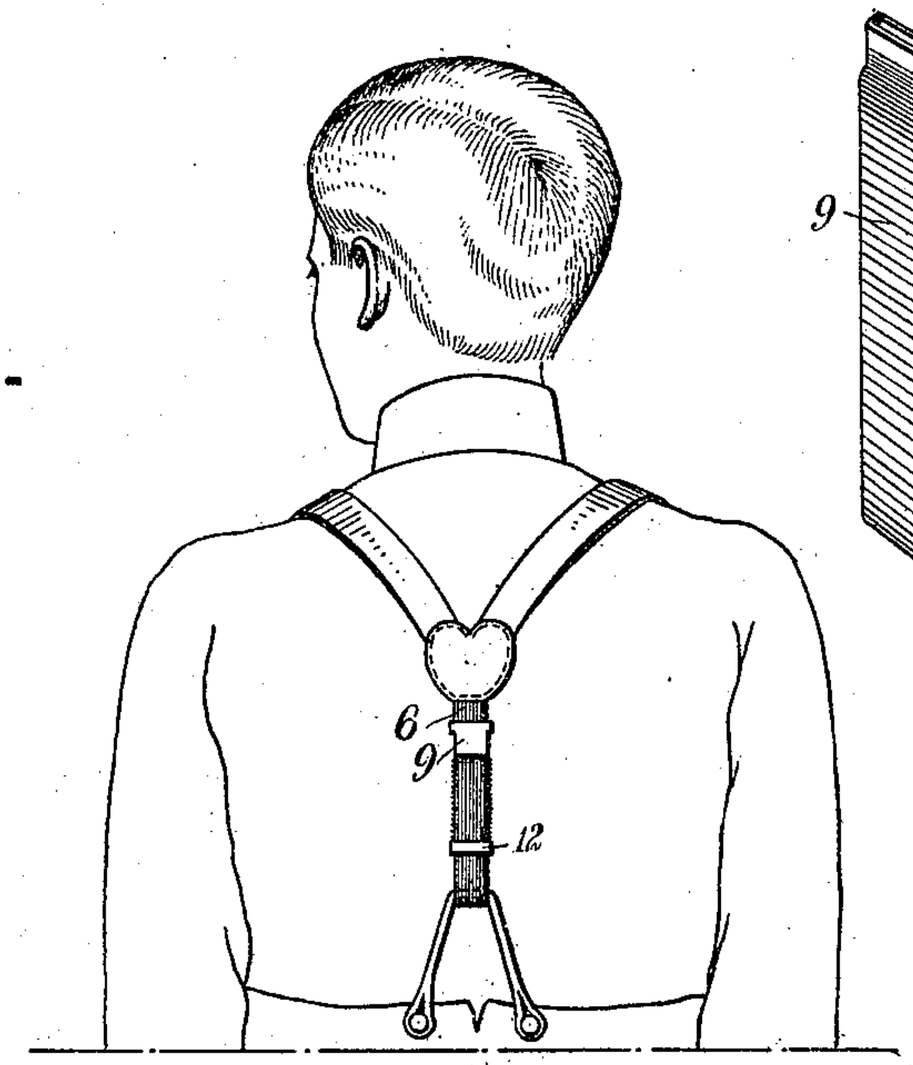


Fig. 5.

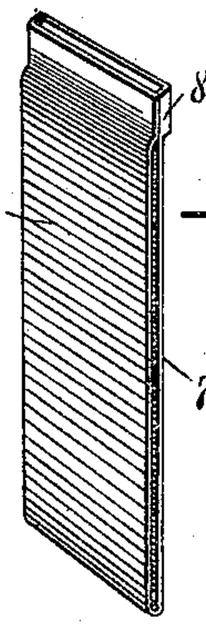


Fig. 3.

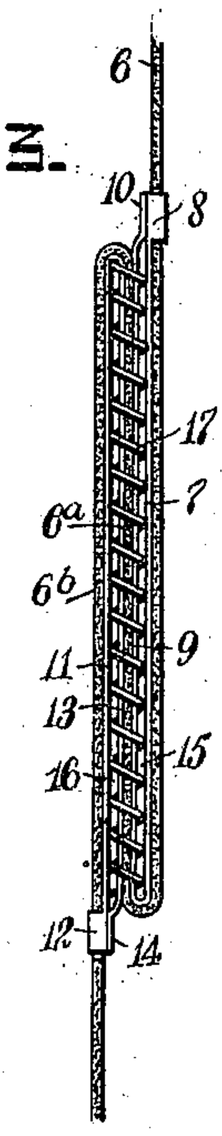


Fig. 2.

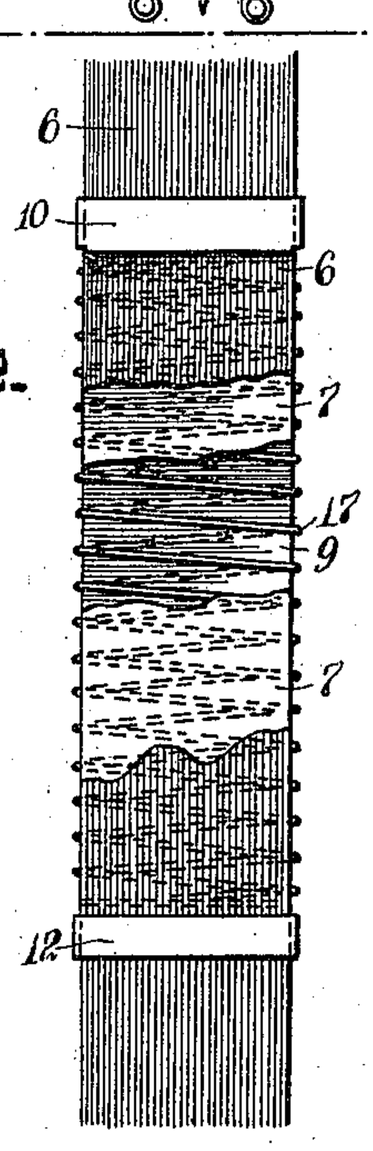
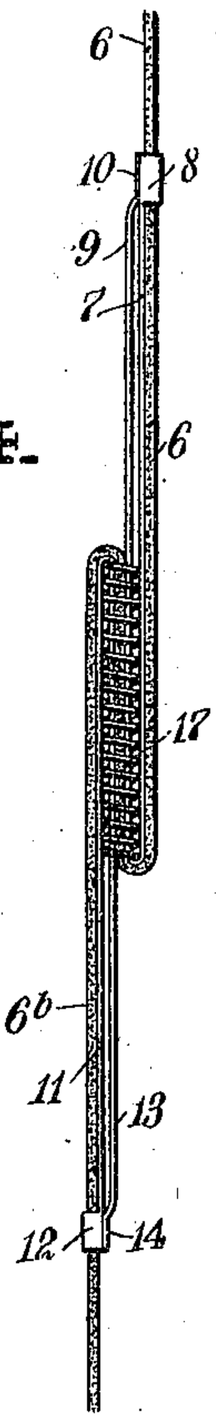


Fig. 4.



WITNESSES

T. G. Hachenberg

Walton Harrison

INVENTOR

James H. O'Brien

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES H. O'BRIEN, OF ILION, NEW YORK.

SPRING FOR FLEXIBLE CONNECTIONS.

975,274. Specification of Letters Patent. **Patented Nov. 8, 1910.**

Application filed January 20, 1910. Serial No. 539,072.

To all whom it may concern:

Be it known that I, JAMES H. O'BRIEN, a citizen of the United States, and a resident of Ilion, in the county of Herkimer and State of New York, have invented a new and Improved Spring for Flexible Connections, of which the following is a full, clear, and exact description.

My invention relates to springs for flexible connections, such as straps, ribbons, cords, belts, and the like, and is of peculiar service in flexible connections used for articles of clothing, such as suspenders, garters, armlets, and the like.

My invention comprehends a flexible strap incapable of stretching, and a spring and guide members connected with said strap in such manner that the virtual length of the strap may be varied by aid of the tension of the spring.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an elevation showing my invention as embodied in a strap forming a part of a person's clothing; Fig. 2 is a view partly in elevation and partly broken away, showing the strap and its guides together with the spring mechanism; Fig. 3 is a side elevation showing the mechanism as it would be seen by a person standing at the right of Fig. 2 and looking toward the left; Fig. 4 is a view somewhat similar to Fig. 3, but showing the device as it appears when the strap is pulled upon and thereby virtually elongated, the spring being thus compressed or shortened; and Fig. 5 is a detail showing in perspective one of the guides.

At 6 is a strap, made in this instance of inelastic webbing, and at 7 is a guide plate which at its upper end is provided with a large eye 8. The guide plate 7 is bent back upon itself—that is, provided with a portion 9, the upper end 10 of which is bent against the eye 8 and secured rigidly in relation to the same. At 11 is another guide plate which is provided at its lower end with an eye 12 and is bent back upon itself—that is, provided with a return portion 13, the latter having its lower end 14 bent against the eye 12 and secured firmly to the same. The two guide plates with their accompanying parts are exactly alike, except that the eyes 8, 12 extend in opposite directions. Each guide plate with its return portion I designate as a "guide." Owing to the spacing of the return portions, the two guides are provided with openings 15, 16 having generally the form of elongated slots.

At 17 is a spiral spring which encircles the return portions 9, 13, and also a portion 6^a of the strap. Another portion 6^b of the strap extends through the eye 12. The strap as a whole extends downwardly through the eye 8 to the lower end of the guide plate 7, thence bends around the lower end of this guide plate and extends between the two return portions 9, 13, thence bends downward upon the opposite side and passes through the eye 12.

The operation of my device is as follows: The parts being assembled as above described, the strap is ready for use and may be incorporated with other parts, as an article of clothing. In the instance here shown the device is employed as a part of a pair of suspenders. Whenever the ends of the strap are pulled apart, the spring 17 is compressed, as indicated in Fig. 4, and the length of the strap is thereby virtually lengthened to a distance much greater than the general length of the spring in a direction parallel with the strap. As the strap is pulled upon, the upper portion of it travels through the eye 8 and the lower portion 6^b through the eye 12 so that a comparatively trivial shortening of the spring 17 results in a considerable extension of the virtual length of the strap. The guide plates protect the spring.

I do not limit myself to the use of any particular material for the strap. Neither do I limit myself to the exact mechanical details shown and described, as obviously the same principles may be employed in any number of other ways by persons skilled in the art.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A device of the character described, comprising a longitudinal inelastic member, a guide plate disposed parallel therewith and bent back upon itself so as to form a return portion, said guide plate being provided with an eye to which said return portion is secured, another guide plate mounted upon a different portion of said inelastic member and reversed relatively to said first-mentioned guide plate, and a spring encir-

cling portions of both of said guide plates and also a portion of said inelastic member.

2. The combination of a guide plate, provided with an eye and bent back upon itself so as to form a return portion, a strap threaded through said eye and bent around said guide plate and said return portion, another guide plate connected with a different portion of said strap and provided with a return portion, said return portions being disposed upon opposite sides of another portion of said strap, and a spring encircling said return portions of said guide plates and also encircling said last-mentioned portion of said strap.

3. A device of the character described, comprising a longitudinal strap, guide plates engaging the same and movable relatively to each other, each of said guide plates having a return portion and a compression spring encircling all of said return portions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES H. O'BRIEN.

Witnesses:
FRED D. HARTFORD,
JOHN F. NAGLE.