

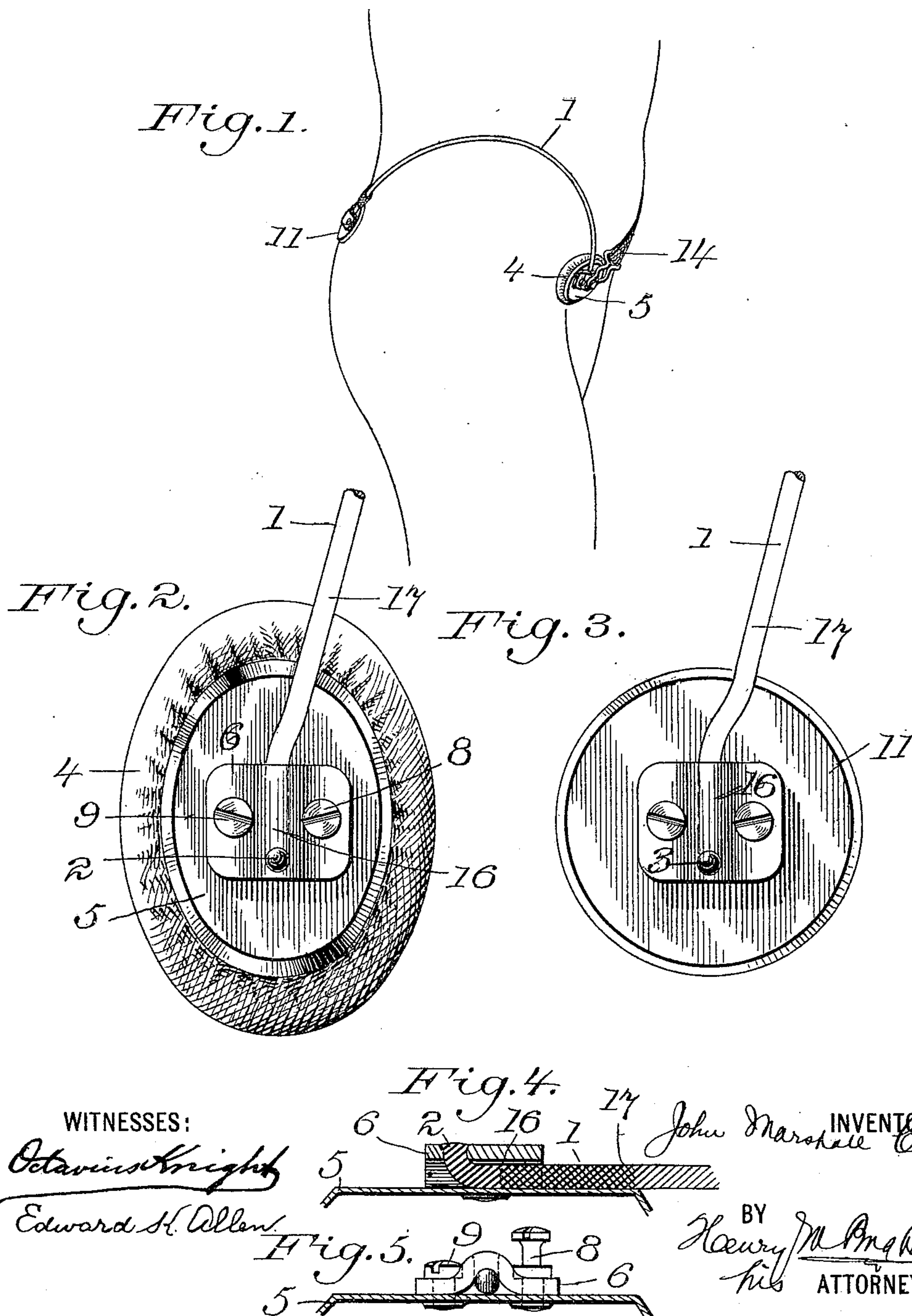
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Patented Jan. 23, 1900.

J. M. CULLIS.
TRUSS.

(Application filed Aug. 3, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

JOHN MARSHALL CULLIS, OF YONKERS, NEW YORK.

TRUSS.

SPECIFICATION forming part of Letters Patent No. 641,845, dated January 23, 1900.

Application filed August 3, 1898. Serial No. 687,626. (No model.)

To all whom it may concern:

Be it known that I, JOHN MARSHALL CULLIS, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Trusses, of which the following is a specification.

The object of my invention is to provide a ready means of effecting the angular adjustment of either the front or rear truss-pad to suit the requirement of the patient and the conditions of the particular case for which the truss is used.

In carrying my invention into effect I prefer to form the truss-spring of round wire, though it will be apparent that the invention is applicable to truss-springs of other form.

In order to provide for the angular adjustment of the pad relatively to the body of the spring, my invention consists in so annealing a portion of the spring near the extremity thereof, to which the pad is applied, that it will be rendered soft and ductile at this point, so that it may readily be made to take a new form or set by a twisting or deflecting strain applied to the pad secured to such extremity of the spring, while the main body of the spring retaining its hard and tempered condition and resilience will not acquire a new permanent set by such twisting or deflecting strain.

In the accompanying drawings, Figure 1 is a perspective view of a truss, illustrating my invention. Fig. 2 is a rear view of the front pad and spring end on a larger scale. Fig. 3 is a rear view of the rear pad and spring end, also on a larger scale. Fig. 4 is a longitudinal section on the line 4 4, Fig. 2. Fig. 5 is a transverse section on the line 5 5, Fig. 2. The truss-spring 1 is made of spring-steel, preferably in round form, terminating at its respective ends in lugs or studs 2 and 3, turned outward at about right angles to the body of the spring for attachment to the end pads of the truss.

4 represents the front pad, 5 the back plate thereof, to which the cushion is attached, and 6 a clip or clamp plate formed on its under side with a concavity or groove to receive the front end portion of the spring and near its lower edge with an aperture or seat into which projects the outturned lug or stud 2, forming

the front extremity of the spring. The clip or clamp plate 6 is tightly secured to the pad-plate 5 by screws 8 and 9; thus rigidly and securely clamping the end of the spring thereto. The back plate 11 of the rear pad is secured to the rear end of the spring 1 in the same manner—that is to say, by a grooved clip or clamp plate 12, perforated near its lower edge to receive the outturned lug or stud 3 on the rear end of the spring and securely fastened to the plate 11 by screws 13.

The suspender 14, which passes in customary manner over to opposite hip of the wearer, may be formed at its rear end with a simple loop, through which the truss-spring is passed, and provided in front with a clip 15 to catch over a suitable stud on the pad-plate 5. For this stud I prefer to employ the screw 8, which I form with a projecting head for the purpose, as shown in Fig. 5.

The novel feature of my invention relates to a provision for the ready angular or torsional adjustment of the respective pads to suit the particular requirements of the wearer and of the particular case or ailment for which the truss is applied. It is well known that special angular or torsional adjustment of one or both of the pads is commonly required to suit each particular case. To meet this requirement in a simple, economical, and effectual manner, I anneal the steel spring for a portion of its length near each extremity—as, for example, between the points indicated at 16 and 17 in Figs. 2, 3, and 4—so as to take the temper from the wire and render it soft and ductile in those parts, while the central part and main body of the spring and also the extremities, which are fixed in the clamp-plates, being of tempered steel retain their hard and resilient character. A truss made in this manner with a spring of tempered steel and for a short portion of its length near one or both ends of soft and ductile metal and secured to the pads in the manner described or in any equivalent manner enables the surgeon or other party applying the truss to adjust one or both pads in angle in either direction, either by deflection or torsion, according to the requirement of the patient. For this purpose the operator, firmly grasping with one hand the body of the spring and with the other the pad to be adjusted, applies the necessary

twisting or bending strain to the end of the spring through the medium of the pad itself, causing the ductile portion of the spring to acquire a new set in the position to which the pad is adjusted. The angular adjustment may be made by deflection in the plane of the spring or by torsion in a plane perpendicular thereto, or both at once, and by repeated trials, if necessary, the pad or pads may thus be adjusted to suit the requirements of the particular case or patient.

It is a well-known and common practice to construct truss-springs of steel of such low temper that they may be strained by torsion or bending, so as to impart a new set or form to the truss to suit particular patients; but it has been found difficult to construct a truss, especially of round steel wire, with sufficient strength and resilience to enable it to maintain its form in use and the requisite pressure on the person without making it of so hard temper that a new set cannot be imparted without difficulty and liability of breaking. I am aware that the annealing of steel articles or parts thereof is a common practice in the art of metal-working; but so far as I am aware this fact never suggested to any one prior to

my invention the special construction in which my improvements consist and which I devised after some years of experience in the manufacture and use of spring-wire trusses to obviate the difficulty which occurred in making such springs hard enough to retain their shape in use and ductile enough to be set and adapted to suit the requirements of individual patients without danger of breaking.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

A truss constructed with a spring formed of elastic or resilient metal in its main or central portion, and of comparatively soft or ductile metal at a point near one or both ends, and bent at the extremity to form a projecting lug or stud; a suitable pad and a clip having a hole or seat in which the upturned end of the spring is inserted and between which clip and the pad the spring is securely clamped, substantially as explained.

JOHN MARSHALL CULLIS.

Witnesses:

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OCTAVIUS KNIGHT.