(No Model.)

G. H. PHELPS.

TENNIS RACKET.

No. 360,468. Patented Apr. 5, 1887.

Fig: 1.

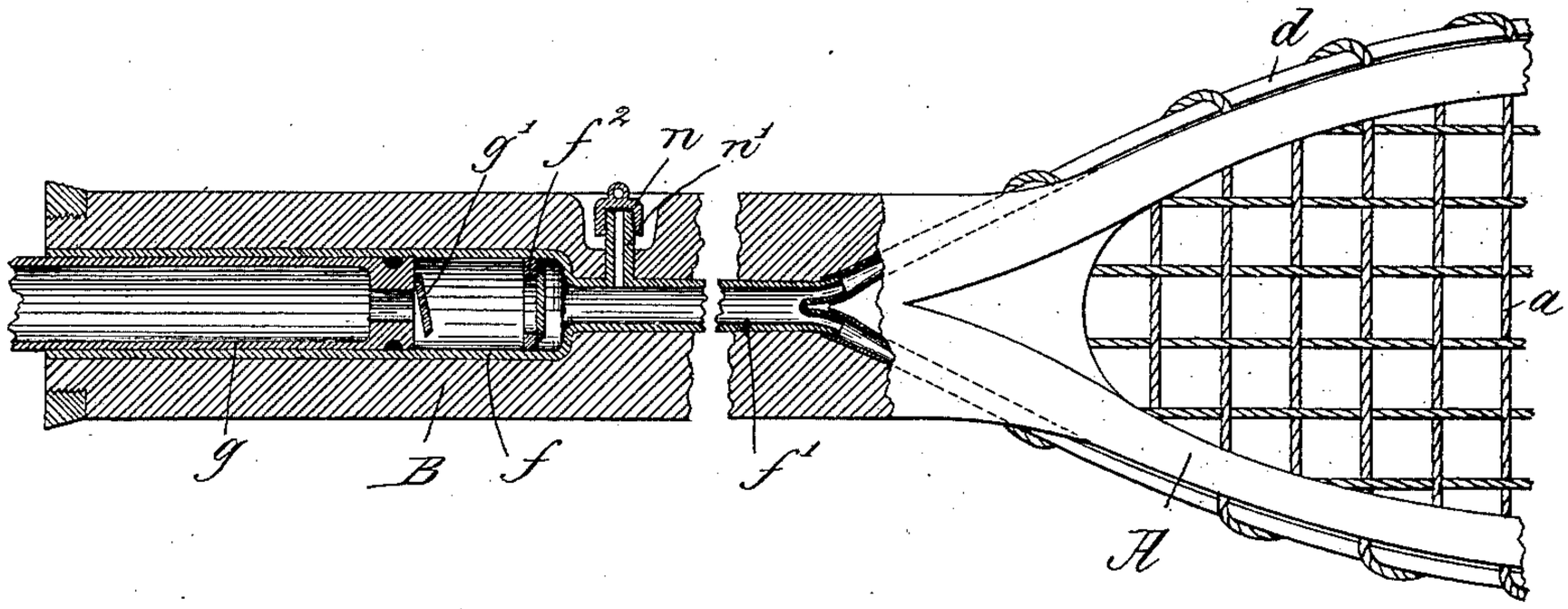


Fig: 2.

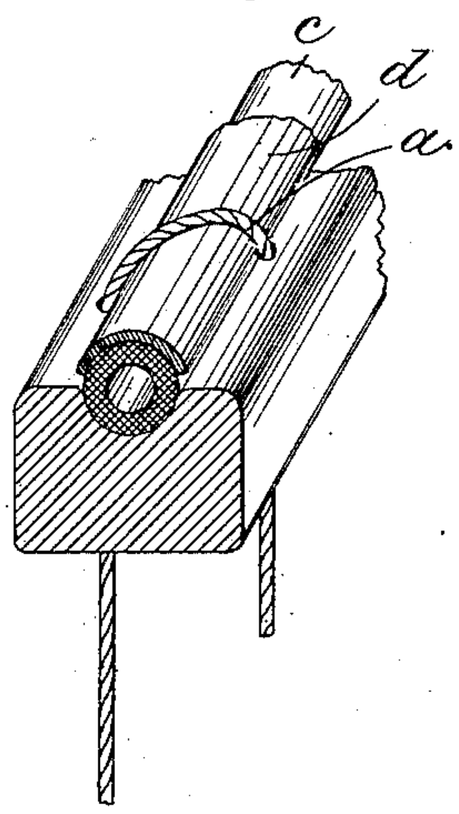
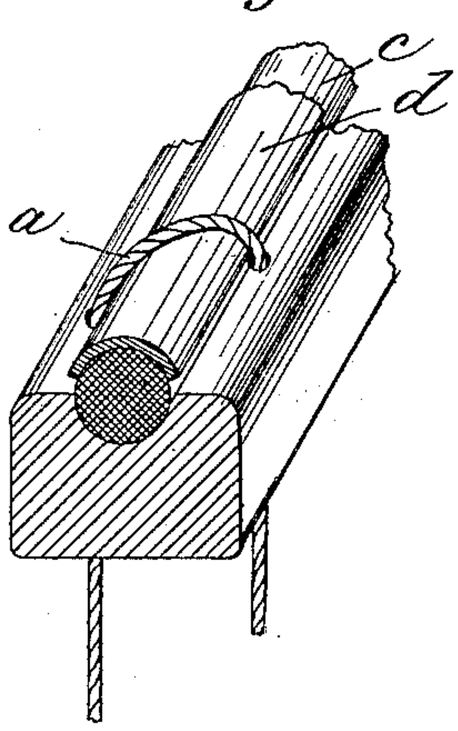


Fig: 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE H. PHELPS, OF WEST NEWTON, MASSACHUSETTS.

TENNIS-RACKET.

SPECIFICATION forming part of Letters Patent No. 360,468, dated April 5, 1887.

Application filed September 2, 1886. Serial No. 212,481. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. PHELPS, of West Newton, county of Middlesex and State of Massachusetts, have invented an Improvement in Tennis-Rackets, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a racket such as commonly used in a game of tennis and the like with suitable means whereby the gut-strings forming the net may be drawn taut or slackened at will, or when once drawn taut may be kept so under all conditions of the atmosphere to which it may be exposed.

In order that a racket shall be in its best possible condition it is necessary that the strings forming the net shall always be as taut as possible, and much annoyance is caused upon finding a net loose and flabby, which condition may result from hard usage or from the variable condition of the atmosphere—damp weather causing the strings to shrink, and dry weather to relax. The changes in the condition of the net caused by changes in the atmosphere is not readily noticeable to the eye; but the effect upon the elasticity of the net is at once perceptible by using it.

In accordance with this invention a yielding cushion passes around the frame, constituting the end of the racket, and protected by a plate or shell, about which the strings of which the net is composed pass, the yielding cushion permitting the strings to contract or relax, due to the variable conditions of the atmosphere or other causes, the cushion contracting or expanding to a like degree, thus obviating breaking of the strings or taking up the slack thereof, as the case may be, the cushion serving to keep the strings properly stretched, so that the elasticity of the net is substantially the same at all times.

The yielding cushion is preferably composed of a rubber core or tube laid in a suitable groove cut in the outside of the racket-frame, and in instances wherein it is designed to slacken the strings after using, or to stretch the same to a required tension before using, the ends of the rubber tube are connected with an air-forcing apparatus concealed within the handle of the racket, the said air-forcing apparatus being so constructed as to enable air to be forced into the tube to inflate the same to any desired extent. A suitable vent is provided, by which the air introduced into the tubular yielding cushion may be discharged at any time.

Figure 1 shows in top view and partial section a portion of a lawn-tennis racket embodying this invention, the handle being partially broken out to save space on the drawings; Fig. 2, a cross-section of the frame supporting the net and of the yielding cushion over which the string forming the net bears; and Fig. 3 a modified form of cushion, to be referred to.

The frame or head A, composed of a piece of wood bent into any suitable shape, and a handle, B, are of usual construction. The string or cord *a* of the net is passed through holes bored through the frame A and over the yielding core or tube *c*, preferably made of rubber, which is laid in a groove cut in the outside of the frame A, said string bearing upon the yielding cushion thus formed; or, if desired, a metallic or other shell, *d*, may be introduced between the string or cord and the yielding core, to prevent the string cutting into the core when drawn taut.

When it is desired to use the racket, the tube *c* (should the string or cord *a* not be sufficiently taut) is inflated by an air-forcing apparatus consisting of a tubular frame or case, *f*, having a discharge passage or pipe, *f'*, to which the ends of the tube *c* are connected. A check-valve, f^2, is permanently located within the case *f* at its forward end, it opening to permit air to pass into the pipe *f*, but closing to prevent air from passing outward. A hollow piston or plunger, *g*, snugly fitting the case *f*, is provided, it having a check-valve, *g'*, at its forward end and a suitable handle (not shown) at its rear end, so that as it is pulled out the check-valve *g'* will open and permit air to enter the chamber formed in the end of the case *f*, and as the said plunger or piston is pushed forward the air thus introduced into the chamber at the end of the case *f* will be forced into and through the pipe *f'* to the tubular core, thereby inflating the said core to such an extent as to stretch the strings

or cords *a* of which the net is composed to any proper tension.

After using the racket, a screw-cap, *n*, closing the vent-passage *n'*, is removed, permitting the inclosed air to escape.

By employing a yielding tubular cushion, as described, the strings or cords of which the net is composed may be kept stretched or not, as desired.

As it is obvious that a racket having a tubular core or cushion and the air-forcing apparatus may be somewhat expensive, and as the particular function subserved by the tubular core is to yield to the varied conditions of the net, the said air-forcing device may be omitted, and the yielding cushion may consist either of a tubular or of a solid piece of rubber or other usual or suitable elastic material.

By this method of construction a very cheap and serviceable racket may be made, the strings of which the net is composed being free to contract and relax under the varying conditions of the atmosphere and such other causes as may affect it, and yet maintain substantially the same elasticity at all times.

I claim—

1. In a racket, the frame or head and the net supported by it, combined with a tubular yielding cushion over which the strings composing the net pass and an air-forcing apparatus for forcing air into the tubular yielding cushion, substantially as described.

2. In a racket, the frame or head and the net supported by it, combined with a yielding cushion and a plate or shell, *d*, laid upon said cushion, over which the strings composing the net pass, substantially as described.

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

GEO. H. PHELPS.

Witnesses:
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