

No. 734,888.

PATENTED JULY 28, 1903.

C. T. KINGZETT.
PROCESS OF MAKING PLAYING BALLS.
APPLICATION FILED NOV. 13, 1902.

NO MODEL.

Fig. 1.

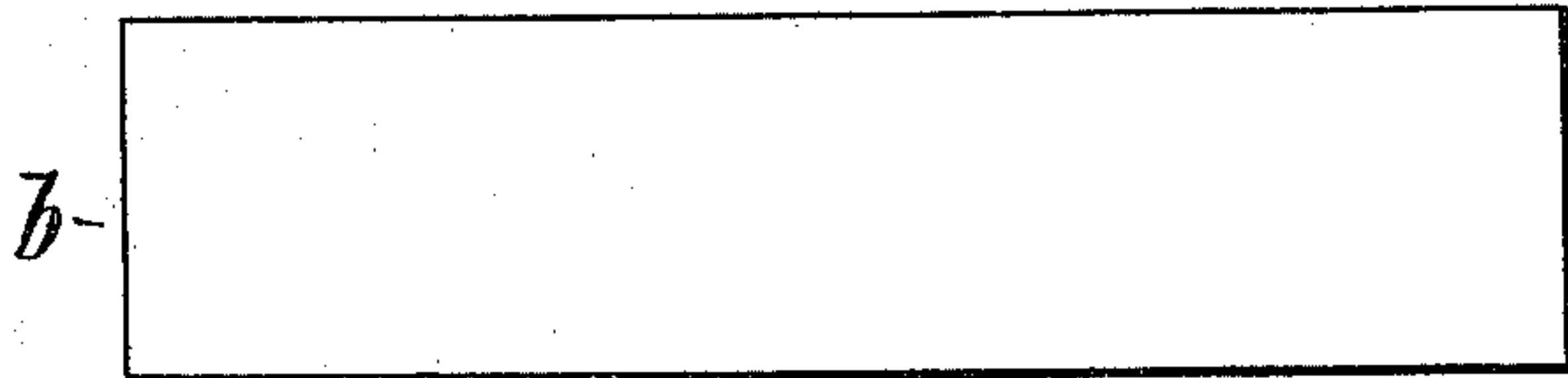


Fig. 2.

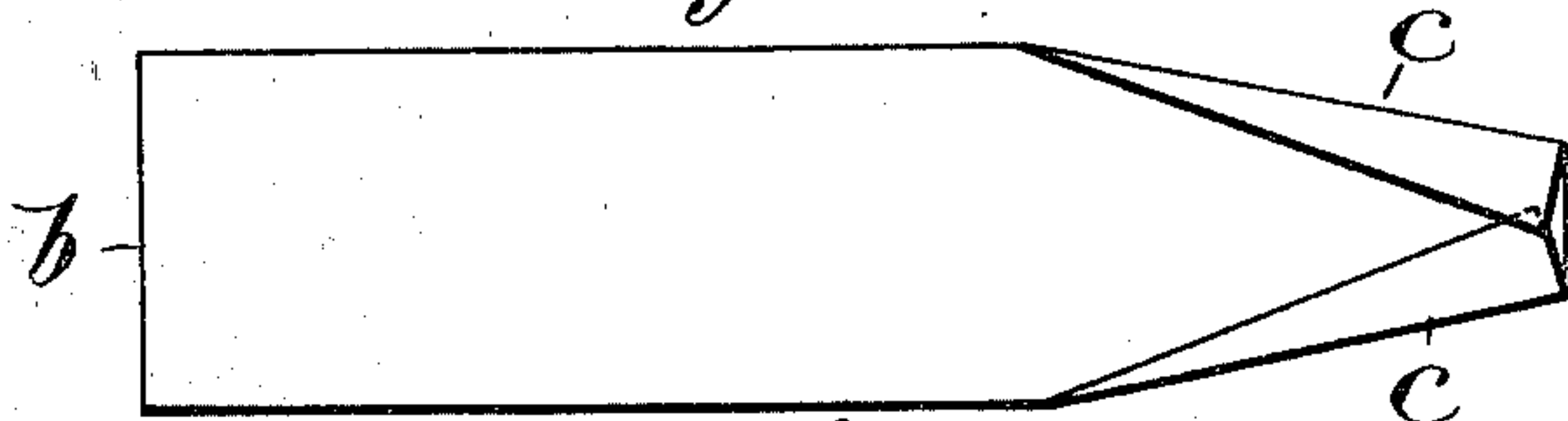


Fig. 3.

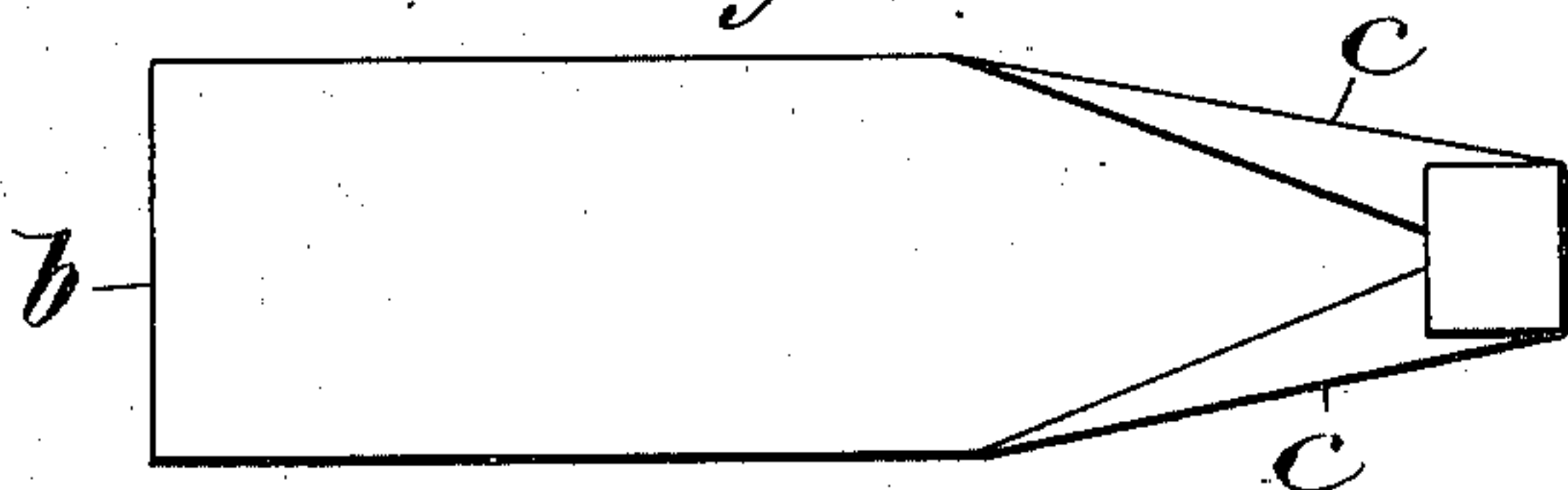


Fig. 4.



Fig. 5.

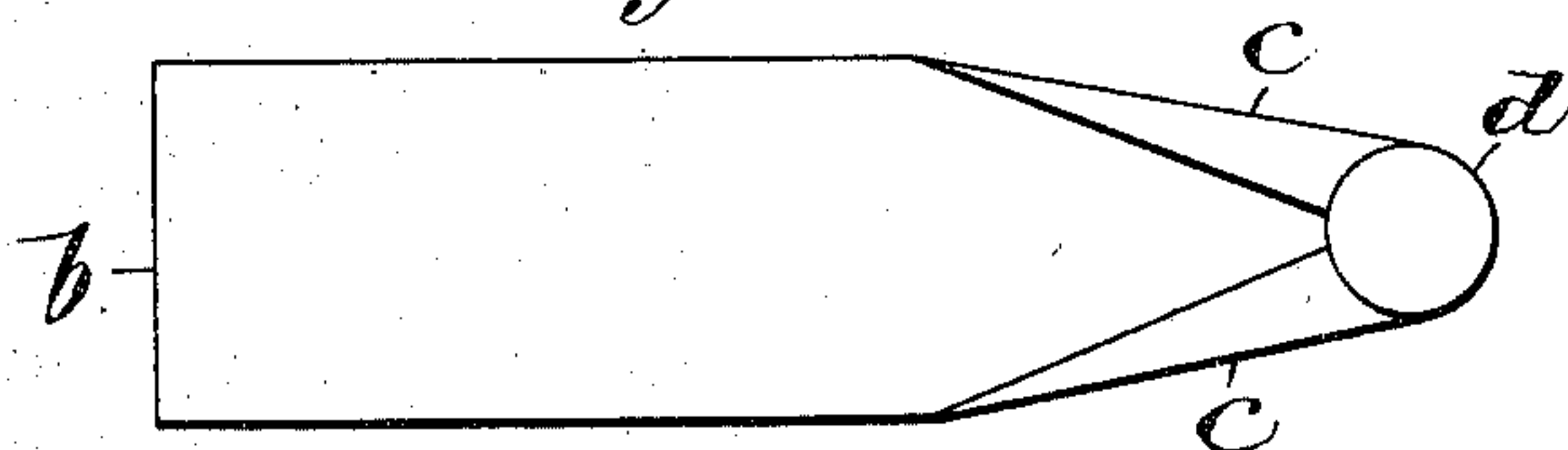


Fig. 6.

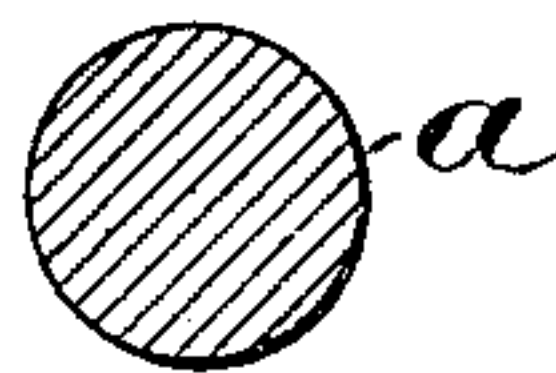


Fig. 7.

Fig. 8.

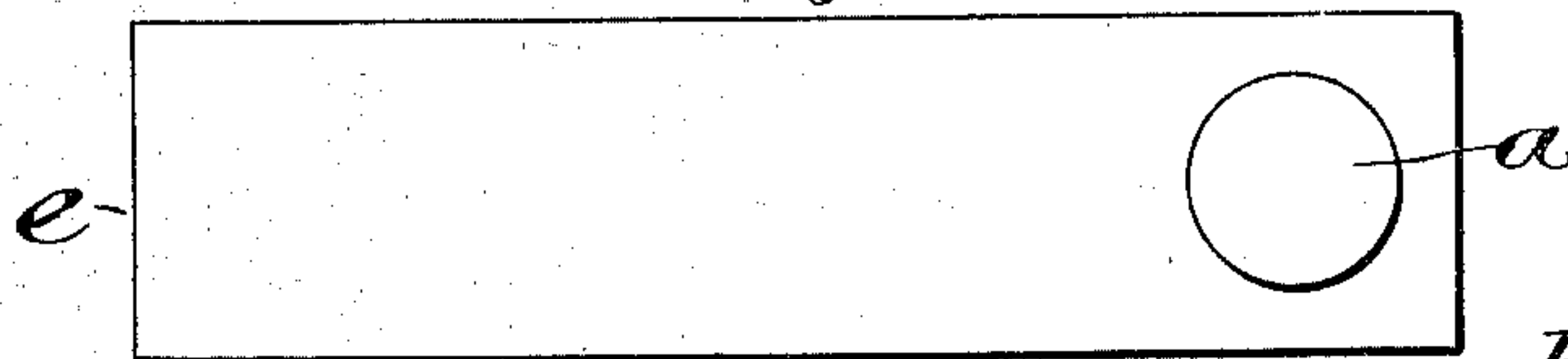
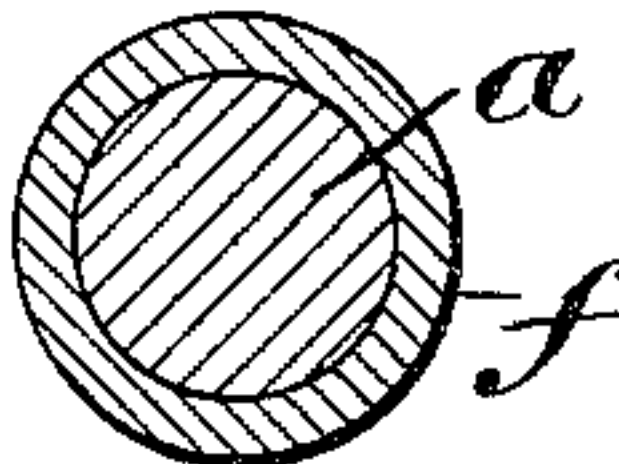
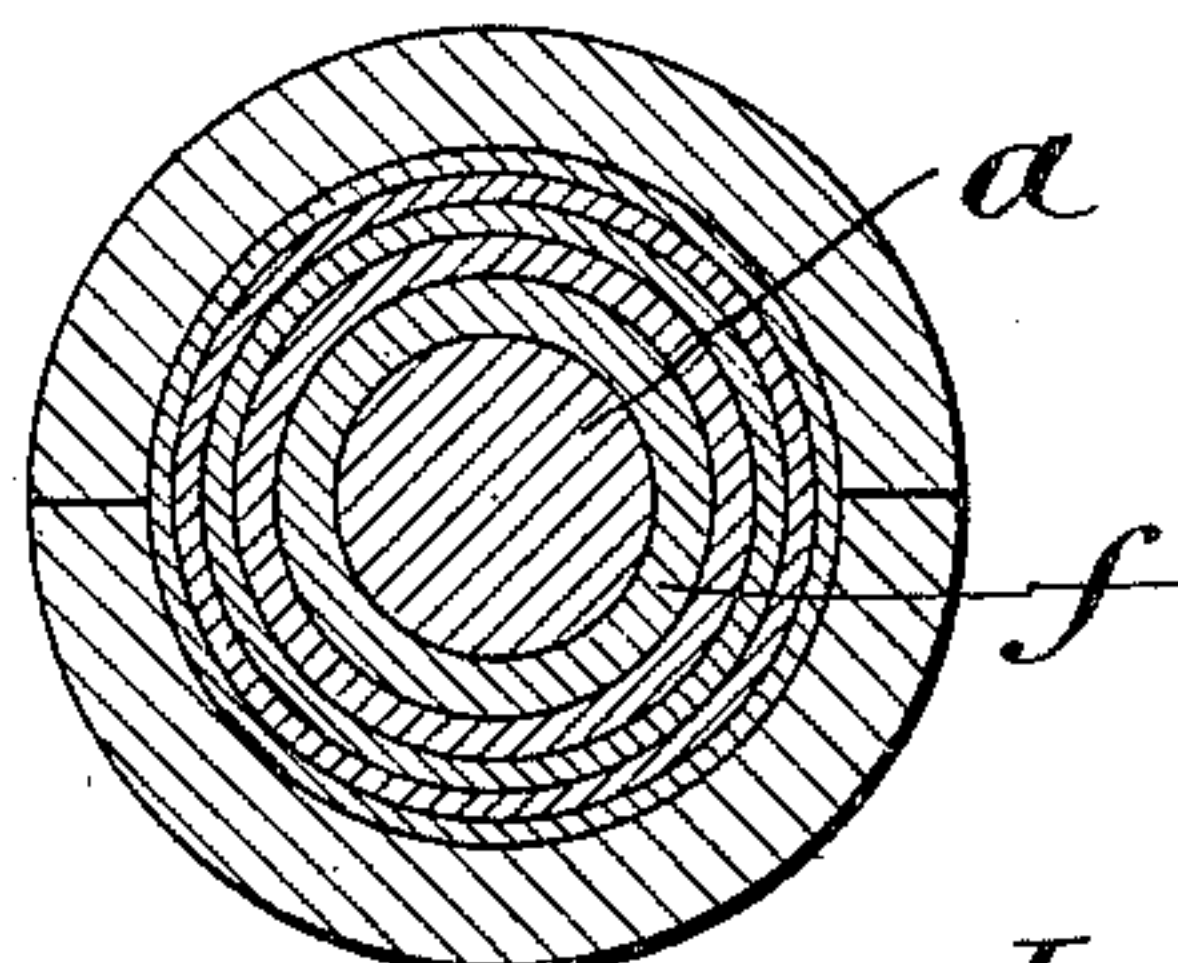
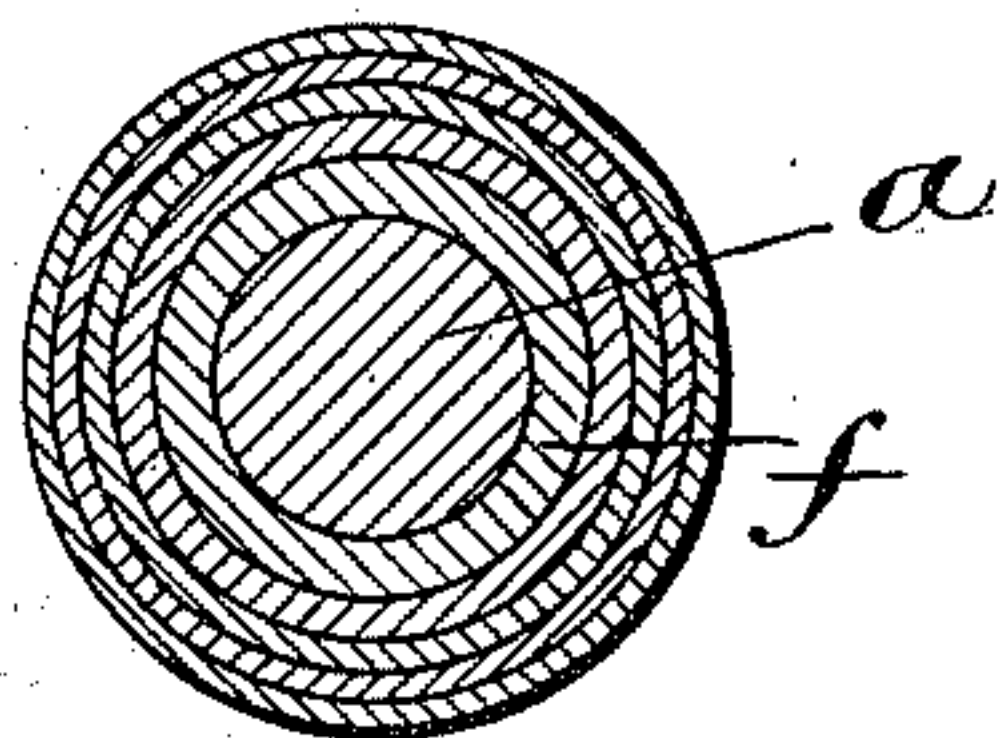


Fig. 10.



Witnesses.
A. M. Parkins.
J. A. Macdonald.

Inventor.
Charles T. Kingzett,
By his Attorneys,
Baldwin, Davidson & Wright

UNITED STATES PATENT OFFICE.

CHARLES THOMAS KINGZETT, OF CHISLEHURST, ENGLAND.

PROCESS OF MAKING PLAYING-BALLS.

SPECIFICATION forming part of Letters Patent No. 734,888, dated July 28, 1903.

Application filed November 13, 1902. Serial No. 131,260. (No model.)

To all whom it may concern:

Be it known that I, CHARLES THOMAS KINGZETT, manufacturer, a subject of the King of Great Britain, residing at Elmstead Knoll, Chislehurst, in the county of Kent, England, have invented certain new and useful Improvements in Processes of Making Playing-Balls, of which the following is a specification.

This invention has reference more especially to golf-balls, but is also applicable to balls used in other games.

Golf-balls have before been made with a central core of vulcanized india-rubber or with a central core of hard material surrounded by a thick layer of vulcanized india-rubber which in turn is itself incased in a thick outer shell of gutta-percha. Such layer of india-rubber has either been formed of two hemispherical cups or of india-rubber tapes or threads wound around the core under tension.

In the manufacture of my golf-ball I employ non-vulcanized india-rubber softened externally by being steeped in a volatilizable solvent, such as carbon disulfid or benzin, and use such softened rubber, still moist with solvent, in conjunction with gutta-percha in alternating layers, which by the solvent are caused to unite the one with the other and form a solid sphere. The exterior of the balls I form, as heretofore, of a thick outer shell of gutta-percha.

The drawings annexed illustrate the manner in which I prefer to proceed.

Figure 1 is a plan view of a length of a broad tape or strip of india-rubber previously softened by being steeped in a volatilizable solvent. Fig. 2 is a plan of the same tape with the two side portions at one end folded over inward. Fig. 3 is a plan of the same when this end has been rolled up into a small roll while continuing to fold over inward the two side portions. Fig. 4 is a longitudinal section of Fig. 3. Fig. 5 is a plan of the same with the small roll squeezed into approximately spherical form. Fig. 6 is a section of a sphere of softened india-rubber formed by rolling up the remainder of the tape around the small sphere previously formed. Fig. 7 is a plan view of the sphere placed onto a broad tape of gutta-percha.

Fig. 8 is a section of a sphere formed by rolling the gutta-percha tape around the softened-india-rubber sphere and squeezing it into approximately spherical form. Fig. 9 is a section of a sphere formed by repeating these operations—that is, by similarly winding on first a tape of softened india-rubber and then a tape of softened gutta-percha. Fig. 10 is a section of a sphere such as shown in Fig. 9 incased in a thick outer casing of gutta-percha.

I first form a central approximately spherical core *a* of rubber from a broad tape or strip *b* of india-rubber which has previously been softened on the exterior by being steeped in a volatilizable solvent. To form the tape *b* into a solid spherical mass, I commence by bending inward toward one another the two side edges or portions *c* of one end of the tape, as illustrated in Fig. 2, while at the same time winding up tightly this end of the tape into a roll, as illustrated in Fig. 3, and squeezing together the several folds and turns of the rubber tape, so as to make them all adhere closely together and assume more or less of a spherical form *d*, as illustrated in Fig. 5, and continue the winding and bending over of the sides of the tape until a core of the desired size has been produced, as illustrated in Fig. 6. Over this core *a* I next in the same way wind and bend around a similar tape *e* of gutta-percha previously softened by heat, so as to form around the core a complete hollow shell *f* of gutta-percha, as illustrated in Fig. 8. After this I again wind and bend around the gutta-percha-covered core another tape of rubber previously softened by a volatilizable solvent, and to make sure of obtaining perfect union between the rubber and gutta-percha and between the several overlapping folds and turns of the rubber tape more volatilizable solvent may be applied to the india-rubber in course of or after winding. The alternately winding on of a softened-gutta-percha tape and a tape of rubber moistened with a volatilizable solvent is repeated until the thick exterior coating of gutta-percha has to be formed. This outer coating may be formed in the same way by winding on and pressing together softened tapes of gutta-percha until the desired thick-

ness is obtained, or it may be formed of two hemispherical cups of gutta-percha. Afterward the whole may be compressed together and brought to the required spherical form by being compressed between dies. Thus the inner portion of the ball may be composed of numerous alternate concentric layers of india-rubber and gutta-percha, all made to adhere one with the other by the volatilizable solvent used. Each of the india-rubber layers also becomes one solid layer of india-rubber however many thicknesses or folds of the tape there may be in the layer.

In place of making the central core or nucleus of softened rubber, as above described, a core or nucleus of other material might be used; but generally it is better to form it of rubber.

In place also of alternately winding around the core first a tape of gutta-percha and then a tape of india-rubber moistened with solvent the rubber might by steeping in the solvent be brought into a softened plastic state and then spread over the surface of gutta-percha tapes, and such compound tapes can then be wound up and made into spherical balls in the way above described, or similar compound tapes for making up into balls might be formed by pressing tapes of india-rubber which have been previously softened by immersion in solvent onto tapes of gutta-percha, so as to make them adhere the one to the other.

What I claim is—

1. The hereinbefore-described process of forming a ball such process consisting in first steeping india-rubber in a volatilizable solvent and afterward molding such softened rubber together with strips of softened gutta-percha in alternating layers into a spherical form.

2. The hereinbefore-described process of forming a ball such process consisting in first steeping india-rubber in a volatilizable solvent and afterward molding such softened rubber together with strips of softened gutta-percha in alternating layers into a spherical form and then inclosing such compound spherical mass in an outer casing of gutta-percha.

3. The hereinbefore-described process of forming a ball such process consisting in first steeping strips or tapes of india-rubber in a volatilizable solvent and then molding such softened and moistened rubber and softened

strips or tapes of gutta-percha into alternating concentric approximately spherical layers.

4. The hereinbefore-described process of forming a ball such process consisting in first steeping strips or tapes of india-rubber in a volatilizable solvent and then molding such softened and moistened rubber and softened strips or tapes of gutta-percha into alternating concentric approximately spherical layers and afterward inclosing the compound mass in an outer casing of gutta-percha.

5. The hereinbefore-described process of forming a ball such process consisting in first steeping strips or tapes of india-rubber in a volatilizable solvent and subsequently winding such softened and moistened strips and softened strips of gutta-percha alternately around a central nucleus so as to form around the nucleus a series of alternating approximately spherical layers of india-rubber and gutta-percha all united the one with the other.

6. The hereinbefore-described process of forming a ball such process consisting in first steeping strips or tapes of india-rubber in a volatilizable solvent and subsequently winding such softened and moistened strips and softened strips of gutta-percha alternately around a central nucleus so as to form around the nucleus a series of alternating approximately spherical layers of india-rubber and gutta-percha all united the one with the other and afterward inclosing the compound mass in an outer casing of gutta-percha.

7. The hereinbefore-described process of forming spherical layers of solid india-rubber around a central nucleus such process consisting in winding bending and compressing a strip or tape of india-rubber previously steeped in a volatilizable solvent around the nucleus until the required thickness of layer is obtained with all the several turns and folds of this winding adhering together and forming one compact mass.

8. The hereinbefore-described process of forming a solid spherical core of dense but very elastic india-rubber such process consisting in first steeping a strip or tape of india-rubber in a volatilizable solvent and winding up and bending such tape into a solid spherical mass.

CHARLES THOMAS KINGZETT.

Witnesses:

WILLIAM HOLMES,

CHARLES BECKENSALL.