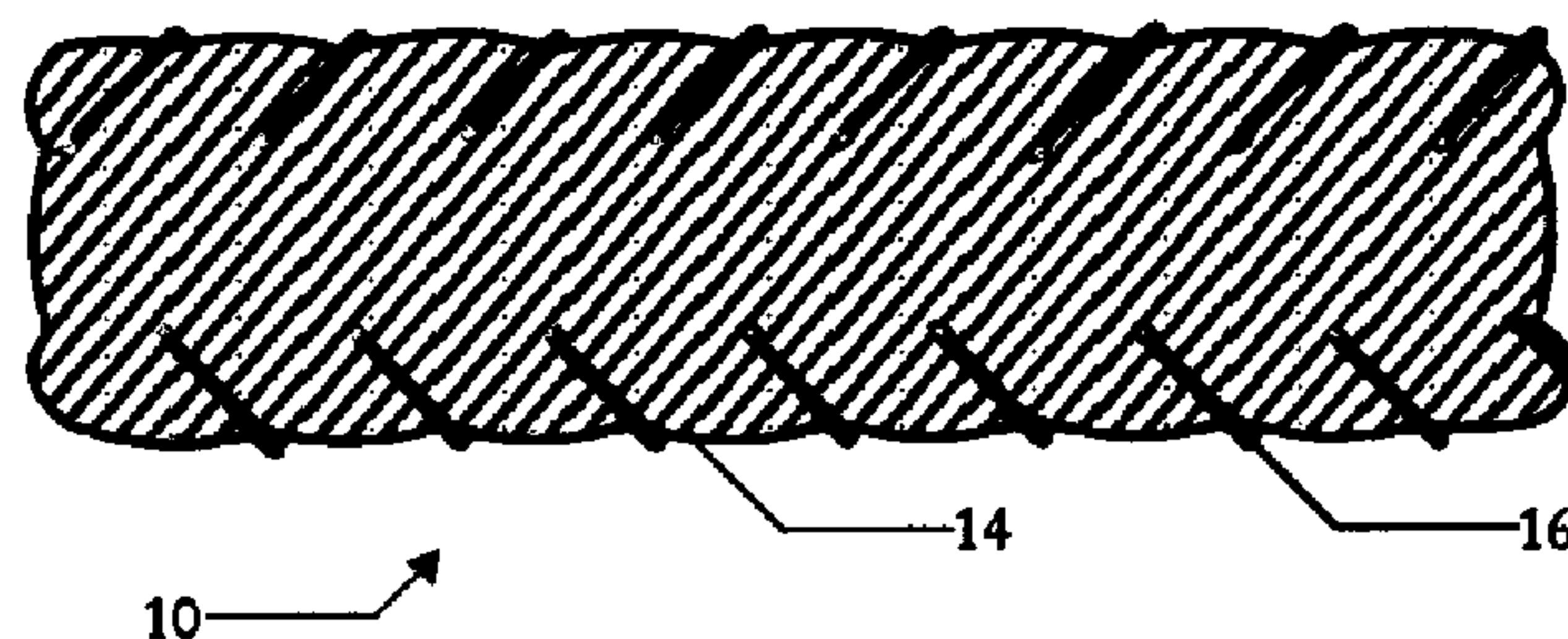




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(72) Nordquist, Stephen Roy, CA
(72) Tymtschischin, Martin, CA
(73) Nordquist, Stephen Roy, CA
(73) Tymtschischin, Martin, CA
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(54) **DISQUE POUR HOCKEY EN SALLE**
(54) **FLOOR HOCKEY PUCK**



(57) A floor hockey puck has a core of visco-elastic polymer enveloped in a durable, low friction casing. The visco-elastic polymer approximates the weight, momentum and feel of an ice hockey puck but presents less danger of impact injury.

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Abstract

A floor hockey puck has a core of visco-elastic polymer enveloped in a durable, low friction casing. The visco-elastic polymer approximates the weight, momentum and feel of an ice hockey puck but presents less danger of impact injury.

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Floor Hockey Puck

by

Stephen Roy Nordquist

and

Martin Tymtschischin

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Background

Repeated attempts have been made to build a good floor hockey puck. The problem is challenging because a good floor hockey puck must reproduce the feel of an ice hockey puck within the confines of a different environment. It must resemble an ice hockey puck to the extent that floor hockey resembles ice hockey; however, it must also possess unique characteristics dictated specifically by the game of floor hockey.

In the game of ice hockey, heavily padded players skate at high speeds on a low friction ice surface. They shoot a dense, squat puck made of a durable hard rubber. The puck's weight and squat shape help to keep it flat on the ice. The puck's weight and composition allow it to develop suitable momentum when shot and to behave predictably in collisions with goal posts, rink boards, hockey sticks and other game objects. However, the puck's weight and composition dictate that players wear heavy padding and helmets to avoid injury when struck by the puck.

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In the game of floor hockey, players, often wearing nothing more than shorts and a T-shirt, run around a floor which, although smooth, is significantly more frictional than ice. For reasons of tradition, it is desirable for a floor hockey puck to be of the same size and shape as an ice hockey puck so long as its

texture allows it to glide along the floor in the manner of an ice hockey puck. The weight and composition of the floor hockey puck must be such that it has the same feel and equivalent behaviour as an ice hockey puck. The floor hockey puck must glide along the floor but must not be prone to either float above the floor nor roll along on its edge. It must be heavy enough to develop suitable momentum but must be composed of a material that will not hurt unpadded players on impact. The puck must not be so inelastic that it bounces unduly or behaves unpredictably after colliding with a wall or the floor but neither should it be so elastic that it easily deforms or quickly wears.

Repeated attempts have been made to satisfy these design characteristics.

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One such attempt was to replace the puck with a ball such as a tennis ball. The ball rolled easily over the floor and didn't hurt players. However, it behaved unpredictably, bouncing off of walls and flying over the floor. These characteristics significantly altered the game of floor hockey, leading to the separate development of the game of ball hockey.

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One of the earlier puck designs was a hollow plastic puck. It had the proper puck size and shape and glided well over a floor. The puck did not hurt players on impact. However, the puck was too light: it had a tendency to float or fly above the floor and it didn't develop the same momentum as an ice hockey puck.

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Another attempt was to insert roller bearings into a traditional ice hockey puck. This puck possessed many ice hockey puck characteristics but also had problems. Unfortunately the bearings had a tendency to jam with grit from the floor. Such a heavy puck also dictated that players wear significant

padding. In a more recent variation, United States Patent 5,275,410 granted to Bellehumeur et al. on January 4, 1994 for a "Puck for use on a Non-Ice Surface" teaches an arrangement of low friction runners in place of the bearings. This heavy puck is geared toward roller blade hockey where padded players skate on concrete. Bellehumeur also considers the problem that the puck may behave

5 unpredictably when a high friction portion, as opposed the low friction runners, contacts the playing surface.

Yet another line of design has been to use non-traditional materials to build a puck. Canadian Patent 1,315,818 granted to Owen on April 6, 1993 for a "Floor Hockey Puck", Canadian Patent 1,273,663

10 granted to Nevoral on September 4, 1990 for an "Indoor Hockey Puck", and Canadian Patent 1,209,165 granted to Kunick on August 5, 1986 for a "Floor Hockey Puck" all teach variations on felt and canvass floor hockey pucks. These pucks have the advantages that they glide well over a floor, they don't hurt players on impact, and they have a similar feel to an ice hockey puck. However, these pucks are not durable and wear poorly. Felt pucks also have a tendency to roll, which Owen tries to

15 overcome by making the edge of his puck convex.

What is needed is a durable floor hockey puck that strikes a good balance between all the design criteria. The present invention is directed to a durable floor hockey puck that behaves predictably in collisions yet is unlikely to injure players on impact.

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Summary

In one embodiment of the invention, there is provided a puck for use on a non-ice surface, comprising: a core of visco-elastic polymer, a casing enveloping the core, and means for securing the casing to the

core. The core may be formed either as one solid piece or as laminations. The case may be made of leather, a rubber-like material having a lower coefficient of friction than the core, or a plastic-like material having a lower coefficient of friction than the core. The means for securing the casing to the core may be stitching or a bond. The stitching may be nylon.

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Brief Description of the Drawings

These and other features, aspects, and advantages of the present invention will become better understood with reference to the following description, appended claims, and accompanying drawings where:

- 10 Figure 1** is a side view a floor hockey puck embodying features of the invention;
Figure 2 is top view of the floor hockey puck of Figure 1; and
Figure 3 is a cross-sectional side view of the puck of Figure 1, viewed along the section AA.

Description

- 15** With reference to Figures 1 through 3, a floor hockey puck is generally illustrated at 10. The puck 10 comprises a core 12 enveloped in a low friction casing 14 and sealed in with stitching 16. Preferably, the puck is a squat cylinder, measuring one inch high by three inches in diameter and weighing approximately 4.5 ounces. However other shapes and sizes fall within the spirit of the invention and the preferred size and shape are only the most traditional. It is envisioned that a junior version of the
- 20** puck, suitable for elementary school children, would be a squat cylinder, three quarters of an inch high by three inches in diameter.

The core 12 is a visco-elastic polymer. Examples of visco-elastic polymers are some silicone compounds and "SORBOTHANE", a liquid urethane blended material manufactured by Sorbothane Inc. and described in United States Patent 4,346,205. The core 12 can be a solid cylinder or a lamination of discs.

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Visco-elastic polymers are more conventionally used in shoes as shock-absorbers, insoles and orthotics. They strike an excellent balance between shock absorption and non-deformability. It has been found that this same balance is also very suitable for floor hockey pucks. The particular density and elasticity of the core 12 yield a durable floor hockey puck 10 that is similar to an
10 ice hockey puck in terms of weight, momentum and collision behaviour yet does not present the same impact dangers to unpadded players.

It has been found that a visco-elastic polymer having a durometer measurement of between 25 and 75 on the 00 Shore Scale is suitable for forming the core 12. Preferably, the visco-elastic
15 polymer should have a durometer measurement between 25 and 50. A more preferred durometer measurement range is between 25 and 35. A most preferred durometer measurement is 30.

The casing 14 is preferably made of leather because it is durable and has a texture that grips the blade of a hockey stick but glides easily along the playing surface; however, other materials with
20 similar properties could also be used. The stitching 16 is preferably nylon because it is both durable and easy to work with; however, other materials with similar properties could also be used.

It is also envisioned that the core 12 could be potted, moulded or otherwise encased in a seamless or fused-seamed shell of a low friction rubber-like or plastic-like material. The shell could be bonded to the core.

5 Although a specific embodiment of the present invention has been described and illustrated, the present invention is not limited to the features of this embodiment, but includes all variations and modifications within the scope of the claims.

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CLAIMS

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

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1. A puck for use on a non-ice surface, comprising:
 - (a) a core of visco-elastic polymer, having a durometer measurement of between 25 and 75 on the 00 Shore Scale,
 - (b) a casing enveloping the core, and
 - (c) means for securing the casing to the core.

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2. A puck as in claim 1 wherein the visco-elastic polymer has a durometer measurement of between 25 and 50 on the 00 Shore Scale.

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3. A puck as in claim 1 wherein the visco-elastic polymer has a durometer measurement of between 25 and 35 on the 00 Shore Scale.

4. A puck as in claim 1 wherein the visco elastic polymer has a durometer measurement of 30 on the 00 Shore Scale.

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5. A puck as in claim 1 wherein the core is formed from laminations of visco-elastic polymer.

6. A puck as in claim 1 wherein the casing is leather.

7. A puck as in claim 1 wherein the casing is a rubber-like material having a lower coefficient of friction than the core.

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8. A puck as in claim 1 wherein the casing is a plastic-like material having a lower coefficient of friction than the core.

9. A puck as in claim 1 wherein the means for securing the casing to the core is stitching.

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10. A puck as in claim 10 wherein the stitching is nylon.

11. A puck as in claim 1 wherein the means for securing the casing to the core is an adhesive bond.

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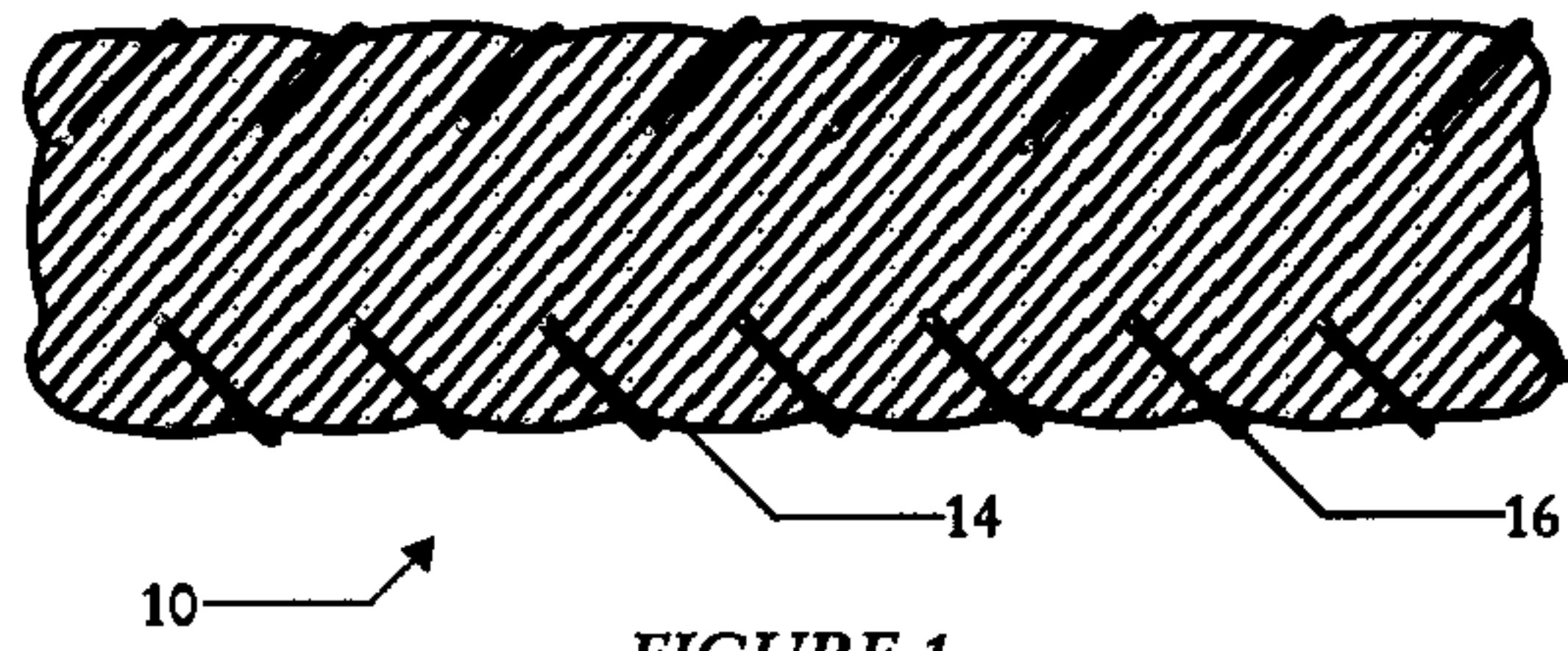


FIGURE 1

Michael J. Roman

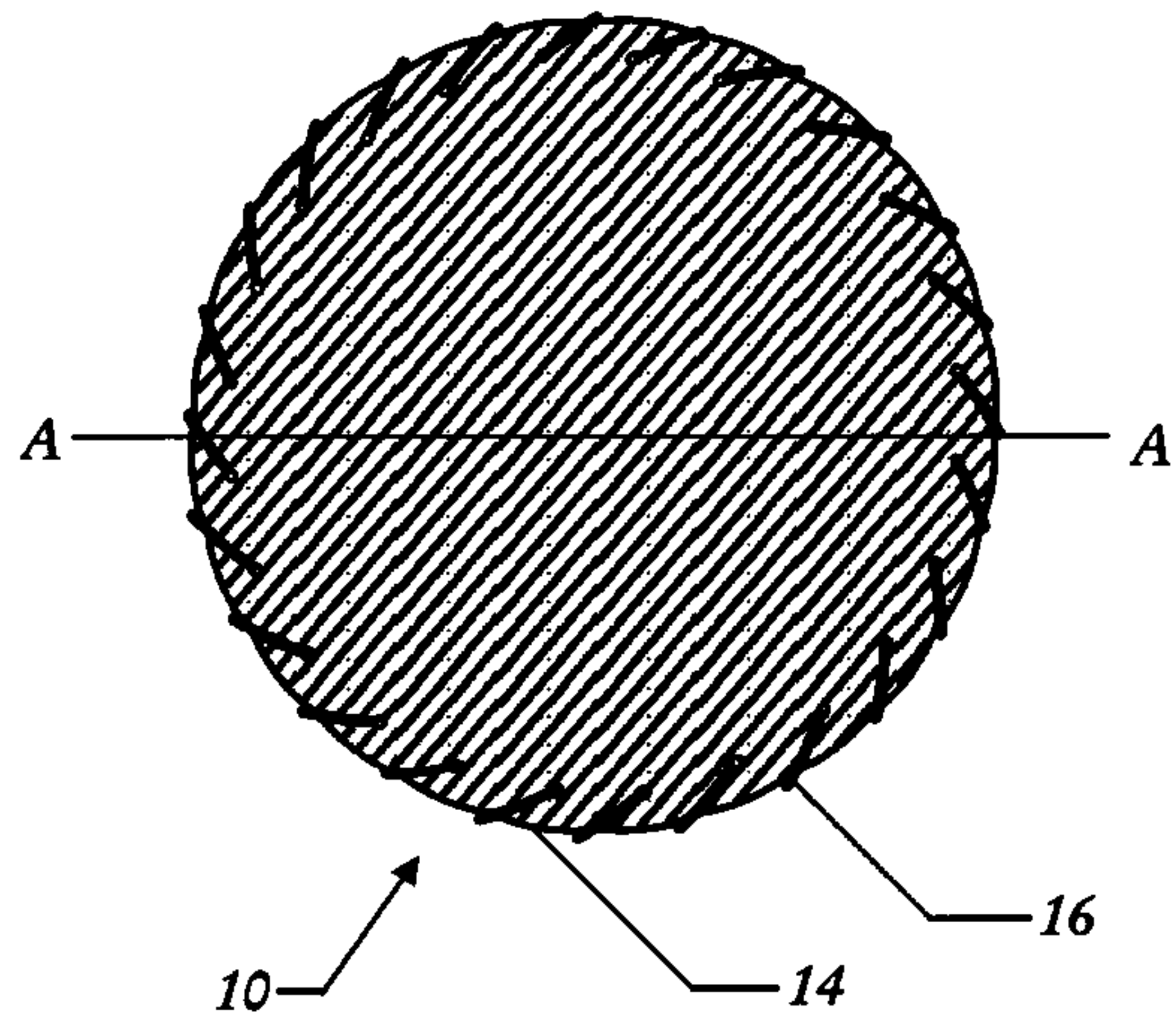


Figure 2

Michael J. Roman

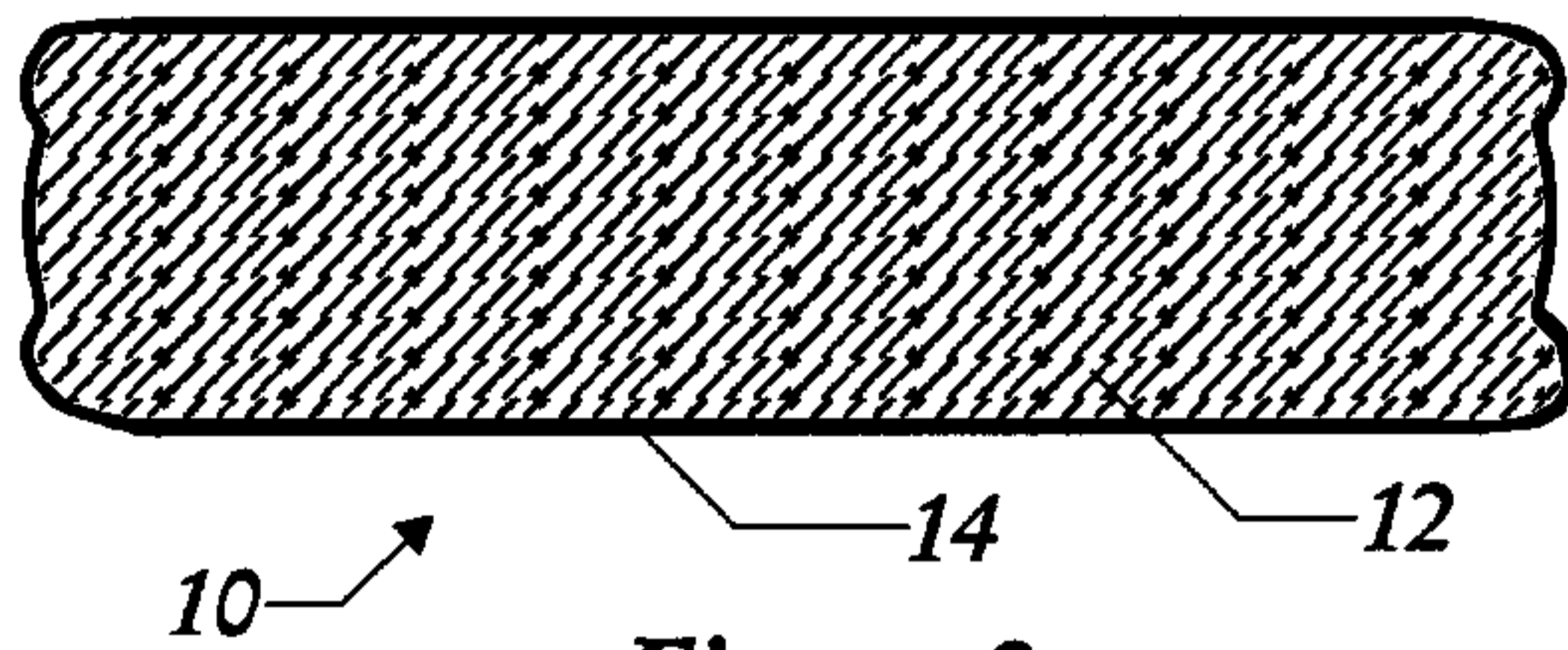


Figure 3

Michael J. Roman