Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2349191 A1 2000/05/11

(21) 2 349 191

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(86) Date de dépôt PCT/PCT Filing Date: 1999/11/02
(87) Date publication PCT/PCT Publication Date: 2000/05/11
(85) Entrée phase nationale/National Entry: 2001/05/03
(86) N° demande PCT/PCT Application No.: US 99/25866
(87) N° publication PCT/PCT Publication No.: WO 00/25708
(30) Priorité/Priority: 1998/11/03 (60/106,881) US

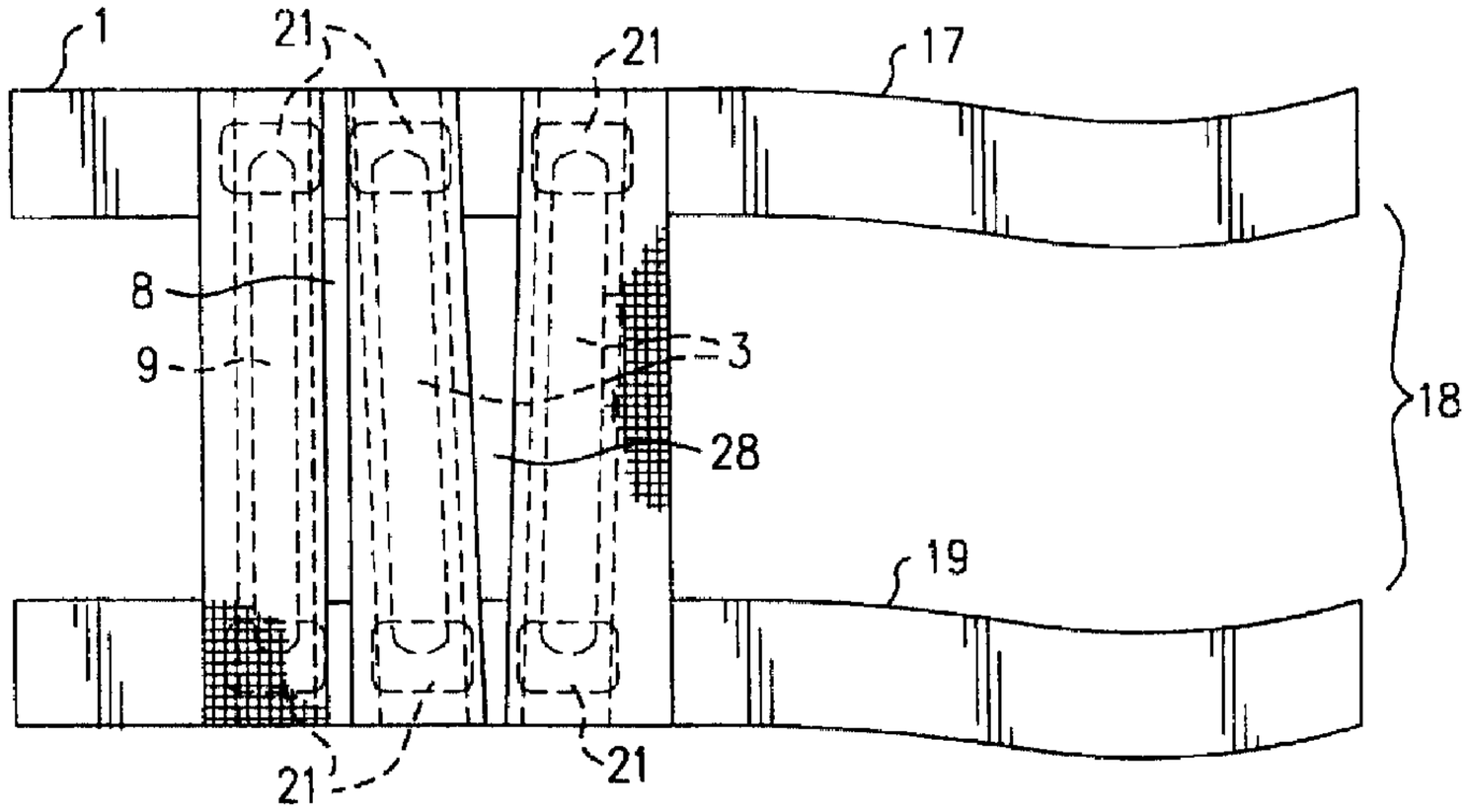
(51) Cl.Int.^{6}/Int.Cl.^{6} A61F 5/00

(71) Demandeur/Applicant:
THROWRIGHT LLC, US

(72) Inventeur/Inventor:
KAFER, TIMOTHY J., US

(74) Agent: FETHERSTONHAUGH & CO.

(54) Titre : BRACELET ORTHOPEDIQUE CONCU POUR L'ENTRAINEMENT AU LANCER DE BALLE DE BASE-BALL
(54) Title: ELBOW BRACE FOR TEACHING BASEBALL THROWING



(57) Abrégé/Abstract:
An improved elbow brace adapted for teaching baseball throwing with three stays enclosed by cloth and attached with two circumferential cloth straps. Two or more pads (21) sit between the ends of stays and the inner surface of the brace which adjoins the skin when worn. Stitched seams (15) are placed very close to the edges of the primary stays (3) and the third stay (9) to carefully hold them in proper alignment, allowing less than three-eighths of an inch of lateral movement and preferable less than one-eighth of an inch. The span between the primary stays (3) narrows toward the top of the brace (11). The middle stay is stiffer than the other two.

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A61F 5/00 — A1

(11) International Publication Number: WO 00/25708

(43) International Publication Date: 11 May 2000 (11.05.00)

(21) International Application Number: PCT/US99/25866

(22) International Filing Date: 2 November 1999 (02.11.99)

(30) Priority Data:
60/106,881 3 November 1998 (03.11.98) US

(71) Applicant: THROWRIGHT LLC [US/US]; 9225 Northeast Fifth Street, Bellevue, WA 98004 (US).

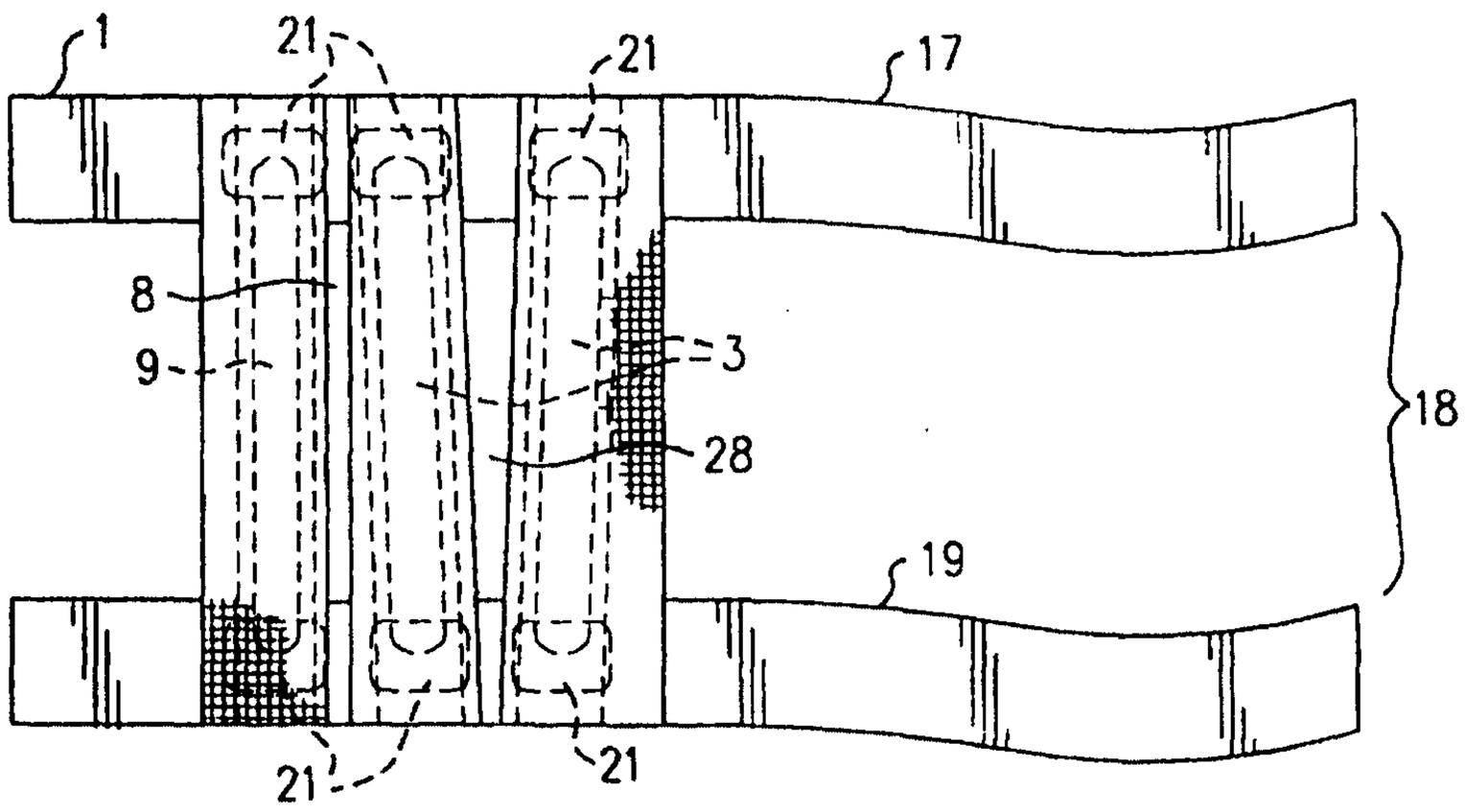
(74) Agents: HALEY, Jeffrey, T. et al.; Graybeal Jackson Haley LLP, Suite 350, 155 108th Avenue Northeast, Bellevue, WA 98004–5901 (US).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: ELBOW BRACE FOR TEACHING BASEBALL THROWING



(57) Abstract

An improved elbow brace adapted for teaching baseball throwing with three stays enclosed by cloth and attached with two circumferential cloth straps. Two or more pads (21) sit between the ends of stays and the inner surface of the brace which adjoins the skin when worn. Stitched seams (15) are placed very close to the edges of the primary stays (3) and the third stay (9) to carefully hold them in proper alignment, allowing less than three–eighths of an inch of lateral movement and preferable less than one–eighth of an inch. The span between the primary stays (3) narrows toward the top of the brace (11). The middle stay is stiffer than the other two.

ELBOW BRACE FOR TEACHING BASEBALL THROWING

The field of this invention is limb braces for athletics.

BACKGROUND OF THE INVENTION

When people with no experience first try to throw a baseball, especially children, they often cock the elbow in an undesirable fashion. Successful baseball players learn to keep the elbow straighter than 90 degrees while they throw. A coach can hold the elbow in a suitable position while a throw is practiced in slow motion, but it is impossible for a coach to hold the elbow in this position during an actual throw.

A mechanical brace for keeping the elbow in a preferred position has been developed for use in training tennis players. A diagram for the brace is shown in Figure 1. It consists of a patch of cloth **1** with two longitudinal pockets **2** where stays **3** are inserted. The cloth **1** is strapped around the elbow with three straps **4** which attach to velcro patches **5** on the opposite edge of the cloth. Unfortunately, this brace does not adequately hold the elbow for teaching baseball throwing.

SUMMARY OF THE INVENTION

The invention is an improved elbow brace adapted for teaching baseball throwing. One of the features of the invented brace is that, in addition to the two stays **3** of the prior art, it has an additional stay **9** making a total of three stays. The additional stay **9** is preferably narrower than the other two stays **3**.

The sheet of cloth **1** of the prior art brace extends around less than 50% of the circumference of the arm. However, the invented brace must achieve a

significantly greater bracing effect than the prior art brace. Consequently, in one embodiment as shown in Figure 2, it must extend around more than 50% of the circumference of the arm. However, it cannot extend around 100% of the circumference of the arm or it will produce too much chafing at the elbow. Consequently, when properly sized for the arm, it extends around more than 50% but less than 80% of the circumference of the arm at the elbow as shown in Figure 2. The elbow protrudes through a rectangular hole formed by the two edges of the cloth **1** and the two straps, the lower strap **17** and the upper strap **19**. (The "upper" end or "top" of the brace is that which is closer to the shoulder when applied and the "lower" end or "bottom" of the brace is that which is closer to the wrist when applied.)

Unlike the prior art brace which has three straps, the invented brace has only two straps, a lower strap **17** and an upper strap **19**, so that the elbow can protrude in a gap **18** between the two straps and between the two edges of the sheet of cloth **1**. Because the forces applied to the invented brace are greater than in the prior art brace, and because one of the stays **3** presses quite firmly against the skin above and the skin below the inside of the elbow, two or more pads **21** are desirable between the ends of stays and the inner surface of the brace which adjoins the skin when worn.

In the prior art brace, the stay pockets **2** are quite wide compared to the stays **3**, allowing the stays to be close to each other or far from each other depending upon happenstance. In the invented brace, stitched seams **15** form the edges of the stay pockets **2**. The stitched seams **15** are placed very close to the edges of the primary stays **3** and the third stay **9** to carefully hold them in proper

alignment, allowing less than three-eighths of an inch of lateral movement and preferable less than one-eighth of an inch.

When properly applied to the elbow, the bone of the forearm will be pressed against by the span of cloth **13** between the two primary stays **3**. Consequently, this span of cloth **13** between the stays must be at least three-quarters of an inch for a child-size brace and up to two inches for an adult-size brace so that cloth will press against the arm bone rather than the end of the stay pressing directly (through the pad and the skin) against the arm bone. Preferably, the span of cloth between the primary stays **3** will narrow toward the top of the brace **11.** When the gap between the two primary stays **3** narrows toward the top of the brace (widens toward the bottom of the brace) there is less buckling of the stays and better performance of the brace.

In a preferred embodiment of the brace shown in Fig. 3, the brace includes holes or slits **8** and **28** beside each of the stays. The holes allow desirable flexibility between the stay pockets.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows the prior art brace for teaching tennis.

Figure 2 shows the invented brace.

Figure 3 shows the invented brace with padding at the ends of the stays and with holes beside the stays.

DETAILED DESCRIPTION

The primary structure of the brace **1** is preferably made of heavy, tightly woven polyester such as used for belts or back packs. In the first embodiment shown in Figure 2, it is comprised of one layer folded on itself, to form the pockets **2**. The pockets are formed by stitching across the two layers to form seams **15**. In the preferred embodiment shown in Figure 3, the straps **17** and **19** are formed of a layer of belt material stitched to a layer of velcro loops.

At the lower end, the end toward the wrist, the gap between the two primary stays **3** is preferably between ¾ inch and 1 ¼ inch for children and between 1 1/4 inch and 1 ¾ inches for adults. At the upper end, toward the shoulder, the gap is preferably about one half as wide as the gap at the lower end, resulting in a tapered space between the stays. Measuring the distance between the primary stays at the ends of the hole **28,** the ratio of the wider end to the narrower end should be between 1.05 and 1.5, preferably about 1.2. The ratio of the length of the hole **28** to the width of the wider end should be between 2.0 and 4.5, preferably about 3.1. The ratio of the length of the hole **28** to the width of the narrower end should be between 1.5 and 4.0, preferably about 2.5.

The stays may be of any stiff but flexible material such as many varieties of plastic, preferably one-sixteenth inch thick polycarbonate, between ¾ inch and 1 3/4 inches wide and 4 – 8 inches long for adults and 3/8 inch to 1 inch wide and 3 – 6 inches long for children. The middle stay is preferably half again thicker than the other two or is comprised of two stays held together by the surrounding cloth. The stays may be formed by injection molding, in which case it is preferred for them to be connected at their ends by bridging material to form one interconnected piece.

The ends of the lower strap **17** and the upper strap **19** are attached to each other with any of many possible fasteners. The preferred fastener is velcro. Each strap preferably passes through a rigid plastic eye affixed to the opposite end of the strap and then loops back upon itself so that both the hooks and the loops of the velcro are on the strap.

As the locations for the pads **21** are all in a line, the pads are preferably made of a single strip of padding passing under the ends of all of the stays. As the two locations for padding strips lie on straight lines from the two straps **17** and **19**, the padding is preferably sown to the strap. The straps **17** and **19** may be cut from laminated material consisting of a woven polyester layer and a foam rubber layer. The polyester provides the strength and stiffness while the foam rubber provides the padding. Alternatively, a non-skid rubber surface may be achieved on the inside of the straps by spray coating the polyester strap material with a high traction rubber-like material.

In the model shown in Figure 3, the holes **8** and **28** may be formed by simply cutting holes in the cloth sheet **1**. However, it is preferable to form the holes by sewing together the various structures of cloth to create the desired shape rather than cutting holes in a larger piece of cloth. Specifically, a sheath is made for each of the three stays independently. When these three sheaths are sewn to the two straps **17** and **19**, the desired structure is formed.

I claim:

1. An elbow brace comprising:

cloth enclosing three or more stiff, flexible stays with a circumferential fastener.

2. The elbow brace of claim 1 where the three stays are disposed approximately parallel to each other and the middle stay is substantially stiffer than the other two.

3. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays with a circumferential fastener forming a shape adapted to an elbow, the brace having no material at the location of the elbow.

4. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays approximately parallel to each other, with two circumferential straps, each strap affixed to an end of each stay, and no circumferential structure between the two straps.

5. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays with a circumferential fastener where the stays are constrained by surrounding cloth to allow lateral movement of each stay of less than three-eighths of an inch.

6. The elbow brace of claim 5 where the stays are constrained by surrounding cloth to allow lateral movement of each stay of no more than one-eighth of an inch.

7. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays oriented longitudinally to a circumference, each stay having an end toward a wrist and an end toward a shoulder, the stays forming a space between them which tapers to be wider toward the wrist and narrower toward the shoulder, and a circumferential fastener.

8. The elbow brace of claim 7 where the space between the stays is between three-quarters of an inch and two inches.

9. The elbow brace of claim 8 where a ratio of the width of the space toward the wrist and a width of the space toward the shoulder is between 1.05 and 1.5.

10. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays, each having ends, with a circumferential fastener forming an inside and an outside and padding disposed on the inside of the ends of the stays.

11. The elbow brace of claim 8 where the padding also comprises a non-skid inner surface.

12. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays with a circumferential fastener where one of the stays is substantially stiffer than the other one or more stays.

13. An elbow brace comprising:

cloth enclosing two or more stiff, flexible stays with a circumferential fastener forming an inside and an outside and a non-skid surface disposed on the inside.

FIG. 1
PRIOR ART

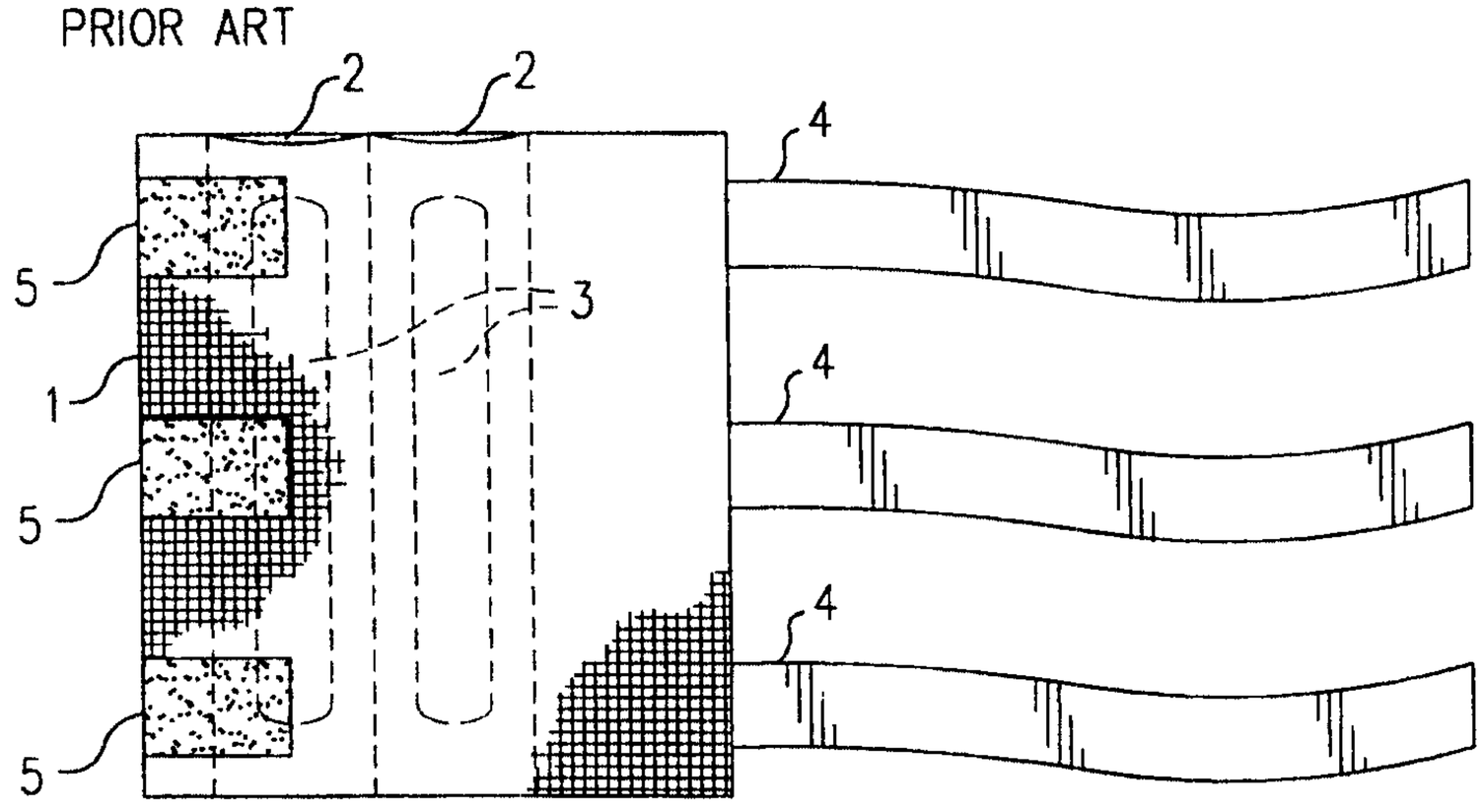


FIG. 2

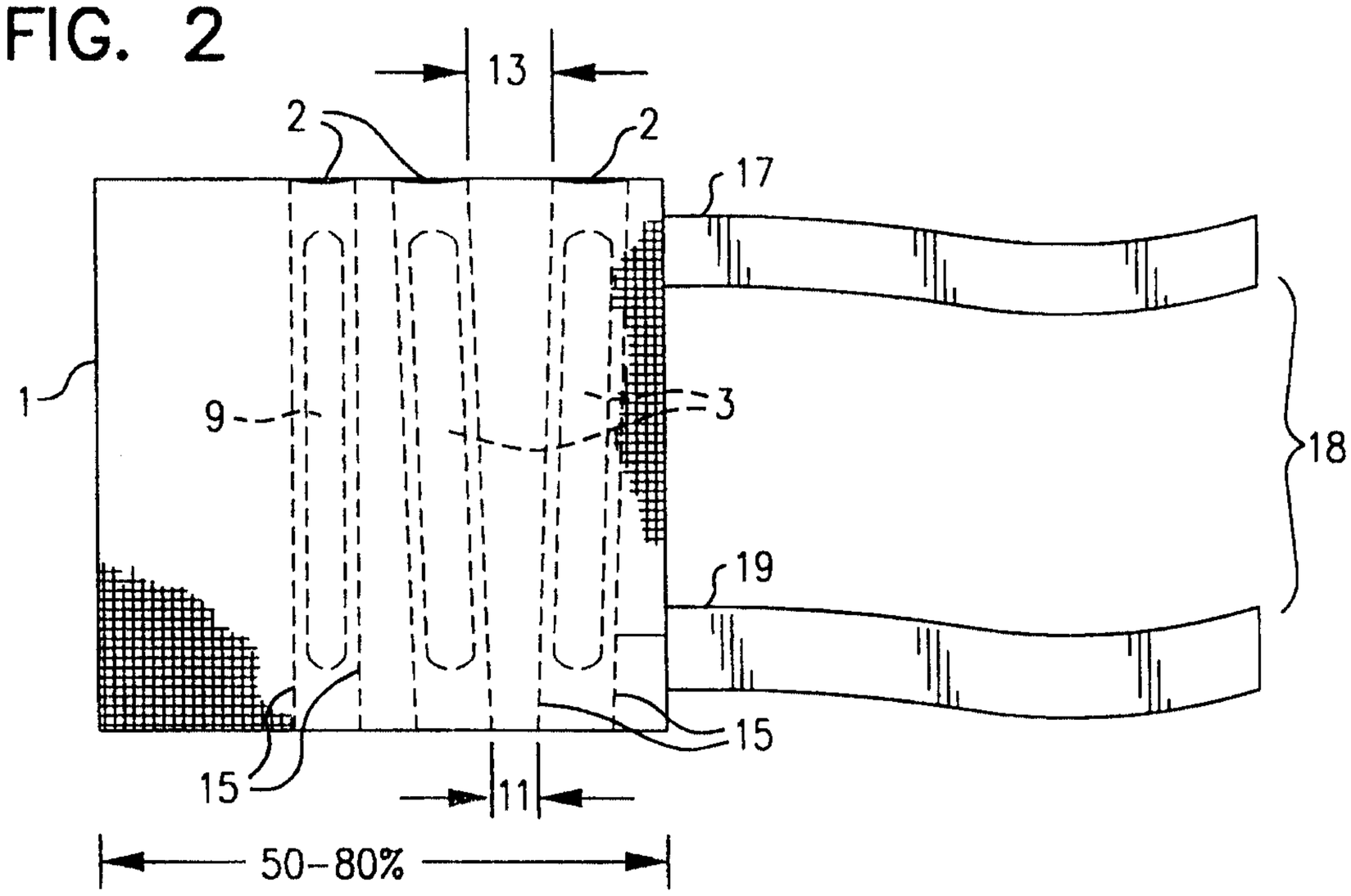
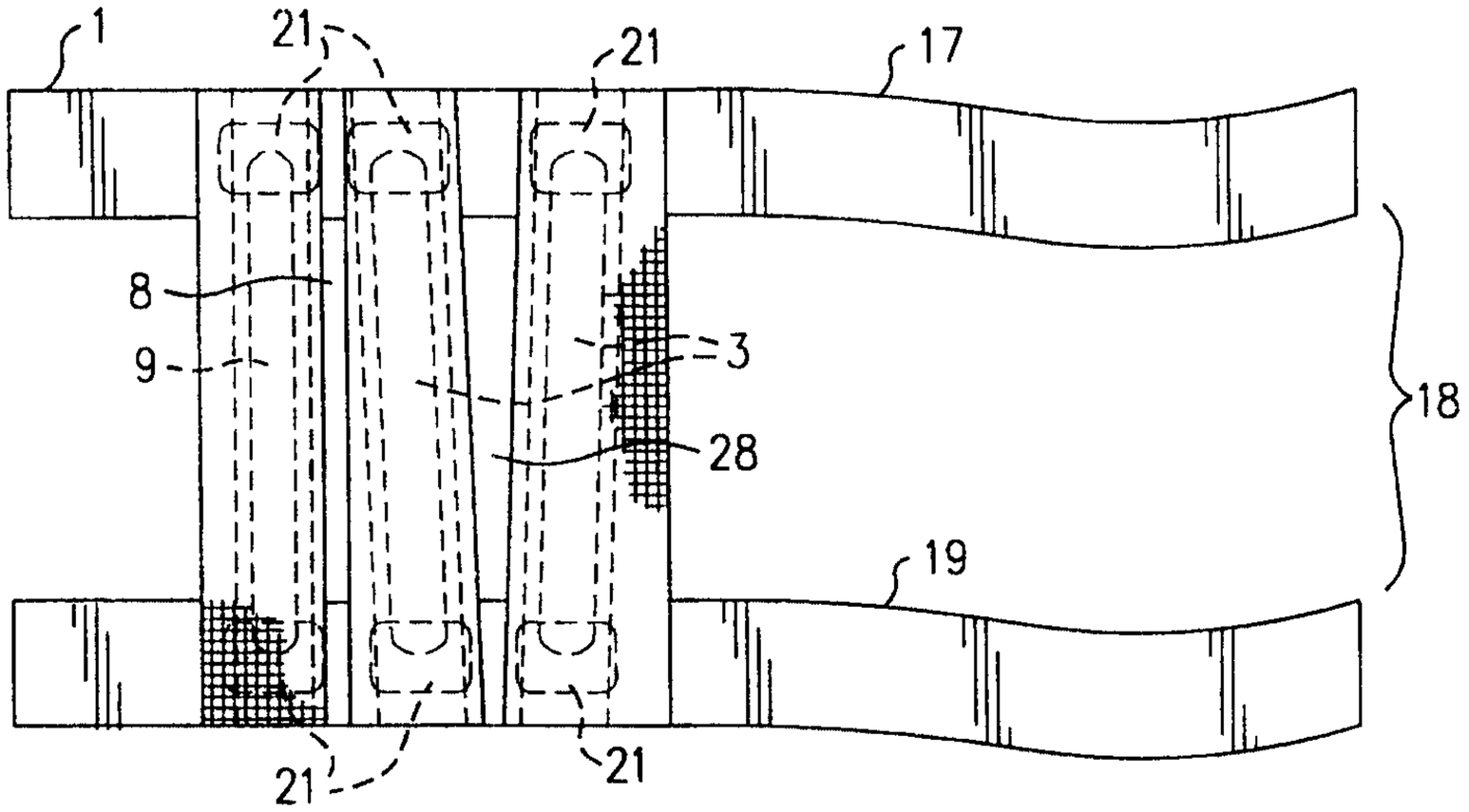
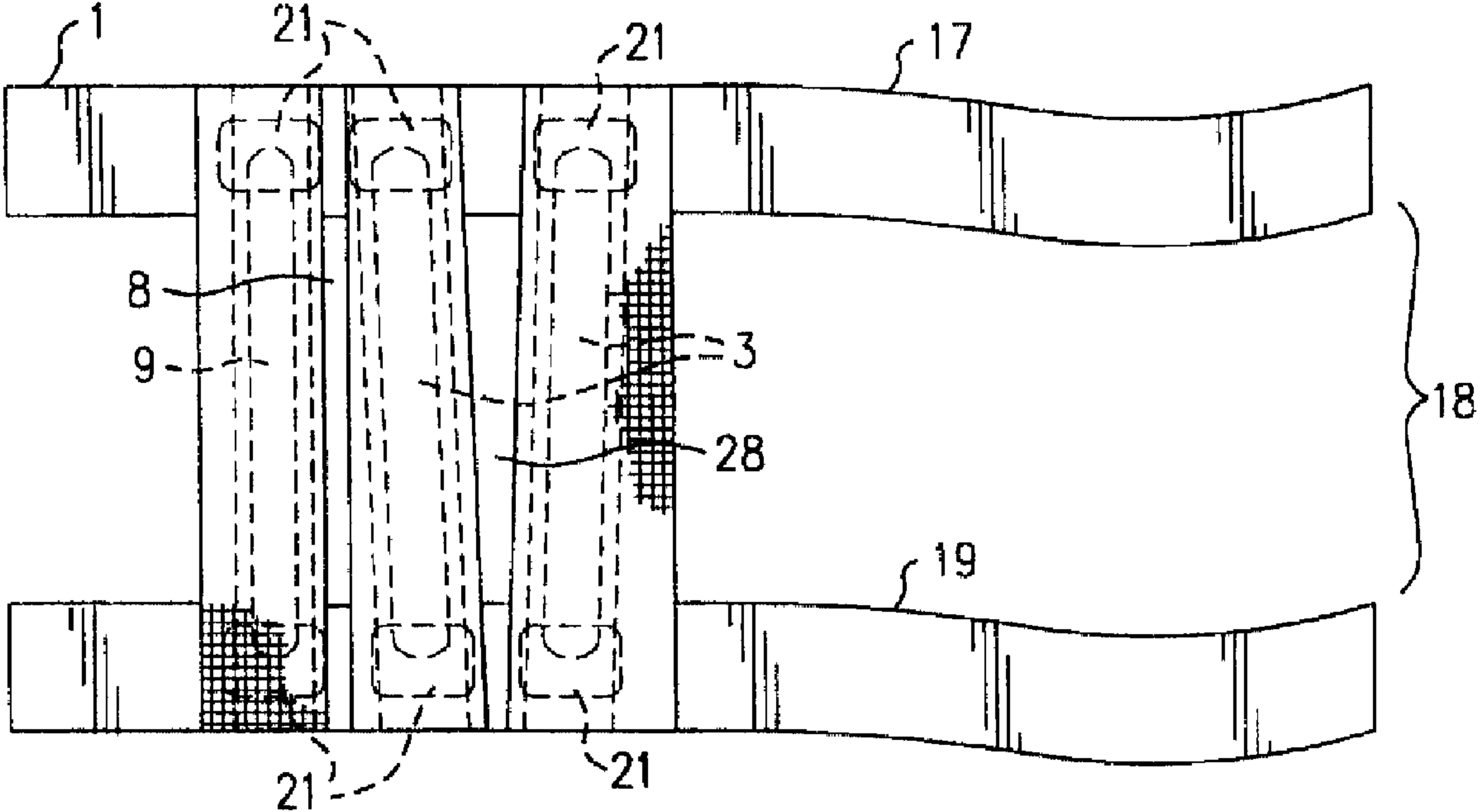


FIG. 3




1
21
21
17
8
9
3
28
18
19
21
21