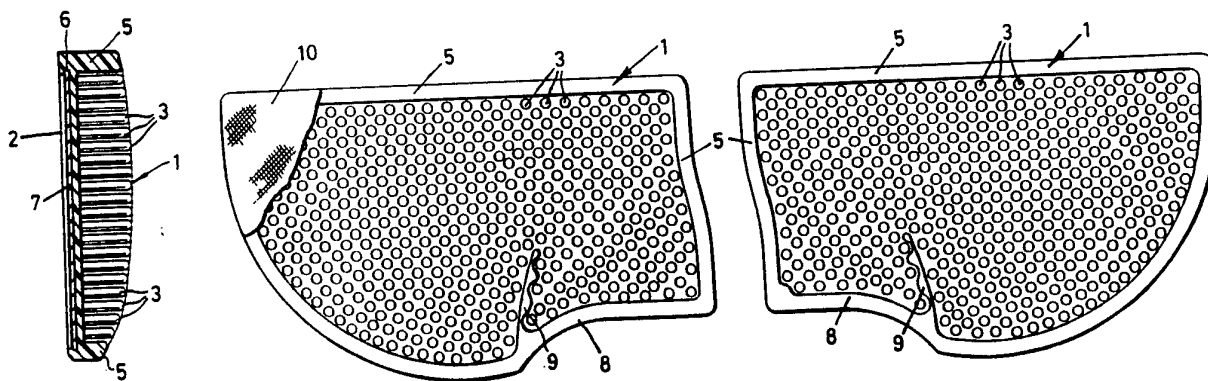




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : A47B 21/03	A1	(11) International Publication Number: WO 93/25116 (43) International Publication Date: 23 December 1993 (23.12.93)
(21) International Application Number: PCT/GB93/01300 (22) International Filing Date: 18 June 1993 (18.06.93) (30) Priority data: 9213087.1 18 June 1992 (18.06.92) GB (71) Applicant (for all designated States except US): CAM-BROOK LIMITED [GB/GB]; 10 Devington Court, Cliff Road, Falmouth, Cornwall TR11 4PD (GB). (72) Inventor; and (75) Inventor/Applicant (for US only) : DAWSON, John, Dalby [GB/GB]; 10 Devington Court, Cliff Road, Falmouth, Cornwall TR11 4PD (GB). (74) Agent: GODDARD, George, William, John; Hughes Clark & Co, 114/118 Southampton Row, London WC1B 5AA (GB).		(81) Designated States: CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>

(54) Title: AN ARM OR WRIST SUPPORT**(57) Abstract**

An arm or wrist support comprises a pad-shaped rest (1), moulded from a plastics material, having a base (2) integrally formed with a plurality of upstanding fronds (3) which are flexible needles between 2 and 5 mm in diameter with dome-shaped ends (4). The upper surface formed by the fronds (3) is sculpted to curve downwardly to the edges of the rest (1) having an upstanding peripheral wall (5) extending continuously around the rest, the lower surface of which has a peripheral groove (6) formed in the peripheral wall for receiving a rigid plate (7). The peripheral wall (5) has a curved wall portion (8) extending from the continuous wall into a container wall (9) providing a reinforcement to support sideward movement of the user's hand. For hygienic purposes, the upper and peripheral side wall are covered by a removable flexible sheet material (10). The base of the rest has a number of feet (11).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	FR	France	MR	Mauritania
AU	Australia	GA	Gabon	MW	Malawi
BB	Barbados	GB	United Kingdom	NL	Netherlands
BE	Belgium	GN	Guinea	NO	Norway
BF	Burkina Faso	GR	Greece	NZ	New Zealand
BG	Bulgaria	HU	Hungary	PL	Poland
BJ	Benin	IE	Ireland	PT	Portugal
BR	Brazil	IT	Italy	RO	Romania
CA	Canada	JP	Japan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SK	Slovak Republic
CI	Côte d'Ivoire	LJ	Liechtenstein	SN	Senegal
CM	Cameroon	LK	Sri Lanka	SU	Soviet Union
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	MC	Monaco	TG	Togo
DE	Germany	MG	Madagascar	UA	Ukraine
DK	Denmark	ML	Mali	US	United States of America
ES	Spain	MN	Mongolia	VN	Viet Nam
FI	Finland				

AN ARM OR WRIST SUPPORT

This invention relates to an arm or wrist support more particularly but not exclusively to a wrist support for computer keyboard operators.

5 When comparing manual typewriters with computer keyboards one of the major differences is that an operator can rest his or her fingers on the manual typewriter keys whereas this is not possible with the sensitive keys of a computer keyboard, where to rest the
10 fingers on the keys could cause inadvertent operation of the keys. This results in the computer keyboard operators having to hold their hands above the keyboard for long periods which often causes muscular stress with painful symptoms.

15 Another difference between manual typewriters and computer keyboards is that the operator of the typewriter has to carry out manual movements to return the carriage and to insert and remove paper from the carriage, allowing for a temporary rest and a change of
20 movement of the hands and arms.

There has been an increasing number of computer keyboard operators who suffer from upper arm disorders which have the colloquial term RSI (Repetitive Strain Injury). This condition is not always an injury in the
25 conventional sense and may not always be caused by strain or repetition. The condition usually involves swelling and inflammation of the tendon sheaths, pinching of the nerves or restriction of the blood supply by compression of the surrounding tissues.

30 Two such conditions covered by RSI are Tenosynovitis which occurs when extreme repetition causes the synovial sheath to produce excess fluid which accumulates and causes swelling and pain while the other condition is Carpal Tunnel Syndrome which occurs when the
35 median nerve is pinched by swollen tendon sheaths as it passes through the carpal tunnel from the forearm to the

hand. This often causes pain and tingling in the hands.

Arm and wrist rests are known which support the forearm or wrist while allowing the hands to move to carry out repetitive operations. These known supports take the form of a padded support bar or hinged forearm supports which are secured to a desk or chair, with the disadvantage that they limit the free and repetitive movement of the hands and wrist.

An aim of the present invention is to overcome the above mentioned disadvantage and provide an improved arm or wrist support providing a comfortable and flexible support without restriction to the movement of the hands and fingers of the computer keyboard operator.

According to the present invention there is provided an arm or wrist support comprising a pad-shaped rest having a base and a plurality of upstanding fronds which are spaced from each other to allow the supported movement of a hand or hands placed on the rest.

Preferably the borders of the rest have a continuous upstanding wall.

Conveniently, the upper surface and sides of the rest are covered by a removable fabric covering secured to the base.

In a preferred construction the base of the rest has a peripheral groove in the side wall to receive a rigid reinforcing member.

An embodiment of an arm or wrist support, according to the invention, will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a plan view of an arm or wrist support;

Fig. 2 is a front elevation of the support shown in Fig. 1;

Fig. 3 is a side elevation of the support when viewed from the right hand side of Fig. 1;

Fig. 4 is an elevation of the other side of Fig. 1;

Fig. 5 is a cross-section taken along the line V-V of Fig. 1;

5 Fig. 6 is an enlarged fragmentary section of one side of the rest showing the removable flexible cover; and

Fig. 7 is a plan view of a left hand and right hand support in position for use.

10 The arm or wrist support comprises a pad-shaped rest 1 moulded from a thermoplastic elastomer such as that sold under the Registered Trade Mark 'EVOPRENE'. The pad-shaped rest has a base 2 integrally formed with a plurality of upstanding fronds 3 which are flexible
15 needles between 2 and 5mm in diameter with dome-shaped ends 4. The fronds 3 are spaced from each other and number approximately 20 to 50 to the square inch (dependent on diameter).

The fronds provide a flexible support for the
20 hand of the user allowing movement of the hand in a sideways or backward and forward movement while providing support for the hand and wrist. The fronds must be of a determined diameter, length and spacing, as herein defined, to provide an adequate support for the
25 user's hand and wrist while not collapsing. Additionally the support offered by the pads allows the user to relax the upper arm muscles as the lower wrist/palms support the weight of the arm. This in turn helps reduce the upper arm/back/neck muscle strain. It is believed that
30 the fronds effect a massaging effect on the wrists and lower arm leading to improved circulation of the blood through surface blood vessels.

The upper surface formed by the fronds 3 is sculpted to curve downwardly to the edges of the rest 1
35 which has an upstanding peripheral wall 5 extending continuously around the rest. The lower surface of the

rest has a peripheral groove 6 formed in the peripheral wall for receiving a rigid plate 7, of e.g., aluminium.

The peripheral wall 5 has a curved wall portion 8 which extends from the continuous wall into a container 5 wall 9 which provides a reinforcement to support sideward movement of the hand of a user resting on the support.

As the arm or wrist support is likely to be used by a number of different persons, the upper surface and the peripheral side wall are covered by a flexible sheet 10 of material 10, for example, Lycra, which is secured to the base of the rest by inserting its free edges under the rigid plate 7. This sheet of material 10 provides an hygienic replaceable cover which can be removed for washing or disposal. The cover also acts as a shield to 15 prevent dust or other dirt from settling between the fronds 3.

The base of the rest may be provided with a number of feet 11, see Fig. 6, which may be formed integrally with the moulded rest and project through 20 holes formed in the rigid plate 7. These feet are made of a friction material to grip the desk surface and prevent the rest from sliding away from, for example, a computer keyboard.

Fig. 7 illustrates a pair of rests, which are 25 designed to mate with each other when placed end to end, to support the left hand and right hand of a computer keyboard operator, it is intended that the user can move the pads apart to cater for numeric and alpha keyboard inputs when the full extent of the keyboard is being 30 used.

In an alternative arrangement the reinforcing plate 7 may have a number of feet of a magnetic material which are magnetically attracted to strips of metalized tape adhered to the surface of the desk, to prevent the 35 rests from moving on the desk surface.

Although the arm or wrist support has been

described as being moulded from a plastics material it can of course be made from other resilient materials such as silicon rubber.

CLAIMS:

1. An arm or wrist support comprising a pad-shaped rest (1) having a base (2) and a plurality of upstanding fronds (3) which are spaced from each other to allow the supported movement of a hand or hands placed on the rest (1).
2. An arm or wrist support as claimed in Claim 1, characterised in that the borders of the rest (1) have a continuous upstanding wall (5).
3. An arm or wrist support as claimed in Claim 2, characterised in that the base (2) of the rest (1) has a peripheral groove (6) in the wall (5) to receive a rigid reinforcing member (7).
4. An arm or wrist support as claimed in any preceding claim, characterised in that the upper surface and sides of the rest (1) are covered by a removable fabric covering (10).
5. An arm or wrist support as claimed in Claim 3 or 4, characterised in that the rigid reinforcing member (7) is metal.
6. An arm or wrist support as claimed in Claim 5, characterised in that the metal is aluminium.
7. An arm or wrist support as claimed in Claims 3 or 4, characterised in that the rigid reinforcing member (7) is a rigid moulded plastics material.
8. An arm or wrist support as claimed in any preceding claim, characterised in that the base (2) has a number of feet (11) of a friction material to support and to prevent sliding movement of the rest (1).
9. An arm or wrist support as claimed in any of Claims 1 to 6, characterised in that the base (2) has a number of feet (11) of a magnetically attracting material.
10. An arm or wrist support as claimed in any preceding claim, characterised in that the rest (1) is moulded from a thermoplastic elastomer such as EVOPRENE

(Registered Trade Mark).

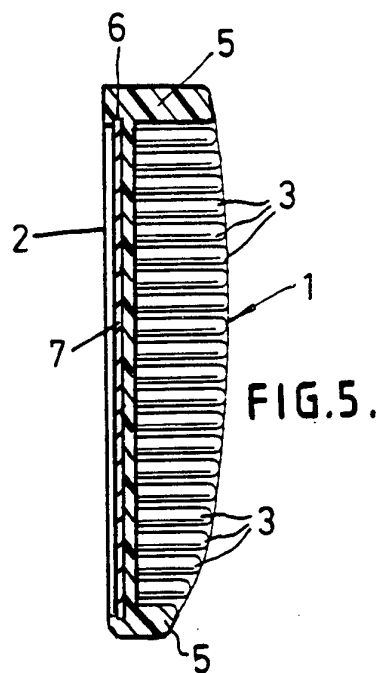
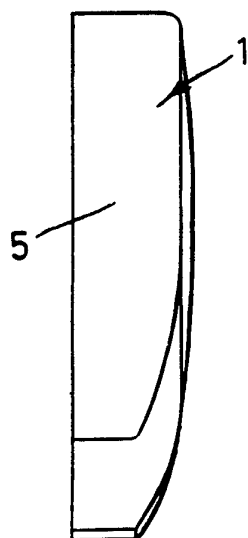
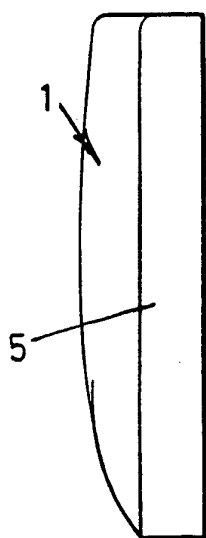
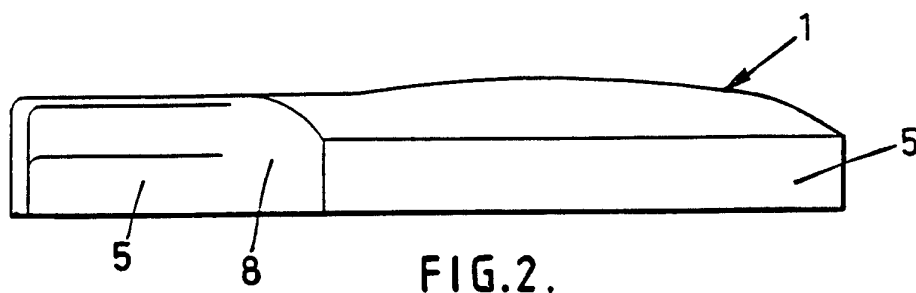
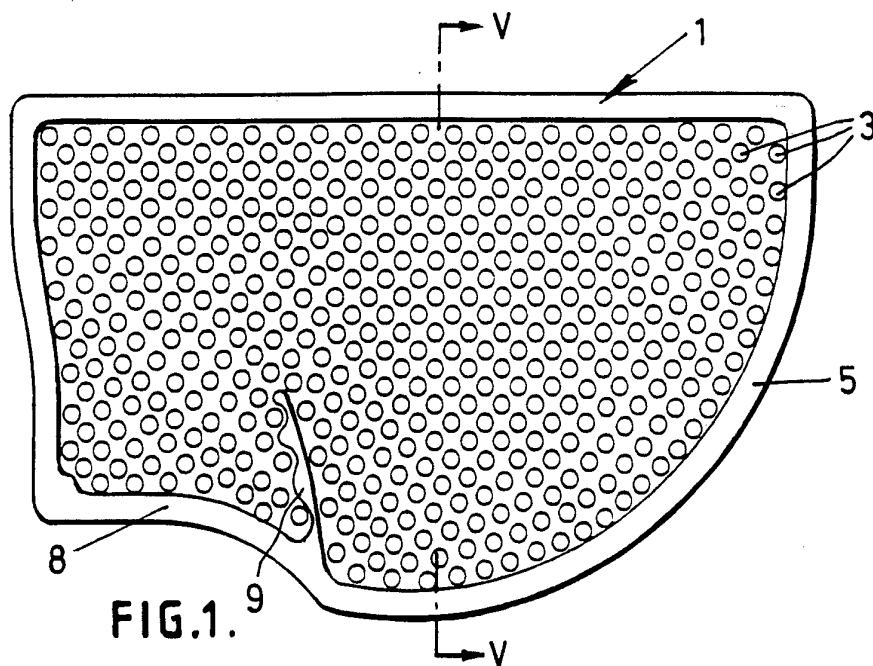
11. An arm or wrist support as claimed in any of Claims 1 to 8, characterised in that the rest (1) is moulded from silicon rubber.

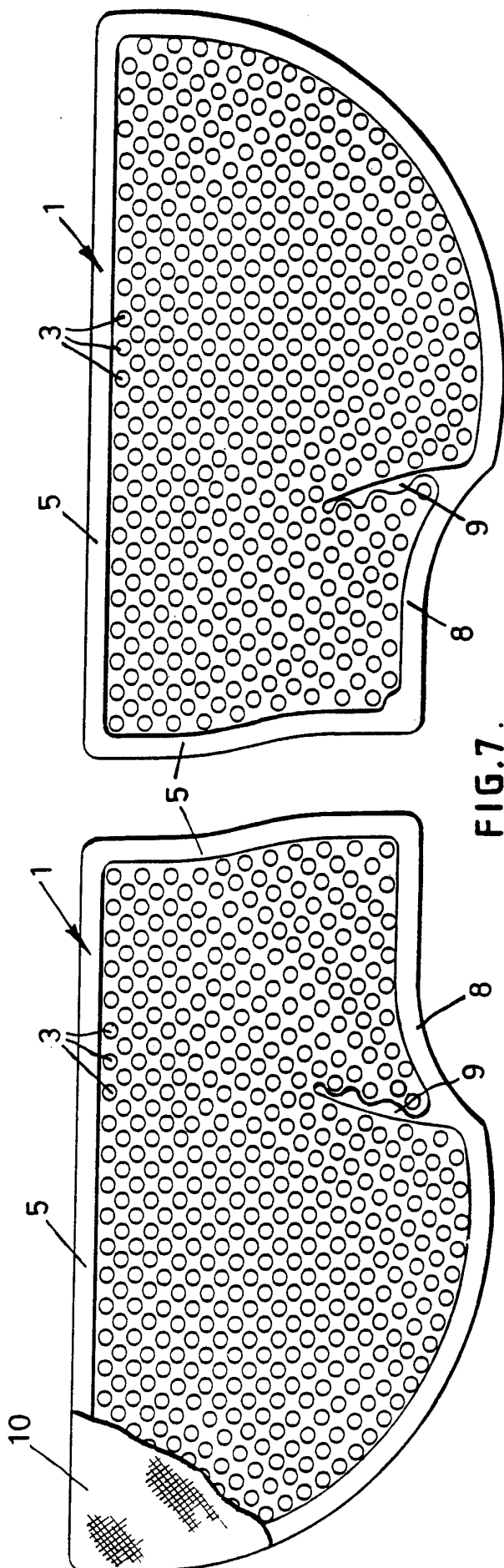
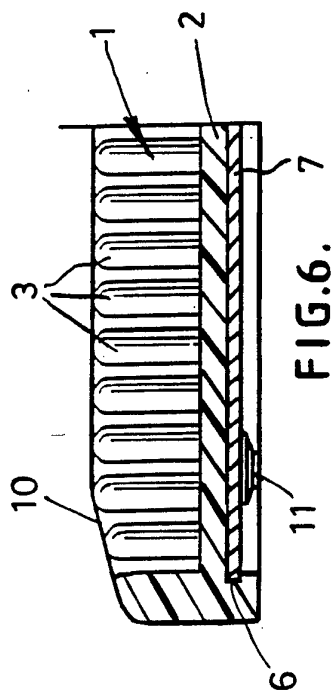
12. An arm or wrist support as claimed in any preceding claim, characterised in that the back wall of the rest (1) is between 13 - 20mm thick.

13. An arm or wrist support as claimed in any preceding claim, characterised in that the front wall of the rest is contoured towards the base (2) of the rest (1).

14. An arm or wrist support as claimed in any of Claims 4 to 12, characterised in that the removable fabric cover (10) is made of a stretchable material such as Lycra.

1/2





INTERNATIONAL SEARCH REPORT

PCT/GB 93/01300

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 A47B21/03		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	A47B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	GB,A,2 104 775 (WRIGHT LINE INC) 16 March 1983 see figures 1-3	1
A	US,A,4 621 781 (MARVEL METAL PRODUCTS CO.) 11 November 1986 see figures 1-6	1
¹⁰ Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
16 SEPTEMBER 1993	05. 10. 93	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	NOESEN R.F.	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 9301300
SA 75347

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 16/09/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2104775	16-03-83	US-A- 4545554	08-10-85
		BE-A- 894212	28-02-83
		CA-A- 1185583	16-04-85
		CH-A- 657320	29-08-86
		DE-A, C 3224208	10-03-83
		FR-A, B 2511942	04-03-83
		JP-C- 1447670	30-06-88
		JP-A- 58045981	17-03-83
		JP-B- 62058010	03-12-87
		LU-A- 84351	28-02-83
		NL-A- 8202132	16-03-83
		SE-B- 451817	02-11-87

US-A-4621781	11-11-86	None	
