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(56) Documents cited

GB 2238706 A

GB 0911767 A

US 4776110 A

GB 2195074 A

GB 0741817 A

GB 2189679 A

WO 86/02240 A

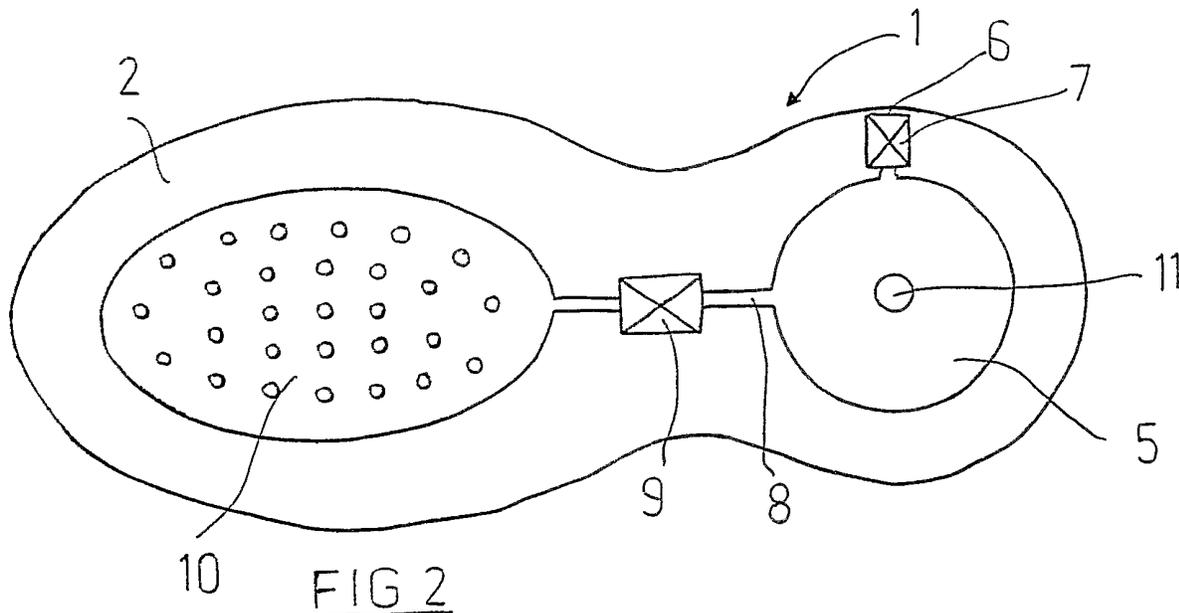
(58) Field of search

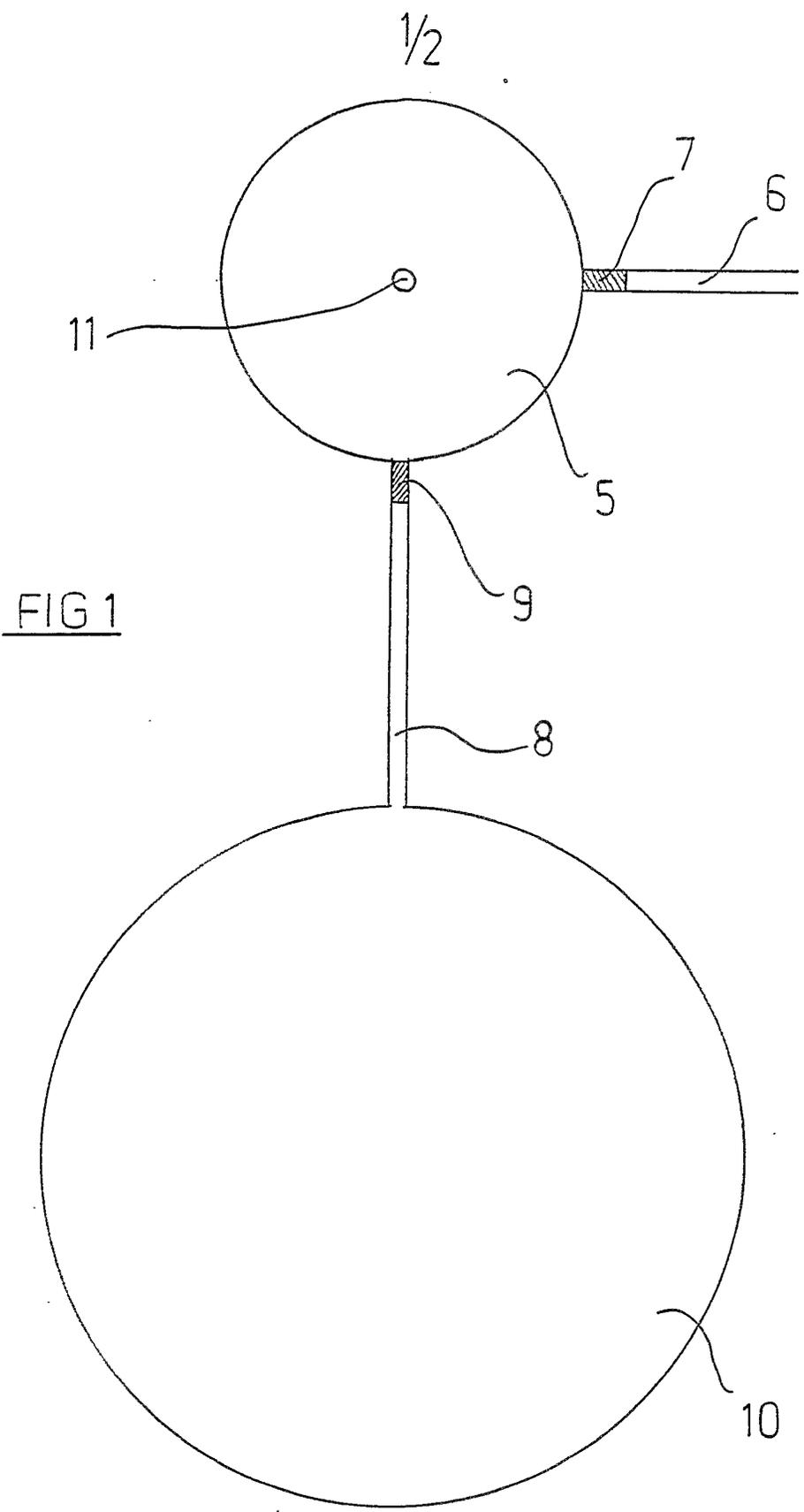
UK CL (Edition K) A3B

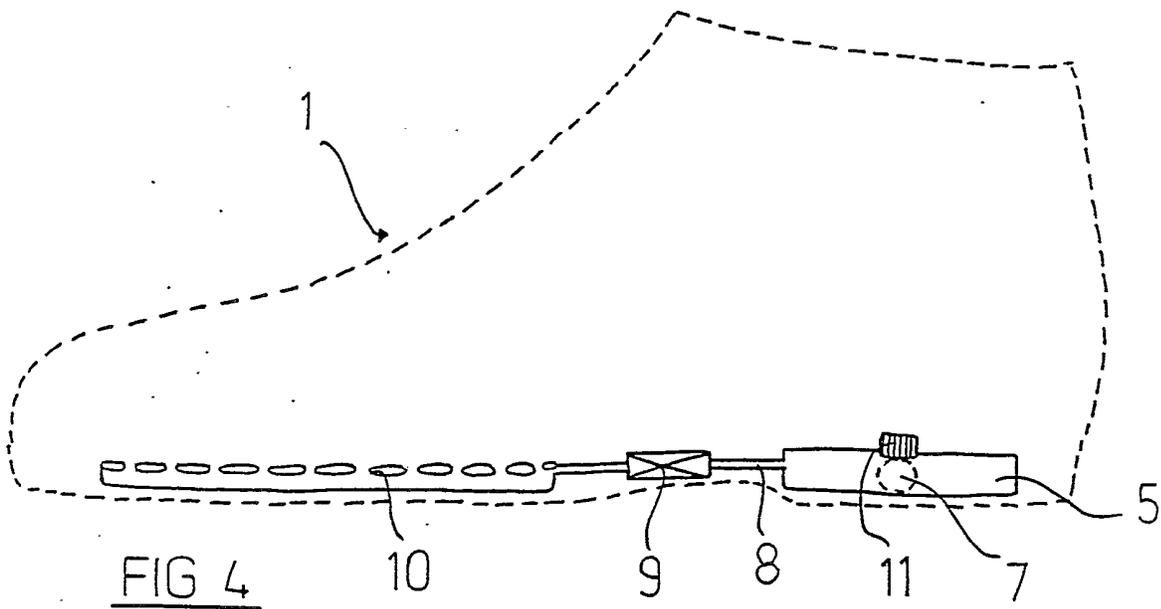
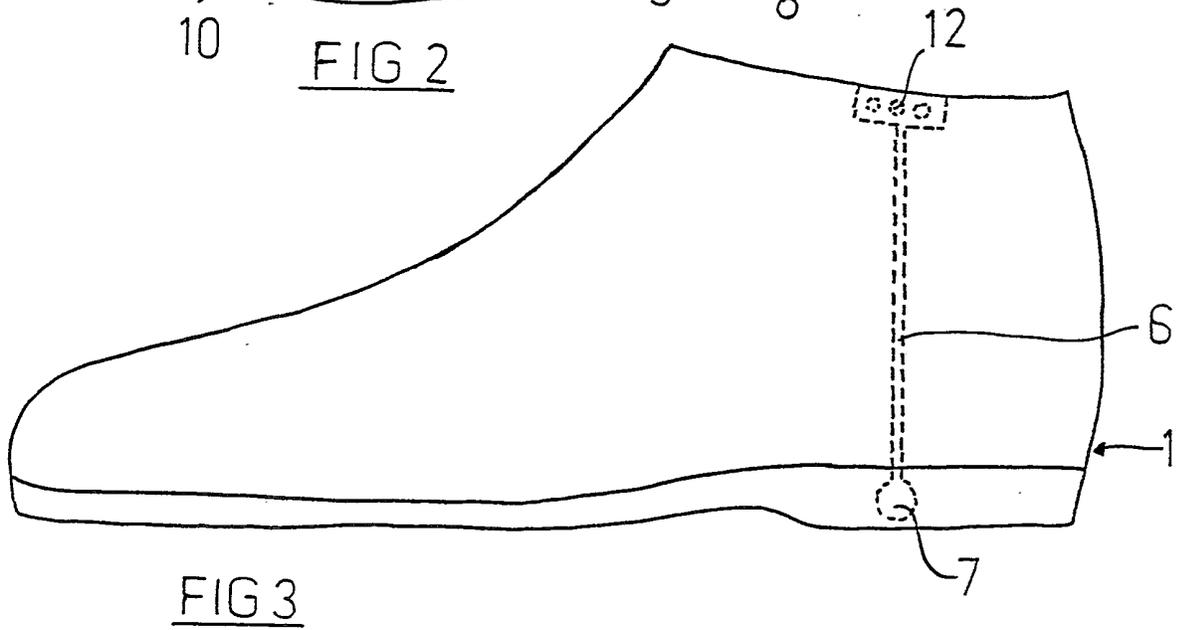
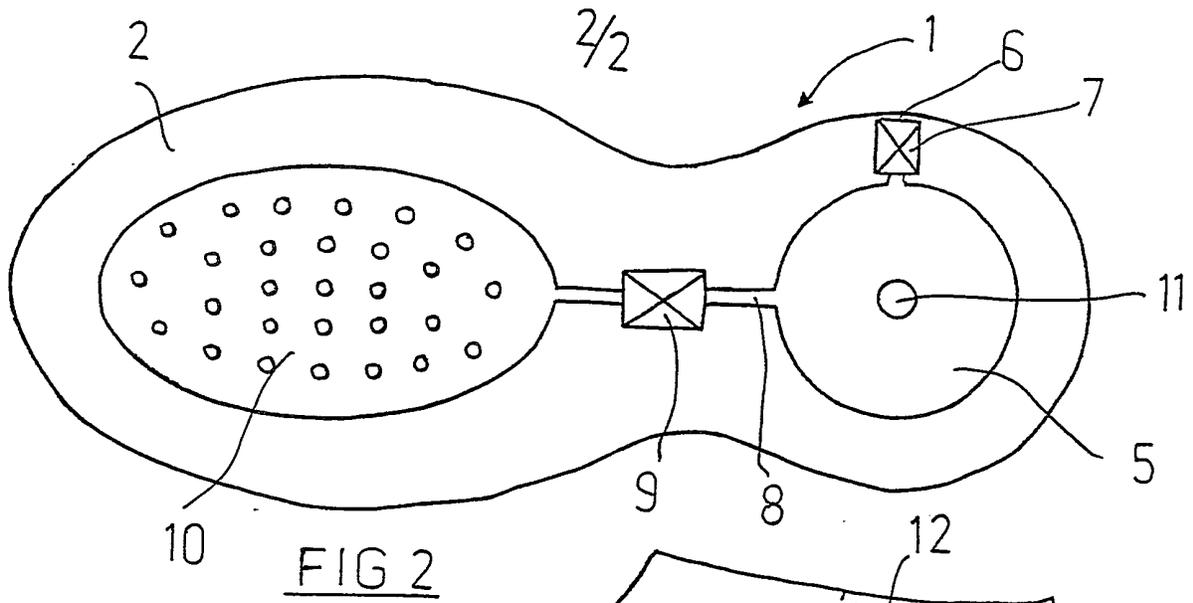
INT CL<sup>5</sup> A43B

(54) Ventilated footwear

(57) A shoe (1) has a pump (5) in its heel with an inlet tube (6) including a one-way valve (7) and an outlet tube (8) also including a one-way valve (9), the outlet tube being connected to an air distribution pad (10) in the sole of the shoe. Pressure of the pump when the heel contacts the ground the pump and forces it into and through the pad to provide air circulation within the shoe. The pump may be deactivated by means of a valve or switch 11.







Title: Improvements in and relating to footwear

#### DESCRIPTION

This invention concerns improvements in and relating to footwear, especially shoes.

5 Foot odour is very common and particularly as a result of wearing so-called training shoes. Such odour may be due to lack of air circulation in closely fitting shoes. In some circumstances it may be beneficial to provide means for losing heat from the foot.

10 An object of this invention is to provide a system for providing air circulation within a shoe or the like.

According to this invention there is provided a system for providing air circulation within a shoe or  
15 the like comprising pump means for drawing air into the shoe and for transferring the air drawn into means for distributing the air to the inside of the shoe.

The pump means is preferably located in a part of the shoe that will be pressurised as a step is taken.  
20 Preferably the pump means will be situated in the heel of the shoe so that as the heel is pressed onto the ground the pump means forces air therein to the air distribution means and when the heel is raised from the ground the pump sucks in air to replace the air

previously forced into the air distribution means. The pump means preferably has an inlet which includes a one-way valve allowing air into the pump and an outlet including a one-way valve allowing air into the distribution means. The inlet for the pump conveniently comprises one or more tubes or pipes ideally situated in the instep of the shoe, especially extending upto to a top edge of the shoe where apertures may be provided through to the tube or tubes. The pump means may have means for deactivating same so that the air circulation systems does not function, if desired.

The air distribution means preferably comprises a pad having a plurality of apertures for distributing air therefrom. The air distribution means is conveniently located in the sole of the shoe.

The system of the invention, as well as providing air circulation within a shoe, may also provide additional comfort for the shoe wearer.

This invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram of a system according to the invention;

Figure 2 is a plan view of a sole of a shoe incorporating a system according to the invention;

Figure 3 is a side view of the shoe of Figure 2;

and

Figure 4 is a section through the shoe of Figure 2 and 3.

Referring to Figure 1 of the accompanying  
5 drawings, a system for automatically pumping air to a  
sole of a shoe comprises an air pump 5 which is operated  
by heel pressure thereon. The pump 5 draws air into it  
via an air intake tube 6 and through a one-way valve 7.  
Air is then ejected from the pump 5 through an air pipe  
10 8, past a one-way valve 9 and into a honeycomb pad 10  
through which the air is released into the shoe.

The pump 5 operates by heel compression when the  
heel is on the ground, which forces the air in the pump  
into the pad 10. When the heel is raised from the  
15 ground, air is drawn into the pump, ready for the next  
time the heel of the shoe is in contact with the ground.  
The pump 5 is provided with a switch or valve 11,  
whereby the pump can be deactivated.

Turning to Figures 2 to 4, the system of Figure 1  
20 is shown installed in a shoe 1 having a sole 2. The  
pump 5 is fitted into the heel of the shoe and the pad  
10 into the sole. The tube or tubes 6 are built into  
the instep of the shoe with apertures 12 therefor at the  
top edge of the instep.

## CLAIMS

1. A system for providing air circulation within a shoe or the like comprising pump means for drawing air into the shoe and transferring the air drawn in to means for distributing the air to the inside of the shoe.  
5
2. A system as claimed in claim 1, wherein the pump means is operated by pressure applied thereto when a step is taken.
3. A system as claimed in claim 1 or 2, wherein the pump means is connected to a tube that is open to the air via a one way valve.  
10
4. A system as claimed in claim 3, wherein the tube is situated on the instep side of the shoe.
5. A system as claimed in any one of claims 1 to 4, wherein the pump means is connected to the air distribution means via a one-way valve.  
15
6. A system as claimed in any one of claims 1 to 5, wherein the air distribution means comprises a pad having a plurality of apertures for distributing air therefrom.  
20
7. A system as claimed in any one of claims 1 to 6, wherein the pump means is situated in the heel of the shoe.
8. A system as claimed in any one of claims 1 to 7, wherein the pump means has means for deactivating same.  
25

9. A system as claimed in any one of claims 1 to 8, wherein the air distribution means is in the sole of the shoe.

5 10. A system for providing air circulation within a shoe substantially as hereinbefore described with reference to and as illustrated in any of the accompanying drawings.

11. A shoe having an air circulation system as claimed in any one of claims 1 to 10.

**tents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

GB 9224807.9

**Relevant Technical fields**

(i) UK CI (Edition L ) A3B

(ii) Int CI (Edition 5 ) A43B

**Search Examiner**

J GRAHAM

**Databases (see over)**

(i) UK Patent Office

(ii)

**Date of Search**

4 JANUARY 1993

Documents considered relevant following a search in respect of claims 1-11

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2238706 A (SHOEMAKERS) Whole document	1, 2, 6, 8, 9
X	GB 2195074 A (TZAN-LIN LEE) Whole document	1-3, 5, 6, 9
X	GB 2189679 A (SHING CHEUNG CHEW) See eg. page 2 lines 54-65	1-7, 9
X	GB 911767 (RIJSWIJK) Whole document	1-3, 6, 7, 9
X	GB 741817 (HICKS) Whole document	1, 2, 4-7, 9
X	WO 86/02240 (CALDWELL) Whole document	1-6, 9
X	US 4776110 (SHIANG) See eg. column 3 lines 16, 17	1-9

Category	Identity of document and relevant passages - 7 -	Relevant to claim(s)

### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).