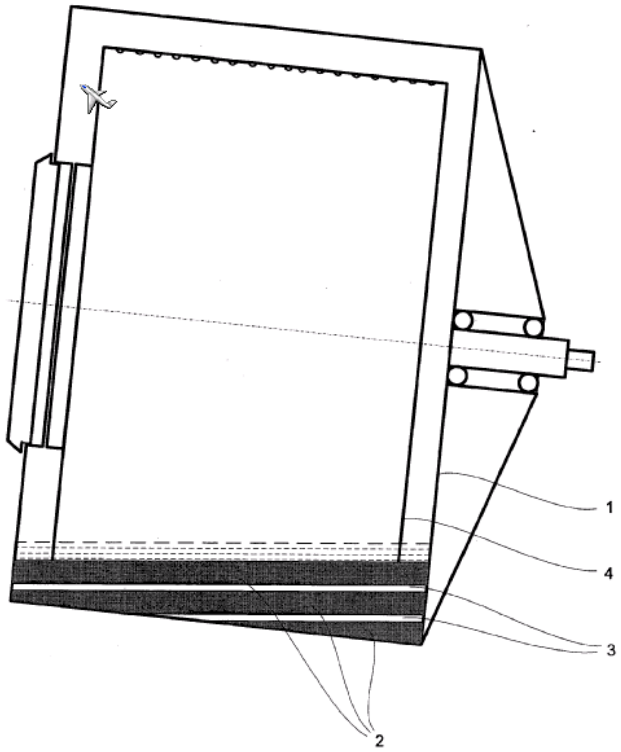
Understanding patent claims

(b) Heating element for a washing machine



The invention

A **heating element** for a washing machine which is cheap and compact and helps to reduce water consumption.



The heating element is a foil heating element at the bottom of the tub of a washing machine.

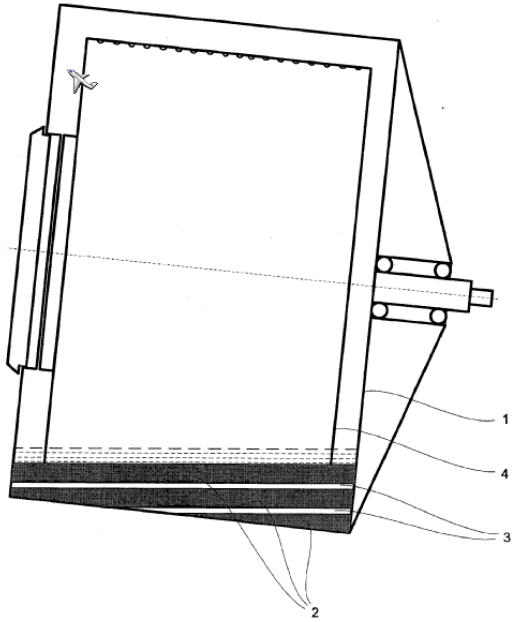
The invention

A **heating element** for a washing machine which is cheap and compact and helps to reduce water consumption.

How can you protect it from imitation?

- "cheap", "helps to reduce ..."
  → too vague and subjective

- "compact"
  = technical function → patent



How to patent this invention: claim it!

~~Patent Claim:~~
~~"A **heating element** for a washing machine which is compact ... "~~

No, this is stating the technical problem. Problems cannot be patented – only specific solutions.

What are the **technical features** that solve the problem and make the heating element compact?

~~Patent Claim: "A washing machine with a heating element for heating **water** inside the tub of the washing machine wherein the heating element is arranged in and adapted in its shape to **the bottom of the tub**."~~

You don't want anyone circumventing the patent by heating something other than water or by arranging the heating element at a different point not exactly at the bottom of the tub.

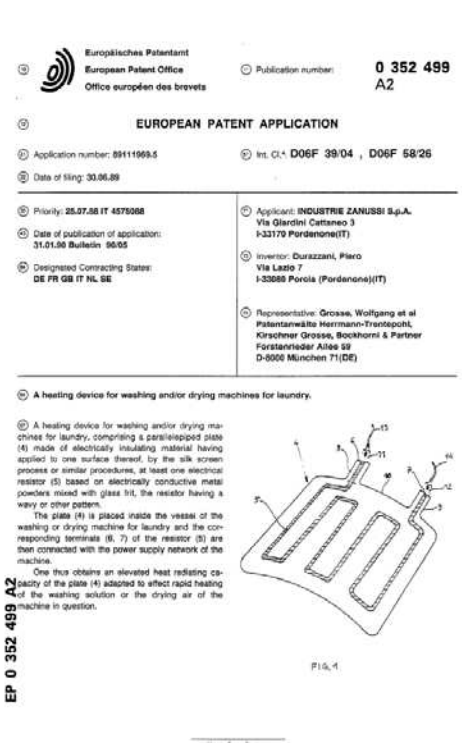
How to patent this invention: claim it!

Patent claim: "A washing machine with a heating element for heating **a medium** inside the tub of the washing machine, wherein the heating element is arranged in and adapted in its shape to **the tub**."

A prior art search will show whether the invention
– as claimed – is actually **new**.

Result of the prior art search

The prior art search found a document that shows a similar heating element for a washing machine.



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 352 499**
A2

EUROPEAN PATENT APPLICATION

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(54) A heating device for washing and/or drying machines for laundry.

(57) A heating device for washing and/or drying machines for laundry, comprising a parallelepiped plate (4) made of electrically insulating material having applied to one surface thereof, by the silk screen process or similar procedures, at least one electrical resistor (5) based on electrically conductive metal powders mixed with glass frit, the resistor having a wavy or other pattern.
The plate (4) is placed inside the vessel of the washing or drying machine for laundry and the corresponding terminals (6, 7) of the resistor (5) are then connected with the power supply network of the machine.
One thus obtains an elevated heat radiating capacity of the plate (4) adapted to effect rapid heating of the washing solution or the drying air of the machine in question.

FIG.1

EP 0 352 499 A2

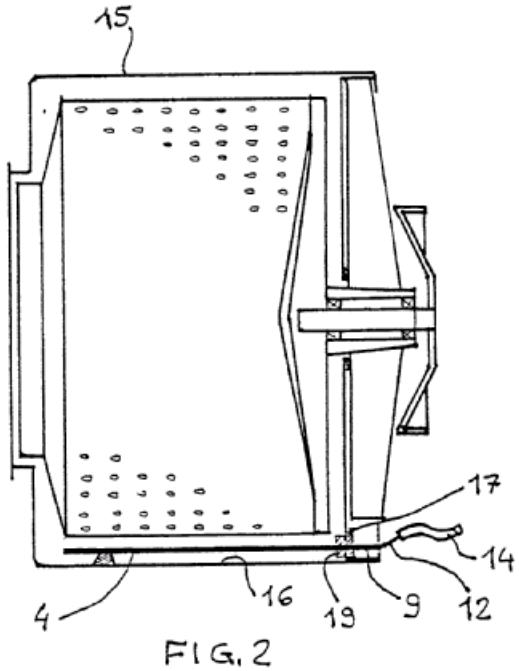


FIG. 2

"… curved plate of electrically insulating material with electrically conductive material applied to at least one surface thereof … "

Comparison of the two inventions

The invention as claimed	EP 0 352 499 A2
"A washing machine with **a heating element** for heating a medium inside the tub of the washing machine wherein the heating element **is arranged in** and adapted in its shape to the tub."	"The heating device ... is mounted in correspondence with the bottom wall ... of the vessel, and expediently spaced therefrom."

Not new

"… a foil heating element ... which is fitted to and adapted in its shape to the tub ..."

- New ("foil heating element" and "fitted to the tub" are not disclosed in EP...)
- Inventive step (technical effect: lower water level in the tub is possible)

Claim to protect the invention

Claim to be filed:

"A washing machine with **a foil heating element** for heating a medium inside the tub of the washing machine, wherein the heating element **is fitted to** and adapted in its shape to the tub."

Use of dependent claims to improve protection

An independent (broader) claim helps prevent the patent from being circumvented.

Dependent (more specific) claims are tailored to fit exactly to potential infringing products.



Application filed with the EPO

Claim 1:

A washing machine with **a foil heating element** for heating a medium inside the tub of the washing machine, wherein the heating element **is fitted to** and adapted in its shape to the tub.

Claim 2: The washing machine of claim 1, characterised in that the foil heating element is glued to the inside of the tub.

Claim 3: The washing machine of claim 1, characterised in that the foil heating element is an integral constituent of the tub and has been formed in the tub during injection moulding thereof.

The EPO will perform its own prior art search and then consider whether the invention AS CLAIMED is new and non-obvious.

Additional prior art found by the EPO

"Heating device for a household appliance"



BUNDESREPUBLIK DEUTSCHLAND
DEUTSCHES PATENT- UND MARKENAMT

Offenlegungsschrift
DE 100 25 539 A 1

Int. Cl.⁷: H 05 B 3/28

Aktenzeichen: 100 25 539.8
Anmeldetag: 23. 5. 2000
Offenlegungstag: 29. 11. 2001

DE 100 25 539 A 1

Anmelder: Diehl AKO Stiftung GmbH & Co. KG, 88239 Wangen, DE

Erfinder: Schotten, Henno, 88260 Argenbühl, DE

Die folgenden Angaben sind den vom Anmel

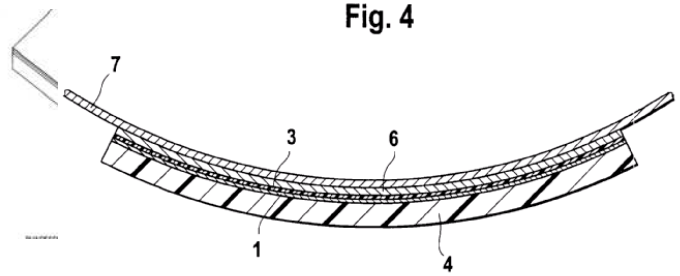
(54) Heizeinrichtung für ein Haushaltsgerät

(57) Bei einer Heizeinrichtung für ein Haushaltsgerät ist zwischen einer zu beheizenden Fläche 2 des Geräts und einer elektrisch leitenden Heizfolie 1 als elektrische Isolation eine keramikgefüllte Polymerschicht 3 angeordnet.

[0022] Beim Ausführungsbeispiel nach **Fig.** 4 weist die Heizeinrichtung zusätzlich ein wärmeleitendes, metallisches Formteil **6**, beispielsweise Aluminium-Formteil, auf, das der zu beheizenden Fläche, im Beispielsfall dem Bottich **7** einer Waschmaschine, angepasst ist.

[0023] Zwischen dem Isolations-Formkörper **4** und dem wärmeleitenden Formteil **6** liegen die Heizfolie **1** und die Polymerschicht **3**, wobei die Polymerschicht **3** zwischen der Heizfolie **1** und dem wärmeleitenden Formteil **6** vorgesehen ist. Durch die Klebeeigenschaften der Polymerschicht **3** sind das Formteil **6** und die Heizfolie **1** miteinander verklebt. Auch der Isolations-Formkörper **4** kann mit der Heizfolie **1** verklebt sein. Er kann jedoch auch – ähnlich wie bei **Fig.** 3 – an die Heizfolie **1** gedrückt sein.

Fig. 4



DE 100 25 539 A1:
"Heating device ... comprising a foil heating element (1) ... adapted and attached to a tub (7) of a washing machine ..."

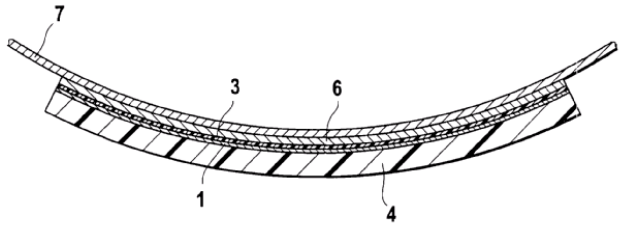
The opinion of the EPO

DE 100 25 539 A1

Applicant's claim:

"A washing machine with **a foil heating element** for heating a medium inside the tub of the washing machine, wherein the **heating element is fitted to and adapted in its shape to the tub**."

Heating device ... comprising a foil heating element (1) ... adapted and attached to a tub (7) of a washing machine ...



This is already shown in DE 100 25 539 A1

EPO response:
Please amend your claims if you want your invention protected!

Further analysis

Did the EPO overlook any important features of the invention?

Applicant's reply:
Amendments to the application, explanation of the relationship between the invention and the prior art

How can the claims be amended to reflect the invention in such a way that it is new (considering all the prior art)?

Comparison of the invention with the prior art

	EP 0 352 499 A2	DE 100 25 539 A1
Technical features of the invention		
Adapted in its shape to the tub	✓	✓
Foil heating element	**No**	✓
Glued to outside of tub	**No**	✓
During injection moulding	**No**	**No**
Advantages/technical result		
Compact + excellent heat transfer + easy assembly with fewer parts	**No**	**No**

Result of the analysis

It is known in the prior art to fit and adapt a foil heating element to the bottom of the tub of a washing machine.

However, the present invention suggests that the foil heating element can be formed in the tub during the injection moulding of the tub.

This particular way of fitting the foil heating element to the tub is **not known** and produces **new, unique benefits**.

There is no hint in the prior art to take a foil heating element and to form it in a tub during injection moulding of the tub.
→ The inventive step requirement is fulfilled!

The claim must be changed to distinguish it from DE 100 25 539 A1.

New claim

"A washing machine with a foil heating element for heating a medium inside the tub of the washing machine, wherein the heating element is fitted to and adapted in its shape to the tub,
characterised in that
the foil heating element is an integral constituent of the tub and has been formed in the tub during injection moulding thereof."

The original description filed with the EPO supports the amendments to the claims

The **object of the invention** is to provide an electrical heating device for a domestic appliance ... cheap ... easy to assemble ... requires less space ... offers the possibility of reducing energy and water consumption.

... the foil heating element allows a very compact arrangement ... at the same time ... an optimal heat transfer ...
... the foil heating element is integrated during the production of the tub, for instance during the injection moulding ... requires only a few production steps; it does not require complex tools, either ...

Supports inventive step: different technical result

Claim 3: The washing machine of claim 1, characterised in that the foil heating element is an integral constituent of the tub and has been formed in the tub during injection moulding thereof.

Difference to prior art

The patent is finally granted

Response from EPO: granted!

(19) Europäisches Patentamt / European Patent Office / Office européen des brevets

(11) **EP 1 342 827 B1**

(12) **EUROPÄISCHE PATENTSCHRIFT**

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09.04.2008 Patentblatt 2008/15

(51) Int Cl.:
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(21) Anmeldenummer: **03005120.5**

(22) Anmeldetag: **07.03.2003**

(54) **Elektrisch beheizbares Haushaltgerät**

Electrically heatable household appliance

Appareil ménager chauffé électriquement

(84) Benannte Vertragsstaaten:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priorität: **07.03.2002 DE 10209975**

(43) Veröffentlichungstag der Anmeldung:
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(56) Entgegenhaltungen:
EP-A- 0 352 499
DE-A- 10 025 539
DE-A- 19 935 987
DE-U- 1 823 414
US-A- 5 444 228