Intellectual Property topics in OU Engineering Courses

by

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Teaching philosophy

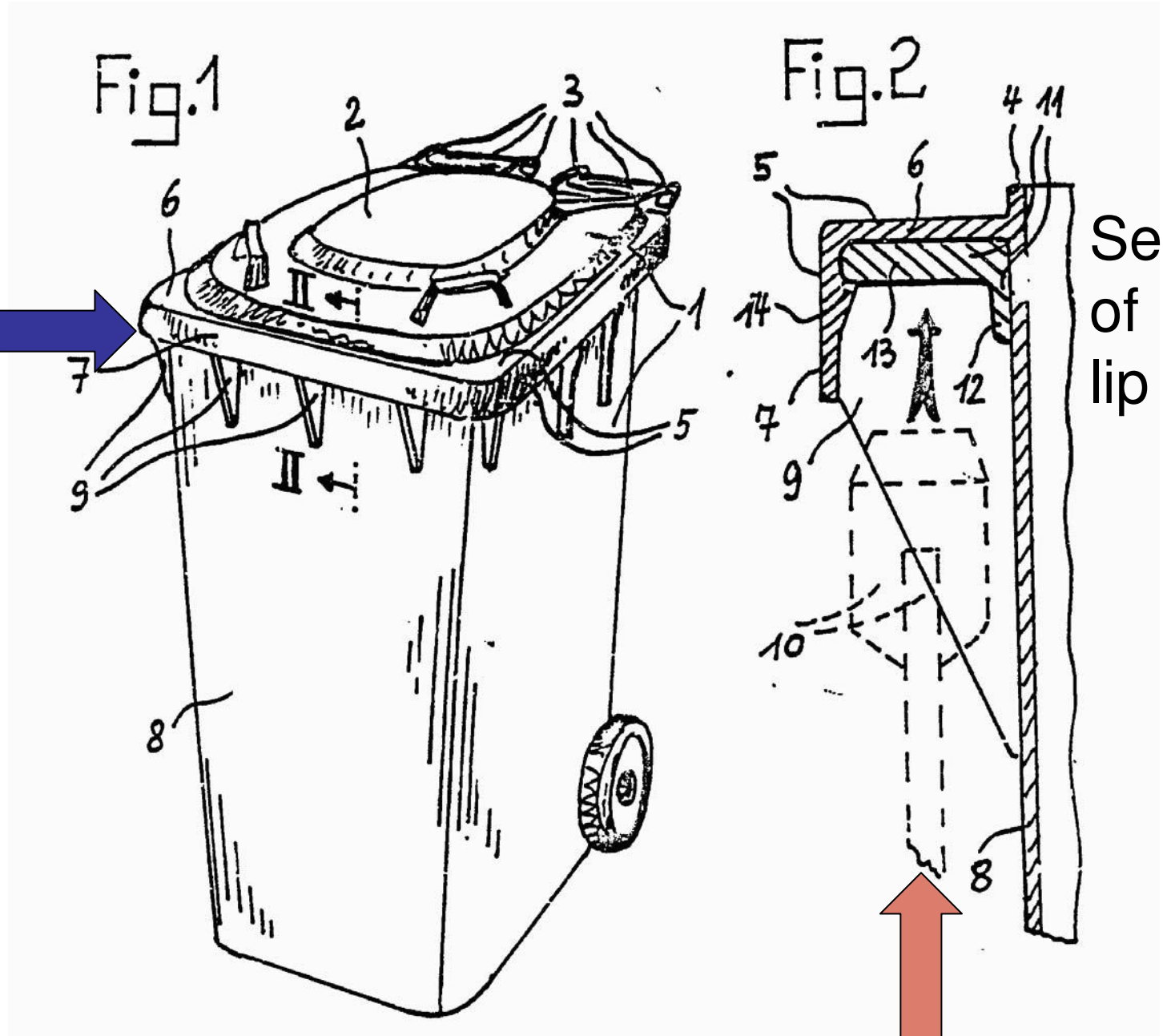
- IP taught at UG, T173 (~ 800 students p.a.) and PG level T839 (Forensic Engineering, ~100 students p.a.)
- Hands-on approach to subject, guided by case studies and application of simple mechanics
- Cases chosen from precedents, court reports and own experience as an expert witness
- Mechanical patents, with some input on registered design, design right, confidential information
- Text and resources file, TV-AV and tutor support

Principal Case Studies

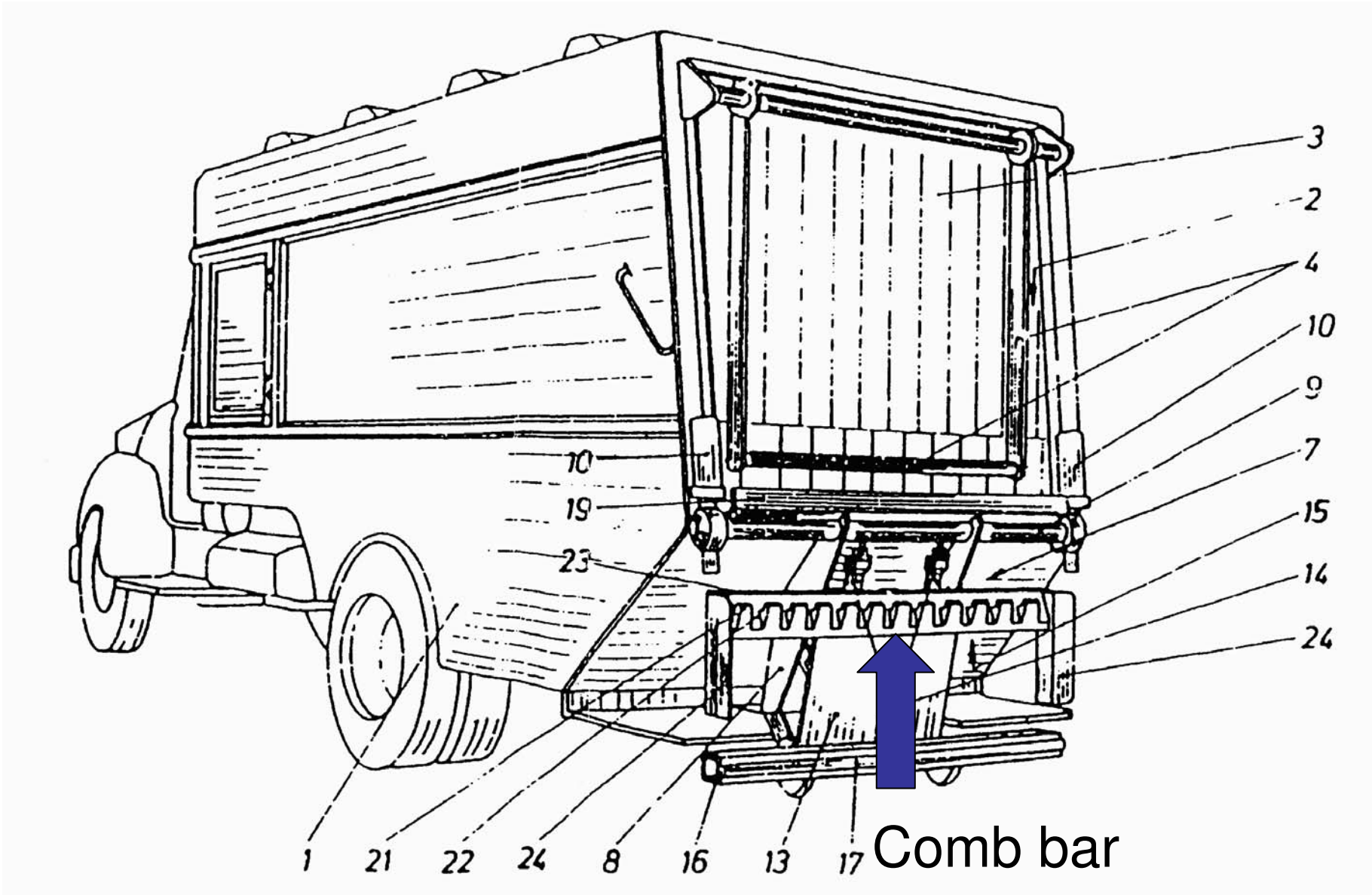
- The wheelie bin, or how to “design around” an existing patent
- The wheeled rotary lawnmower (level of invention)
- The Residual Current Device or RCD, or how to improve on an existing patent
- The Workmate, and pursuing infringers
- Catnic lintel for “purposive construction” of claims
- Gillette/ medical stent/ Epilady/ Windsurfer

The first wheelie bin, GER design patent, 1975

Lip for lifting



Fitment to vehicle



Schneider patent GB 1 588 932 (1977)

What we claim is

1 A container for refuse, comprising a body of substantially rectangular cross-section having a cover therefor, a depending flange which extends along one sidewall of the body in the region of an upper edge of said wall and is stiffened by substantially vertically arranged struts connected to the body, and a rib which extends substantially parallel with the body between the body and the depending flange; and wherein a reinforcing member is provided for said flange, said member extending along and projecting laterally from said flange and being adapted and arranged to serve as an abutment for said container during emptying thereof.

Simplification!

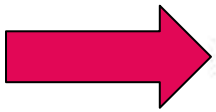
Claim 1 of the Schneider patent can be simplified to the following integers, all of which are essential to the working of the invention.

1 A container for refuse, comprising;

2 a body of substantially rectangular cross-section having a cover therefor,

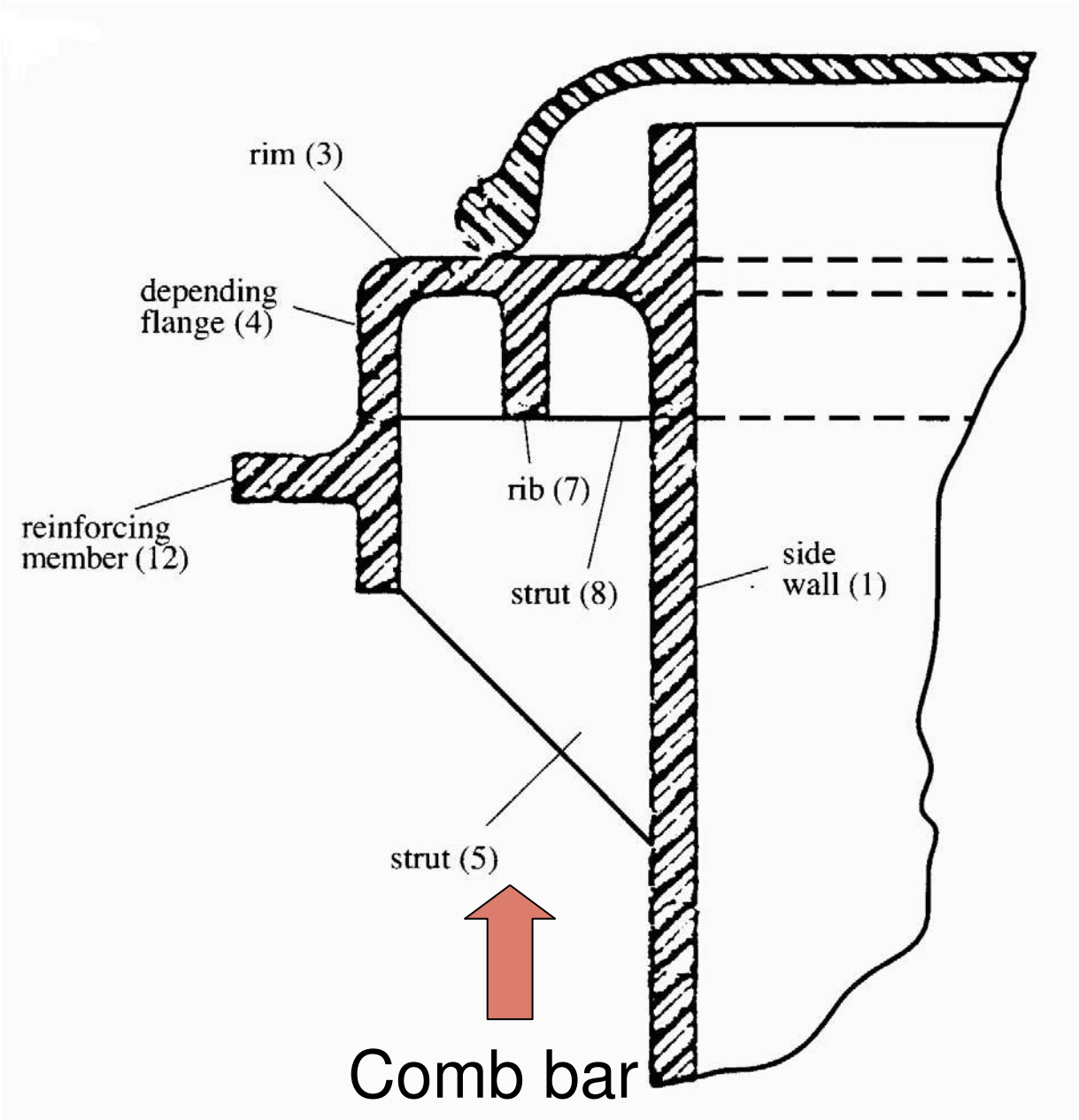
3 a depending flange which extends along one sidewall of the body in the region of an upper edge of said wall, and is stiffened by

4 substantially vertically arranged struts connected to the body, and



5 a rib which extends substantially parallel with the body between the body and the depending flange;

6 wherein a reinforcing member is provided for said flange, said member extending along and projecting laterally from said flange and being adapted and arranged to serve as an abutment for said container during emptying thereof.



Definitions for Claim 1

Definitions of technical terms

Here are some technical definitions from a 1964 edition of Chambers technical dictionary:

flange a projecting rim, as the rim of a wheel which runs on rails, the top and bottom members of an I-beam.

strut any light structural member or long column which sustains an axial compressive load.

Chambers English Dictionary gives:

rib a raised band, a prominence running in a line.

Bin manufacture using injection moulding in plastics

direction of withdrawal of metal tool cores during injection moulding. (Figures 1, 3 and 4)



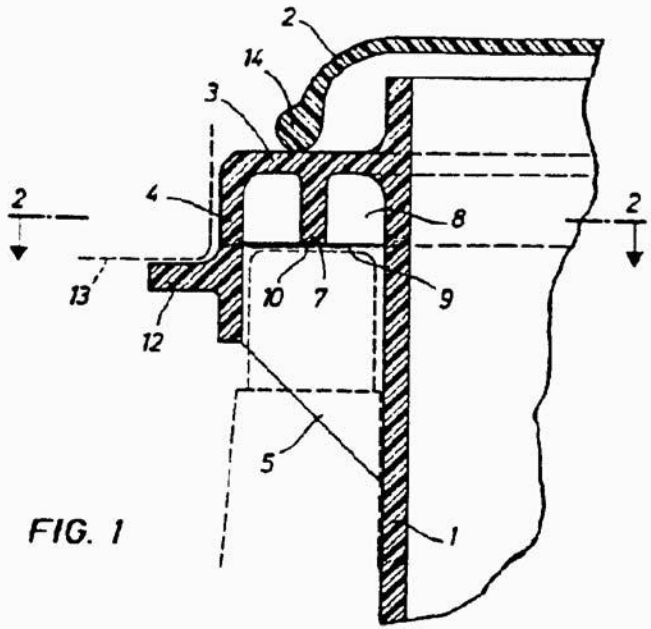


FIG. 1

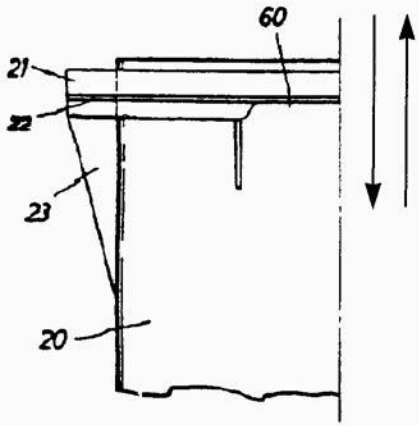


FIG. 4

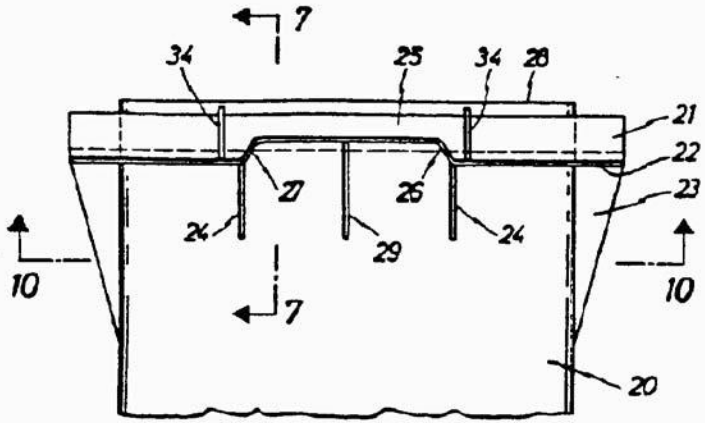
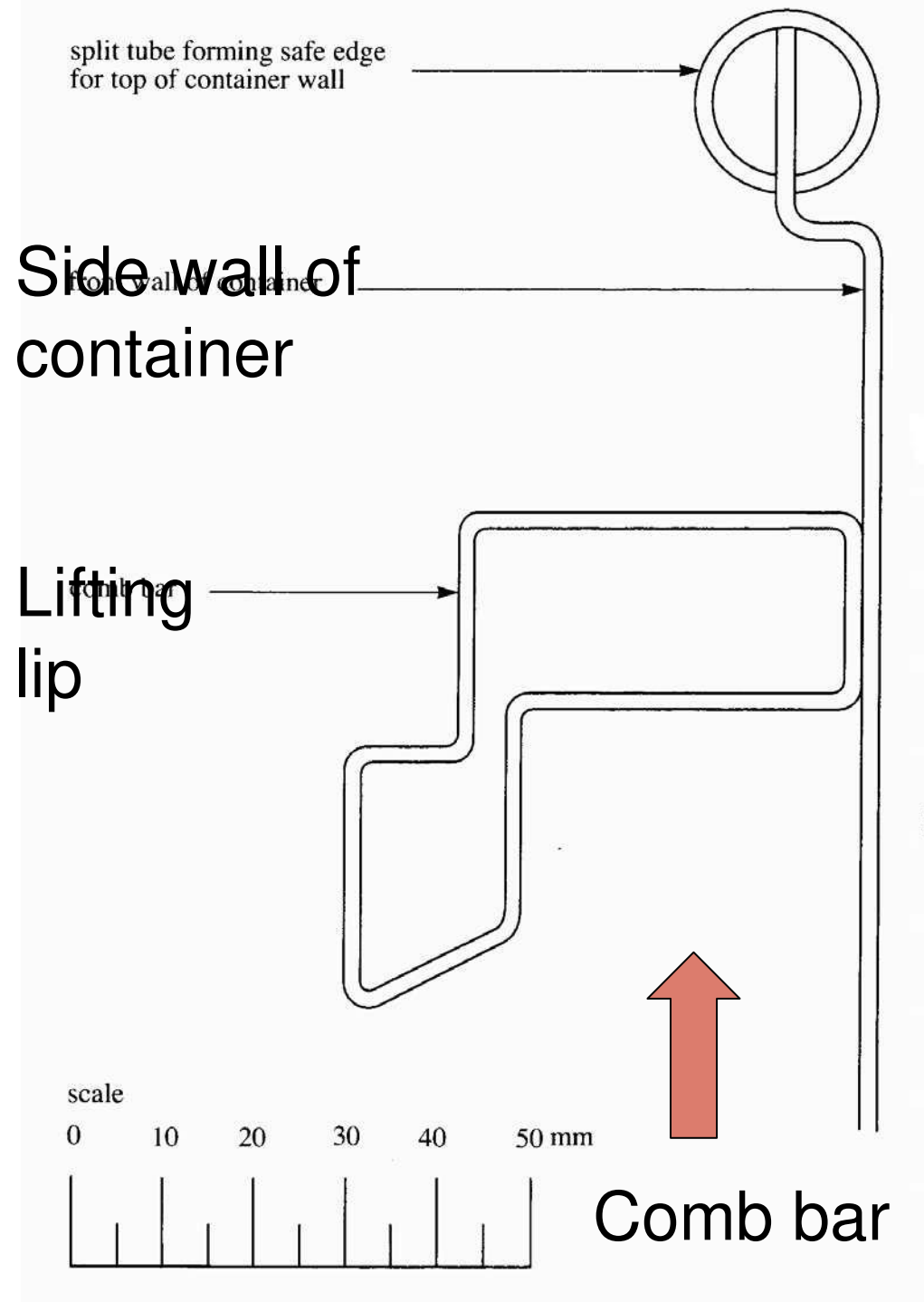
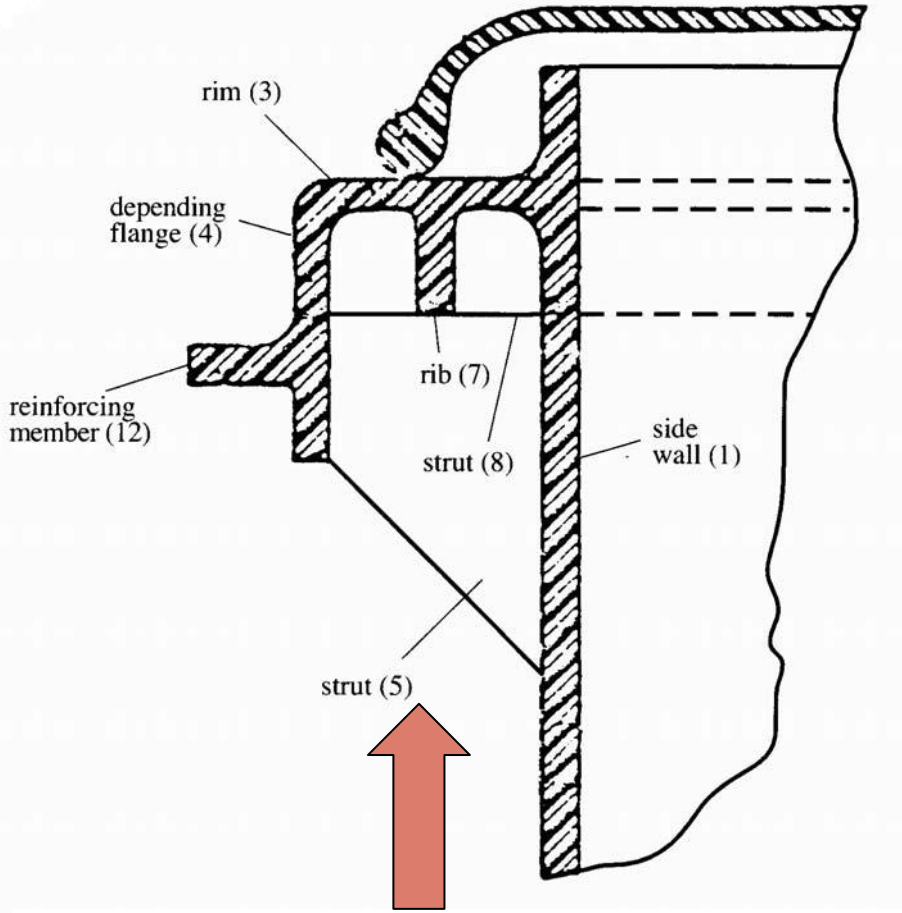


FIG. 3

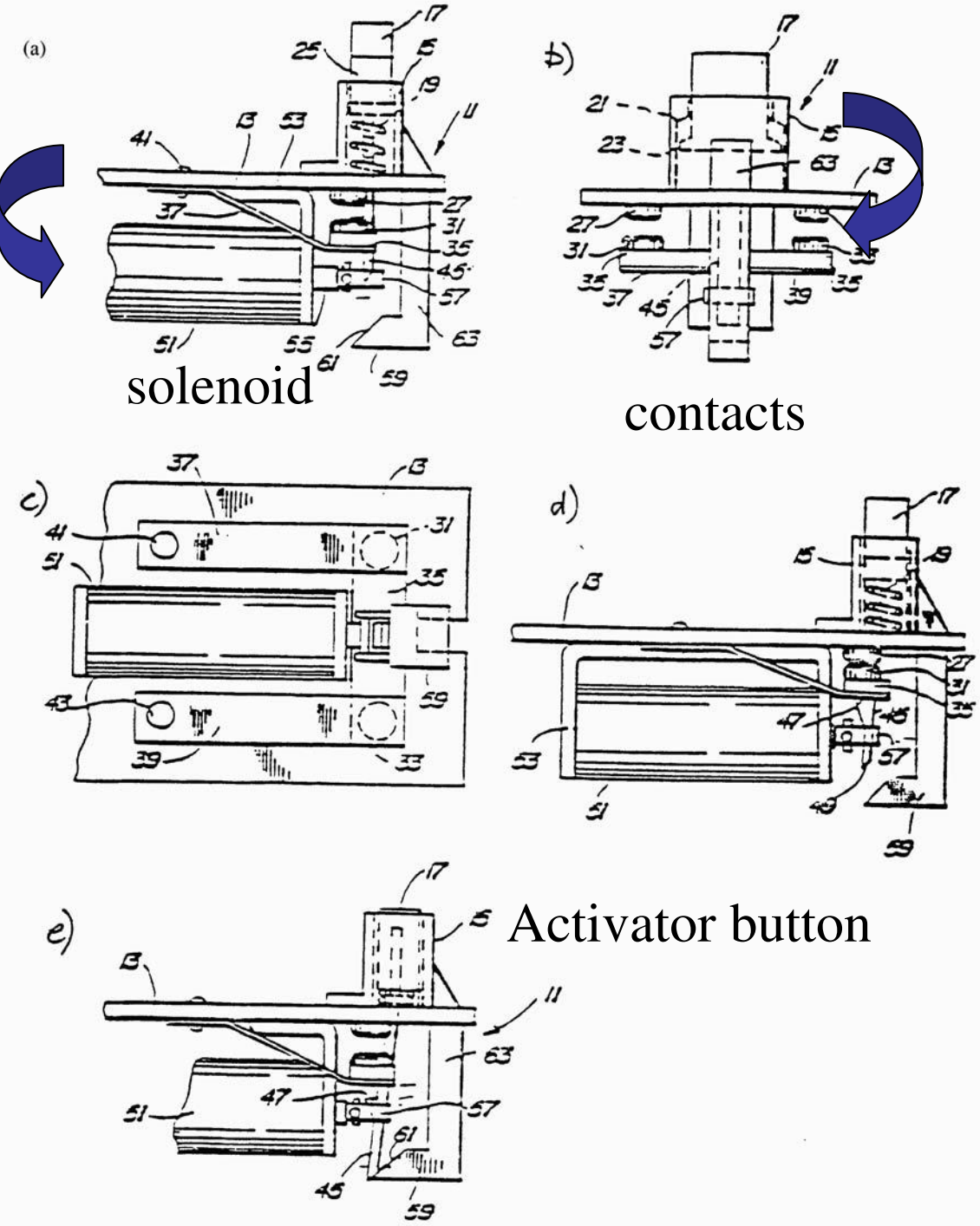
The Taylor bin made from welded steel sheet





Results

- Schneider patent valid but not infringed by Taylor bin since has no rib
- Steel bins very successful for public use since fire-resistant and very tough
- Manufacturing costs are low with sheet fabrication methods
- Plastic bins expensive owing to high tool costs, so long production runs needed
- Taylor proceed to patent own bin and pursues infringers!
- Case shows importance of claim drafting and anticipating future developments



Powerbreaker: safety device for cutting electrical power when leak detected (RCD)

Spring loaded actuation mechanism

Tech Research Corp GB 2 141 587 (1983)

What I claim is

1 A resettable circuit closing device that is opened in the event of an under-voltage condition comprising; contact means biased to a normally open position; mechanical actuating means for closing said contact means; adjusting means to condition said actuating means to enable closing of said contact means; and electrically energized holding means separate from said adjusting means but which cooperates with said actuating means once conditioned to maintain the conditioning of said actuating means and close said contact means only when the voltage across said holding means exceeds a predetermined level.

Simplification

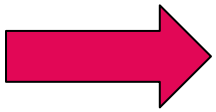
What I claim is

1 A resettable circuit closing device that is opened in the event of an under-voltage condition comprising:

(a) contact means biased to a normally open position;

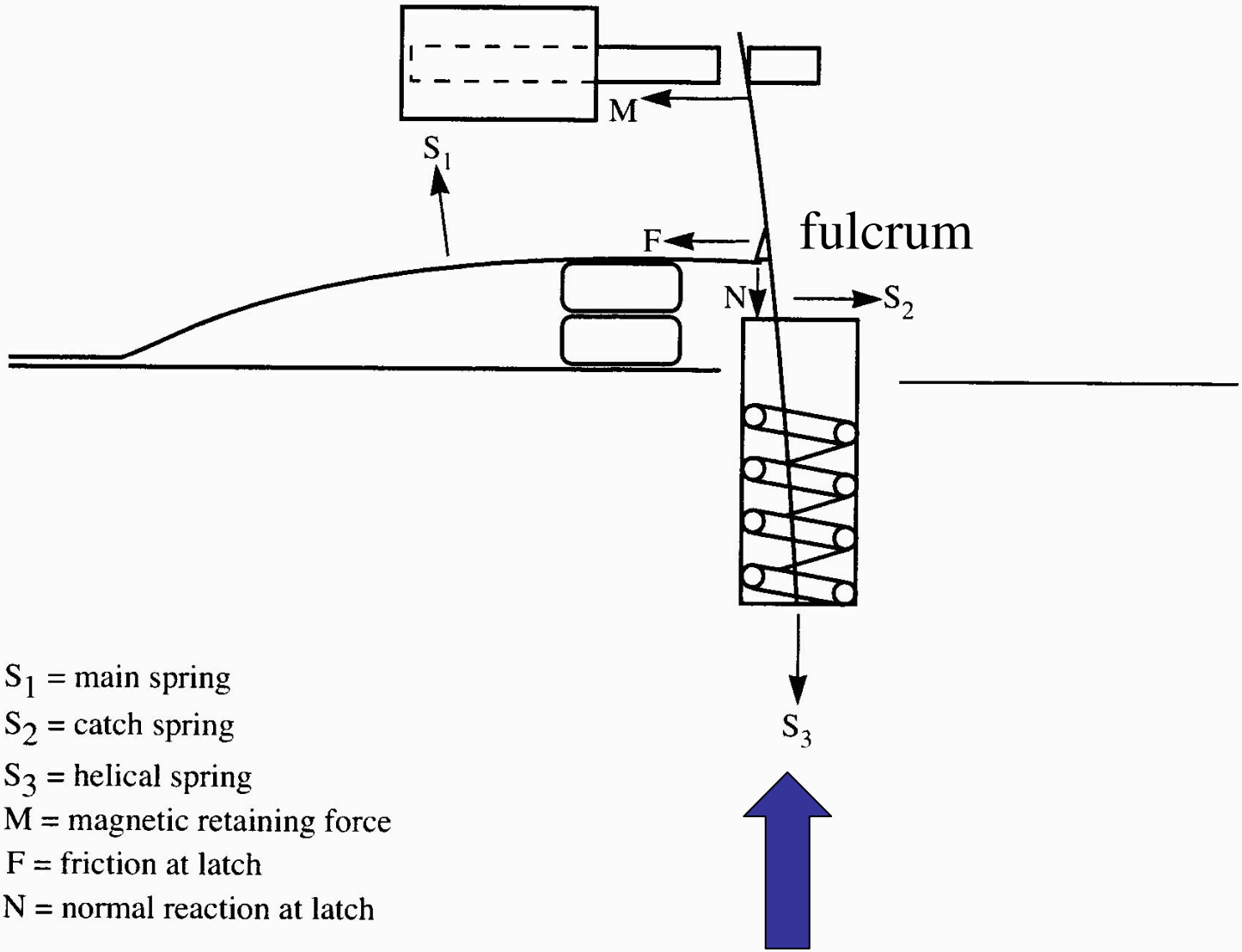
(b) mechanical actuating means for closing said contact means;

(c) adjusting means to condition said actuating means to enable closing of said contact means;

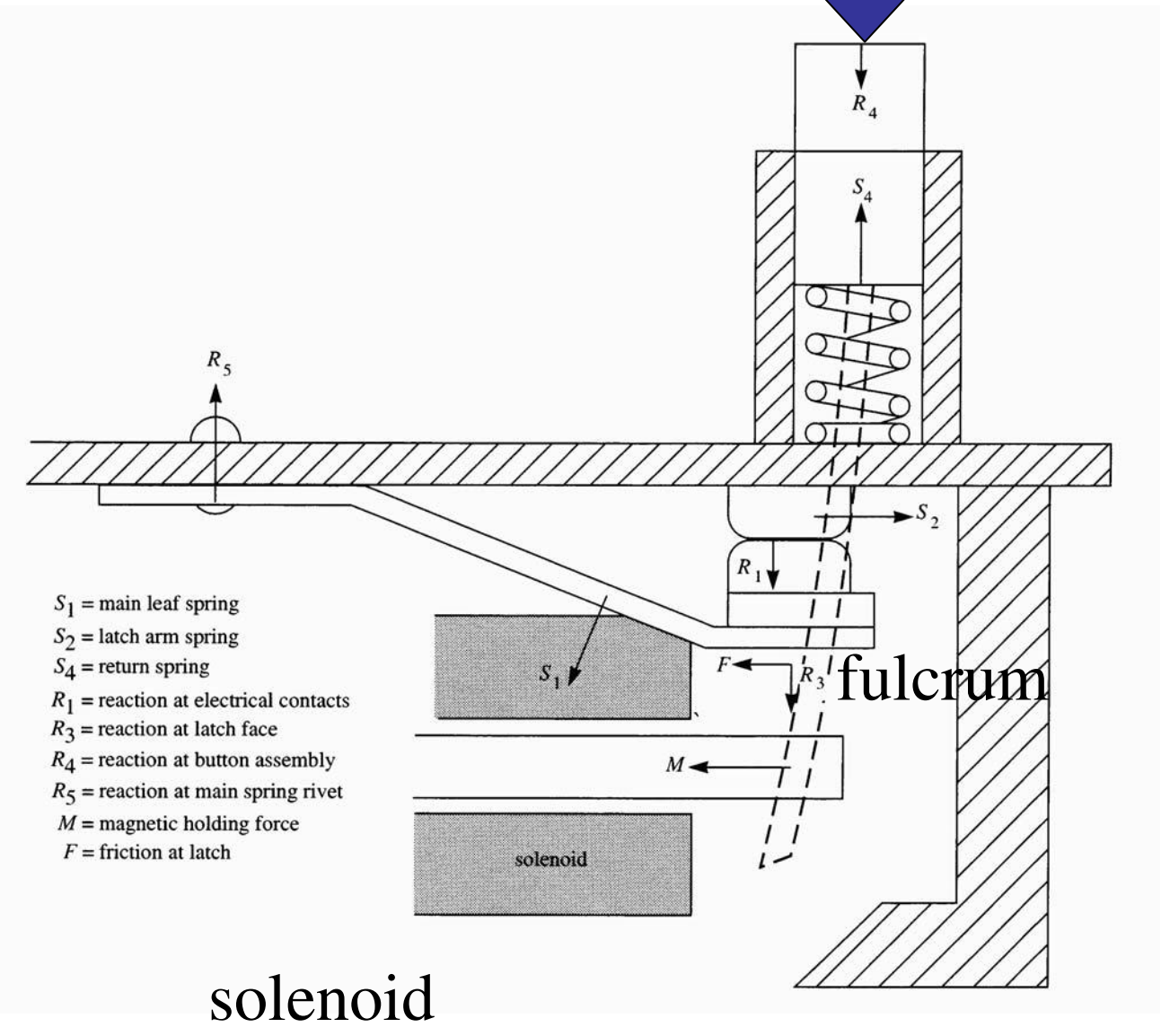


(d) and electrically energized holding means separate from said adjusting means, but which co-operates with said actuating means once conditioned to maintain the conditioning of said actuating means and close said contact means only when the voltage across said holding means exceeds a predetermined level.

Technical Effect 1



Button to activate

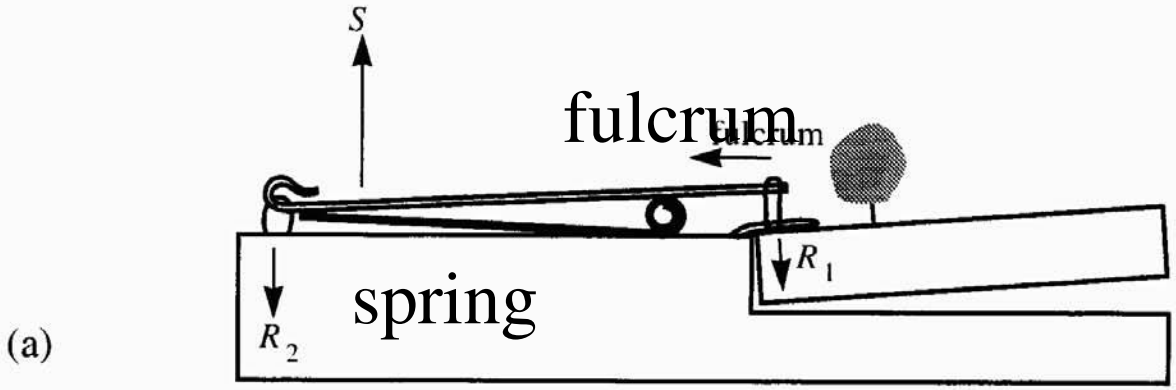


fulcrum

Technical effect 2

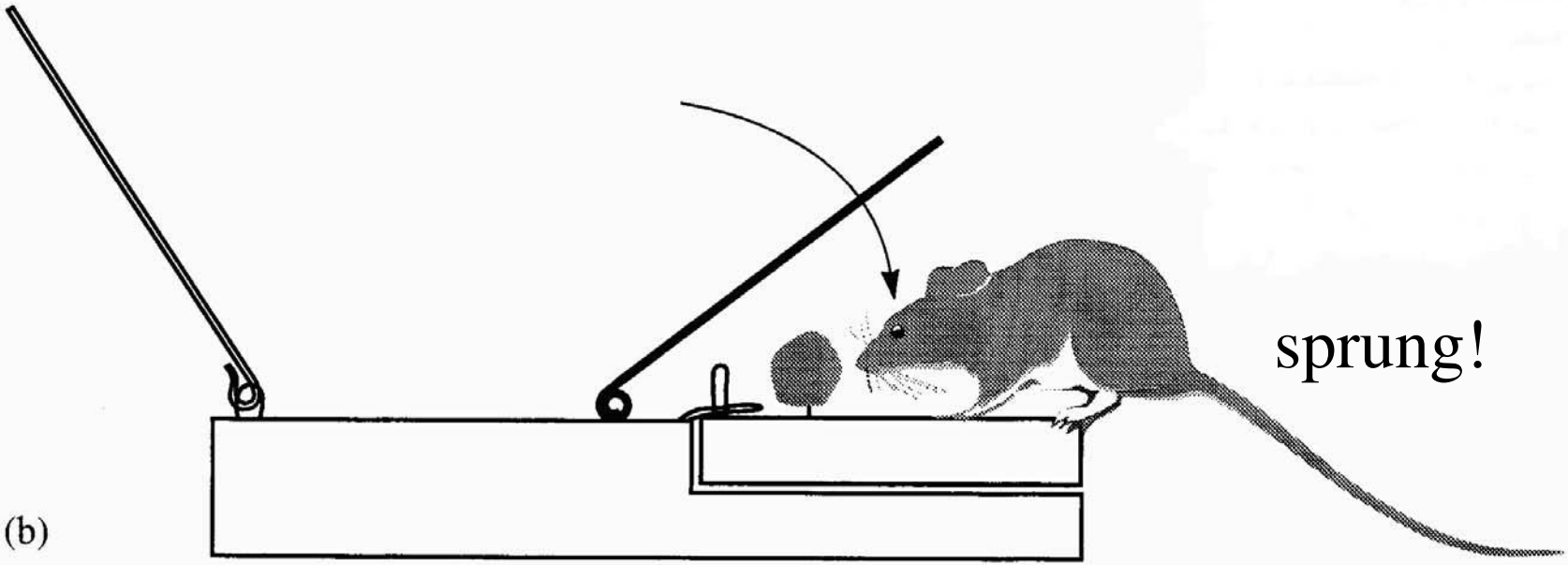
solenoid

The mousetrap!



(a)

activated



(b)

sprung!

FIG 10

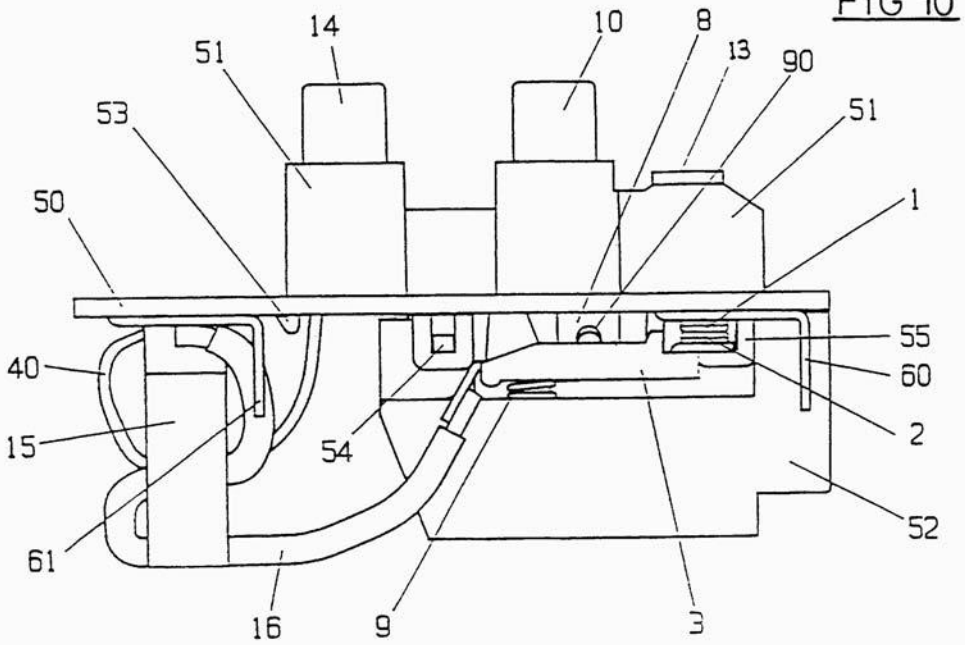
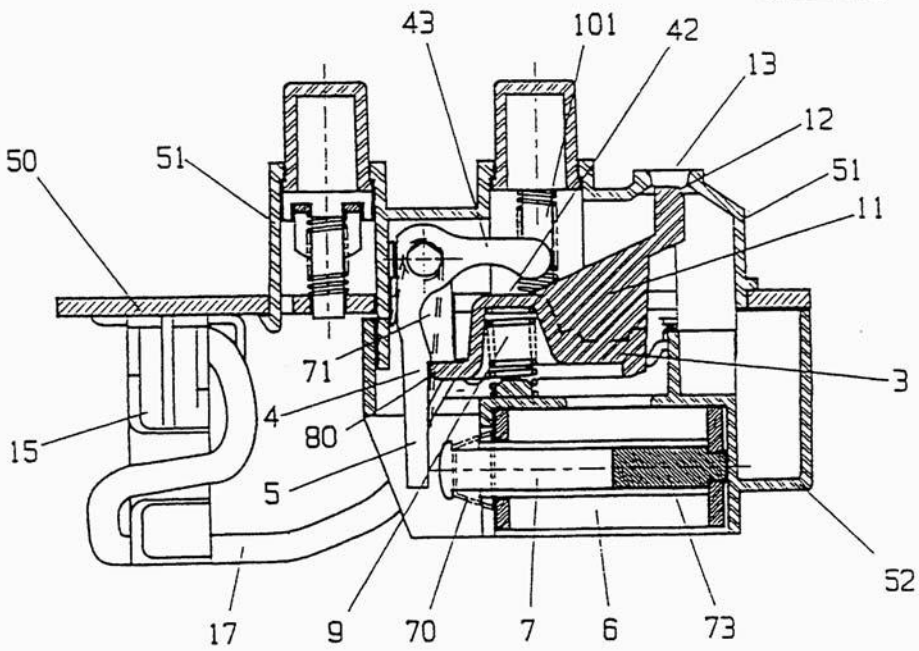
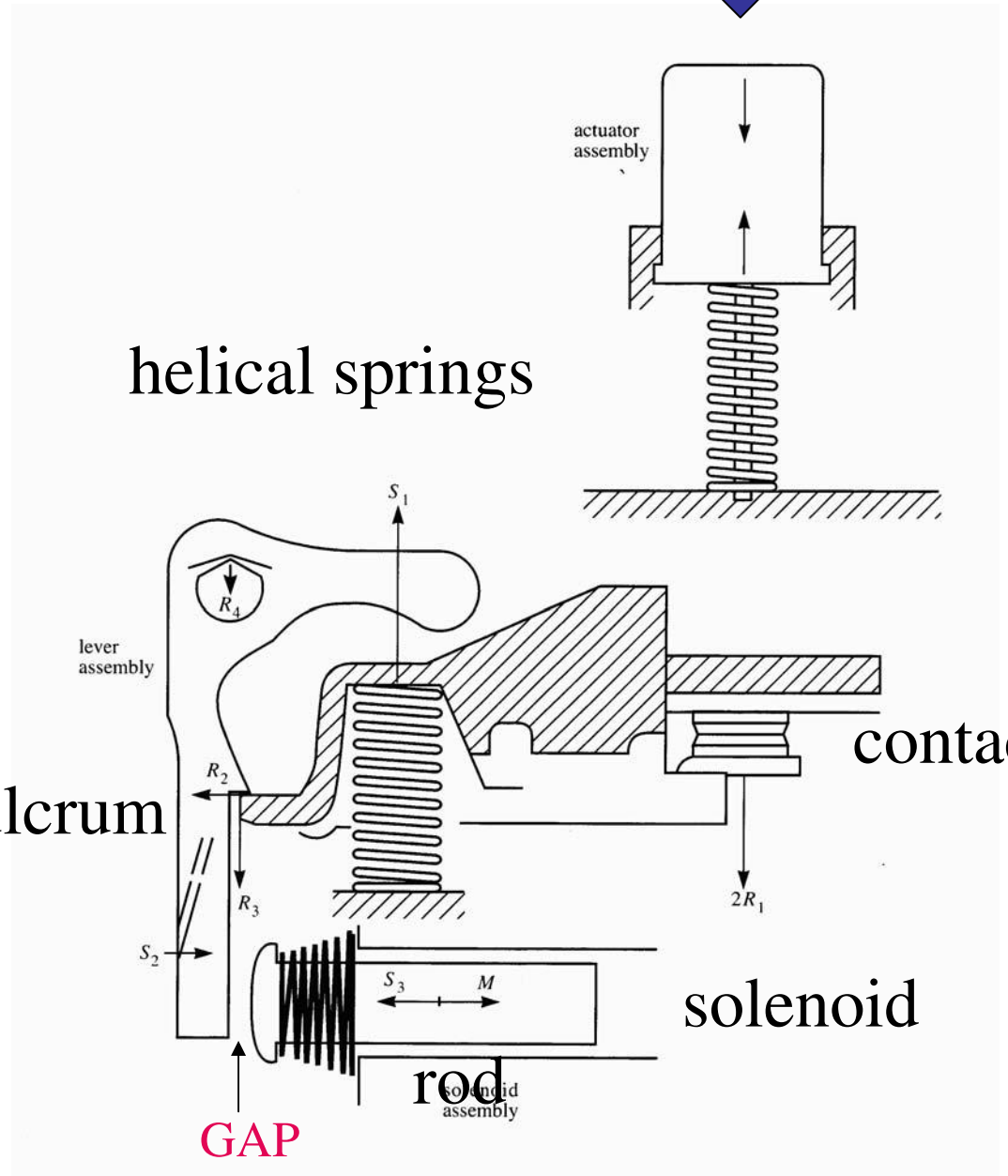


FIG 11



The Protector: PDL/Volex



fulcrum

contacts

solenoid

rod

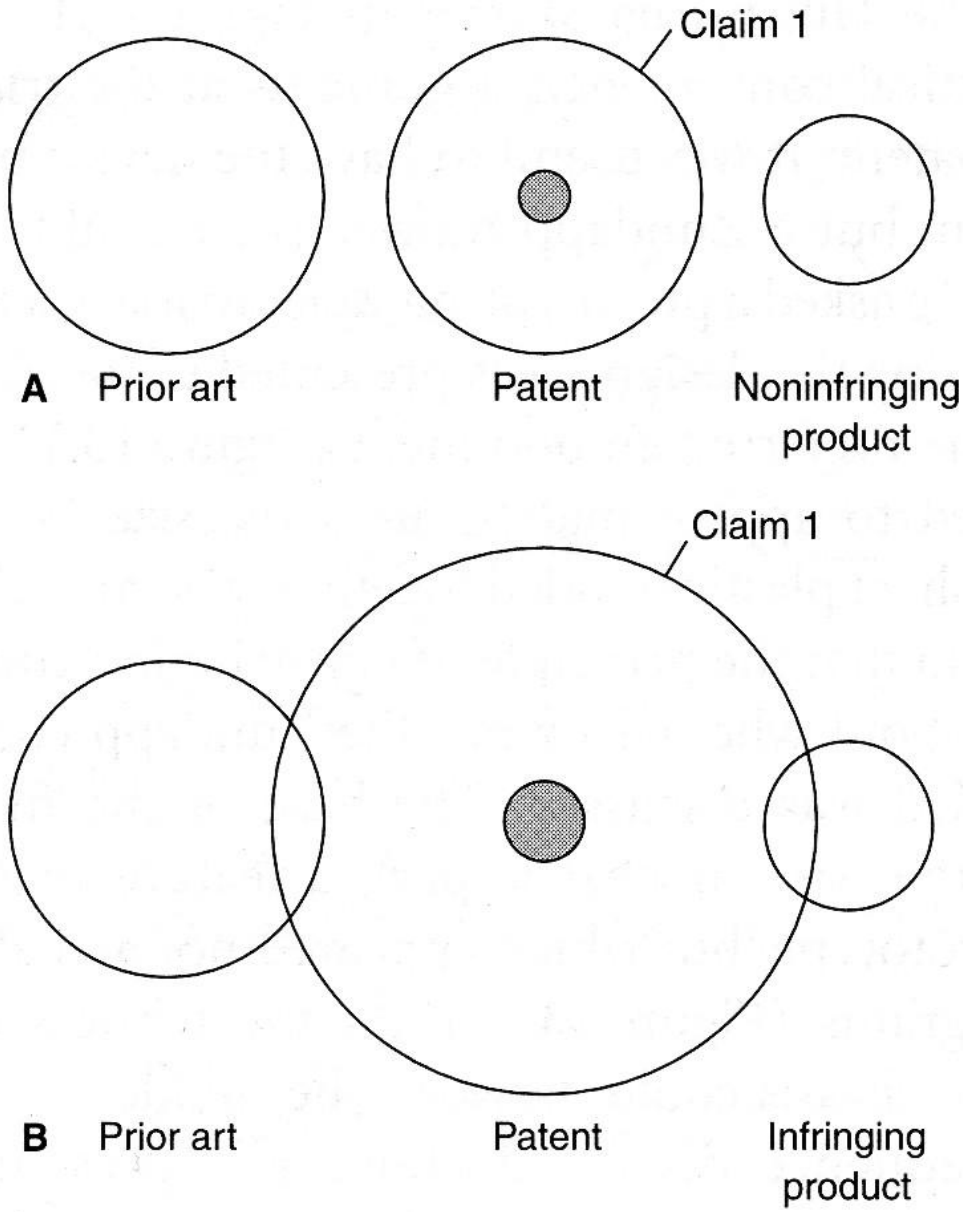
GAP

How it works: impact by separate rod

Results

- Powerbreaker patent valid but not infringed (1996).
- New concept patented by PDL and product sold in UK. Prices fall as a result of competition.
- Reaction time of ~14 ms well below critical threshold for electrocution (~ 50 ms)
- RCD's required to be fitted in all new homes by Building Regulations
- Expanding market for safety products
- Surprising that world had to wait over 100 years for this invention! Interdisciplinary research between engineers and physiologists produced the inventive spark.

Boundary marker diagram: patentees dilemma



OU Experience

- IP taught now for about 4 years with support from EPSRC in an IGDS scheme with London Metropolitan University
- Students in full-time industry/commerce careers
- Positive feedback from students, who regard patents as source of information on new technology using *Espace*
- Weekend schools for face-to-face tuition
- Examined by continuous assessment and exam
- Plans to extend teaching into other courses, with medical devices, new materials and possibly software patents