

# The 'Levytator'

## A Multi-Curving New Dimension in Escalators

by Prof Jack Levy OBE FIMechE

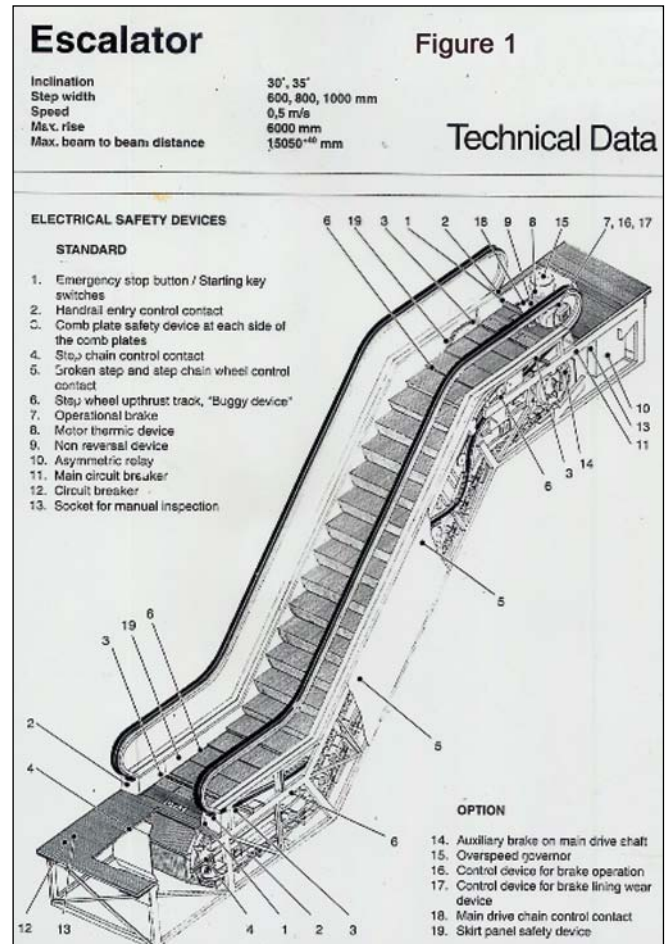
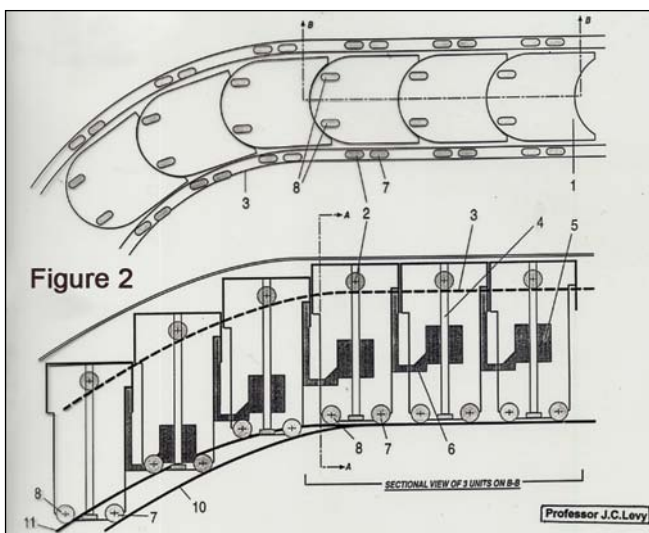
The moving stairway or 'escalator' as we know it was invented by Charles Seeberger in 1897 and in principle has changed little since then. Fig. 1 shows a cut-away drawing of a typical installation. A basic feature is that the return path is *underneath* the usable steps. Of course there have been improvements; for example in the driving mechanism and the handrail, but the 2-dimensional character has not changed.

Fig. 2 shows the new 'Levytator' concept.

In contrast to the existing design the steps are in a loop and the installation is now 3-dimensional. This means savings in cost because no excavation is necessary and virtually all steps are in action all the time. Also, maintenance can be carried out much more easily - all from the top. Anyone who has seen the difficulties, for example on the London Underground, when an escalator requires overhaul or maintenance will appreciate the advantage.

The 'Levytator' design can:

- Enable the escalator to follow any sequence of rise and fall of left/right curved paths within the design parameters.
- Be adapted to many new convenience and architectural applications for which the conventional escalator design is unsuitable.

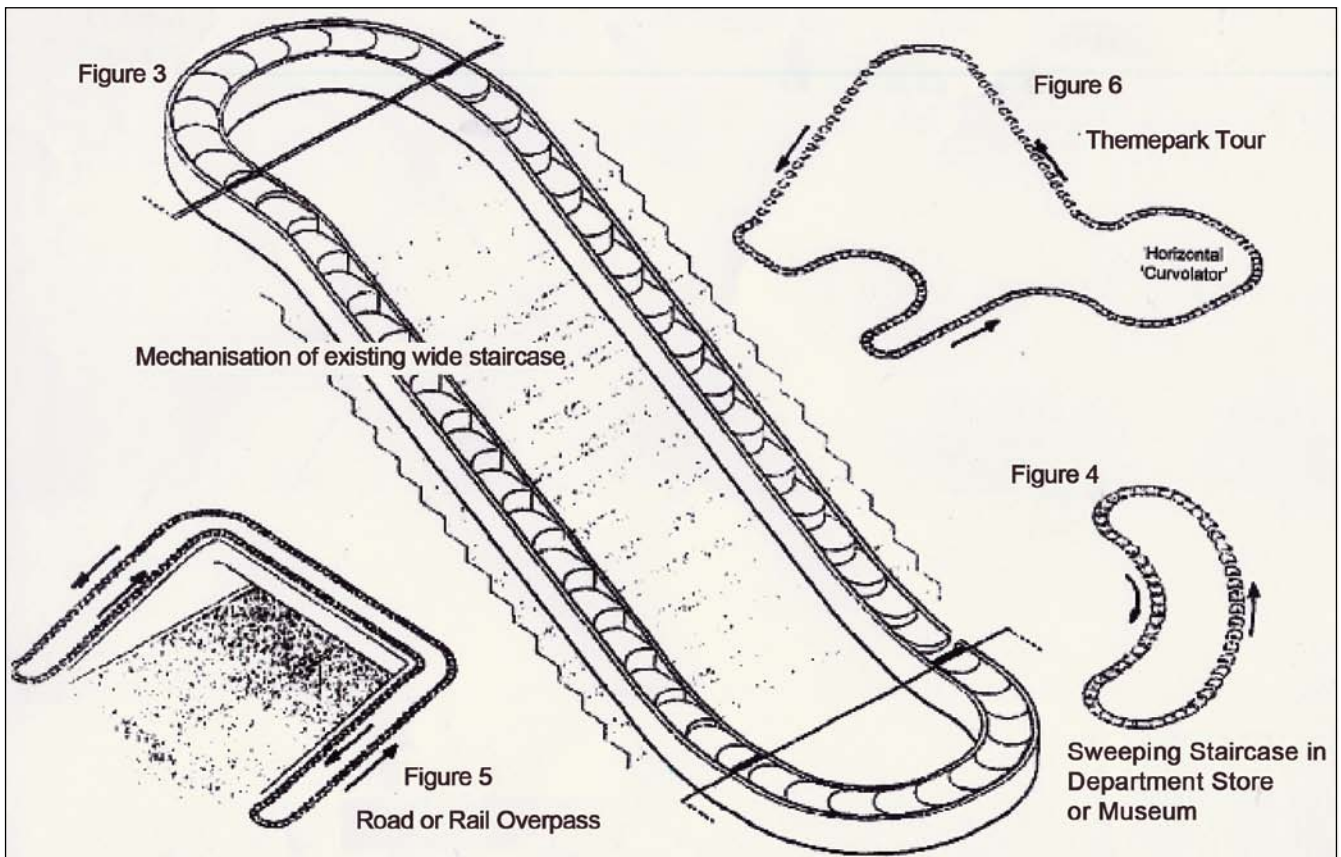


- Particularly this includes the ability to be placed over existing staircases, effectively mechanising them at low cost.
- Because of these new applications; be helpful to the old and disabled - an important consideration nowadays.

Here are some examples :

Fig. 3 shows the mechanisation of an existing wide staircase - for instance in an art gallery or museum.

Fig. 4 depicts a sweeping staircase in a department store. This offers many possibilities. It will be seen that the 'up' and 'down' curvatures can be different to suit the particular environment. (Mitsubishi does in fact make a curved escalator but this is for only one



*An Artists impression of a long run to conduct people on, for example, the tour of a theme park.*

curvature and is of the traditional type with the return path underneath, so is very limited in application and only a small number have been sold).

Fig.5 illustrates the possibility of a mechanised road or rail overpass for pedestrians. Where such overpasses already exist it is noticeable that they are little used – probably because of their daunting character particularly again for the elderly and disabled.



Fig. 6 shows the possibility of a long run to conduct people on, for example, the tour of a theme park. Included in this diagram there is a horizontal section labelled 'curvulator'. A widespread application of this could be in airports and would be much more versatile than the existing 'travelators' which are limited to straight runs. Also curvulators could be retrofitted to existing airport terminals.

Finally a word about costs. The average cost to manufacture and install a traditional straight escalator is about £100,000. For a 'Levytator' of similar forward length the cost should be similar because the basic technologies and elements are similar. However the 'Levytator' will provide a return path at no additional cost so could be regarded as 50% cheaper per working step. □

## ABOUT THE AUTHOR

**Professor John.C. (Jack) Levy**  
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*Professor Jack Levy is a Chartered Engineer engaged in engineering consultancy after a career at City University and at the Engineering Council.*

*When in 1999 he was awarded the Gold Medal of the 'World Federation of Engineering Organisations', it was in recognition of his international and national contribution to professional engineering education.*

*Jack Levy was born in London. He received his primary engineering education at Imperial College where later, with a Fulbright award, he did postgraduate work in the USA.*

*After several years in the aircraft design industry, he joined the City University, London where he became Professor and Head of Mechanical and Manufacturing Engineering. He was Pro-Vice-Chancellor in the '70's and '80's and director of a 'spin off' university company 'City Technology Ltd'. Also, for 20 years, he was a consultant on ship structures to Shell International Marine.*

*Then in 1983 he joined the newly formed Engineering Council as 'Director - Engineering Profession'. In this post he carried executive responsibility for the national development of Engineering Degree and Training standards;*

*also for the international contacts of the profession to negotiate agreements for the recognition of UK degrees.*

*Having 'retired' more than once, he has now returned to his roots as a design engineer. He runs Levytator Ltd a company formed to exploit his new design of escalator patented in Europe, USA and China.*

*Jack Levy is a Fellow of the Royal Academy of Engineers, the Institution of Mechanical Engineers, the Royal Aeronautical Society and the Irish Academy of Engineering.*

*In 1984 he was named an OBE and is a Freeman of the City of London. He holds honorary doctorates from four UK universities, including City.*

