

Escapaid

An effective system for skyscraper evacuation

Contents:

- Title
- Product Illustration Summary Background
- Specification
- Line Drawings Contents
- Line Drawings
- Prototype
- The Market
- Legal Arrangements
- Commercial Arrangements
- Inventions

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Summary

Escapaid

WHAT IS ESCAPAID?

The Escapaid Emergency System provides the safest and most practical way of evacuating people from a high building in the event of fire.

A GAP IN THE MARKET

Currently there is no effective way of getting people out of a burning skyscraper quickly enough to save lives. Fact. Tragic, 9/11 fact.

"Strict Building Codes have been established-regulating egress requirements and places of refuge within buildings, but these requirements alone cannot ensure the safety of occupants in the event of a fire, earthquake or similar disaster. "

Source: Fire evacuation from Skyscrapers; a Potential Way Forward, P.J. Armstrong, University of Illinois, 2002

WHAT MAKES ESCAPAID STAND OUT?

Escapaid is essentially a staggered escape chute. Evacuees access the Escapaid tower from their own floor and descend, via a series of controlled falls, to the ground level. These falls take place via a series of padded chambers, making the whole experience rather like an extended period on a bouncy castle; in other words, it is safe, comfortable and non-traumatic precisely what a system of emergency evacuation should be.

WHAT'S S IN IT FOR THE MANUFACTURER?

Building regulators are crying out for a system of skyscraper evacuation that a) does not use existing stairwells and b) does not cost an arm and a leg. Development of Escapaid in partnership with authorities is viable and attractive.

LEGAL PROTECTION

A Patent Application has been filed.

PROTOTYPE

A modular series of prototype tests are planned for the Saftikey.

Background

Escapaid

September 11th, 2001:

The impact of the destruction of the Two Towers continues

The media is panicking. Building regulators are racing round in circles. And, architects are struggling.

The problem is simple: you *need to* build skyscrapers, you *have* the technology to build skyscrapers, but you *don't* have the technology to get people out of skyscrapers quickly enough to avert loss of life in the event of fire. That's what 9/11 showed so dramatically and tragically.

Victims were filmed jumping out of windows and 100's of firemen were caught in the collapse because they were trapped on the stairs.

This scenario is *precisely* what construction academics have been warning about for years:

"In high rises, the amount of people present makes evacuation more difficult; they have to be moved down through long stairs _filled with other panic-stricken people, at the same time allowing firemen to work effectively.

Source: [Impact of Building Codes on Multi-storey Vertical Structures](#)

RX. Greenshaw, University of Wisconsin, 1991

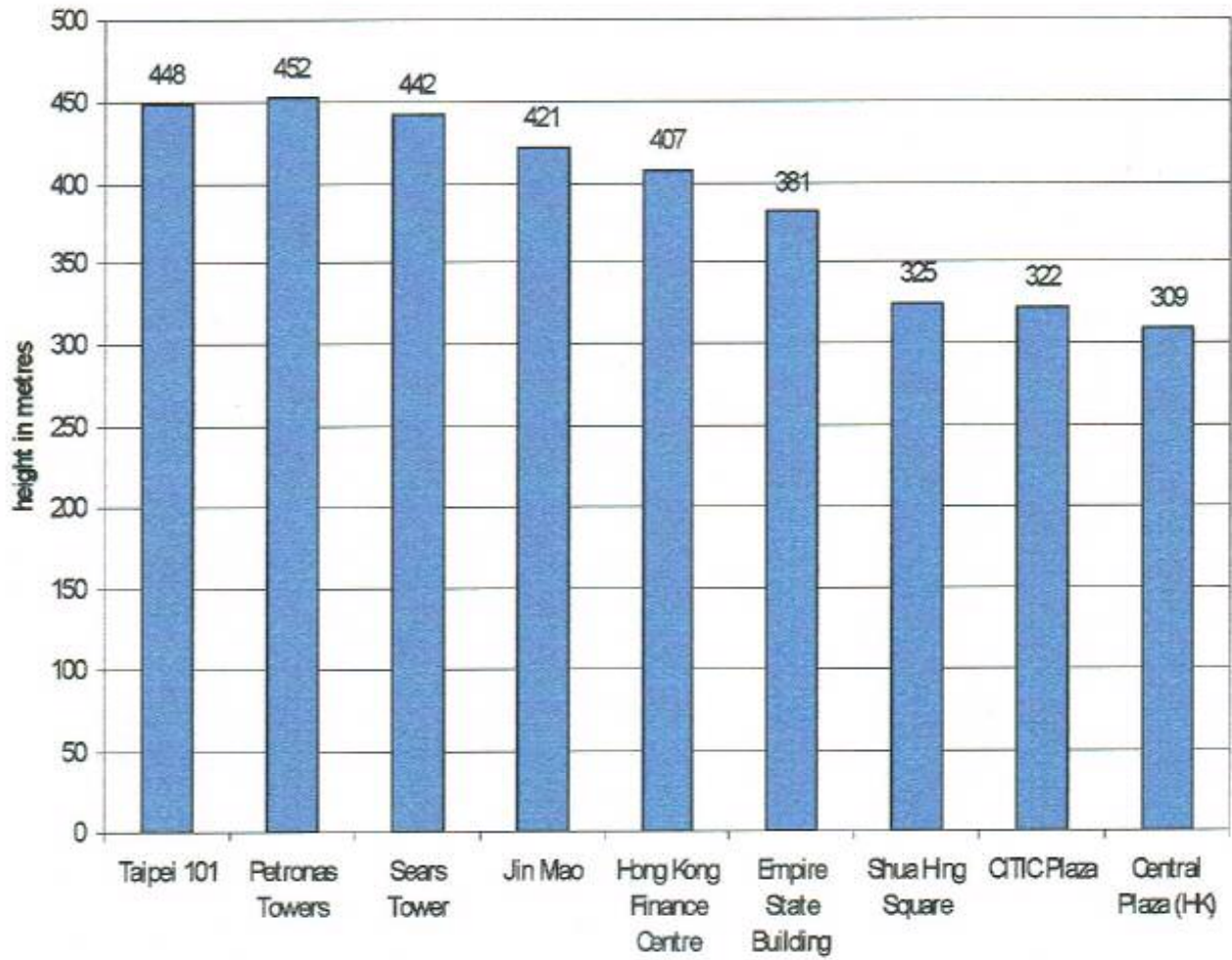
And, skyscrapers are getting taller. The Taipei 10 1 building, only just been completed, stands at a staggering 448 metres high (see Figure 1 overleaf)

The Escapaid has been developed as a viable solution to a problem that can only get more serious as skyscrapers get higher and more common.

Background

Escapaid

FIGURE 1: THE TEN TALLEST SKYSCRAPERS (GLOBAL)



Source: (CTBUH) Council on Tall Buildings & Urban Habitat, USA, 2004

Product Specification

Escapaid

PRODUCT FUNCTION

The Escapaid aims to provide a managed means of emergency egress from multi-storey buildings, satisfying criteria of.

- √ Flexible installation options
- √ Appropriate capacity for number of building occupants
- √ Appropriate evacuation speed
- √ High evacuee safety and comfort

PRODUCT CONCEPT

Escapaid comprises a tower. This tower runs to the height of a building and comprises a number of stacked chambers (*line drawing 1 overleaf*). Together, these padded chambers form a cellular escape chute. Evacuees access the tower via their storey and reach the ground by descending through each chamber in turn.

PRODUCT OPERATION

Descending through the chambers

Each chamber features a suspended, low-friction floor sloped towards an exit chute in one corner (*line drawing -3, overleaf*). Diametrically opposite to this *lower* exit chute is an *upper* entrance chute set into the ceiling of the chamber (*line drawing 2 overleaf*). The evacuee falls through the upper entrance chute, the sloped profile of the low-friction floor guides him to the diagonally-opposite corner, and he exits to the next chamber below via the exit chute.

Arriving at the bottom of the tower

On approach to the ground floor of the building, a structure resembling a **bouncy** castle with a revolving, centrally-positioned, inflated cone deflects evacuees into

Product Specification

Escapaid

Different directions, allowing a swift flow of people through the system (*line drawing 5 overleaf*).

PRODUCT CONFIGURATION

Tower Construction

The main Escapaid tower features a number of loosely stretched independent sagged floor sections - each one comprising a separate chamber. A shock-absorbed slack-spring system is anchored into the walls. Similar in principle to that used to secure a trampoline to its frame.

The floor of each chamber is constructed of a Lycra-based material coated with Teflon. Key criteria for material composition include high oil content for low-friction sliding of evacuees and elasticity for shock absorption.

KEY DESIGN FEATURE

Central to the design of the Escapaid is the diametric positioning of entry/exit chutes in each cell; the evacuee falls through the ceiling at one corner, slides along the floor, and exits through the floor at the other corner. This system ensures that the fall experienced by the evacuee is less than the height of one storey at a time, and also ensures that the evacuee cannot look straight down the tower and become susceptible to vertigo.

FLEXIBLE INSTALLATION

The Escapaid is suitable for installation along the outer wall of a building, and inside vertical shafts within existing or newly-built multi-storey constructions.

Product Specification

Escapaid

The walling of the tower is made of two inter-connected layers with an inner cavity of heat-and-fire-proof material.

DESIGN DEVELOPMENT

The cellular construction of the Escapaid tower allows for easy developmental testing.

Line Drawings Contents

Escapaid

The following line drawings illustrate the compact, simple innovation of the Escapaid:

Drawing 1: front view: Escapaid tower principle

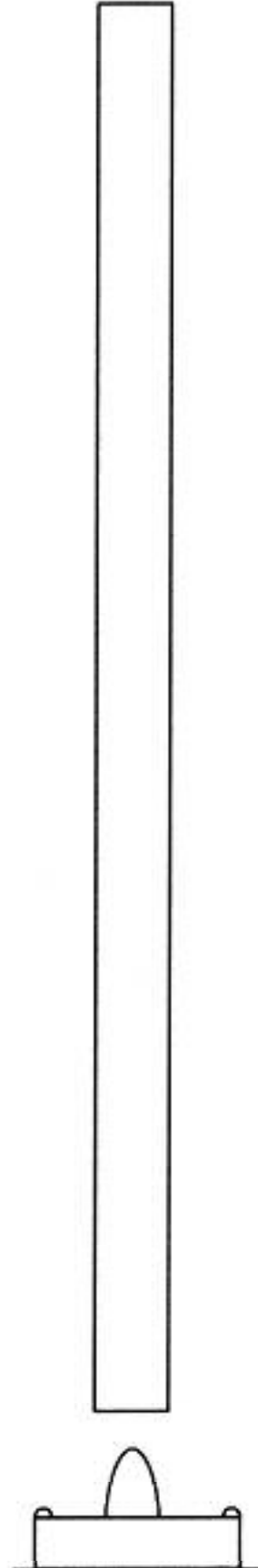
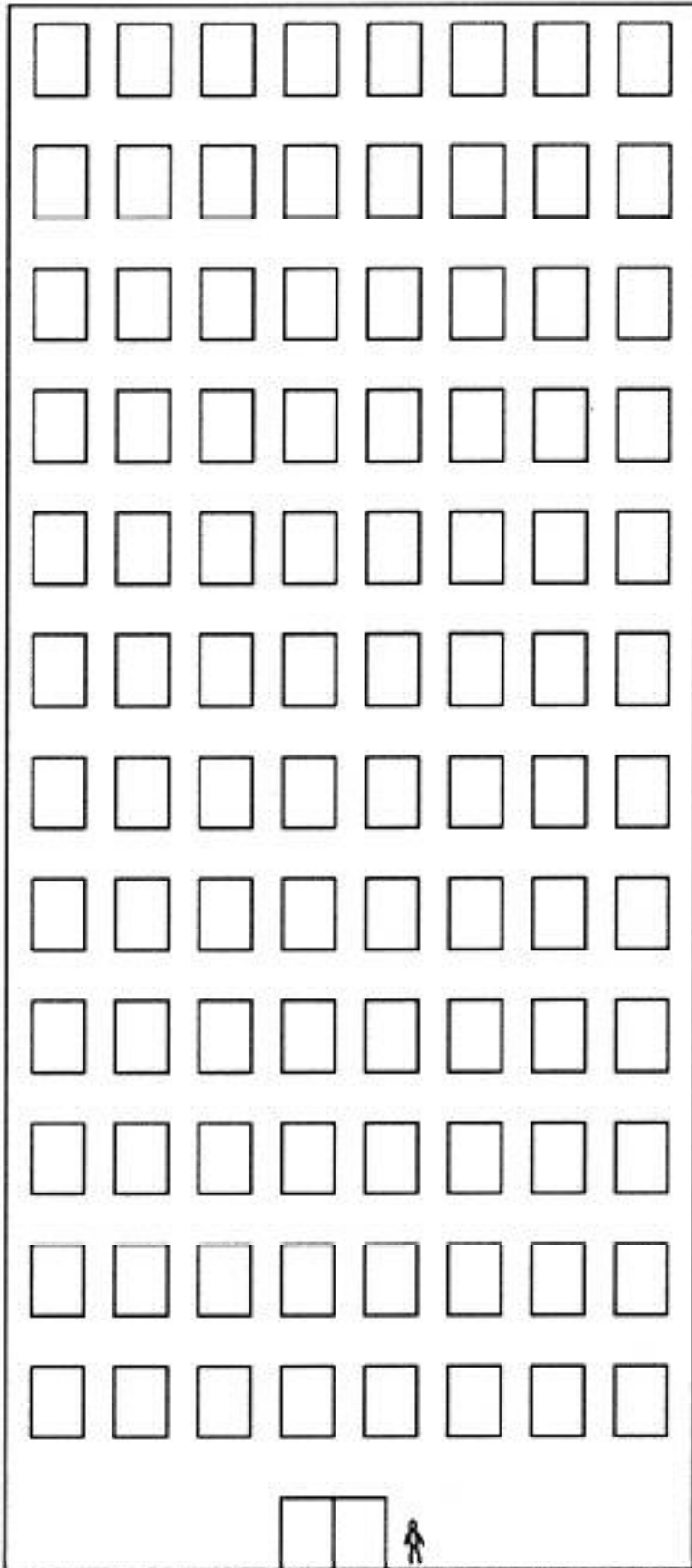
Drawing 2: isometric cut-away view: Escapaid chamber principle

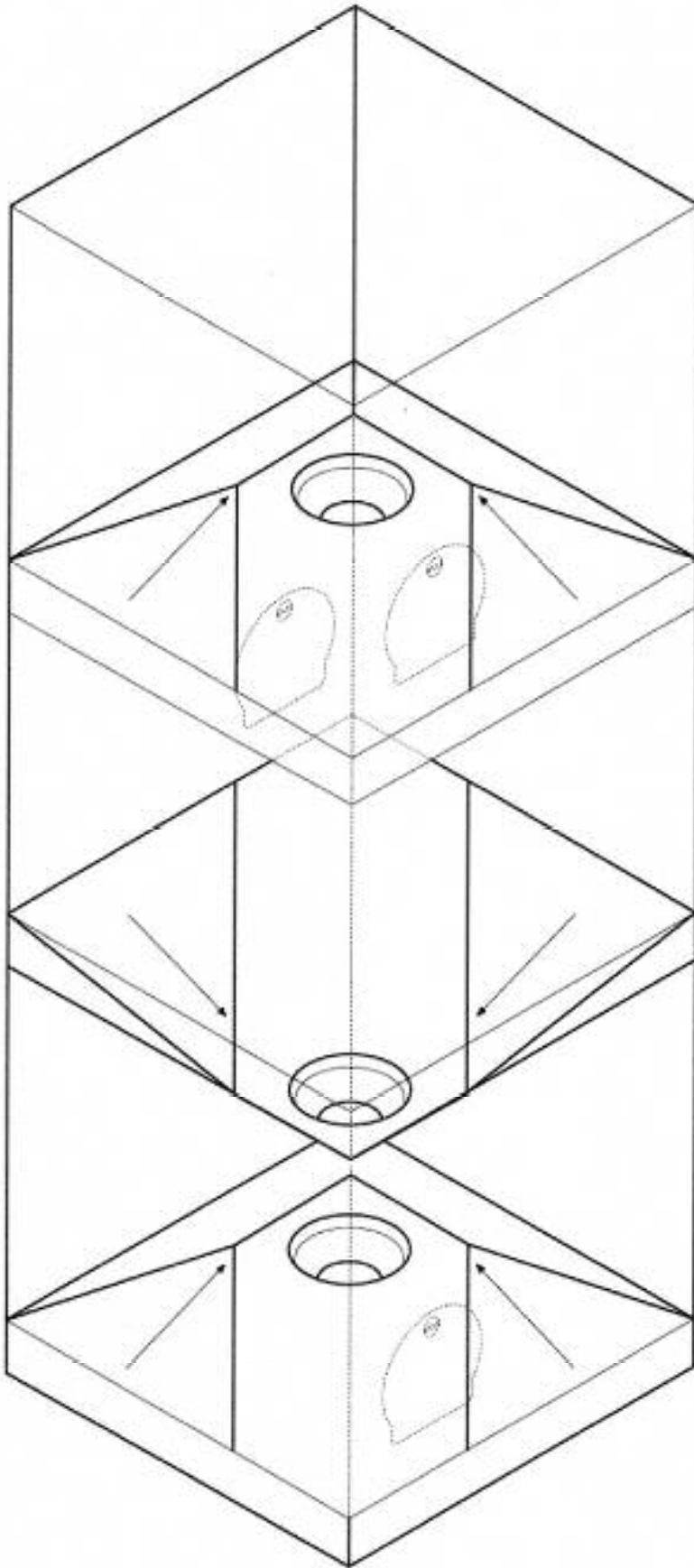
Drawing 3: isometric cut-away view: a single Escapaid chamber

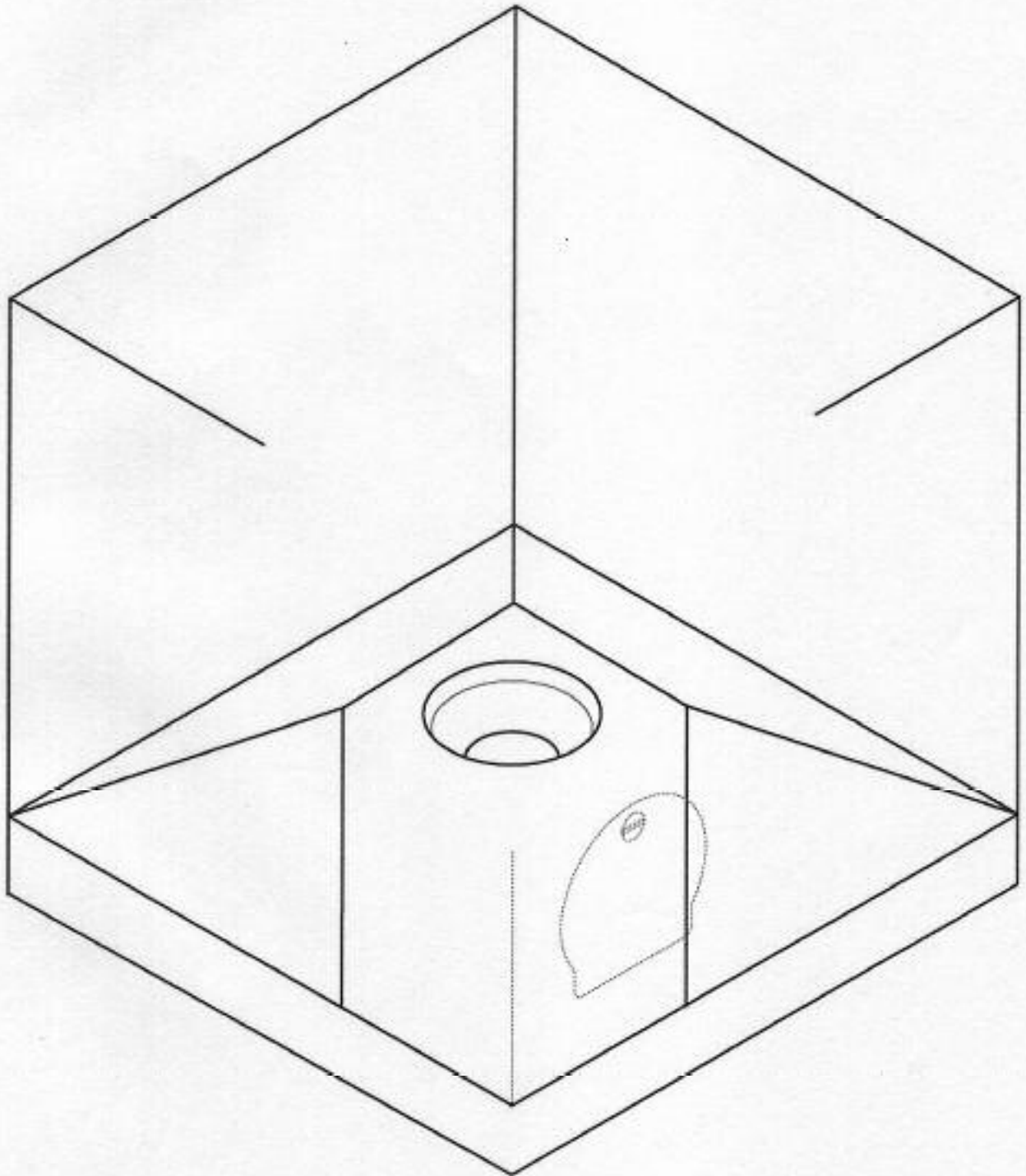
Drawing 4: front exterior view: single Escapaid chamber featuring entry hatch

Drawing 5: Side view (featuring cut-away): ground-level exit bed

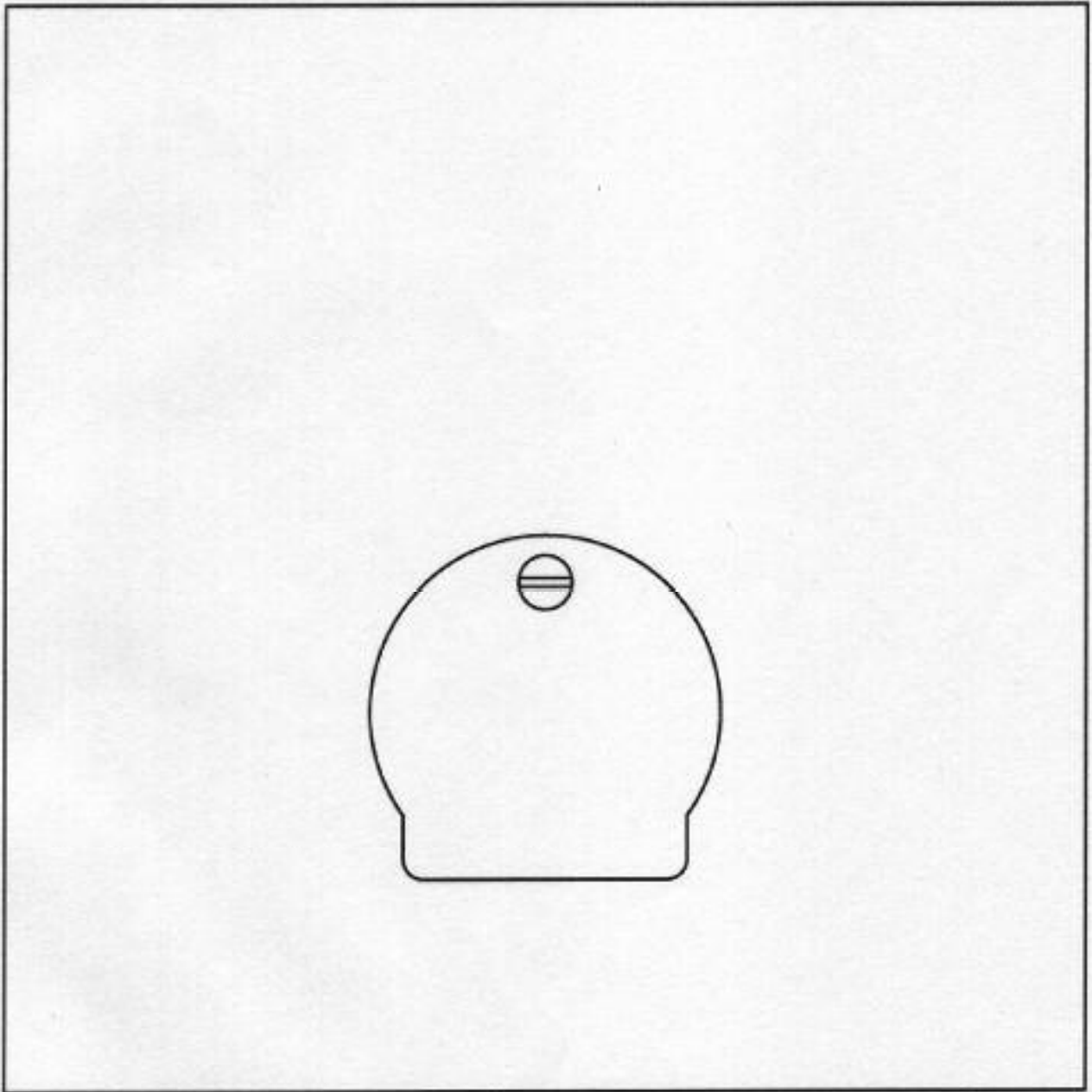
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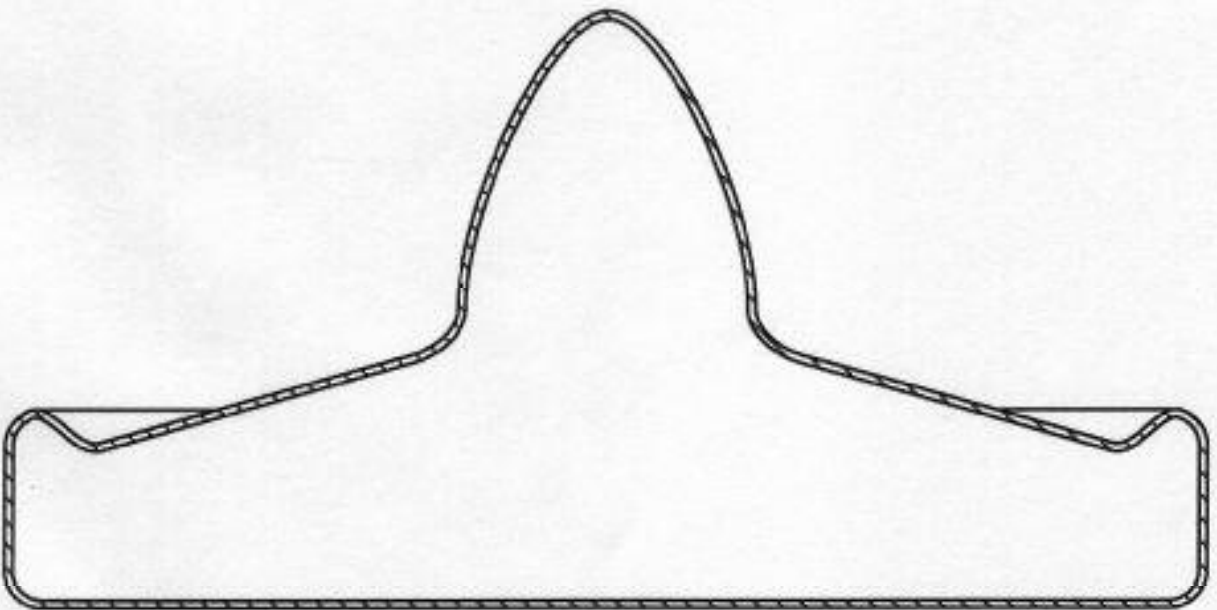
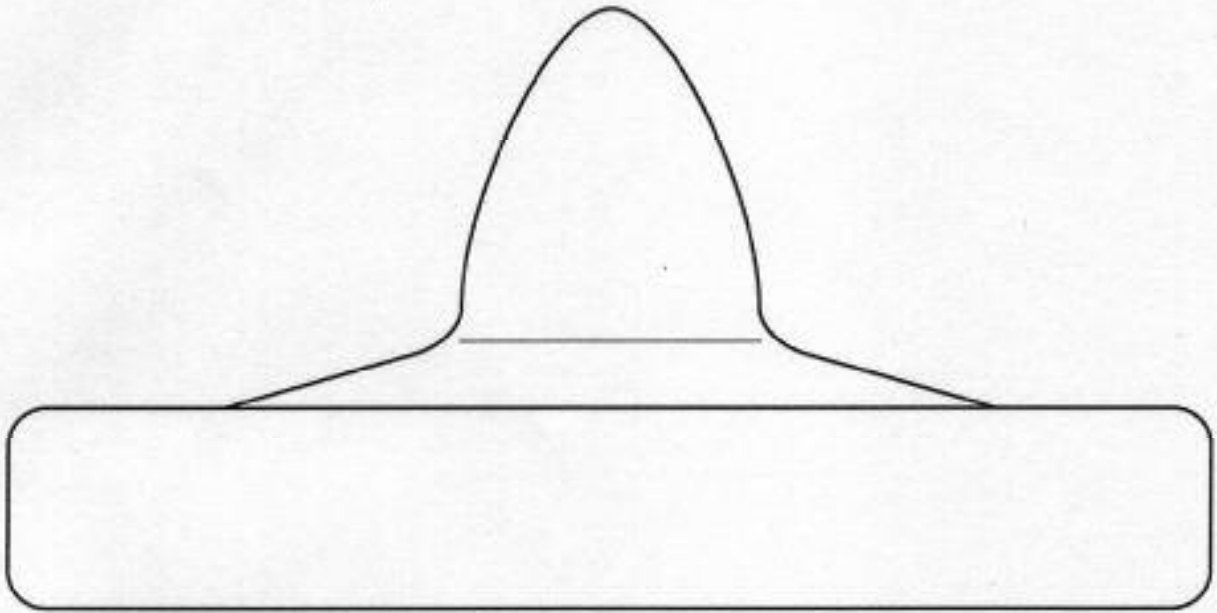




Escapaid



Escapaid



Prototype

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A prototype of the Escapaid is currently not available. Modular prototype testing is envisaged for the following key areas of Escapaid design:

1. **Load testing vs. single chamber design** Finalising chamber design to strike optimum balance between speed of passage and load-bearing capacity

2. **Load testing vs. stacked chamber configuration** Finalising overall structure to determine capacity limit

3. **Load testing/comfort vs. materials** Finalising materials choice to offer
 - a) Sufficient strength to maintain structural cohesion of Escapaid tower
 - b) Sufficient elasticity and low-friction passage to keep escapees comfortable

The Market

Escapaid

The market for the Escapaid is grand, global, and wide open:

- √ **Grand** because the potential revenues to be accrued are astronomical; skyscraper construction accounts for £1bn+ investment annually. (Safe Skyscraper Construction Campaign, USA, 2004)
- √ **Global** because skyscrapers are continually being built worldwide (with China being the current hotspot of development)
- √ **Wide open** because the market is in a continual state of flux with building codes, and building codes are in a continual state of flux themselves:

BUILDING CODES AND MAKING NEW FRIENDS

The Escapaid offers excellent market potential if it is developed in partnership with a regional/national regulatory authority. There are a lot of them - over 18,000 regional skyscraper building codes exist in the USA alone (American institute of Architects Journal, 2002) - and none of them have got a product to recommend.

After 9/11, there has naturally been a drastic tightening of safety regulations concerning skyscrapers - such as the following provision made in New York in response to findings of the World Trade Centre Building Code Task Force:

"A means of egress from the interior of a building to an open exterior space which is provided by the use of the following, either singly or in combination: exterior door openings, vertical exits, exit passageways, horizontal exits, interior stairs, exterior stairs, fire towers or fire escapes, but not including access stairs, aisles, corridor doors or corridors. "

Source: Sub-section M6 of [Int. No. 126](#)- amendment to administrative code of New York City passed by New York City Council June 7 2004

The Market

Escapaid

BUILDING CODES AND MAKING NEW FRIENDS (cont.)

Devised by the city that experienced the worst skyscraper accident in history, this legislation is unbelievably vague. And, that's because - until the Escapaid was devised - there has been no simple answer to the problem of skyscraper evacuation.

The NY City Council is essentially saying here, "find something, anything, *everything* that can get people out fast. We don't know what you're going to have to do, but do *some*

This attitude is common globally amongst building authorities. The DTI of the UK, for example, spends £6m per annum on the outsourcing of development strategies for building codes, including fire prevention, cessation, evacuation etc. (Construction Monitor, 2001, www.dti.gov.uk). They clearly don't even know where to *begin*, let alone start.

HEAD IN THE CLOUDS?

Inventions are not alone in the search to provide improved skyscraper evacuation. Since 1999, the DM Aerospace Group in Israel has been developing the Eagle Platform. This operates along the lines of existing VTOL (Vertical Take-Off and Landing) technology, as pioneered by the Harrier Jump Jet. The Eagle Platform is essentially a hovercraft transporter, capable of rising up and down the exterior of skyscrapers and taking on board evacuees via windows/emergency exits. The idea is an exciting one, and certainly possible scientifically. But, is it likely to be cost-effective? And 100% reliable? And what about capacity?

Legal Arrangements

Escapaid

- A patent application number GB 0409034.6 has been filed with a priority date of 23rd April 2004.
- A thorough international patent search has not revealed any prior art that prevents the patent application from proceeding.
- The intellectual property is protected by Patent Applicants Insurance.
- Inventions are an international marketing company that has been appointed by the inventor as their exclusive agent to negotiate licences for the use of their intellectual property.
- Inventions is a division of Omega Holdings Limited, a company registered in England and Wales (No. 1823024) whose registered office is at 28, Main Street, Mursley, MK17 0RT
- Further information is available on request.

Commercial Arrangements

Escapaid

- The Intellectual Property, including all Patents, Applications, Copyright, and Know-How shall remain in the ownership of the inventor, Michael J. Zabrana, therefore will not be available for outright sale, but licence on a regional, national, or international basis is available through us, or by contacting directly Celtic Lines on www.celtic-lines.com or via e-mail on celtic-lines@celtic-lines.com & zabrana@celtic-lines.com
- Inventions, as represented by Mr. Colin Cramphorn is the exclusive representative of Mr Michael J. Zabrana in respect of this invention.
- Payment may be negotiated on basis of a lump sum advance payment, or royalty on sales, or as a combination of the two.

Inventions

Escapaid

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Inventions is a wholly owned division of Omega Holdings Limited. A company registered in England and Wales in 1983.

In the first years of trading, the business was primarily associated with the plastics industry, having subsidiary companies manufacturing injection mouldings, injection moulding tools, press tools, and special purpose equipment. One of the company's early projects was the design and manufacture of a machine for the high speed welding of plastic hemispheres to form balls for roll on deodorant.

In the early years, an inventor approached the company to assist with the development of a new design of automotive sunroof.

Inventions

Escapaid

Top Sliding Roof - This project was very successful and formed the embryo from which "Inventions" grew.

Over the rest of the eighties, there was a gradual move from the plastics business towards the inventions field until in 1991 "Inventions" was the only trading division of Omega Holdings Limited.

The early years of Inventions were not easy - not least because of the recession - but steady progress was made and the business grew. The company has developed as a "virtual company" with an association of people with varying skills all operating from their own base. The core company has only five employees but has a host of expert associates in areas such as product development, design, graphic art, copy writing, prototype manufacture, intellectual property, sales, marketing and licensing.

A variety of products have now been successfully sold. These range from a simple plastic clip to stop lorry wheel nuts from loosening to a very sophisticated digital security system which is now the international standard for use on facsimile.

Inventions is now one of the UK's leading International Licensing Agents dealing with private inventors.