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(54) **Title:** NEW MECHANISM FOR LIFTS

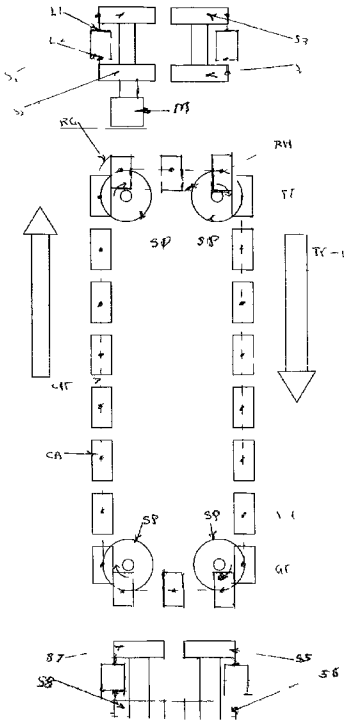

FIG-1

(57) **Abstract:** A new method of, elevator in which multiple cages on each floor are connected by conveyor chain which lifts all cages on one side in upward direction and lowers all cages on other side in downward direction, thereby giving very huge efficiency of moving people up and down very fast. In this variations are possible of having either alternate cages or one cage in 3 floors on 1 in 4 floors etc. and the number of cages on the chain will decide the level of efficiency as compared to single cage at present. The entire chain having all cages is moved by sprockets on top & bottom. When any cage has reached its destination it stops & that door is opened. Due to timer setting door closes automatically and chain moves again. When chain stops, all the floors will have two cages facing the floor, one for upward movement and one for downward movement. At any time at any floor if person wants to go up or down he has to only press a proper button outside and almost instantly the door of cage available on that floor opens and he (or they) go inside. After pressing suitable buttons inside the cage, the whole chain starts moving tiU that cage comes to its destination and stops, Variations in above(A)2 ducts are side by side and chain links are connected at front and back of the cage. Here the door will be in two parts and cage will have vertical partition. (B) The cages are not connected by chain but they are independently driven by either motor or fuel engine etc.and they move up and down with the help of rack, pinion and brake. At the top, the cage can be either pushed by hydraulic or pneumatic cylinder from left to right or allowed to be inverted (C) The cage is in form of piston, which is moving in a vertical cylinder. The air above the cage is removed with the help of steam, ether vapour etc. and further condenses with the help of shower /cooling water which creates vacuum and air pressure pushes the cage upward at very high speed. The lowering of the cage due to gravity is controlled by normal chain, gearbox and wire rope mechanism.

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NEW MECHANISM FOR LIFTS

COMPLETE SPECIFICATION :

This invention of new mechanism is described under various salient points. (A) Super lift is a new system of elevators for buildings applicable for any number of floors. The main advantage is, it has no waiting time for passengers due to multiple cage system (instead of only one in present arrangement). Any person at any time on any floor gets the cage to go up or down almost immediately. Please refer figure 1. CA=Cage, CH = Chain, SP = Sprockets RG = Rail Guide, to prevent turning of cage, RH = Rail for horizontal movement, TF = Top Floor, TF-I = TPFL-I, GF = Ground floor, 1st F = 1st Floor. Each cage for every floor is fitted on chain links L1 & L2 (see top view). The entire chain having all cages is moved by sprockets Sl, S2, S3, & S4 on top & sprockets S5, S6, S7, S8 at bottom. The main sprocket set Sl, S2 is driven by motor M, whose power varies as per number of cages etc. Chain moves only if all landing & cage doors are closed. When any cage has reached its destination it stops & that door is opened. Due to timer setting door closes automatically and chain moves again. When chain stops, all the floors will have two cages facing the floor, one for upward movement and one for downward movement. At any time at any floor if person wants to go up or down he has to only press a proper button outside and almost instantly the door of cage available on that floor opens and he (or they) go inside. After pressing suitable buttons inside the cage, the whole chain starts moving till that cage comes to its destination and stops, with each cage automatically facing each floor. Similarly simultaneously if different people have entered

different cages the chain starts and stops with the help of electronic logic control according to various instructions given by passengers inside different cages & outside, similar present single cage system. One side of the chain caters to upward movement and simultaneously other side of the chain caters to downward movement. If building has 90 floors the efficiency of this super lift is 180 times the present single cage system as 90 cages are doing upward movement^ and 90 cages at same time are doing downward movement. This new design is very efficient than the conventional single cage system at present. The cost of manufacturing this will be only marginally more than the present, but performance and superior service will be much better. The difference between present design and new one is similar to the difference between bullock cart and car. (B) When instructions are " ten floors - no stop " the conveyor automatically goes in high-speed mode to reduce time. And if load is more in the morning in up direction, automatically alternate cage'*'*mode will operate. Here alternate cages will be used instead of all to reduce load. Similarly I in 3 or l in 4 or l in 5 cages can be used instead of all if very high efficiency is not required. To reduce cost chain can have alternate cages onryj. in 3 cages only etc, and rest of the space on conveyor will be kept blank. Efficiency will be directly proportional to number of cages on chain. Alternate cage arrangement is shown in fig 2 & 1 cage in 4 floors arrangement in figure 9. (C) All other normal features will be similar to the system in present single cage design. Either every cage will have a geared motor or separate drive for cage and landing doors, or one motor can be common for 4 or 5 cages and all drives can be connected by a chain. During power failure an auxiliary battery operated motor will bring the conveyor to the nearest position and only loaded cage doors will open one by one and passengers allowed to go out. The conveyor will

have some dummy positions at top and bottom, where it will not face any floor. Here there will be no landing door and only cage door, which will open during power failure. Normally people are supposed to vacate the last cage on top and bottom and hence there is no possibility of any passenger available in dummy positions but in emergency, door can be opened and people can come out. A load cell includet(between chain link and cage measures the weight of the cage and conveys the information to the electronic control. If on right side, cage is not in synchronization with the floor, this small defect can be rectified by adjusting distance D & H as shown in figure 9. As whole cage width has to pass through the bottom the civil work AB has to be supported from the sides by MS beams as bottom has to be clear (See figure 4). (D) Variations in above conveyor design are possible with some changes as shown in various attached figures. See figure 5. CH = Chains, DO = Doors 2 ducts are side by side and chain links are connected at front and back of the cage. Here the door will be in two parts and cage will have vertical separate partition. Another variation and design is possible as shown in figures 6 and 7. DO = Doors. The cages are not connected by chain but they are independently driven by either motor or fuel engine etc. and they move up and down with the help of rack, pinion and brake. At the top, the cage can be either pushed by hydraulic or pneumatic cylinder from left to right or allowed to be inverted as shown in figure 7. (E) Some other designgare possible theoretically but not practical as shown in figure 3. Here the cages instead of straight line, move in a circular motion similar to giant wheel but this design requires very large horizontal space equivalent to height of building which is not possible. Another variation is possible as shown in figure 8 and 10. The cage is in form of piston, which is moving in a vertical cylinder. The air above the cage is removed as described

below, and cage is pushed up by air pressure due to vacuum on other side. After reaching top, the cylinder pushes cage to right and wire rope and motor lowers the cages as per the destination required. The removal of air is done as below: - The system uses a completely different method which is very powerful to give huge power. Atmospheric air pressure at 1 kg. /cm.sq. Is used (naturally always available). To make use of it, it is necessary to remove air from top chamber at cheap cost. Please refer figure 10. Piston moves freely up and down in metal cylinder MC. Boiler B provides steam or ether vapour which is kept under constant pressure in receiver R. £pteam is sent to metal cylinder MC by valve VI till cylinder is full and reaches valve V2, where it is sensed by sensor at valve V2. Valve V l is closed and steam has removed all air from cylinder C which has escaped to atmosphere through condenser CO. Cylinder is cooled by cold water circulation as well as by shower. As soon as steam condenses in cylinder, huge collapse of volume and hence almost full vacuum is generated in cylinder. Due to this, upward atmospheric air force of 1 kg. /cm.sq. acts on bottom of piston and it moves up thereby raising weight W. During upward movement top of piston due to rack and pinion operates Gear A, and this rotation rotates fly wheel F which rotates alternator AL giving power to out put (PO). Now air is released in cylinder and weight W (piston) moves down. Now same rack and pinion rotates Gear B in reverse direction and with help of gears C.D.& E rotates flywheel in same direction. Gears C & D are connected to free wheel and hence transmit power in one direction only. After piston has come down again steam is admitted and cycle repeated. Top and bottom movement timings are controlled by stoppers S1 & S2 and hence constant power is obtained. Same system can be used to operate bullet train. Consider piston as train see fig/E) CYL = Cylinder, P = Piston, (Cage), PO = Power

Output, V = Vacuum, CW = Cold Water, WPD = **Waste Pallet** Dispenser, HW = Hot Water, RE = Receiver, F = Fire, B = Boiler, W = weight, CO = Condenser, MC = Metal Cylinder. Cylinder is a long pipe fitted from one city to another. If air is removed from other side at cheap cost as above piston (train) will move at bullet speed from one city to another. Above system can have various different applications. One of them is raising the cage of elevators to very great height at cheapest cost.

The major design changes in elevator design have been described above. AU other systems like opening doors etc, will be similar to existing single cage design.

1. A new method of operating elevator in buildings as described above under points (A), (B), (C), (D), (E), in which multiple cages on each floor are connected by conveyor chain which lifts all cages on one side in upward direction and lowers all cages on other side in downward direction, thereby giving very huge efficiency of moving people up and down very fast. hi this variations are possible of having either alternate cages or one cage in 3 floors on 1 in 4 floors etc. and the number of cages on the chain will decide the level of efficiency as compared to single cage at present. Alternate cage arrangement is shown in figure 2 & 1 cage in 4 floors arrangement in figure 9

2. A new method of operating elevators in buildings as described above under points (A), (B), (C), (D), & (E) in which various variations of designs are possible for example having two ducts side by side as shown in figure 5. Or cages are moved up and down by independently driven motor or fuel engine and supported on back side by rack, pinion and brake. The top cage is pushed by hydraulic or pneumatic cylinders from left to right or allowed to be inverted to a circular duct at the top, as shown in figure 6 and 7.

3. A new system of operating elevator with the help of vacuum as described above as shown in figure 8 and 10 where air is removed from the cylinder with the help of steam, ether vapour etc. and further condenses with the help of shower /cooling water which creates vacuum and air pressure pushes the cage upward at very high speed. The lowering of the cage due to gravity is controlled by normal chain, gearbox and wire rope mechanism.

4. The new system of operating elevators with the help of multiple cages as described in points (A), (B), (C), (D), (E), in which many other minor variations in designs are possible keeping the main idea of multiple cage

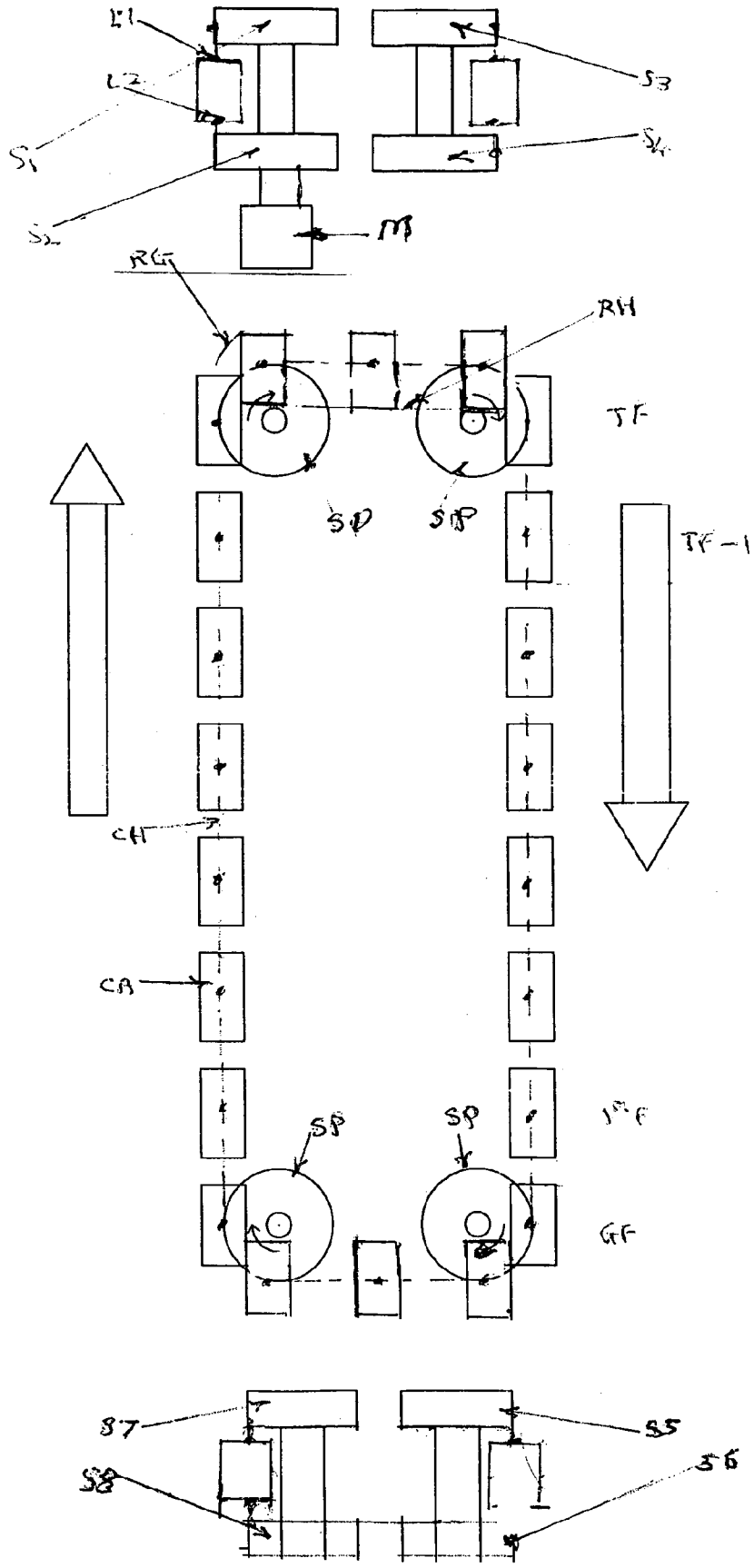


FIG-1

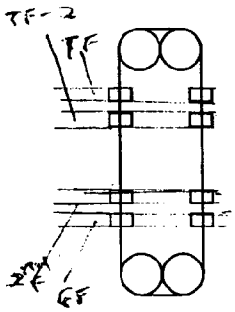


FIG 2

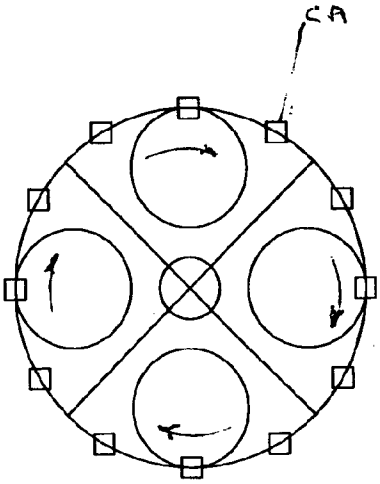


FIG 3

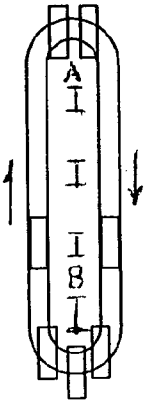


FIG 4

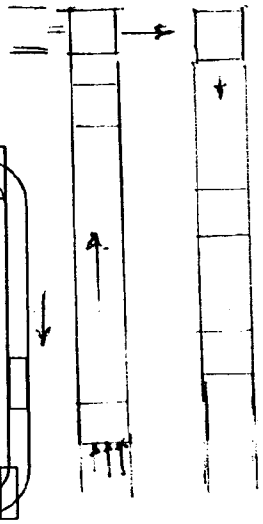


FIG 8

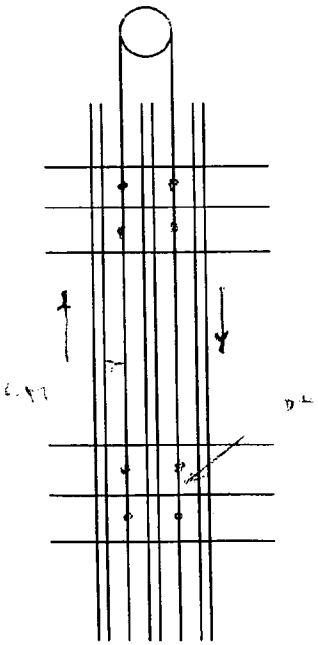


FIG 5

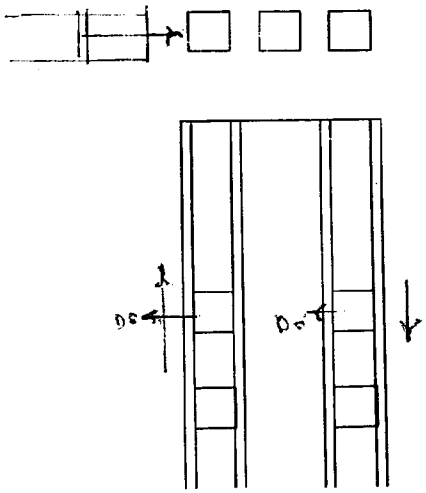


FIG 6

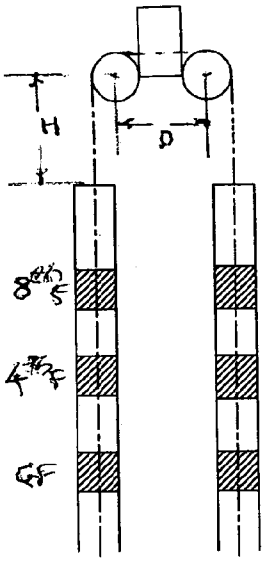


FIG 9

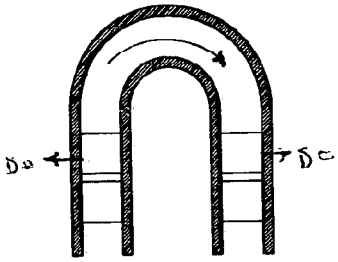
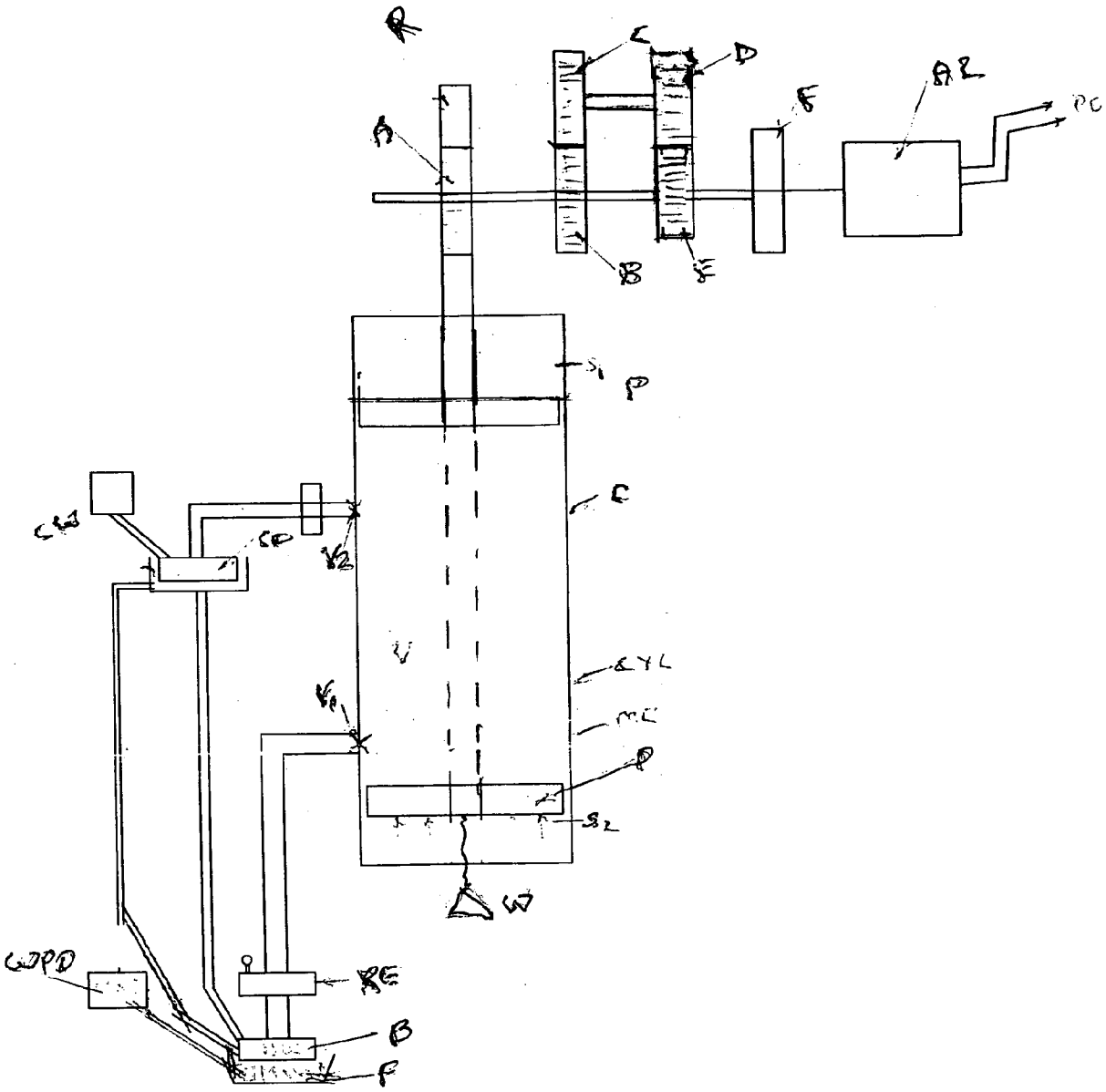


FIG 7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INTERNATIONAL SEARCH REPORT

International application No
PCT/IN2008/000185

A CLASSIFICATIONS SUBJECT MATTER
INV. B66B9/10

According to International Palenl Classification (IPC) or to both national classification and IPC

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B66B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to claim No
X	GB 1 393 669 A (TREBRON HOLDINGS LTD) 7 May 1975 (1975-05-07) page 2, column 1; figures 1,2,12	1-4
X	GB 741 072 A (J & E HALL LTD) 23 November 1955 (1955-11-23) page 2, columns 1-2	1-4
X	US 4 071 135 A (ISHIKAWA RIICHI ET AL) 31 January 1978 (1978-01-31) abstract; figure 1 page 5, column 1, lines 31-48	1-4

D Further documents are listed in the continuation of Box C

[X] See patent family annex

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Date of the actual completion of the International search	Date of mailing of the international search report
9 December 2008	23/12/2008

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IN2008/000185

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