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

(11) EP 1 054 375 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.11.2000 Bulletin 2000/47

(51) Int. Cl.[7]: **G09F 15/00**

(21) Application number: **00850086.0**

(22) Date of filing: **17.05.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

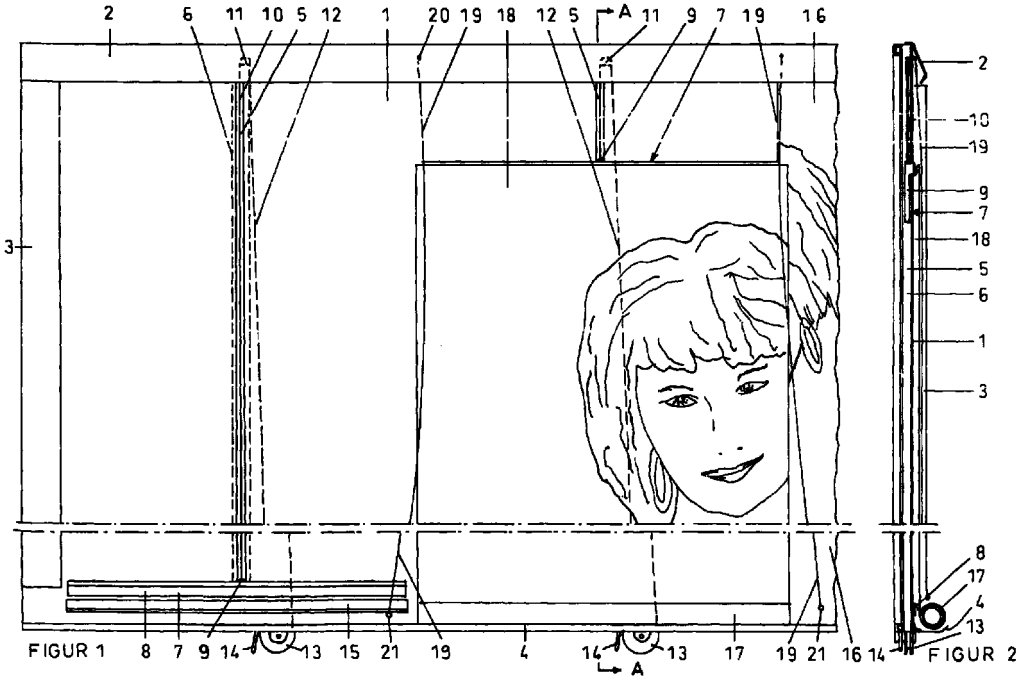
(30) Priority: **21.05.1999 SE 9901850**

(71) Applicant: **WINBERG, Ragnar**
S-254 58 Helsingborg (SE)

(72) Inventor: **WINBERG, Ragnar**
S-254 58 Helsingborg (SE)

(54) Device for billboards

(57) Device for billboards of the kind where the board has a hard firm surface to which the message can lie close, where the message is arranged in several lengths placed beside each other whose height is the same as that or the board, where the lengths overlap each other in their side edges and where every length belonging to the message can be put up and taken down separately, **characterized by** the fact that for each length there is a hoisting device mounted on the board on which the upper edge of the length can be applied when the hoisting device is in its lowest position near the lower edge or the board and that the hoisting device after that can be hoisted to its uppermost position with the length applied and in this position keep the length.



EP 1 054 375 A2

Description

[0001] The invention in question is intended for ordinary billboards, specially the big ones whose height is about three metres and whose breadth is about four metres.

[0002] The purpose of the invention is to simplify the changing of messages and eliminate the use of paste.

[0003] Since many decades the application of messages on big boards is made by applying a number of 6 to 8 printed sheets of paper with water-soluble paste onto the surface of the board. The paste is applied either directly on the board or on the sheets. The sheets overlap each other and if the paste is applied directly on the board this must be completed with paste in the overlappings . When a new message is to be applied this can be done on an earlier one. When the board has generally five to seven messages on top of each other all are removed in layers and the board is scraped dean. After that new messages can be applied. This method has several disadvantages. The paper must be damp when applied, otherwise it can bubble. The application of paste is unhygienic and after some time splashes and running paste will make especially the lower frame of the board dirty. Paste can also make areas outside the board dirty. If the application of paste is insufficient, corners of the posters may come loose at strong winds and then the whole poster sheet may blow away. At strong winds it can be difficult to handle the separate poster sheets. It is also difficult to check the taking off layers of paper at strong winds. At temperatures below zero there may be difficulties at pasting. Furthermore it is inconvenient for the applicator to stand on a ladder as he often does when the topmost poster sheets are to be applied.

[0004] A device for exchanging messages on a billboard is shown in the PCT application WO 98/28730. There all the paper sheets that are to form the message have been fastened together and rolled onto a tube, whose length is the same as the breadth of the board. The whole message fastened together is hoisted up at the same time by only one hoisting device. Most big boards are in big cities. Parking a car dose to the board is most often not possible. Therefore the applicator often uses a bicycle or a carrier moped which can be placed near the boards. Handling a roll whose length is four metres or more is hardly possible in that situation. Often the big boards are placed on house walls several metres above the ground. Handling such long rolls on ladders can be risky, specially at strong winds.

[0005] Another device for exchanging messages on a billboard is described in the Swedish patent 501806. There one length at a time is applied by a special tool for application which the applicator himself must bring. The tool has a shaft which is longer than the height of the board , which is difficult to bring when climbing on ladders. The tool is not possible to use on boards which are placed near the ground or, which is usual with boards placed high, where there is a standing platform near below the board. As the upper edge of the length is not fastened to the application tool it can fall down the board when it is to be taken away.

[0006] A third device for exchanging messages on a billboard is described in the US patent 4185408. There is no hoisting device for each length. In the shown example of application there is no hoisting device at all and the intention is that every length is to be hooked to a sliding rail at the upper frame of the board by hand. In the description it is said that for very large boards there might be a hoisting device which is placed in vertical grooves along the vertical sides of the board. In that case everything is hoisted at the same time. The idea of the invention is a sign with tight from behind. Such are expensive and there is a very small number of them compared to the number of ordinary big boards.

[0007] With lengths with overlapping sides there are several disadvantages if the lengths are to be applied by one single hoisting device:

[0008] When the lengths are to be hoisted they cannot be rolled up on one single bobbin with the breadth of one poster length.

[0009] Because of the overlapping, rolled-up lengths cannot be placed axially in the same line. At least every second length must have a different axial position which means a complication.

[0010] When taken down according to the figures in the U.S. patent the lengths must be removed at the top (very high). The rolling-up of a length may then be difficult. It must be rolled up with its upper edge first and at the upper frame of the board since the length must not fall down.

[0011] This means greater risks at the hoisting in strong winds when several lengths are hoisted at the same time than when only one length under better control is hoisted at a time. This is also true of the taking down.

[0012] When taken down the used lengths cannot be rolled up on a single bobbin if they are rolled up at the lower part of the board.

[0013] The purpose of this invention is to eliminate the use of paste and in other ways facilitate the exchange of messages on big boards of the size which is common in Europe. This with a board construction which can be produced at a low cost. The only thing that the applicator will have to bring to the board is the tool whose length is slightly more than the breadth of a poster length. On the tool all the old lengths, one after the other, can be rolled and on the tool all the new lengths one after the other can be rolled off from only one bobbin. All work can be done from the lower edge of the board.

[0014] The invention has the special features that will be seen from the patent requirements and will be thoroughly described below by means of figures where examples of the design are shown in principle. For rea-

sons of clarity certain measures are exaggerated.

Figure 1 shows part of a big board seen from the front.

Figure 2 shows the board according to Figure 1 seen in section A - A.

Figure 3 shows the lower part of a board with a toot applied before taking off a length.

Figure 4 shows the lower part of a board with a tool applied for applying a new length.

Figure 5 shows the cross-section of a board.

[0015] In Figures 1 and 2 the surface of the board itself is indicated by 1. On its back it is supported by profiles. The board has an upper frame 2, side frames 3 and a lower frame 4, which is turned out at the exchange of messages. Inside the surface of the board there is a groove 5 approximately in the middle behind each length. The groove has a narrow vertical opening towards the surface of the board. A little behind the surface of the board the groove has inside side walls, which are marked with broken lines 6 on the left groove. A hoisting device is generally indicated by 7. It includes a horizontal, at the bottom double-folded plate 8, which is attached to a part 9 that can be moved in the groove and whose topmost part is a little above the double-folded plate. From the part 9 there is a fiat plastic ribbon 10, whose edge can be seen in the middle of the groove. This ribbon runs to the very top over a sliding part 11 and can be further seen as a broken line 12 down to a wheel 13 on which it can be rolled up. The wheel is designed as a ratchet wheel on its inside, which cannot be seen on the figures, however. A ratchet for every wheel, which can be taken away, is indicated by 14. On the board-plate there is a double-folded plate 15 for every length at the very bottom with the double-folded edge upwards fastened. The aim of these plates 15 is to attach the lower edges of the lengths to the board.

[0016] On the board according to Figure 1 one length is entirely applied to the very right. One bobbin with rolled-up new lengths is indicated by 17 and lies in the turned-out lower frame. One length 18 from this bobbin is in its upper edge attached to a hoisting device 7 and applied almost to its full height. This length overlaps the length 16 to the right. When the length is entirely applied its uppermost edge comes in under the upper frame 2. Stainless steel wires 19 are attached at the top of the board 20, below the upper frame. They have loops 21 to be attached at the bottom of the board. On the figures they have been loosened at the bottom. The aim of the steel wires is to be stretched across the overlappings of the lengths. The stretching device is at the bottom but it is not shown.

[0017] In figures 3 and 4 the plate surface of the board is indicated by 1 and the right side frame by 3. A length is here indicated by 22. Its lowest part is attached to a stiffening strip 23 and this is inserted from below into the double-folded plate 15. 24 indicates double adhesive tape and 25 a protecting strip covering the tape.

[0018] On the outer edge of the turned-out lower frame a tool is applied. This has a handle 26, and two fastened fastening parts 27 about 700 millimetres apart. The tool has cardboard bobbins inserted between four rotating wheels with flanges 28. On one side of the tool the wheels are attached to arms which can be spread out 29, so that the bobbins with their rolled-up lengths can be put on and taken off. The arms can be locked in their inner positions by the handle 30. On the lower bobbin in Figure 3 used lengths 31 have been rolled up. On the other bobbin are the lengths 32 that are to be applied.

[0019] The taking-off of lengths is done by first loosening the ratchet 14 of the corresponding wheel 13. The protecting strip 25 is taken off whereupon the lower frame is turned upwards so that the outermost length rolled up on the bobbin gets into contact with the glue of the tape 24. When the first length is taken off, its tape glue gets into contact directly against the bobbin. By means of a crank 33 turning the gear-wheels 34, the wheel is rotated and with that the bobbin at which the length 22 is rolled onto the bobbin. The slightly braked wheel 13 prevents the length and the hoisting device from falling down. The uppermost part of the length is taken off from the plate 8 on the hoisting device and the bobbin is rotated a little more. The tool is then brought to the right of the lower frame for the taking off of the next length. It is advisable first to take off all the lengths from the left to the right. After this has been done the tool is taken off the lower frame, turned and applied again to the tower frame, now so that the bobbin with the new lengths 31 comes at the bottom and nearest to the board according to Figure 4.

[0020] When hoisting, the procedure is to insert the uppermost edge of the length, which is provided with a stiffening strip 35, from above into the double-folded plate 8, which is part of the hoisting device. The ratchet of the corresponding wheel is brought into function and a loose crank 36 is put into the centre hole of the wheel 13. When turning the crank, the plastic ribbon 10 is rolled onto the wheel and the hoisting device is hoisted. The part 9 contains a tension spring 37, which in its lower part is connected with the part 9 and in its upper part joined to the plastic ribbon 10. When the length is hoisted so that it is stretched, the length can be stretched still more by turning the crank a little. The ratchet 14 locks the wheel so that it does not rotate backwards.

[0021] When applied according to the invention, one edge of the length becomes free, since the lengths overlap each other, because it is not attached to the board or to the adjoining length. This may cause problems at strong winds as the wind may lift the length and damage it. Even if the length should not be damaged, air in motion coming in here may bring about an

unwanted undulation of the length. In order to neutralize this, the length can be strongly stretched between its upper and lower edges. The horizontal joint itself between the two or three sheets which make the length must be strong and not dissolvable by rain. Since a polystyrene foil, which is a suitable material for the message, gets about 3 millimetres longer between the upper and lower frames at a temperature increase of twenty degrees, the tension should be continuous so that there is about the same tension of the length independently of its increase of length. Otherwise there may be unwanted bubbles or creases.

[0022] To make sure that the free edge of the length cannot blow up, stainless wires can be stretched over the edge of the length and prevent it from leaving the board. These wires can be loosened at the bottom when the messages are changed and stretched after the change.

[0023] As an alternative to steel wires, transparent plastic strips may be used, which are fastened at the top below the upper frame and can be taken off at the bottom at the change of messages and tightened after the change.

[0024] At the board designs which are shown in the figures, the stretched lengths come a few millimetres above the surface of the board. This can be designed so that the application of a length at the lower frame comes behind the surface of the big board and that the hoisting device at the top keeps the upper edge of the length behind the surface of the big board. Then the visible length lies close to the surface of the board.

[0025] The normal thing for the big billboards is that the surface of the board is plane. If the board between the straight upper frame and the straight lower frame bulges a little, the lengths can be made to lie tight to the surface of the board with some tension and a steel wire outside the edge of a length can press the edge of the length against the surface of the board with some tension.

[0026] If the board is placed very near the ground or there is a platform just below the board, which is often the case when the board is on a house wall high above the ground, all hoisting wheels 13 can be placed quite close to one or both side frames. The plastic ribbons 10 run on the back side of the board.

[0027] The tool which contains a cardboard bobbin for the rolling-up of used lengths can be driven by a battery-driven electric motor, possibly inside the bobbin. This can be advisable when it is difficult to turn the crank close to the lower frame because of the placing of the board.

[0028] The ratchets 14 can be placed so that they are only possible to reach when the lower frame is turned out. The lower frame can be locked in a turned-in position. The plate 8 of the hoisting device can, in its outer ends, run in grooves in the board behind its surface.

[0029] For the big boards of today the message is printed on a number of poster sheets of paper. They are so high that two or three sheets must be put together to a length. Since paper expands at contact with water, specially at right angles to the direction of the fibres and the paper in this case will not be pasted onto the board, it must be provided with a layer which prevents its expansion when wet. One way is to glue a plastic film onto each side of the sheets with melting glue. The plastic film can be on a roll. The overlapping of the poster sheets vertically should be cut away before the plastic film is glued onto the sheets. The plastic films keep the two or three sheets together to a length.

[0030] The printing of the message can, instead of being printed on untreated paper, be printed on paper which is covered with plastic on both sides. The message can also be printed directly on a white plastic foil of polystyrene for instance or on an incombustible aluminium laminate. If in the future it becomes possible to print the whole height of the length in one printing, this will mean a simplification since the joint in height will be eliminated.

[0031] If the hoisting device 7 is not applied to the board and it is not provided with the lower fastening plates 15 it is possible during a transition period to continue to paste the posters in the traditional way and when all boards in an area have been changed proceed to the system according to the invention.

[0032] It is an advantage that the only thing that must be brought to the board is the easily handled tool containing the new message. It is also an advantage that all work can take place at the lower part of the board and that the work can therefore take place at lower heights than at the traditional pasting of posters.

[0033] The invention is of course applicable also to other sizes of boards than those of ordinary big boards, specially to boards whose breadth is even larger and requires a greater number of lengths.

Claims

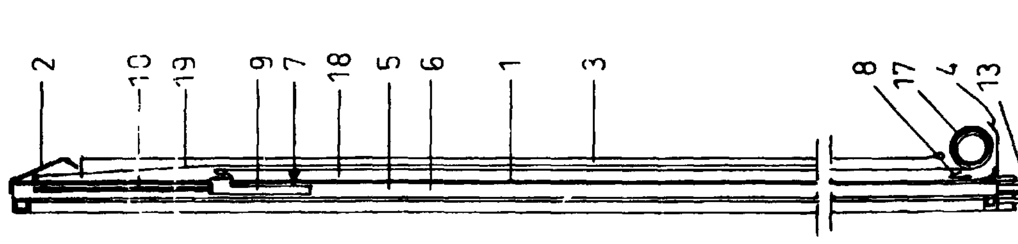
1. Device for billboards of the kind where the board has a hard firm surface to which the message can lie dose, where the message is arranged in several lengths placed beside each other whose height is the same as that of the board, where the lengths overlap each other in their side edges and where every length belonging to the message can be put up and taken down separately, **characterized by** the fact that for each length there is a hoisting device mounted on the board on which the upper edge of the length can be applied when the hoisting device is in its lowest position near the lower edge of the board and that the hoisting device after that can be hoisted to its uppermost position with the length applied and in this position keep the length.

2. Device according to Patent requirement 1, **characterized by** the fact that the device includes a fas-

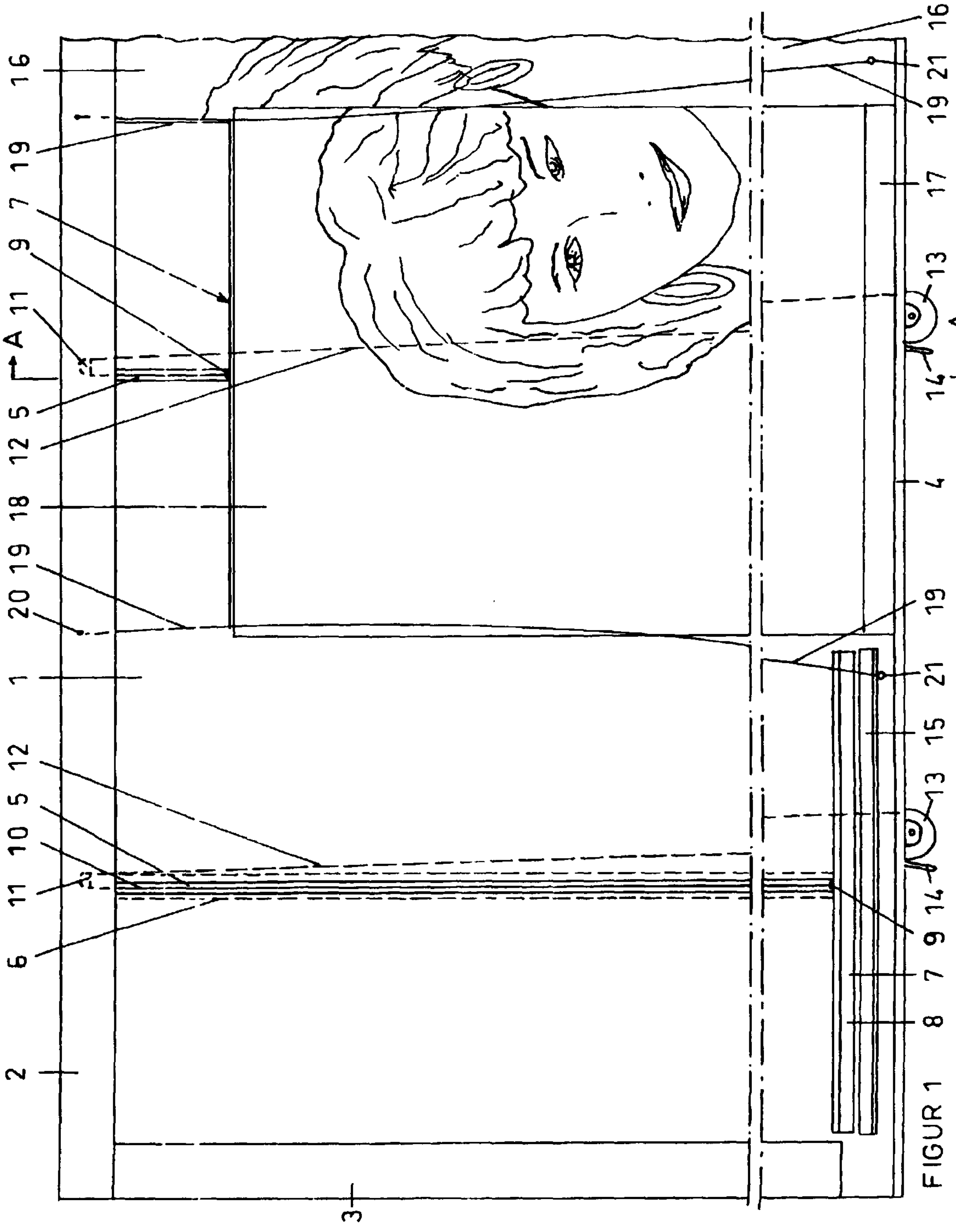
tening device for the lower edge of each length and that each length can be stretched by the removing of the hoisting device from the fastening device under increasing tension.

3. Device according to an earlier patent requirement, **characterized by** the fact that the hoisting device is partially placed and steered in a vertical groove under the plane of the board.

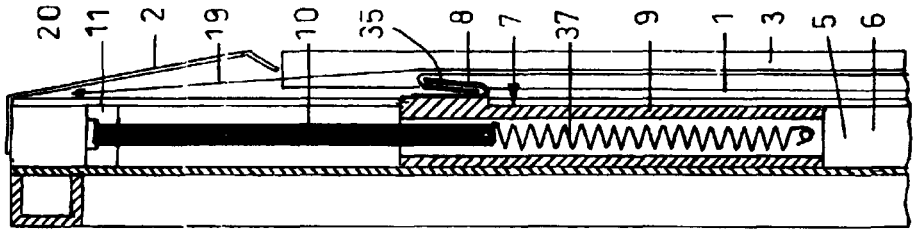
4. Device according to an earlier patent requirement, **characterized by** the fact that it includes a wheel 13 for each length, where the centre of the wheel is situated below the frame 4 of the board and where the wheel is rotated at the hoisting of the length.



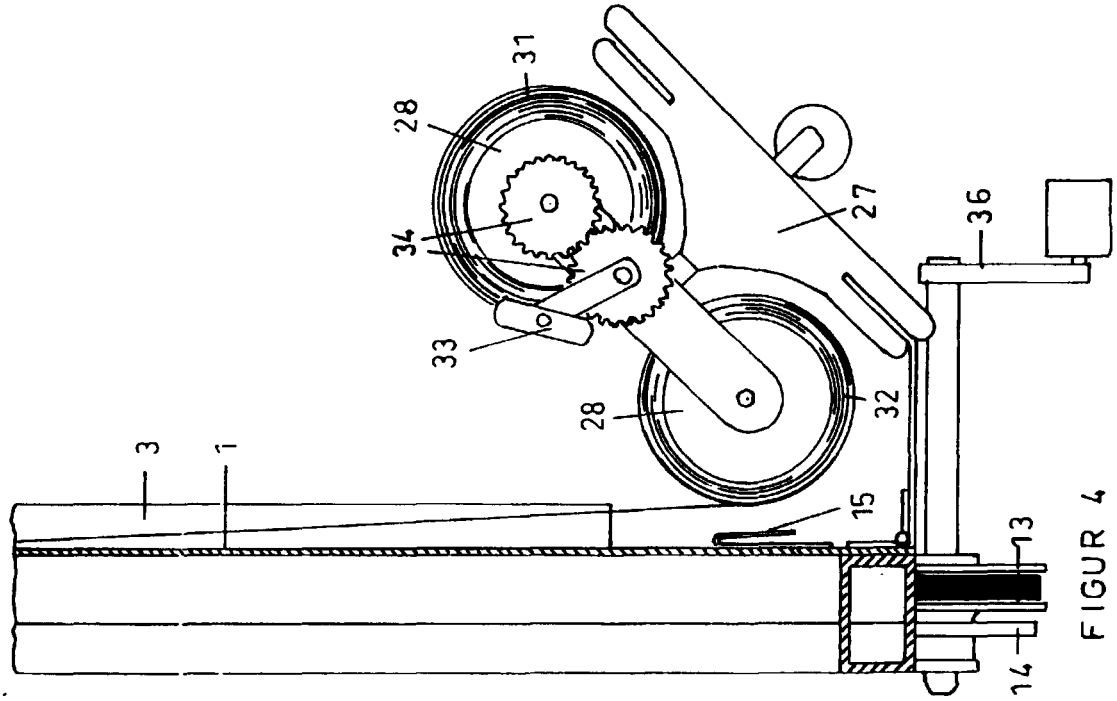
FIGUR 2



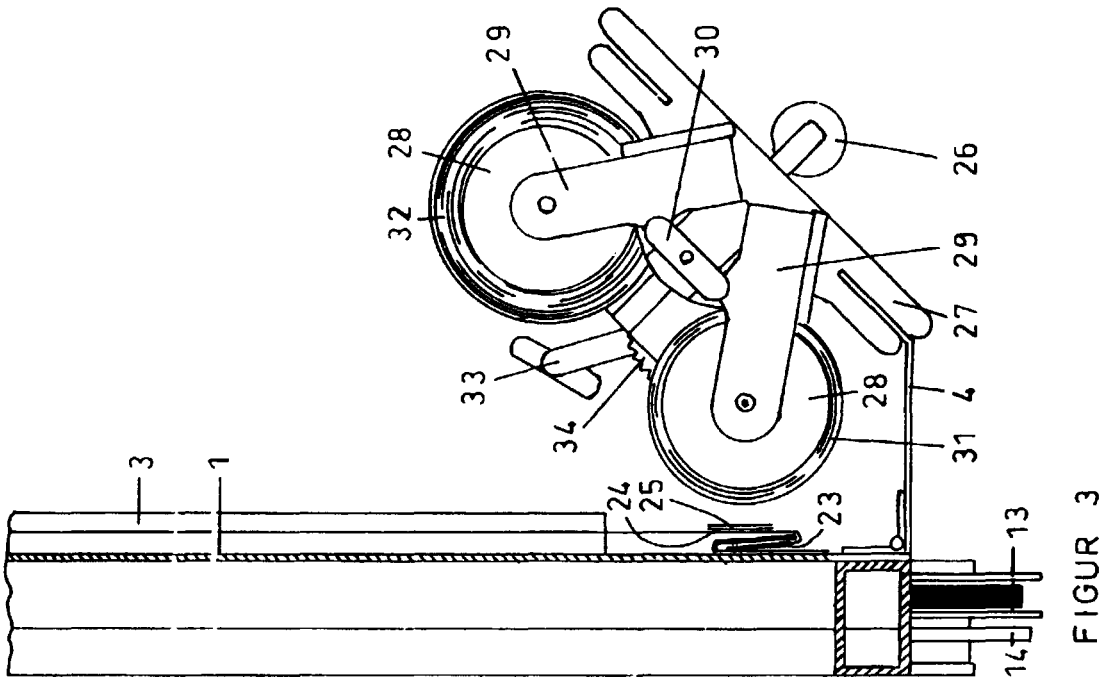
FIGUR 1



FIGUR 5



FIGUR 4



FIGUR 3