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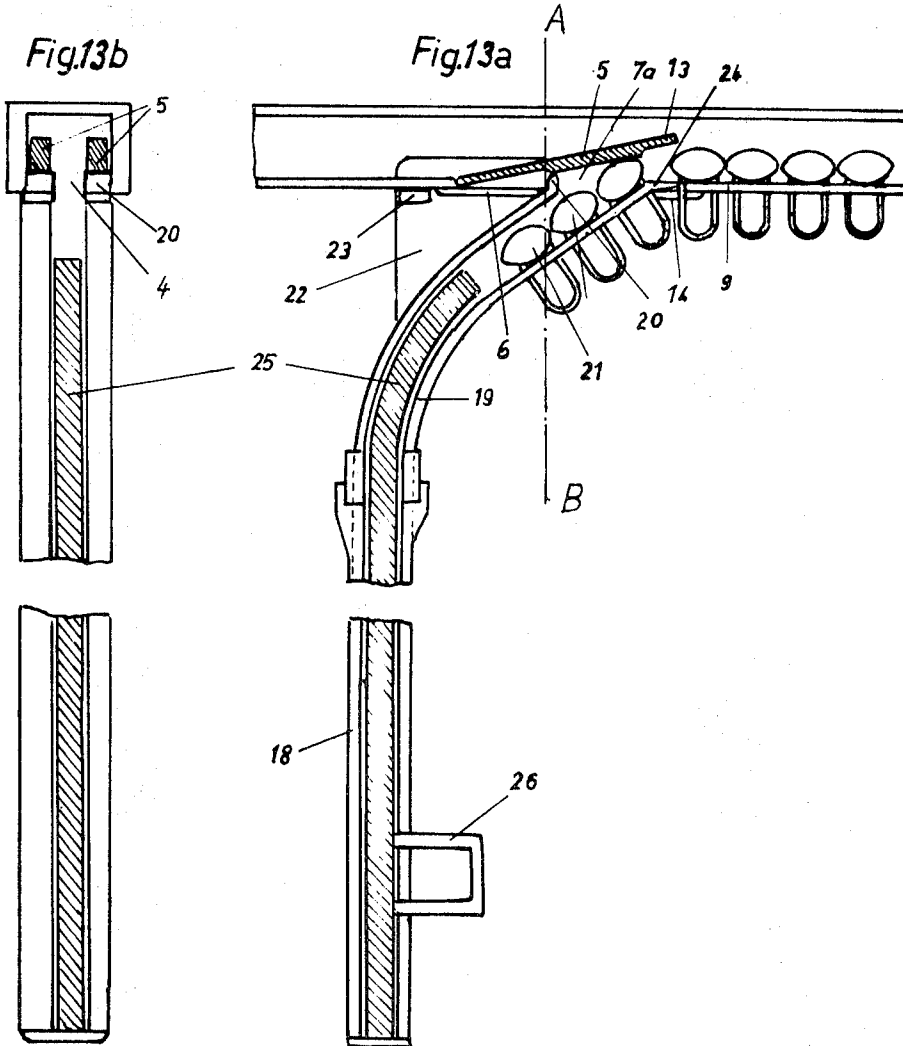
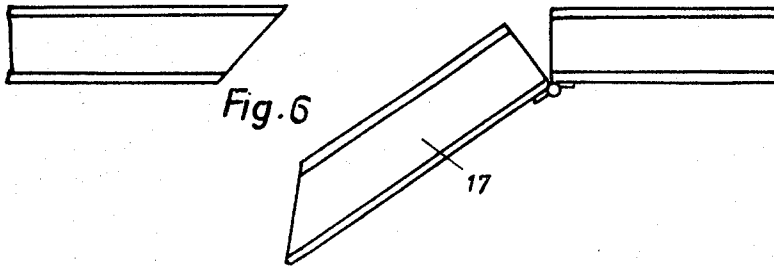


Fig. 7

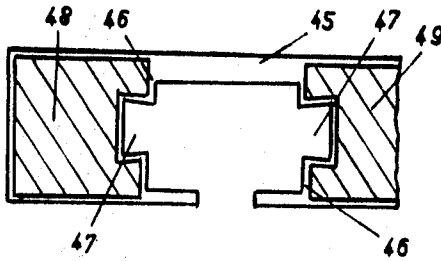


Fig. 8

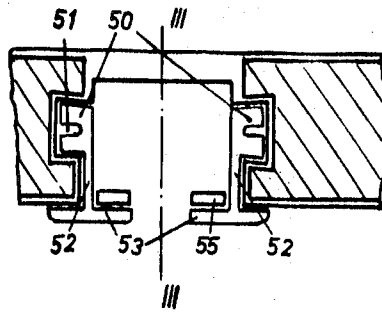


Fig. 9

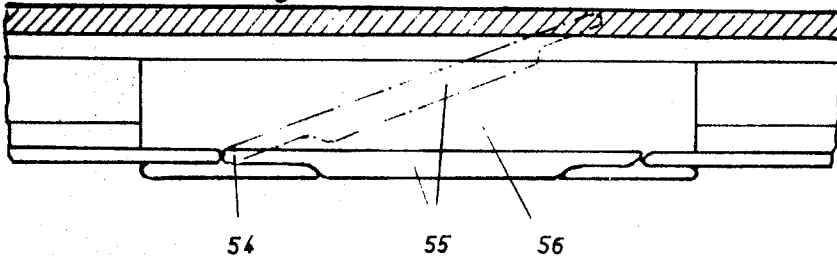


Fig. 10

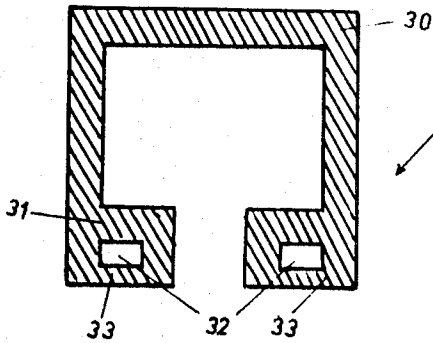


Fig. 12

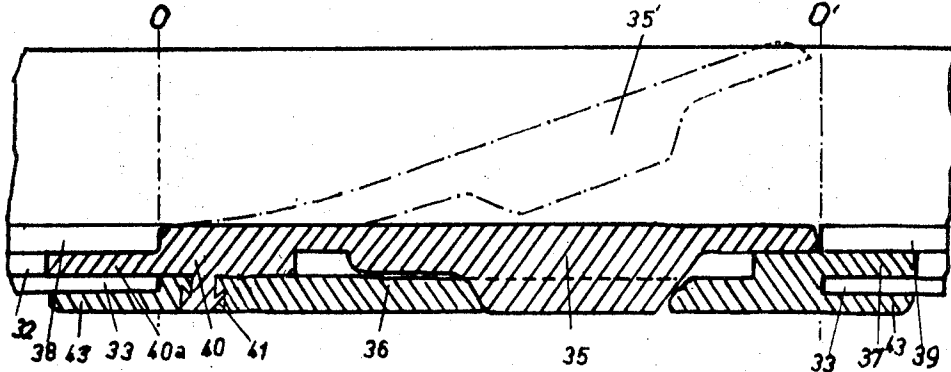
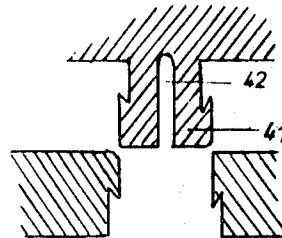
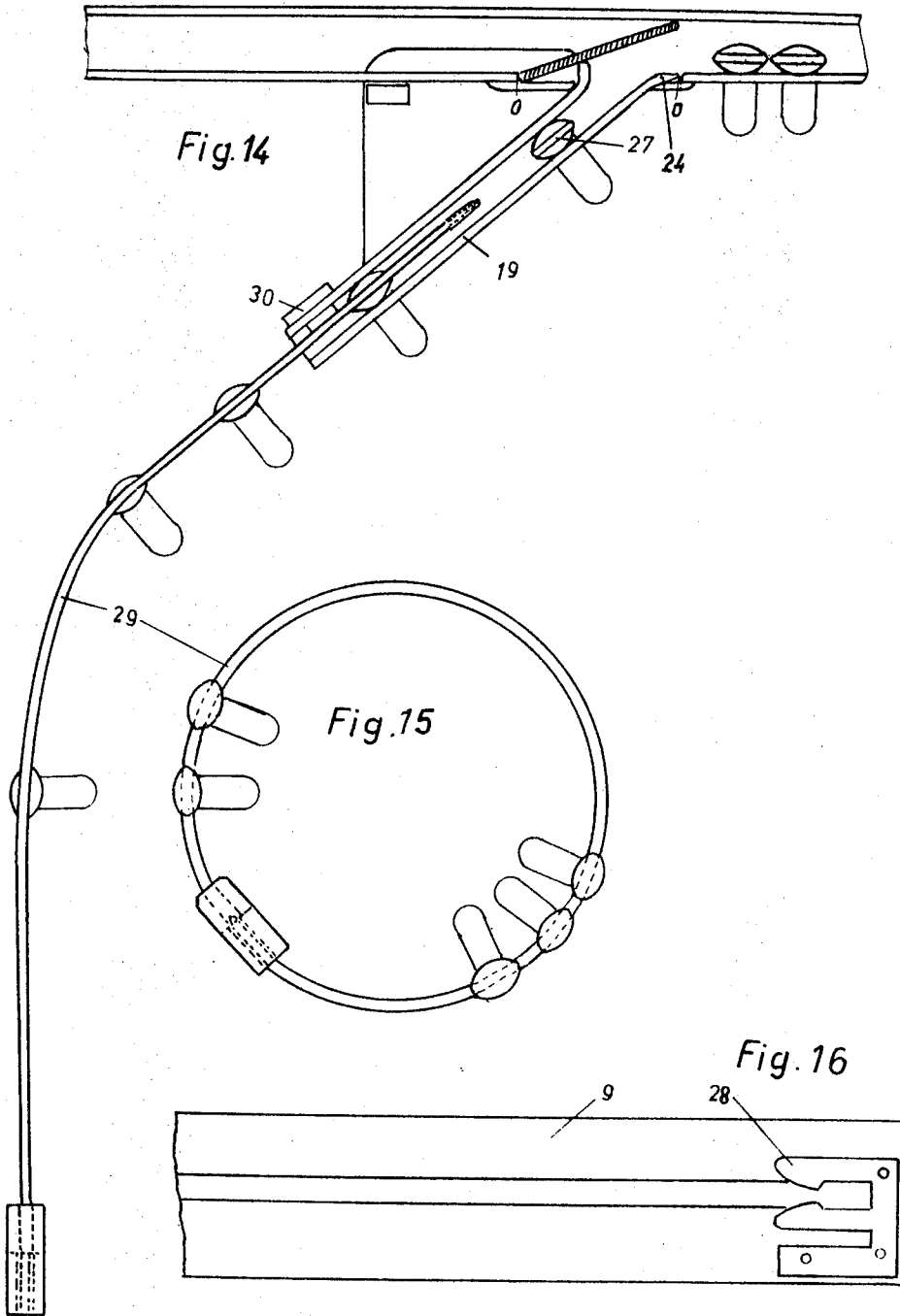


Fig. 11



CURTAIN GUIDE RAIL ASSEMBLY

BACKGROUND OF THE INVENTION

Ordinarily curtains or hangings are suspended on rollers or carrier elements provided with carrier eyes which can be shifted laterally in guide rails secured on the ceiling or wall of the room above windows and doors. The introduction of the carrier elements into a guide rail, for example into a currently usual slide track of a hollow rail formed after the style of an inverted U, is effected directly at the ends or, if the rail is embedded in the body of a curtain bar or the ceiling plaster, through an opening provided at the end of the guide rail and accessible from beneath in the rail itself or in the carrier bar, which opening is sufficiently large so that the body of the carrier element may be inserted on to the slide track. When all the sliders or rollers are inserted, the end of the rail or the opening must be blocked by means of a special fastening in order to prevent the carrier elements from sliding down and falling out.

The hanging up or replacement of a curtain or hanging is toilsome since all of the carrier elements, arranged over the whole width of the curtain must be individually grasped and inserted into the guide rail. If only one carrier element is overlooked, the elements already introduced after this must be taken out of the opening again. Since in the case of fixedly mounted curtain rods or guide strips a ladder is always necessary for the fitting of the curtains with their carrier elements. Since it is also necessary to work with the arms raised, such work is not only time consuming, but also toilsome.

SUMMARY OF THE INVENTION

It is the aim of the present invention, in order to avoid this above-described complicated work, to provide on the guide rail a specially designed opening which does not lie at the end of the rail as hitherto, frequently in the corner of the room, but can be provided at any desired selected point in the length of the rail, whereby the introduction of the carrier elements is simplified. Moreover, such an opening should render superfluous the hitherto usual special fastenings for preventing the carrier eyes and rollers from falling out, and furthermore any carrier elements overlooked in insertion should be subsequently inserted into the guide rail without the necessity of taking the previously inserted elements out.

The invention fulfills these requirements in that on the underside of the guide rail an introduction opening is provided at any desired selected point having the extent of one or more carrier elements and is covered off by yieldably retained track surface sections movable substantially perpendicularly of the plane of the opening which continue in the fixed track surfaces of the rail and find support on the latter.

For the insertion or removal of the carrier elements for the curtains the movable track surfaces of the opening section are moved out of their rest position against a force, for example, a spring, which presses them back into their initial position again after termination of the insertion operation. The one end of the movable track surfaces can be held by a leaf spring which merges into the fixed approach track surface, the other end in the rest position rests either directly on the fixed departure track surface or on a slight depression at the commencement.

Other embodiments are also conceivable in which the movable track surfaces are connected with an especially firm connection web to form a closed profile which bears resiliently against the web of the rail extending parallel thereto. Moreover, each individual track surface can be held by means of a hinge on one of the fixed legs of the guide rail and can be upwardly hingeable or equally can be suspended on the web by springs and upwardly pushable. A special support member here again provides support for the movable track rail parts in their rest position.

In the opening section the support members and also the legs and the rail web can be made with the movable rail parts as an entire coherent part which can be separated out of the

guide rail. This provides the possibility of inserting the new introduction device according to need into existing guide rails.

Even guide rails, the legs or track rail parts of which are provided with apertures into which continuing rail pieces, for example extensions or curves, can be inserted, can be equipped with the new introduction device according to the invention. In the case of these rails the apertures in the legs or leg extensions serve to hold the support parts for the separated track surfaces. Thus, in one example of embodiments, the legs of the guide rails are provided throughout with lateral outward bulges of slightly trapezoidal form. Retaining parts of the support member are introduced into these openings, which retaining parts retain the horizontal support parts to be provided beneath the movable track surfaces, by means of connection parts which extend along the downwardly leading leg parts.

Another example of embodiment relates to a guide rail in which the track surfaces for the sliders or rollers of the carrier elements are of relatively stout formation and provided over their entire length with continuous cavities. Apart from greater stability, these stout track rails with the cavities have the purpose that mutually adjoining rail pieces can be conveniently fitted together by push-in connection.

So that the introduction device according to the invention for the carrier elements may be provided in the case of rails having this type of profile, the elasticity or flexibility of the movable track surfaces is used in a manner in which the rearward end of the movable track surfaces, prolonged with a shoulder, is introduced into the cavity of the fixed approach rail at the interruption point. The support part is also insertable with its forward end into the cavity of the fixed track rail which departs further forward, at the interruption section. Due to the exploitation of the flexibility of the synthetic plastics material of the movable track rail parts, the provision of a leaf spring or a hinge for the retention of the end of the movable sections becomes superfluous.

In all the above described embodiments of devices for the insertion or extraction of the carrier elements at any desired opening along the extent of the guide rails, the handling of the carrier elements is facilitated by the fact that this work does not have to be carried out as hitherto at the corners of the room, which mostly are difficult of access, but can be carried out a point where a ladder can be set up conveniently.

In order to avoid the setting up of a ladder so that the introduction and extraction of the carrier elements can be carried out not directly by hand but from the floor, a further feature of the invention provides that these tasks can be carried out by means of an auxiliary rail which has the same profile as the guide rail. By means of an end piece attachable to this auxiliary rail, the end of which piece terminates in tongues, the carrier elements travel through the above-described opening into or out of the continuing guide rail section. This end piece is attached approximately in a quarter circle to the portable auxiliary rails which can be made vertical or with slight inclination in any desired length, in which rails a flexible, displaceable guide body provided with a handle holds the sliders or rollers of the carrier elements and permits them to be pushed into the guide rail.

If the entire curtain is then situated in the actual guide rail allocated to it, and its outermost carrier element is anchored at the end of this rail by means of a fastening device, the auxiliary rail with the end piece can be taken out of the opening again and used on another guide rail in the same manner. When the opening has closed, the curtain or hanging is distributed over the whole length of the guide rail. The sliders or rollers run over the closed introduction opening without hindrance.

The removal of a curtain takes place in a corresponding manner. After the pushing of the curtain together with its carrier elements to the opening side of the introduction opening, it is brought to the opened introduction opening out of the retaining device situated at the end of its carrier bar, which device opens on lateral traction. By the insertion of the end

piece of the auxiliary rail the resilient slide or track rail sections rise there and clear the exit between the guide rail and auxiliary rail to the carrier elements of the curtain. When the entire curtain has now dropped into this auxiliary guide, the latter is taken out of the opening again. The curtain can then be easily let out of the auxiliary rail.

An especially expedient receiving device for the removed curtain with its carrier elements consists in using, in place of the long auxiliary rail, only its end piece. A flexible retaining wire of plastic synthetic material or metal wire is introduced into the latter in the manner of a circular knitting needle, on which the carrier elements, which are formed according to its thickness, are arranged in a row. After the reception of all the sliders the two ends of the retaining wire can be connected together. The entire curtain situated on this fitting can be put in this condition, together with the suspension elements, into a washing machine and hung up again immediately after cleaning.

DESCRIPTION OF THE DRAWINGS

The invention will be explained in greater detail hereinafter by reference to some examples of embodiments thereof which are illustrated in the accompanying drawings, wherein:

FIGS. 1a and 1b represent a cross section and a longitudinal section, in approximately actual size, through the opening part according to the invention, to be fitted in a track rail, in the closed condition. The movable parts are indicated by shadings.

FIGS. 2a and 2b show the opening in the open condition.

FIGS. 3a and 3b illustrate diagrammatically on a somewhat larger scale, a different embodiment of the opening part in which the track surfaces of the rail are pivoted out of the rest position into the working or open position, in the region of the opening.

FIGS. 4a and 4b show diagrammatically a third embodiment of the opening part in which the track surfaces are connected within the opening by a transverse piece in the raised and lowered positions.

FIGS. 5a and 5b show another embodiment in which the track surfaces of the opening part are raisable against a spring force.

FIG. 6 shows an opening piece which is downwardly hinged.

FIG. 7 shows the profile of the U-rail with the lateral recesses of the legs.

FIG. 8 shows the design and fitting of the support member in cross section at any given point of the guide rail.

FIG. 9 shows a longitudinal section along the line III—III in FIG. 8.

FIG. 10 represents a guide rail with reinforced guide surfaces and cavities provided therein.

FIG. 11 shows the formation of the movable track surfaces and of the support member in longitudinal section.

FIG. 12 is a partial view of a connection point between the support member and the movable track rail.

FIGS. 13a and 13b represent an end piece, fitted on a freely movable auxiliary rail, for insertion into an opening such as shown in FIGS. 1 to 12.

FIG. 14 shows the end piece connected with a retaining wire for sliders.

FIG. 15 shows diagrammatically the retaining wire with the sliders arranged in a row thereon in the closed condition, and FIG. 16 is a view from beneath the clamping piece which fits on the underside of the curtain bar, for holding fast the outermost carrier element of a curtain.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in the drawings, the U-shaped guide rail in FIG. 1 has track surfaces 3 for the sliders or rollers on the lower end of the legs 2 issuing from the web 1. Opening 4 is provided between these surfaces for the downwardly hanging eyes.

At any desired point of the guide rail the track surfaces 3 are separated off over a short distance at the section 0—0 from the approach slide surface and the continuation slide surface and also from the legs 3. There, on the underside of the rail, a flat support part 6 is provided which supports the separated track rails in their rest position and on raising of which an opening 8 is provided for the passage of the carrier elements in the direction of the arrow. If the movable track surfaces 5 are raised in the direction of the arrow 7, these parts assume approximately the position according to FIG. 2. Sliders or rollers can be inserted through the produced gap with their carrier eyes (not represented here) onto the continuation fixed rails 9 or taken out of the guide rail in the opposite direction. The movable opening part 5 can be supported by leaf springs 5' held on the fixed approach track surfaces 3. Thus after the cessation of the pressure exerted from beneath against the opening flap 5, these leaf springs, with the track surfaces 5, resume their horizontal position and the opening is closed. Without the spring tension, the opening however would still close itself due to the force of gravity.

Another example of an embodiment for the opening device is represented in FIG. 3. There the track surfaces to be displaced are articulated in hinged fashion along their attachment edges to the legs 2. Due to the pressure of the carrier elements to be inserted from beneath, the two track surfaces 10 hinge against their corresponding legs 2 and remain in the vertical position, as represented in FIG. 3b, until no more carrier parts are inserted, before they drop back into their initial position again. The lower parts 9 in FIG. 3b are the continuation track surfaces represented in FIGS. 1 and 2. The dropping back of the raised rail parts 10 could also be supported by a suitable fitted spring.

A further possibility of opening for the track surfaces at the insertion opening for the track surfaces at the insertion opening is represented in the example according to FIG. 4. According to this, in the lower part of the U-shaped guide rail, there is a somewhat lower movable part 11 which is pressed downwards in the rest position by springs 12 placed between the fixed rail 1 and the movable part 11. By striking upon the movable track surfaces from beneath, part 11 is pressed upwards against the force of the two springs 12. The sliders or rollers are then inserted upon the continuation track surfaces 9 visible in FIG. 4b and can be displaced further into the curtain guide rail. After termination of the insertion, the part 11 is pressed back into the normal position shown in FIG. 4a under the pressure of the springs 12.

A similar solution is represented in FIG. 5, where the movable track surfaces 16 are not connected to one another but can be individually pressed upwards against the force of a springs 15. The retention of the displaceable track rail pieces in the rest position is accomplished by extension pieces. Such pieces are indicated in FIGS. 1 and 2 as tongues 13 on the movable track rail 5 which fit into the recesses 14 on the fixed track surface 9 and the support member 6. In FIGS. 3 to 5, the support member 6 must be provided on the opening in a dimension corresponding to the movable parts.

According to the further example of embodiment in FIG. 6, the complete piece 17 of the guide rail can be either withdrawable from the guide rail or tiltable downwards. It may be returned into its initial position by means of a spring (not shown).

In the above examples, the device for the introduction and withdrawal of the curtain carrier elements is shown for rails with simple U-shaped profiles. However, this device can also be used without substantial modifications for guide rails with legs or slideways provided with apertures. For example, curved rail parts can be attached securely without interruptions to the main rail.

FIG. 7 shows the cross section through a plastic rail 45 in which the legs 46 have slight trapezoidal outward bulged portions 47. The parts 48 and 49 on both sides of the rail are of plastic-sheathed and preferably wood-reinforced rail parts. The outward bulges 47 receive the retaining pieces 50 of the

support member, as may be seen from FIG. 8. These parts 50 are provided with slots 51 so that by compression they can be taken out of the dovetail-shaped apertures 47. The parts 52 of these holding pieces 50 carry carrier pieces 53 to be provided on the underside of the interrupted rail section, on which pieces the movable track surfaces 55 rest. As may be seen from FIGS. 8 and 9, at the point of interruption of the normal carrier surfaces of the guide rail the movable track surface piece 55 is movable about its pivot point, so that it assumes the position shown in dot-and-dash lines, whereby the introduction of the carrier elements 50 through the produced opening 56 is rendered possible. The track surface pieces 55 are held at their rear end 54 by means of a leaf spring (not shown).

The cross section of the U-rail 30 according to FIG. 10 shows the track surfaces 31 attached to the lower leg ends. Each surface 31 contains a cavity 32 extending through the whole rail length. This cavity provides that adjoining rail parts, even those of arcuate course, can be conveniently attached. The movable track surface is also inserted into this cavity with an extension piece 40a shouldered on its rear end 40, which piece is thus embedded between the upper part 38 and the lower part 33 of the fixed approach track rail (see FIG. 11). The elastic flexible material of the movable track surfaces 35 yields to a pressure acting against its lower part, moves upwards and constitutes an introduction opening for the carrier elements, assuming the position 35' indicated in dot-and-dash lines.

The support part 36 is connected with the rear end 40 of the track surface 35 by a locking device 41 by means of a dovetail-shaped formation of the insertion protuberance. The slot 42 in this locking part renders it possible to separate the track surface from the support element 36 by compression of the two halves. The support element 36 engages with its forward part 37 in the cavity of the continuation fixed guide rail part 39 or 33. The lower rear protuberances 43 of the support part place themselves beneath the lower surfaces 33 of the leg ends of the guide rail 30. The support part and the introduction device, as illustrated between the dot-and-dash lines running through 0 and 0', can thus be inserted as a complete component at any desired point in existing rails, if the corresponding piece is cut out of the existing rail.

In order still further to facilitate the insertion and withdrawal of the carrier elements for the curtains or hangings, especially to save the use and climbing of a ladder, according to a further feature of the invention an auxiliary rail according to FIG. 13, adapted to the novel introduction opening is provided. This has the form of a portable curtain rail 18 to which a special insert end piece 19 is attachable at an angle. This end piece is inserted in the longitudinal direction of the fixed curtain rail on the one opening edge 24 of the sliding surfaces and rests with its track surface ends in the recess 14 before the continuation rail 9. The separated track rails 5 are lifted by the attachment 20 on the web end of the end piece 19, whereby a way is prepared for the sliders 21 of the carrier eyes on to the guide rail 9 or from this rail into the auxiliary rail 19. A special guide plate 22 is secured on the web of the curved end of the auxiliary rail, the thickness of which plate corresponds approximately to the gap 4 between the track surfaces. This plate maintains the correct direction of the auxiliary rail. By means of a special catch (not shown) and a stop 23 on its rear edge this guide plate 22 is made fast during its utilization.

A solid filler piece 25 consisting of flexible material is displaceably situated in the interior of the U-shaped auxiliary rail and with a handle 26 guided between the track surfaces of the rail and secured on its lower part holds up the sliders 21 with the curtain and permits the pushing of them upwardly, such that the curtain passes completely through the introduction opening into the actual curtain rail. The insertion of a curtain already provided with its carrier eyes and sliders 21 into the auxiliary rail 18 can be effected quickly if the rail is made upwardly hingeable over a certain part in its longitudinal

direction by means of a hinge strap fitted for example on the web (not illustrated). The entire row of sliders arranged side by side is inserted into the open rail and on hinging together of the two halves is immediately ready for further conveying by means of the displaceable piece 25 through the opening into the desired curtain rail 9.

So that the end of the curtain is held fast on the curtain rail, before the auxiliary rail is removed, the introduction opening is closed and the other sliders of the curtain are distributed over the whole width of the guide rail by pulling. The first slider is moved by a light pull in the direction towards the self-closing gripper piece 28, according to FIG. 16 provided on the end of the curtain rail. The slider is then held fast by the gripper piece. This piece is relatively flat and grasps the legs of a slider by means of a slightly rounded clip. The resilient gripper piece 28 is so dimensioned that it may release the slider again on a somewhat more vigorous lateral pull. This occurs when the curtain is to be removed from the guide rail again by means of the auxiliary rail 19.

An especially expedient form of embodiment of this removing and holding device is represented in FIGS. 14 and 15. Into the end piece 19 the end of a retaining wire 29, consisting of plastic material, is introduced and closed in circular form after the style of a circular knitting needle. This end is made fast by a suitable device 30 at the entry of the end piece 19. If the heads of the sliders are provided with a bore 27 which corresponds to the thickness of this retaining wire 29, then the whole number of sliders of a curtain or hanging can be placed in a row so that the entire curtain hangs on this retaining wire which is closable into a ring. The curtain or hanging can then be cleaned with the sliders and the retaining wire attached.

I claim:

1. A device for the introduction and extraction of displaceable curtain carrier elements into and out of guide rails, comprising an opening having the dimensions of the carrier elements, said opening being provided at any desired selected position on the underside of the guide rail, yieldably held track surface sections movable substantially in a direction perpendicular to the plane of and adapted to cover the opening, said track sections forming a part of the fixed track surfaces of the rail and, support means on the rail, said support means being adapted to support said track sections.

2. A device according to claim 1, characterized in that the track surface sections covering the opening are held in their closed position by spring means.

3. A device according to claim 1 characterized in that the movable track surfaces of the opening are maintained in position by leaf springs which merge into and are secured to the fixed track surfaces.

4. A device according to claim 1 characterized in that the track surfaces of the opening are connected by a web to form a profile which bears upon the fixed web of the guide rail profile through spring means.

5. A device according to claim 1 characterized in that the track surfaces of the opening are resiliently displaceable along the sidewalls of the guide rail.

6. A device according to claim 1 characterized in that the track surfaces of the opening are hinged by means of hinges with their attachment edges on the legs of the rail profile.

7. A device according to claim 1 characterized in that the extensions of the guide rails comprise apertures running through the entire length of said rails for the attachment of support members for the movable track surfaces.

8. A device according to claim 7, characterized in that the lateral legs of the guide rails possess dovetail-shaped outward bulges into which retaining pieces of the support member are adapted to fit therein, which pieces hold the carrier pieces arranged beneath the movable track rail parts by means of connection pieces extending along the lower leg parts.

9. A device according to claim 7, characterized in that the guide rail is provided with reinforced track surface parts and cavities extending therethrough, the forward end of the support member being introducible into the cavity of the con-

tinuation rail, while its rear end is connected with the movable track rail, the extension of which is introduced into the cavity of the approach rail and held fast therein.

10. A device according to claim 1 characterized in that the complete track section of the guide rail may be displaced.

11. A device according to claim 1 further comprising an auxiliary rail means adapted to carry a plurality of carrier elements, said rail means being further adapted to be secured to said opening such that the carrier elements may be passed into said opening and onto the guide rails by means of a core member means located internally of said auxiliary rail means, said core member means being adapted to urge said carrier elements onto said rails.

12. A device according to claim 11, characterized in that the web surface end of the end piece of the auxiliary rail is

bent upwards so as to form a protuberance adapted to lift the track surfaces of the opening upon insertion into the opening of said rail.

13. A device according to claim 1 characterized in that the carrier elements are held by a retaining wire which can be brought together to approximately assume a circular form.

14. A device for holding fast at any desired point, preferably at the end of the guide rail, the carrier elements inserted into a guide rail by means of the device according to claim 1 further comprising an elastic clip secured over the guide groove, said clip comprising gripper jaws, receives and maintains the sliders of the carrier elements introduced by means of said jaws.

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