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MOVING STAIRWAY

Original Filed Sept. 22, 1932

2 Sheets-Sheet 1

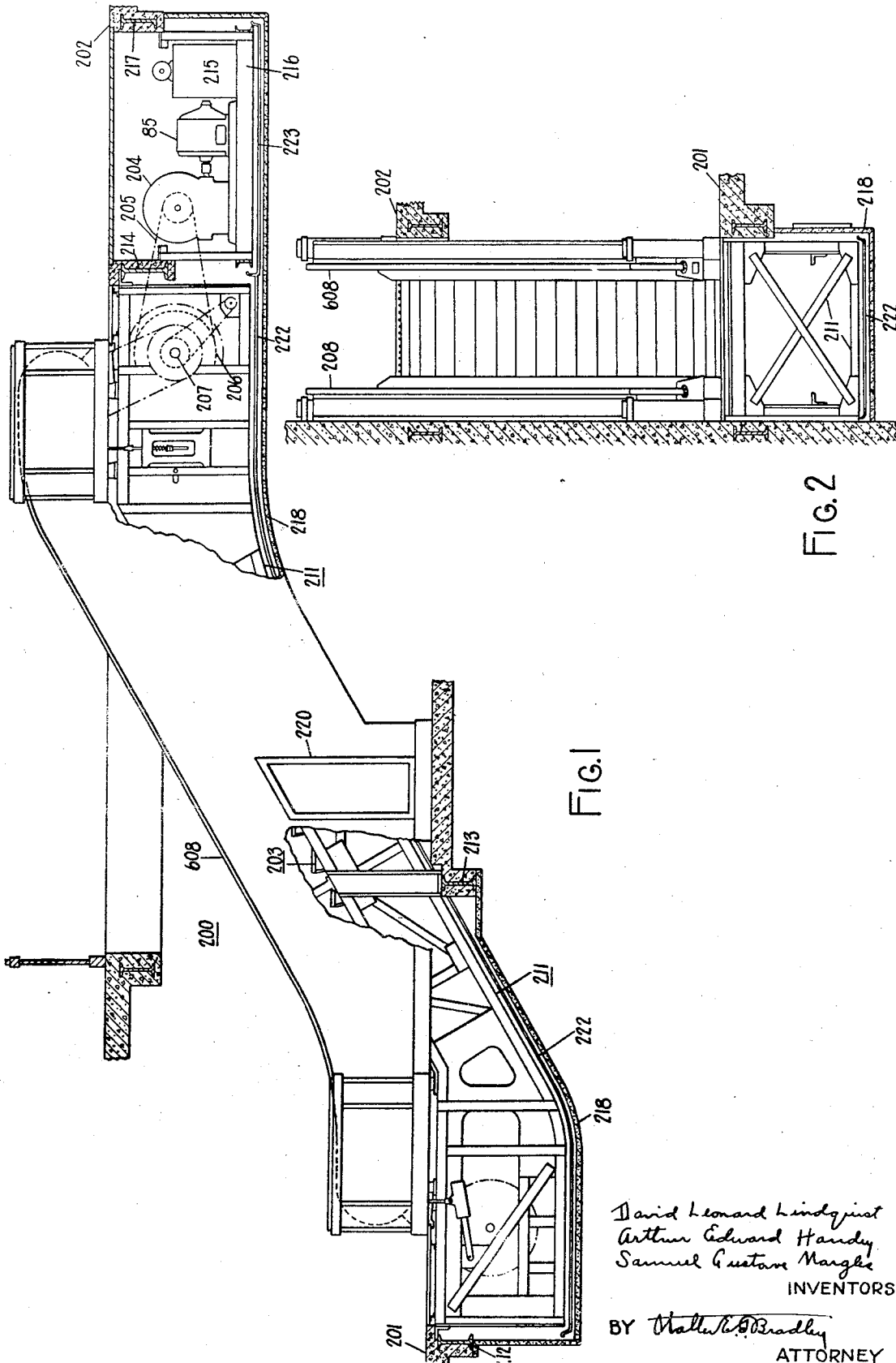


FIG. 1

FIG. 2

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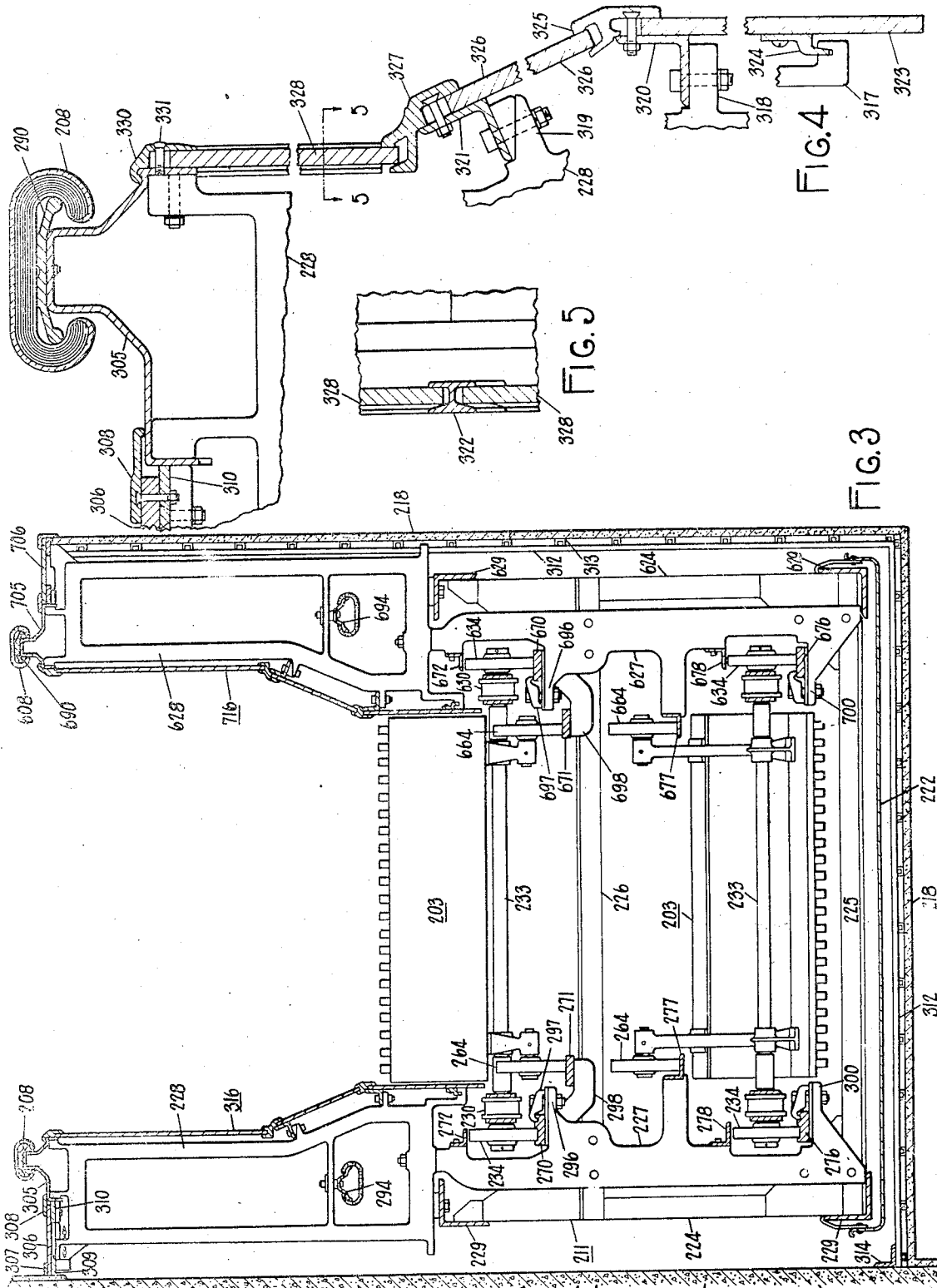
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UNITED STATES PATENT OFFICE

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MOVING STAIRWAY

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1 Claim. (Cl. 192-16)

This invention relates to moving stairways, and more particularly to certain features involving the balustrading and exterior enclosure thereof.

Among such features of the moving stairway are the following:

The balustrading along either side of the runway of the stairway is in units so constructed that the balustrading at any point along the stairway can be removed without disturbing the balustrading at any other point. The individual panels of the balustrading are preferably formed of two plies of thin sheet metal, such as steel, with one ply over each side of a relatively thin core of suitable material. The resulting balustrading is easy to manufacture and install, is fireproof, and is adaptable to varied architectural treatments.

The exposed exterior surfaces of the stairway are preferably encased, from the deckboard adjacent the handrail at one side of the stairway down around the bottom of the stairway truss and up to the deckboard adjacent the handrail at the other side of the stairway, by a monolithic enclosure, such as plaster, suitably supported from the stairway. A simple enclosure is thereby formed, and one which reduces the paneling to be furnished for each stairway to a minimum. In addition, such an enclosure is more fireproof, and has less tendency to vibrate, than wood paneling. In the event the stairway is located along a wall so that only one side and the bottom of the stairway are exposed, a monolithic enclosure is employed to encase such exterior surfaces of the stairway as are exposed, from the deckboard adjacent the handrail on the exposed side of the stairway down and around the bottom of the stairway truss.

This application is a division of patent application Serial No. 634,338, filed September 22, 1932.

Other features and advantages will become apparent from the specification taken in conjunction with the accompanying drawings.

In the drawings:—

Figure 1 is a side elevation of a moving stairway according to this invention, with portions broken away to illustrate schematically certain portions thereof;

Figure 2 is a front elevation of a moving stairway from the lower landing, with certain portions thereof and of the adjacent building structure shown in section;

Figure 3 is a section through the inclined portion of the moving stairway, at right angles

thereto, looking in the direction of the upper landing;

Figure 4 is an enlarged section showing the handrail and balustrade paneling and moulding;

Figure 5 is a section through the balustrade paneling taken along the line 5-5 of Figure 4.

Referring to Figures 1 and 2, the moving stairway, generally designated 200, extends between a lower landing 201 and an upper landing 202. The moving stairway comprises an endless series of steps 203 driven by a motor 85, preferably located at the upper landing as illustrated. Motor 85 operates through reduction gearing 204, driving chain 205 and sprocket 206, to drive the main drive shaft 207 of the moving stairway. By appropriate equipment, including two running gear chains 230 and 630 (see Figure 3), one at each side of the stairway, the steps 203 of the moving stairway are driven from drive shaft 207. Two endless moving handrails 208, 608, one at each side of the stairway, likewise are driven from drive shaft 207.

The moving stairway is mounted upon supporting framework in the form of a truss, generally designated 211, the construction of which is shown in Figure 1. The lower portion of the truss is secured to two crossbeams 212 and 213 at the lower landing, while the upper portion of the truss is secured to a crossbeam 214 at the upper landing. These beams form supports for the truss, being secured to the building structure. When the driving motor 85, control panel 215 and reduction gearing 204 are positioned as shown in Figure 1, such equipment is mounted upon suitable framework 216 secured at one end to crossbeam 214 and at the other end to a crossbeam 217. Preferably the truss 211 is enclosed, as by plaster 218 or other covering medium suitably mounted upon the framework of the truss. Similarly, the driving motor 85 and the equipment related thereto may be enclosed. Suitable access doors 220 may be provided at convenient points as illustrated, to afford access to the enclosed portions of the moving stairway.

Beneath the framework of the truss 211, and between the truss and the plaster or other medium 218, there is provided a drip pan 222 extending the length of the truss. If desired, this drip pan may be formed of a plurality of removable sections, each overlapping the adjacent section so that oil or other lubricant drippings from the stairway do not seep through to the plaster 218. A similar drip pan 223 may be provided

under the framework mounting the driving equipment.

Reference is now made to Figure 3. The framework of the truss 211 along the inclined portion of the stairway includes side members 224 and 624 spaced along longitudinal members 229 and 629, respectively, at either side of the stairway, bottom members 225 at the bottom of the truss connecting two opposite side members, and cross members 226 connecting two opposite side members between the ends of such opposed side members. Secured to the truss at each cross member 226 are two track brackets of similar construction, 227 and 627, one at each side of the stairway. Above each track bracket 227 and 627 (except adjacent the lower landing), there is secured thereto and to the truss, a balustrade bracket 228 and 628, respectively.

Each track bracket is formed with a shoulder 296 or 696, and to each shoulder is fastened, as by clamps 297 or 697, a track for the chain wheels on the corresponding side of the stairway, track 270 being for chain wheels 234 of steps 203 and track 670 being for chain wheels 634 of steps 203. (Each step has one chain wheel 234 and one chain wheel 634 mounted co-axially on the step axle 233 for such step.) Suitable sound-deadening shims may be interposed between the tracks and the shoulders. Tracks 270 and 670 are cold rolled strips of metal, such as steel, with track 270 preferably being rolled with a groove therein as illustrated so as to guide chain wheels 234, and thus to guide the steps 203. There is secured to track 270, between each two adjacent track brackets, one or more (customarily two) separator brackets 298. Similar separator brackets 698 are secured to track 670. Preferably these separator brackets are welded to the underside of tracks 270 and 670. The other ends of these separator brackets are secured to the tracks for the trailer wheels, track 271 being for trailer wheels 264 of steps 203 and track 671 being for trailer wheels 664 of steps 203. As with tracks 270 and 670, it is preferred to weld the underside of tracks 271 and 671 to the separator brackets. The upthrust track 272 for chain wheels 234 is an angle strip the vertical side of which is secured, as by bolts, to track bracket 227. Upthrust track 672 for chain wheels 634 is similarly constructed and mounted.

Near the base of each track bracket 227 and 627 there is formed another shoulder, 300 and 700, respectively, to which tracks 276 and 676, similar to tracks 270 and 670, respectively, are secured in a manner similar thereto. Tracks 276 and 676 are tracks for chain wheels 234 and 634, respectively, during the travel of the steps on the return run of the stairway. Upthrust tracks for chain wheels 234 and 634 are angle strips 278 and 678, respectively, similar to upthrust tracks 272 and 672, and secured to the track brackets in a similar manner. The tracks for trailer wheels 264 and 664 are angle strips 277 and 677, respectively, the vertical sides of which are secured, as by countersunk bolts, to the track brackets.

Continuing the description, and referring also to Figures 4 and 5, there is, extending along each side of the stairway and secured to the top of each balustrade bracket, a handrail support, support 305 being secured to balustrade brackets 228 and support 705 being secured to balustrade brackets 628. These supports are preferably formed of sheet material and shaped as illustrated. The base edge further removed from the

center of the stairway fits into a slot in the balustrade bracket, while the other base edge is suitably secured to the balustrade bracket, preferably by countersunk bolts. A guide, 290 for support 305 and 690 for support 705, is formed and secured to the corresponding handrail support as illustrated. Handrail 208 fits over and runs upon guide channel 290, while handrail 608 fits over and runs upon guide channel 690. Guides 294 and 694 support and guide handrails 208 and 608, respectively, on the return portions of their loops.

The stairway illustrated in Figures 2 and 3 is located so that one side thereof (the left) is adjacent a wall, while its other side (the right) is exposed. The space between the wall and handrail support 305 is spanned by a deckboard 306. Deckboard 306 is retained in place by moulding strips 307 and 308, bolts projecting from the underside of which extend through the deckboard and through suitable longitudinal strips 309 and 310 appropriately secured to each balustrade bracket 228. In an analogous fashion, deckboard 706 at the other side of the stairway spans the area between handrail support 705 and stairway enclosure 218. Stairway enclosure 218 is preferably of plaster applied to metal lathing extending along the side of the stairway from the bottom of the truss to deckboard 706. The metal lathing may be fastened to a lattice-work composed of channels 312 and 313, channels 312 being appropriately secured to the balustrade brackets and extending from the top of each balustrade bracket to below the bottom of the truss, and channels 313 being small longitudinal channels appropriately secured to channels 312. The underside of the stairway may similarly be enclosed with plaster, the lattice-work for the metal lathing for such enclosure being supported from the lower ends of channels 312 at one side of the stairway, and suitable angles 314 at the other side of the stairway.

In the event the stairway is located so that both sides of it are exposed, instead of only one side as illustrated in Figures 2 and 3, both sides of the stairway may be enclosed with plaster, from the deckboards to below the bottom of the truss, in a manner similar to that described for the one exposed side of the illustrated stairway. In such instance, the framework supporting the plaster below the bottom of the truss is secured to the lower ends of channels 312 extending down each side of the stairway. As a result of this construction, there is a monolithic enclosure for the exterior of the stairway extending from the deckboard at the top of the balustrade on one side of the stairway, down around the bottom of the stairway and up to the deckboard at the top of the balustrade on the other side of the stairway. Such an enclosure is readily made, presents a pleasing appearance, is cheaper to install and is more fireproof than panel work and has considerably less tendency to vibrate and transmit sound than panel work.

For similar reasons, it is preferred to employ a continuous monolithic enclosure for the exteriorly exposed parts of the stairway when the stairway is located along a wall, as illustrated in Figures 2 and 3.

Along each side of the runway of the stairway is the balustrading, generally designated 316 and 716. Inasmuch as the balustrading is similar on both sides of the stairway, only that for the left hand side of Figure 3 (balustrading 316) is described in detail. Figure 4 is an enlargement of

such balustrade to show details thereof. Each balustrade bracket 228 is provided with three shoulders 317, 318 and 319. The lower shoulder, 317, is provided with a slot therein, while the two upper shoulders, 318 and 319, have secured thereto angle strips 320 and 321, respectively, which extend along the stairway. Assuming that the balustrading is being installed, a panel 323 is inserted adjacent the sides of the steps so that a hook 324 thereon fits in the slot in shoulder 317. The top edge of panel 323 is secured to angle strip 320 by a moulding strip 325, as illustrated in Figure 4. Moulding strip 325 has a recess therein and into this recess is inserted the lower edge of a second panel 326. The upper edge of this panel rests against angle strip 321 and is secured thereto by a moulding strip 327, as illustrated in Figure 4. Moulding strip 327 is formed with a recess therein, and in this recess is inserted the lower edge of a third panel 328, the upper edge of which extends to the top of the balustrade bracket. A moulding strip 330 secures the top of panel 328 to the balustrade bracket and provides a rounded corner at the top thereof. It is to be noted that moulding strip 330 is secured to the balustrade bracket by screws 331 accessible from the runway of the stairway. Thus, in the event it is desired to obtain access to the inside of the balustrading at any point along the incline, the balustrading adjacent such point may be readily removed without disturbing the balustrading at other parts of the stairway.

It is preferred that the joints between adjacent panels 328, in view of the relative length of such joints, be protected with an H section 322 as illustrated in Figure 5. The joints between adjacent sections of panels 323 and of panels 326 may be simple butt joints.

The panels themselves are preferably formed of two thin sheets or plies of metal, such as steel, between which is a core of one or more plies of wood or other suitable material. The core is preferably "fireproofed" if it is not of material inherently fireproof. The exposed ply of metal may be given a suitable surface finish, or, if desired, formed of such material that it inherently has the desired appearance. If a wood surface is desired, the exposed ply of metal may be provided with a thin veneer of the appropriate wood. The moulding strips are also preferably formed

of metal. The balustrading is thus not only fireproof but adaptable architecturally to its surroundings with comparative ease.

Inasmuch as many changes could be made in the above constructions and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

In a moving stairway supported on trusswork and having a moving handrail along one side of the stairway, balustrading for said side of the runway of the stairway comprising; a series of upright brackets along the stairway at said side secured to said trusswork; a plurality of longitudinal rows of panels, including a lowermost row the lower edge of which is between the sides of the steps of the stairway and said brackets, and also including an uppermost row the upper edge of which is adjacent the base of said handrail; means for supporting from said brackets the lowermost row of panels below the upper edge thereof; means for securing to said brackets the upper edge of each row of panels, except the uppermost row of panels, and for supporting the lower edge of the next higher row of panels, said means for each juncture between edges of two adjoining rows of panels comprising, a base strip secured to said brackets along the upper edge of the lower of such two adjoining rows of panels, and a moulding strip clamping such upper edge against said base strip, said moulding strip having a recess along the top thereof into which fits the lower edge of the upper of such two adjoining rows of panels; and means for securing to said brackets the upper edge of the uppermost row of panels, said means comprising, a top moulding strip, and means by which said top moulding strip may be secured to said brackets to clamp the upper edge of the uppermost row of panels against said brackets after the uppermost row of panels, and all the rows of panels below the uppermost row, are in place.

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