

Feb. 7, 1933.

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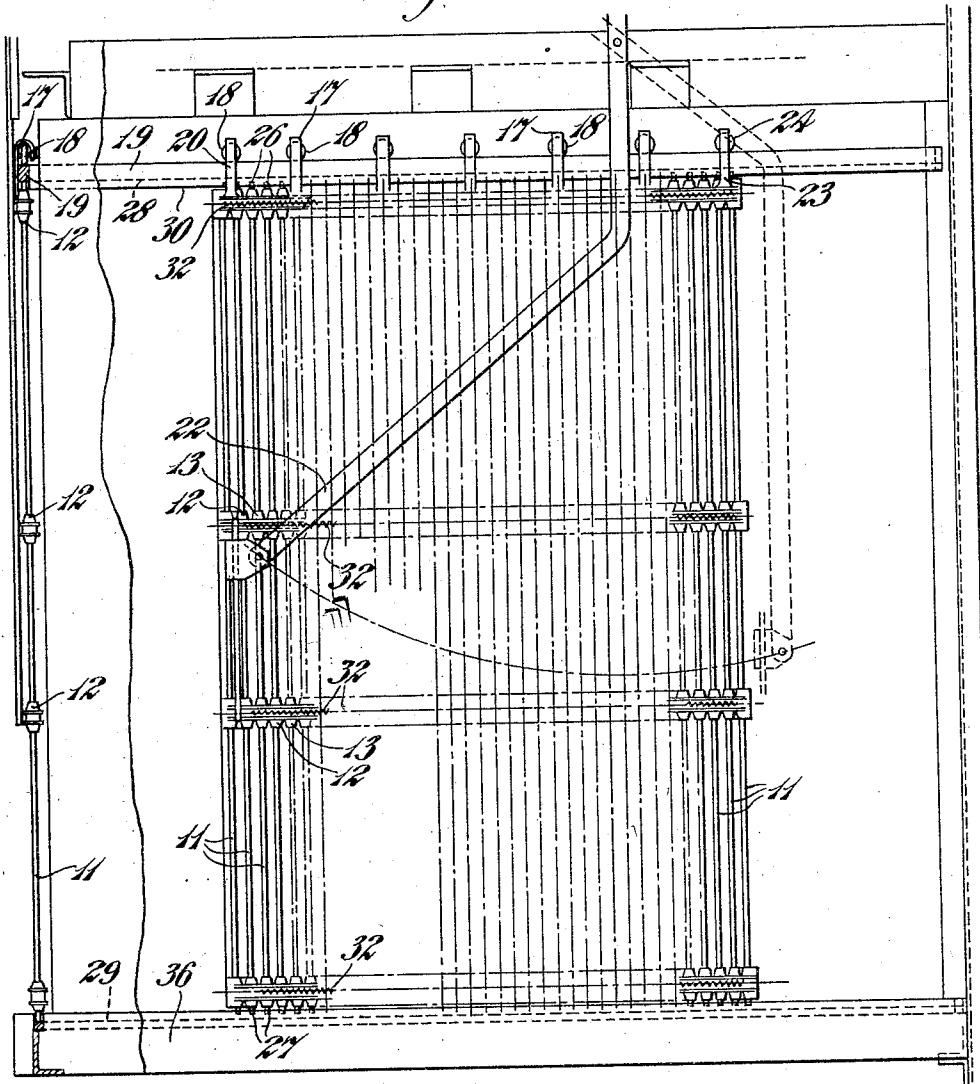
1,896,748

SLIDING DOOR, GATE, OR PARTITION

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4 Sheets-Sheet 1

Fig. 1.



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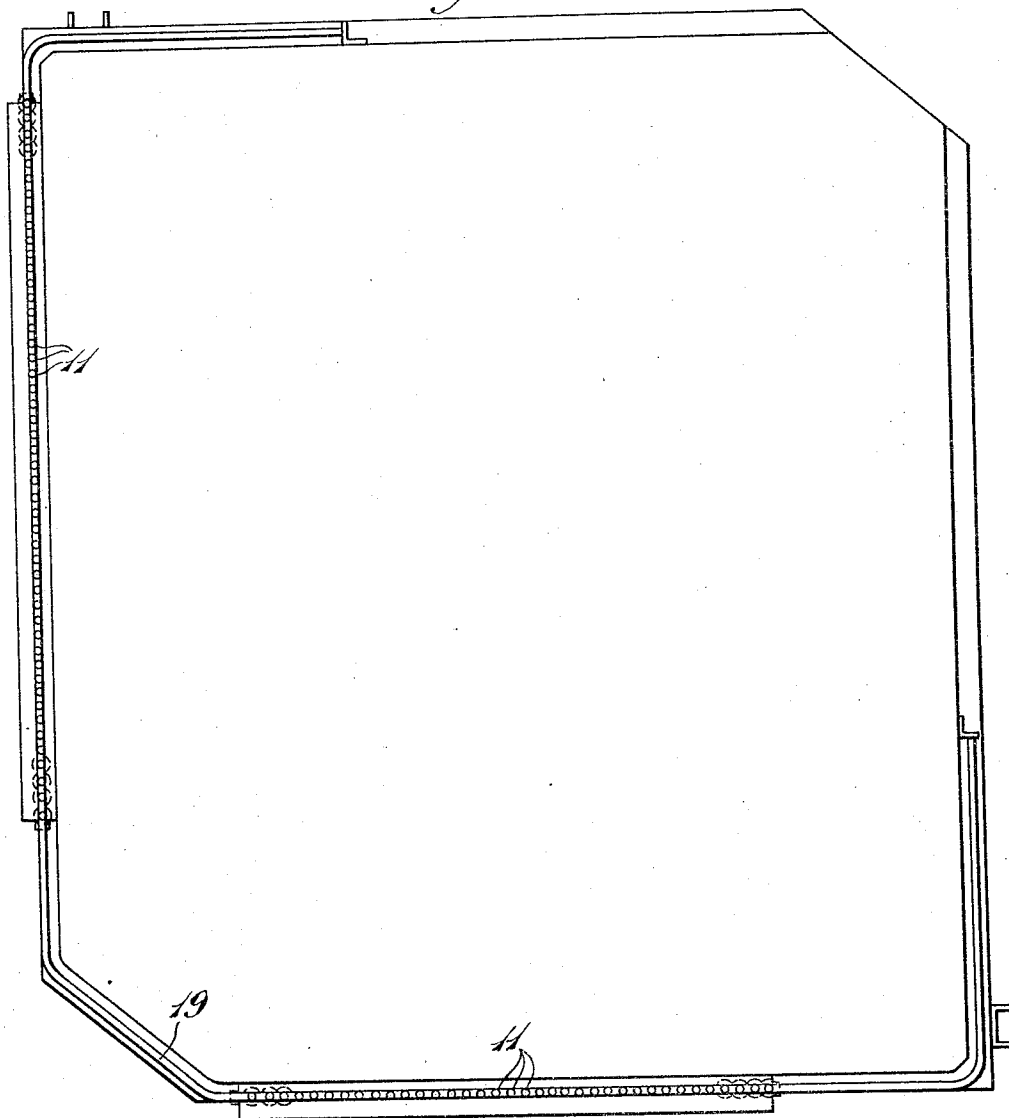
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Fig. 2.



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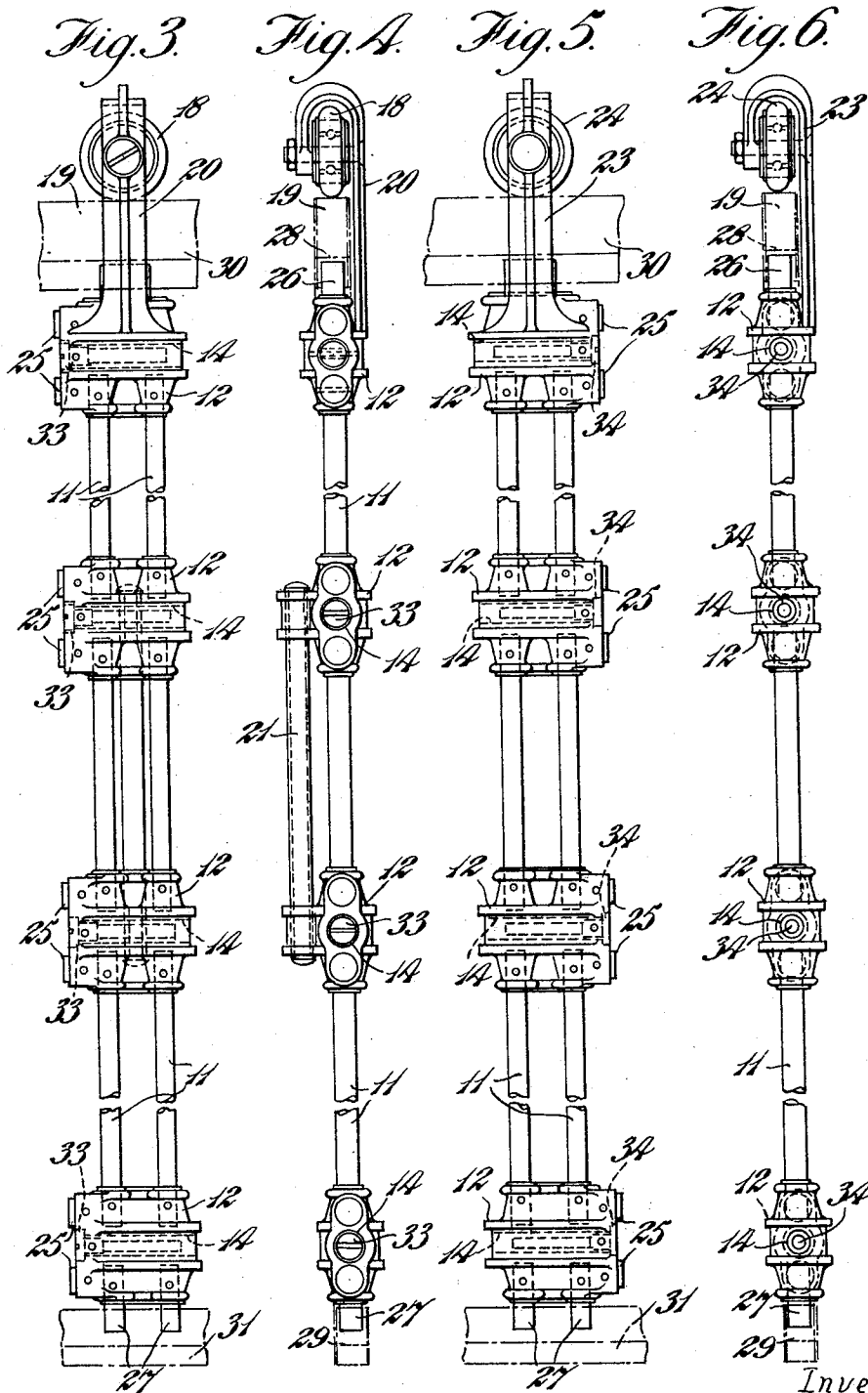
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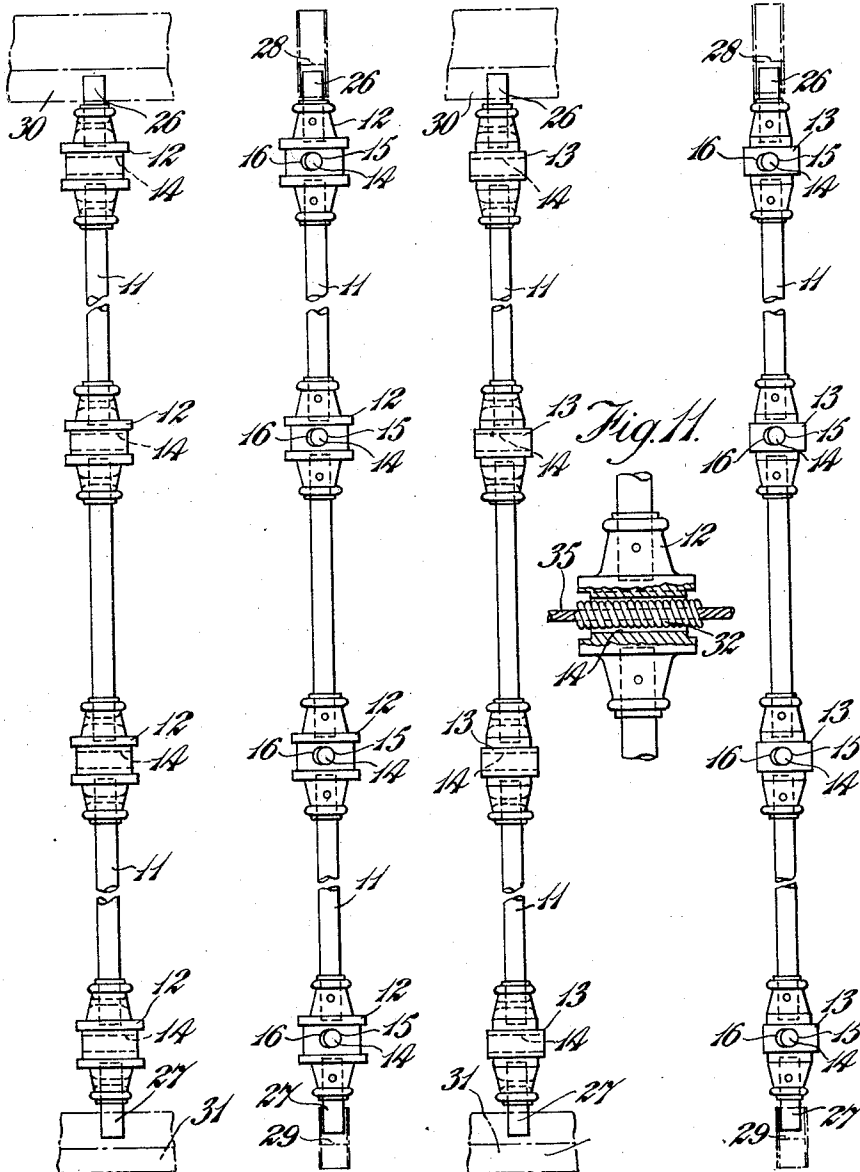
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Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE

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SLIDING DOOR, GATE, OR PARTITION

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This invention relates to sliding doors, gates, partitions or the like constructed of parts connected together and mounted so that the doors or the like will slide round a small curve on being opened or closed. More particularly the invention relates to gates or doors of the grille type as used on lift, hoist or elevator cars or cages or on tramway or the like transport vehicles, and consists of a plurality of vertical members assembled together and supported on rollers adapted to run on a track having a curved portion.

In a sliding gate or the like of the kind specified and in accordance with the present invention, the vertical bars are held together by means of one or more coiled springs, which may be combined with means for turning the supporting rollers as they pass from the straight to the curved portion of the track, and vice versa, in correct alignment with the track.

The door, gate or the like comprises vertical rods or pickets each formed with a horizontal aperture or apertures through which is passed a coiled spring or springs, whilst each aperture has a straight side and a curved side, said curved side being formed towards the inner side of the curve of the track.

Selected pickets are each provided with a bracket, rigidly attached thereto, which is arranged to carry a roller, and the aperture or apertures in the pickets, or preferably formed in members, such as castings, mounted thereon, are formed with a straight side and a curved side in a horizontal plane, the straight side being parallel to the roller. The vertical bars or pickets are arranged side by side in an articulated manner and a coiled spring or springs is or are provided to pass horizontally through the apertures in the members (castings) mounted on said bars or pickets, said spring or springs being attached, if desired, to members at the opposite sides of the door or gate, means being provided for adjusting the tension of the springs, whilst a flexible rope or the like may be placed within the coiled spring to prevent excessive movement

of the pickets in the event of the door or gate being snatched.

One construction of a lift gate in accordance with the invention will now be described with reference to the accompanying drawings in which Figure 1 is a front elevation of the assembled parts with the springs in position, Figure 2 is a plan of the assembled parts, Figure 3 is a front elevation and Figure 4 is a side elevation of the two end, or forward, pickets, Figure 5 is a front elevation and Figure 6 is a side elevation of the other two end, or rearward, pickets, and Figures 7 and 8 are front and side elevations of a picket provided with castings, i. e. male castings, which, in conjunction with those shown correspondingly in Figures 9 and 10 i. e.; female castings, constitute the means of articulation of the pickets, and Figure 11 is an enlarged view of a detail.

The gate is constructed of a plurality of vertical pickets, such as 11, arranged side-by-side and consisting of lengths of metal to be joined together by metal castings, such as 12, and 13 which are spaced along each alternate picket at equal intervals. The castings 12, 13 are of two shapes, the one 12, being a female casting and the other 13, being a male casting, so that by arranging pickets with female castings 12, alternately with pickets provided with male castings 13 an articulated connection between the pickets 11 is obtained, and the pickets are permitted to travel freely in a curved path. Each of the castings 12, 13 is formed with a horizontal aperture 14, having a straight side 15 and a curved side 16. At the upper end of, say, every fourth picket (see Figure 1) there is secured to the casting (12 or 13 depending on the initial disposition thereof) a bracket 17 carrying a roller 18 adapted to run on the track 19. The straight side 15 of the aperture 14 in each of the castings 12, 13 is arranged to be parallel to a diametrical axis of the roller 18. Preferably the two end, or forward pickets are connected together by a bracket 20 (see Figures 3 and 4) and are provided with a handle 21, (if the gate is to be propelled manually) or are connected with

a sliding bar 22, (if the gate is to be operated mechanically), whilst the two pickets at the other end of the gate, rearward pickets, are connected together (see Figures 5 and 6) to render this portion of the gate more rigid for carrying the bracket 23 supporting the roller 24. Each female and male casting 12 and 13 in the pickets connected together may be provided with buffers 25 to ensure that the gate shall open silently. The upper and lower ends of the pickets 11 may be provided with pins or projections 26, 27 arranged to slide in grooves 28, 29 formed in the upper and lower frameworks 30, 31 respectively.

Passing through the apertures 14 are coiled springs 32, connected at their forward ends (see Figures 3 and 4) with means, e. g. a set-screw 33, for adjusting the tension of the springs and connected at their other ends i. e. their rearward ends (see Figures 5 and 6) with similar means 34.

In order to prevent excessive opening of the pickets when the gate is snatched, flexible ropes 35 may be provided to lie within the coiled springs 32 and be secured at their ends in any convenient manner (see Figure 11).

In operation, when the gate is on the straight part of the track 19, the straight sides 15 of the apertures 14 formed in the female and male castings 12, 13 tend to maintain the rollers 18 in alignment with the track 19, but as soon as the leading roller commences to run on the curved portion of the track, the springs 32 bearing against the curved sides 16 of the apertures 14 formed in the castings 12 and 13 tend to turn that roller and to maintain it still in alignment with the track. Furthermore the reverse operation is performed by the springs 32 when the gate is returning from the curved to the straight portion of the track 19, so that in all positions of the gate there will be true alignment between each roller and the track.

The number and spacing of the upper carrying rollers may be arranged according to the individual requirements obtaining with any particular sliding door, gate or grille, and will depend upon the height, width, material, ornamentation and weight thereof.

I claim:—

1. A sliding door of the kind described comprising a plurality of vertical pickets and at least one spring extending transversely through openings in all the pickets and secured at its ends to the end pickets to hold the said pickets together.

2. A sliding door of the kind described comprising a plurality of vertical pickets, a plurality of rollers for supporting the said pickets, a track formed with a curved portion upon which said rollers run, a spring extending the full width of the door and arranged to hold the pickets together and means co-

operating with the spring to maintain the rollers in alignment with the track.

3. A sliding door of the kind described comprising a plurality of vertical pickets formed with horizontal apertures, a plurality of rollers for supporting the said pickets, a track formed with a curved portion upon which said rollers run, a coil spring passing through the said horizontal apertures and means for securing the spring to the end pickets so as to hold the pickets together.

4. A sliding door of the kind described comprising a plurality of rollers, a track formed with a curved portion upon which said rollers run, a plurality of vertical pickets arranged to be supported by the rollers and formed with horizontal apertures, each aperture being formed with a curved side and a straight side and the curved side being arranged to lie towards the inner side of the curve of the track, and a coiled spring passing through the said apertures and having its ends secured to the end pickets so as to hold the pickets together.

5. A sliding door of the kind described comprising a plurality of vertical pickets formed with horizontal apertures, a coiled spring passing through the said apertures and secured to the end pickets so as to hold the pickets together, a plurality of rollers, a track formed with a curved portion upon which said rollers run to support the pickets and means cooperating with the pickets for preventing the pickets from moving apart to too great an extent in the event of sudden movement of the gate.

6. A sliding door of the kind described comprising a plurality of vertical pickets formed with horizontal apertures, a plurality of rollers for supporting the pickets, on a track formed with a curved portion upon which said rollers run, a coiled spring passing through the apertures and connected at one end to the first picket and at the other end to the last picket, means for adjusting the tension of the spring and a flexible rope passing axially through the coiled spring and having its ends secured so as to limit the extension of the said spring.

7. In or for use in a sliding door of the kind described a picket formed with a horizontal aperture having a straight and a curved side, a bracket attached rigidly to the end of the picket and a roller carried by the bracket and adapted to run on an overhead track, the straight side of the aperture being normal to the axis of the roller.

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