

Nov. 15, 1932.

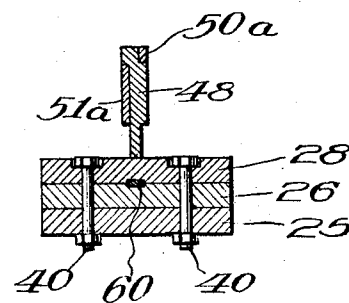
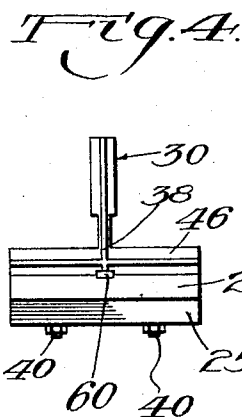
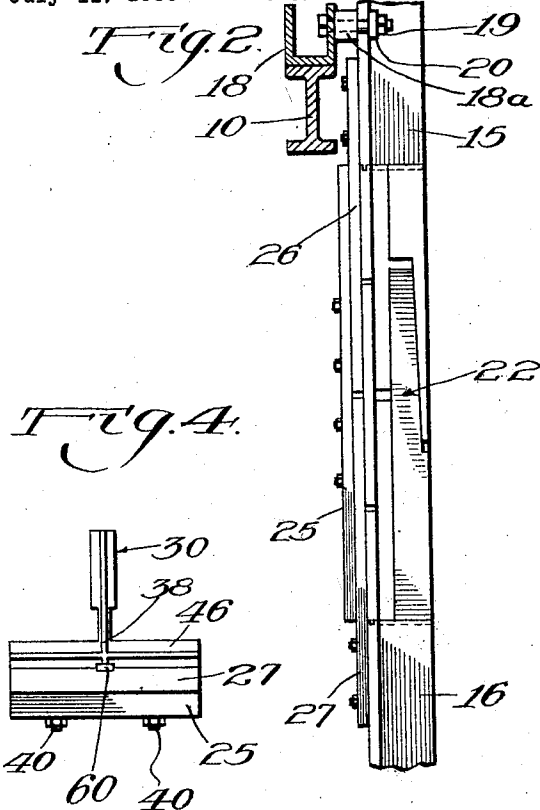
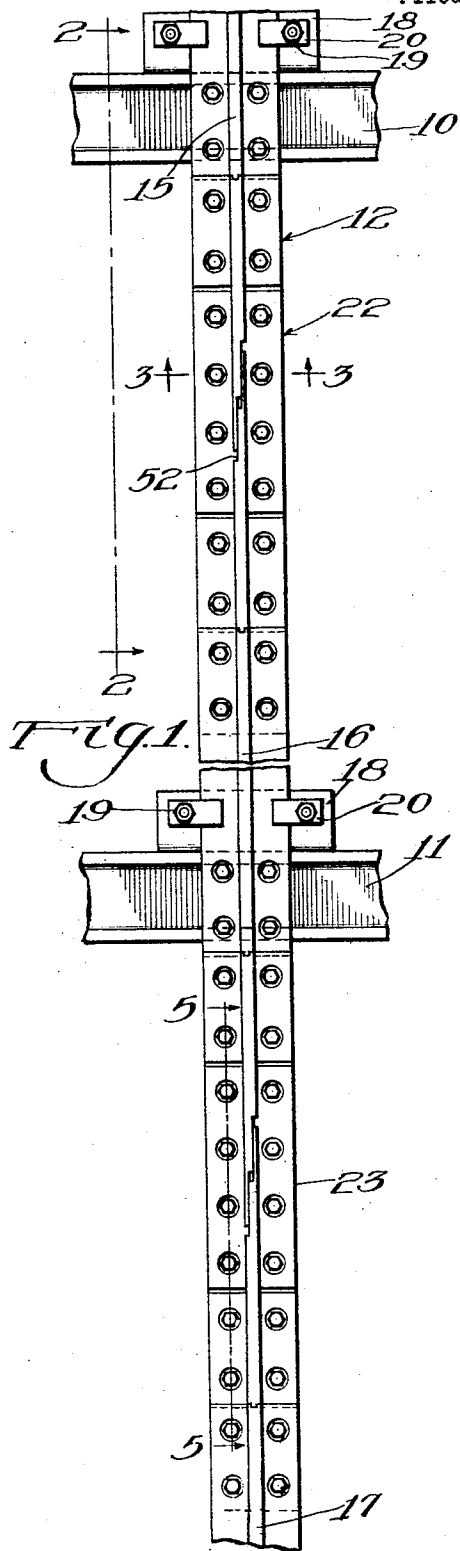
C. SHANAFELT

1,888,018

ELEVATOR SHAFT CONSTRUCTION

Filed July 11, 1930

2 Sheets-Sheet 1



Inventor:
Clark Shanafelt,
By Ogdenfalk, Lee, Chittor & Wile
Attys:

Nov. 15, 1932.

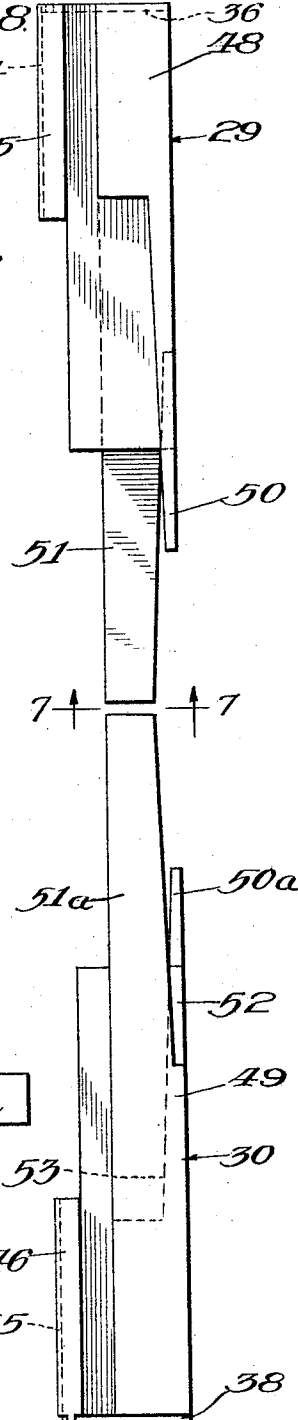
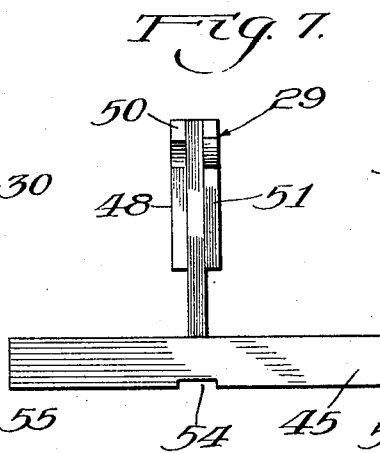
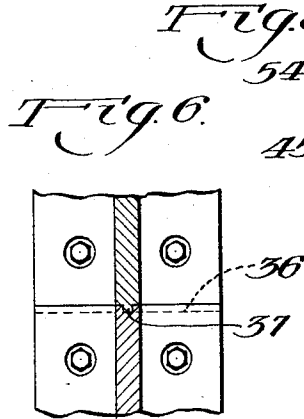
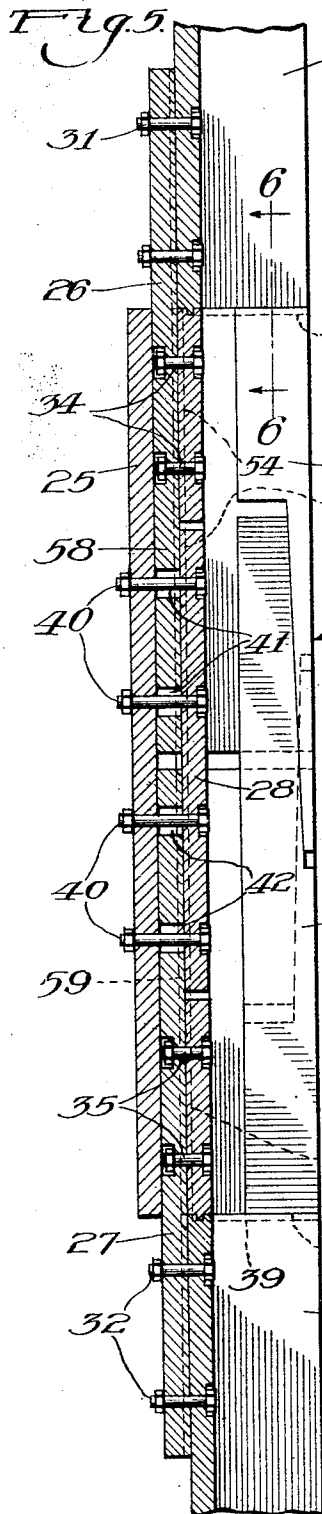
C. SHANAFELT

1,888,018

ELEVATOR SHAFT CONSTRUCTION

Filed July 11, 1930

2 Sheets-Sheet 2



Inventor:
Clark Shanafelt,
By *Dyersmith, Lee, Chutton & Wilson*
Attys:

UNITED STATES PATENT OFFICE

CLARK SHANAFELT, OF AKRON, OHIO

ELEVATOR SHAFT CONSTRUCTION

Application filed July 11, 1930. Serial No. 467,305.

The invention relates to elevator shaft construction, and has as its primary object the provision of improved guide rail construction which insures that the guide rails will remain in alinement when the building settles, or when changes in temperature cause the guide rails to expand or contract.

Another object of the invention is to provide improved expansion joints for connecting adjoining elevator guide rails to each other.

In one form of the invention the guide rails in an elevator shaft are connected to each other by expansion joints, each of which joints comprises a fish-plate to which two sliding plates are secured to slide in a direction which is longitudinal with respect to the guide rails. Rigidly secured to each of the sliding plates is a short section of guide rail which is provided with tongues and grooves slidingly engaging grooves and tongues, respectively, provided on the guide rail section carried by the associated sliding plate, this construction being employed to insure effective bearing surfaces for the guide shoes when they ride over the joint. The guide rails are also secured to the sliding sections and are arranged in such manner that the guide rail sections form continuations thereof. (The sliding plates are splined to the fish-plate to hold the guide rail sections in vertical alinement. When the building settles, or when the guide rails are subjected to changes in temperature, they may move with respect to each other but will be held in alinement by the improved expansion joint.

Many other objects and advantages will appear as this description progresses, reference being had to the accompanying drawings, wherein:

Figure 1 is a fragmentary elevation of elevator guide rail apparatus embodying my invention.

Fig. 2 is a section taken on line 2-2 of Fig. 1.

Fig. 3 is an enlarged section taken on line 3-3 of Fig. 1.

Fig. 4 is an end view of one of the expansion joints shown in Fig. 1.

Fig. 5 is an enlarged section taken on line 5-5 of Fig. 1.

Fig. 6 is a section taken on line 6-6 of Fig. 5.

Fig. 7 is an end elevation of a guide rail section which is one of a plurality of such devices embodied in the construction illustrated in Fig. 1, and

Fig. 8 shows the side elevations of two guide rail sections as they appear before they are brought into operative engagement with each other.

Referring to the drawings, wherein a preferred form of the invention is illustrated, the reference characters 10 and 11 designate beams of a building and secured to the beams 10 and 11 is one of a pair of elevator guiding devices 12. Each of the devices 12 comprises the usual guide rails 15, 16 and 17. As shown, the guide rails 15 and 16 are rigidly secured to the beams 10 and 11 by means comprising channel members 18, spacers 18a, bolts 19 and clamping members 20, the channel members 18 being rigidly secured to the beams 10 and 11. Interposed between the guide rails 15 and 16 and between the guide rails 16 and 17 are expansion joints 22 and 23, respectively, which are preferably identical in construction.

As best shown in Fig. 5, each expansion joint preferably comprises a fish-plate 25, sliding plates 26 and 27, a plate 28 and guide rail sections 29 and 30, the guide rail sections 29 and 30 being preferably identical in construction, with the exception that one of them is provided with a T-shaped slot at one end while the other end is provided with a T-shaped lug.

Fig. 5 illustrates the manner in which the expansion joint 22 connects the guide rail 15 to the guide rail 16, and it will be noted that the guide rails 15 and 16 are rigidly secured to the sliding plates 26 and 27, respectively, by bolts 31 and 32, respectively. The guide rail section 29 forms a continuation of the guide rail 15 and is rigidly secured to the sliding plate 26 by bolts 34. In a like manner the guide rail section 30 forms a continuation of the guide rail 16 and is rigidly secured to the sliding plate 27 by bolts 35.

Referring to Figs. 5 and 6, it will be noted that the guide rail section 29 is provided at its upper end with a T-shaped groove 36 which conforms to its cross-section and accommodates a T-shaped lug 37 projecting from the lower end of the rail 15. The lower end of the guide rail section 30 is provided with a T-shaped projection 38 which projects into a T-shaped groove 39 provided in the upper end of the guide rail 16. This construction insures that the guiding surfaces of the guiding rails and guide rail sections will form continuations of each other.

The plate 28 is spaced from the fish-plate 25 by the sliding plates 26 and 27, but it is rigidly secured to the fish-plate 25 by a plurality of bolts 40 which project through elongated slots 41 and 42 provided in the sliding plates 26 and 27, respectively. The arrangement is such that the sliding plates may be displaced longitudinally with respect to the fish-plate, and it is readily understood that any movement of the sliding plates relative to the fish-plate will be accompanied by like movement of the guide rails 15 and 16 and the guide rail sections 29 and 30 as the guide rails and the guide rail sections are secured to the sliding plates 26 and 27. Thus, if the building settles and the rail 15 is forced downwards towards the rail 16, the guide rail section 29 and the sliding plate 26 will move towards the guide rail section 30 and the sliding plate 27, respectively, to take up the movement of the guide rail 15 in such manner that the guide rail 15 is held in alignment with the guide rail 16 and the position of the guide rail 16 is not changed.

The guide rail sections 29 and 30 are preferably constructed in such manner that relative movement thereof, when the building settles or when the guide rails expand or contract in accordance with the temperature, they will present substantially continuous and effective bearing surfaces for the guide shoes (not shown) of the associated elevator (not shown).

Referring to Figs. 3, 4, 7 and 8, it will be noted that each of the guide rail sections is substantially T-shaped in cross section and that they comprise relatively short base portions 45 and 46, which are secured to the sliding plates 26 and 27, respectively, by the bolts 34 and 35, respectively. Formed integral with the base portions 45 and 46 are web portions 48 and 49, respectively, upon which the elevator shoes (not shown) ride. The web portion 48 projects below the base 45 and the web portion 49 projects above the base 46, and these web portions are slotted or grooved in such manner that they provide a plurality of inter-engaging tongues and grooves. Thus, the web 48 comprises tongues 50 and 51 which engage grooves 52 and 53, respectively, provided in the web 49, and the web 49 comprises tongues 50a and 51a which

engage similar grooves formed in the web 48. The tongues 50, 51, 50a and 51a are preferably tapered as illustrated in Fig. 8 so that the elevator shoes (not shown) will ride smoothly from the web portion 48 to the web portion 49, and vice versa.

The guide rail sections 29 and 30 and the plate 28 are preferably splined to the sliding plates 26 and 27. For this purpose grooves 54 and 55, respectively, are provided in the guide-rail sections 48 and 49. A groove 56 is provided in the plate 28 and grooves 58 and 59 are provided in the sliding plates 26 and 27, respectively.

The grooves 54, 55, 56, 58 and 59 slidably engage a key 60 which is preferably of a length substantially equal to the distance between the upper end of the guide rail section 29 to the lower end of the guide rail section 30 when these members are pushed as far as possible. The lower and upper ends of the guide rails 15 and 16, respectively, abut the end of the key 60 and hold it in place.

It will be noted that any tendency of lateral displacement of the guide rail sections or the sliding plates relative to each other is prevented by the key 60. Therefore, the key 60 holds the guide rail sections and the sliding plates in vertical alinement as far as lateral displacement is concerned, and this construction insures that the guide rails 15 and 16 will be held in vertical alinement as far as lateral displacement is concerned.

The above described construction is exceedingly advantageous as it obviates the necessity of using extreme force to bring the guide rails into alignment if they have been secured in place in the elevator shaft. It also obviates the necessity of bringing the guide rails into alinement when the building settles, as my improved expansion joints hold the guide rails in alinement while the building settles. And as set forth above, the improved expansion joints compensate for expansion and contraction of the guide rails in such manner that they are not forced out of alinement with each other.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as possible, in view of the prior art.

What I claim as new, and desire to secure by Letters Patent, is:

1. In elevator shaft construction, guiding means comprising guide rails, a fish-plate, sliding plates slidably secured to the fish-plate, said sliding plates being constrained to move with said guide rails, and guide rail sections rigidly secured to said sliding plates

and forming a continuation of said guide rails.

2. In elevator shaft construction, guiding means comprising guide rails, a fish-plate, sliding plates slidably secured to the fish-plate, said sliding plates being constrained to move with said guide rails, and guide rail sections rigidly secured to said sliding plates and forming a continuation of said guide rails, said guide rail sections having tongues and grooves engaging grooves and tongues, respectively, of another of said guide rail sections.

3. In elevator shaft construction, guiding means comprising guide rails, a fish-plate, sliding plates slidably connected to said fish-plate, said sliding plates being rigidly secured to said guide rails, guide rail sections forming continuations of said guide rails and rigidly secured to said sliding plates, and means preventing lateral displacement of one sliding plate relative to the other.

4. In elevator shaft construction, guiding means comprising guide rails, a fish-plate, sliding plates slidably secured in said fish-plate and rigidly secured to said guide rails, guide rail sections rigidly secured to said sliding plates, and a spline slidably engaged by said guide rails sections.

5. In elevator shaft construction, guiding means comprising guide rails, a fish-plate, sliding plates slidably secured in said fish-plate and rigidly secured to said guide rails, guide rail sections rigidly secured to said sliding plates, and a spline slidably engaged by said guide rail sections and limited as to longitudinal displacement relative to said guide rail sections by said guide rails.

6. In elevator shaft construction, guiding means comprising a fish-plate, sliding plates, slidably secured to said fish-plate, and guide rails rigidly secured to said sliding plates.

7. In elevator shaft construction, guiding means comprising spaced guide rails in vertical alinement, guide rail sections interposed between said guide rails and forming continuations thereof, a fish-plate, and sliding plates slidably secured to said fish-plate and rigidly secured to said guide rails and guide rail sections.

8. In elevator shaft construction, guiding means comprising spaced guide rails in vertical alinement, guide rail sections interposed between said guide rails and forming continuations thereof, a fish-plate, sliding plates slidably secured to said fish-plate and rigidly secured to said guide rails and guide rail sections, and a spline slidably engaged by said guide rail sections.

9. In elevator shaft construction, guiding means comprising spaced guide rails in vertical alinement, a guide rail section constrained to move with one of said guide rails, a second guide rail section constrained to move with another of said guide rails, a plate

constrained to move with the first-mentioned guide rail section, a second plate constrained to move with said second guide rail section, and means slidably engaging said plates and holding them in vertical alinement.

10. In elevator shaft construction, guiding means comprising spaced guide rails in vertical alinement, said guide rails being secured intermediate their ends to supporting means, slides rigidly secured to opposed ends of the guide rails, and means slidably engaged by the slides and holding them in vertical alinement.

11. In elevator shaft construction elevator guiding means comprising guide rails having cut-away portions and projecting parts, the projecting parts of one guide rail projecting into the cut-away portions of the other guide rail, said cut-away portions and said projections forming an expansion joint.

In testimony whereof, I hereunto subscribe my name, this 30th day of June, 1930.

CLARK SHANAFELT.

70

75

80

85

90

95

100

105

110

115

120

125

130