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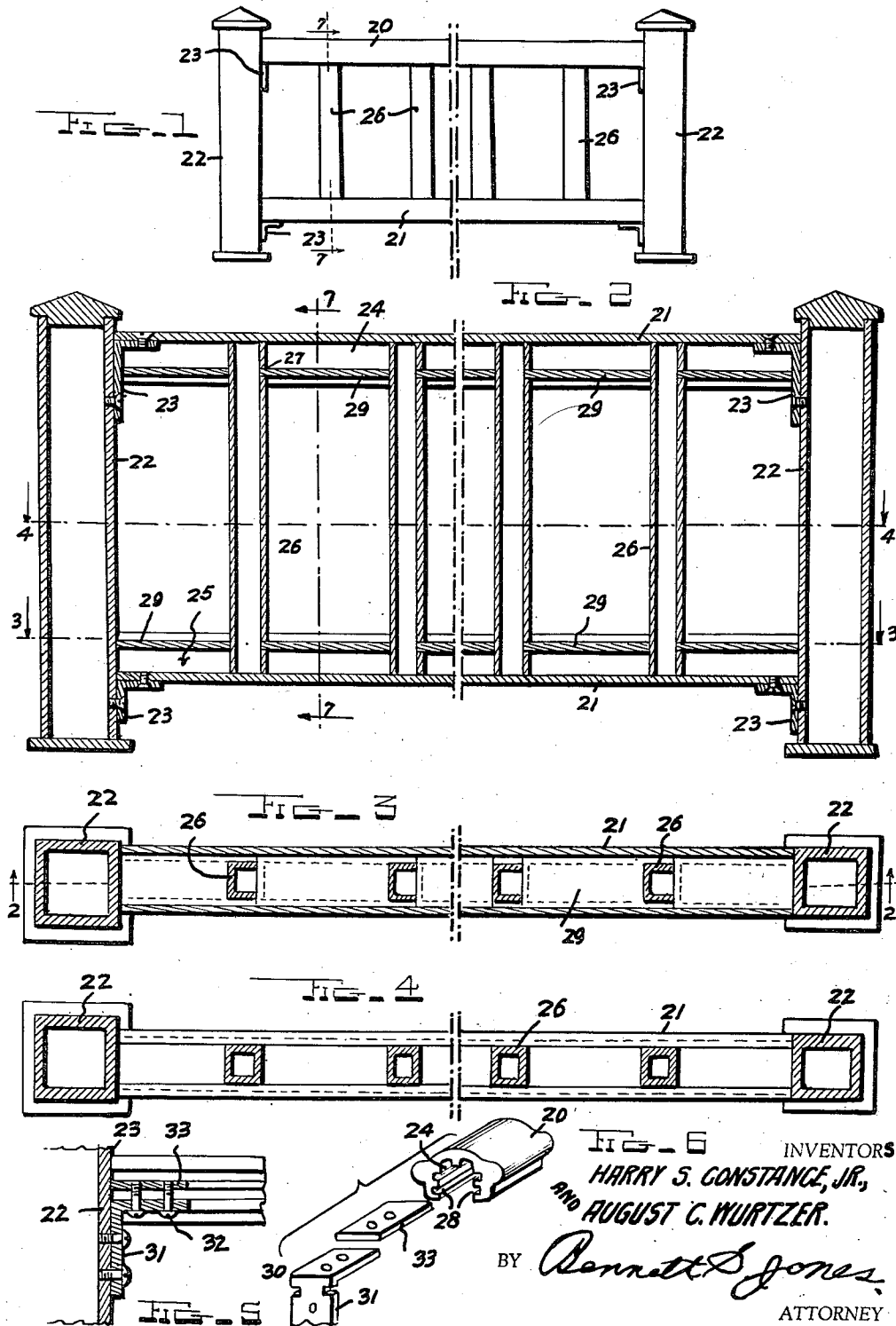
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METALLIC RAILING STRUCTURE

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2 Sheets-Sheet 1



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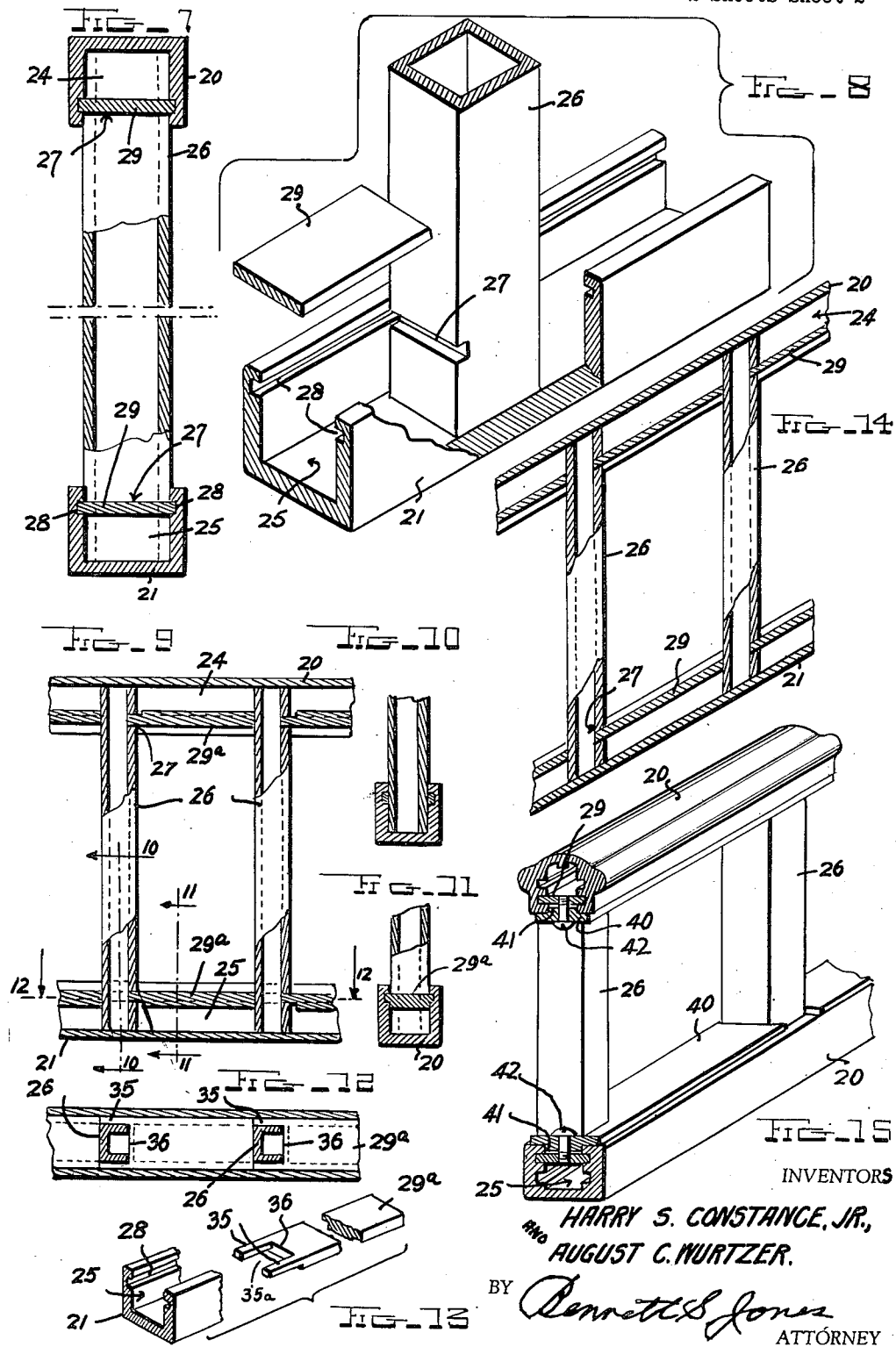
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METALLIC RAILING STRUCTURE

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5 Claims. (Cl. 256—22)

This invention relates generally to building construction, and particularly to railings for porches, balusters, etc.

The primary object of the invention is to provide porch or baluster structures preformed in such manner as to permit them to be moved or shipped to the site of building structures and properly erected quickly and accurately by simple methods, with simple tools and without employment of skilled labor. In carrying out the invention, the structure may be made of any desired materials, but in the present instance the invention is shown as carried out either with aluminum extrusions for all the essential elements, but it will be understood that other materials, metallic or non-metallic, may be equally as effectively employed.

The construction of the elements constituting the rail or baluster is such that the upper and lower rails may be easily and quickly installed and the pickets associated therewith by devices and methods which assure perfect angular relationship with respect not only to the upper and lower rails but with each other. A further object of the invention is to provide a device of this general character which, when properly installed and the parts locked together, presents a rigid construction incapable of being readily deformed or broken apart, and which will prove highly effective in the erection of rail and baluster constructions.

With the foregoing objects in view, together with others which will appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings and particularly pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation of a railing constructed and assembled in accordance with the invention,

Fig. 2 is a longitudinal sectional view, on an enlarged scale, taken on line 2—2 of Fig. 2, showing the general assembly of the rail,

Fig. 3 is a transverse sectional view taken substantially upon the line 3—3 of Fig. 2,

Fig. 4 is a similar view taken upon the line 4—4 of Fig. 2,

Fig. 5 is a detail fragmentary sectional view showing means for connecting modified form of horizontal top rail to the supporting posts,

Fig. 6 is a detail perspective view showing the top rail, connector plate and supporting bracket,

Fig. 7 is a vertical sectional view taken through one of the palings substantially on line 7—7 of Fig. 1, and showing the manner of its connection to the upper and lower supporting rails,

Fig. 8 is a detail fragmentary perspective view on an enlarged scale, illustrating the manner of assembling the picket in the lower rail,

Fig. 9 is a fragmentary view similar to Fig. 2 and showing a modified form of the invention,

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Fig. 10 is a detail fragmentary sectional view taken on line 10—10 of Fig. 9,

Fig. 11 is a similar view taken on line 11—11 of Fig. 9,

Fig. 12 is a horizontal fragmentary sectional view taken on line 12—12 of Fig. 9,

Fig. 13 is a fragmentary perspective view illustrating the connecting key for securing the palings to the supporting rail,

Fig. 14 is a vertical longitudinal sectional view taken through stair railings and illustrating the manner in which the palings are connected to the upper and lower inclined rails, and

Fig. 15 is a fragmentary perspective view, partly in section, illustrating a further modification of the invention.

Generally speaking, the upper and lower rails are in channel form and each is provided on its inner side walls with longitudinal grooves for slidable insertion of flat bars to engage within suitable openings in the upstanding palings to retain the latter rigidly in proper position and for closing the open portion of the channel.

Specifically, the upper and lower rails of the baluster are indicated at 20 and 21, respectively, spaced proper distances apart in parallelism as shown, and secured at their extremities to the upstanding supporting posts or pillars 22 by suitable brackets 23. The rails and posts in the present instance are of hollow construction, being formed or extruded from suitable metal, such as aluminum for lightness and yet possessing sufficient strength and rigidity to withstand the stresses and strains to which the baluster structure may be subjected. The upper rail 20 may have a cross sectional construction such as shown in the perspective view, Fig. 6, being hollowed out longitudinally to provide a channel 24 extending from one end to the other thereof. The walls of this channel may be cut away as shown to lighten the structure without affecting its strength. The channel portion 24 of the upper rail 20 is disposed downwardly, while a similar channel 25 in the lower rail 21 is disposed upwardly; the two channels being of equal breadth as shown. These channels snugly receive the ends of palings 26 cut to such length as to fit within the channels of the upper and lower rails and to rest at their extremities against the interior top and bottom walls thereof, respectively. The various palings 26 will all be made of exactly the same length so that the upper and lower rails 20—21 will be spaced apart equal distances.

Each of the ends of the palings 26 is provided with a transverse channel 27 extending inwardly from one side thereof immediately adjacent to and aligned with the grooves 28 in the inner faces of the side walls of the upper and lower rails 20—21. As shown in the drawings, the palings or pickets 26 are of rectangular cross section and hollow from end to end. The channels 27 therein are in those faces of the pickets at right angles to the grooves 28, as shown specifically in Fig. 8 of the drawings.

The upper and lower rails are provided with key plates indicated at 29, the said plates being of a width to be slidably received at their longitudinal edges in the grooves 28 in the upper and lower rails 20—21 and of a thickness to engage and interlock at their ends within the cross channels 27 in the pickets or palings 26. These key plates are all of similar length in order that the palings 26 will be spaced apart similar distances throughout the entire structure. The rear ends of the plates 29 abut against the outer face or wall of the adjacent picket, and it is obvious from this construction that when the pickets 26 are properly inserted with their upper and lower ends resting in the channels of the upper and lower rails, with the key plates 29 slid into proper engaging position with the same, the various pickets will be rigidly locked to the upper and lower rails, held against any tendency to be

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slid outwardly therefrom, and also held rigidly against moving toward or away from each other longitudinally of the rails.

Figs. 5 and 6 of the drawing illustrate means whereby the ends of a modified form of horizontal top rail may be rigidly secured to the supporting posts 23 by simple and yet very effective devices. This means comprises an angle bracket 30 to be secured by one of its legs as at 31 to the inner face of the post 23, and its opposite leg secured as by rivets or screws 32 to a connecting plate 33 to slidably engage within the grooves 28 in the inner faces of the side walls of the baluster rail 20. The lower rail 21 may be secured to the end posts by the brackets 23 as shown in Fig. 2 of the drawing.

Fig. 14 of the drawing discloses the same inventive idea carried out in connection with stairway baluster rails. In this instance, the rails 20—21 will be disposed in inclined parallelism, and the upper and lower ends of the pickets 26 will be similarly inclined to properly seat within the channels of the upper and lower rails. Likewise, the transverse grooves 27 in the lower ends of the pickets will be inclined so as to receive the keeper or securing plates 29 as will be understood.

In Figs. 9 to 13 of the drawings, there is disclosed a modification of the invention, wherein the key or locking plates 29a are recessed as at 35a at one end to provide spaced parallel arms 35, the inner edges of which embrace the sides of the upstanding pickets 26. In this form of the invention the arms 35 engage with opposite outer surfaces of the upstanding pickets to firmly embrace the latter between them while the portion 36 at the base of these arms engages in the transverse slot 27 as will be understood. In this modification of the invention it is apparent that the pickets will be narrower in cross section than those described in connection with the preferred form in order that the arms 35 at the forked ends of the key plates 29a may snugly embrace the outer side surfaces of the pickets. It will also be observed, particularly with reference to Fig. 12 of the drawing, that the forward ends of the key plates 29a will engage the adjacent rear ends of the next plate so as to entirely seal the channel against the ingress of dirt or moisture.

Fig. 15 of the drawing shows a further modification similar in all respects to the preferred form of the invention with the addition of cover plates 40 fitting within the open ends of the channels in the rails 20 and 21, respectively. These cover plates will be provided on their inner faces with longitudinally disposed shoulders 41 to slidably engage the spaced edges of the walls of the rails 20—21 and to firmly seat within the open ends of the channel. Rivets or screws 42 may be passed through these cover plates and secured in the underlying key plates 29. In this manner, the channels are sealed against the possible ingress of dust, dirt or water.

From the foregoing, it is apparent that we have provided a rail construction of extremely simple form, which may be prefabricated and properly erected upon the job without the exercise of special skill or knowledge and without utilizing or requiring special tools for carrying out the erecting process. When the posts, bottom and top rails, pickets and key plates have all been properly assembled, a rigid structure is provided, all interlocked against any possibility of derangement or breakage and which will prove highly efficient for its purposes.

We claim:

1. In a railing structure, a rail having a longitudinally disposed channel in one of its surfaces, the inner side

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walls of said channel having opposed parallel longitudinally disposed grooves, a picket disposed in angular relationship with said rail with its end engaged in said channel, said picket having a transversely disposed groove in one face thereof and disposed in the same plane with and at right angles to said wall grooves, a key plate having its side edges slidable in said grooves and engageable at one end in said transverse picket groove, and means for locking said plate against movement.

2. In a railing structure, a rail having a longitudinally disposed channel in one of its surfaces, the inner side walls of said channel having opposed parallel longitudinally disposed grooves, a picket disposed in angular relationship with said rail with its end engaged in said channel, said picket having a transversely disposed groove in one face thereof and disposed in the same plane with and at right angles to said wall grooves, a key plate having its side edges slidable in said grooves and engageable at one end in said transverse picket groove, means on the side of said picket opposite to said transversely disposed picket groove to hold said picket against movement, and means for locking said plate against movement.

3. In a railing structure, upper and lower spaced parallel rails having longitudinally disposed channels in their facing surfaces, the side walls each of said channels having opposed parallel longitudinally disposed grooves therein, pickets disposed between said rails with their ends seated in said channels, each of said pickets having a transverse groove in one face thereof disposed in the same plane with said longitudinal grooves, key plates slidable in said wall grooves and engaged at one end in said picket grooves, means for holding said pickets against movement in one direction, and means for locking said key plates against movement.

4. In a railing structure, upper and lower rails disposed in spaced parallelism and having longitudinally disposed channels in their facing surfaces, the side walls of said channels having opposed longitudinally disposed grooves therein, pickets arranged in spaced parallelism between said rails with their ends seated in said channels, one side surface of each of said pickets having a transverse groove therein disposed in the same plane with the companion side wall grooves and at right angles to the latter, and key plates slidable in said wall grooves to engage at one end in said picket grooves and to abut at their opposite ends with the adjacent outer surface of the next picket.

5. In a railing structure, a pair of spaced parallel rails having longitudinally disposed channels in their facing surfaces, the side walls of said channels each having opposed longitudinally disposed grooves therein, hollow pickets interposed between said rails with their ends seated in said channels, each of said pickets having a transverse slot therein in one side thereof disposed in the same plane with and at right angles to the adjacent wall grooves, and key plates having their side edges slidably engaged in said wall grooves with their ends engaged in said picket grooves, the opposite ends of said key plates abutting the ungrooved side of the next adjacent picket.

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