Aug. 17, 1943. R. LUNDY 2,327,311

FENCE STRUCTURE

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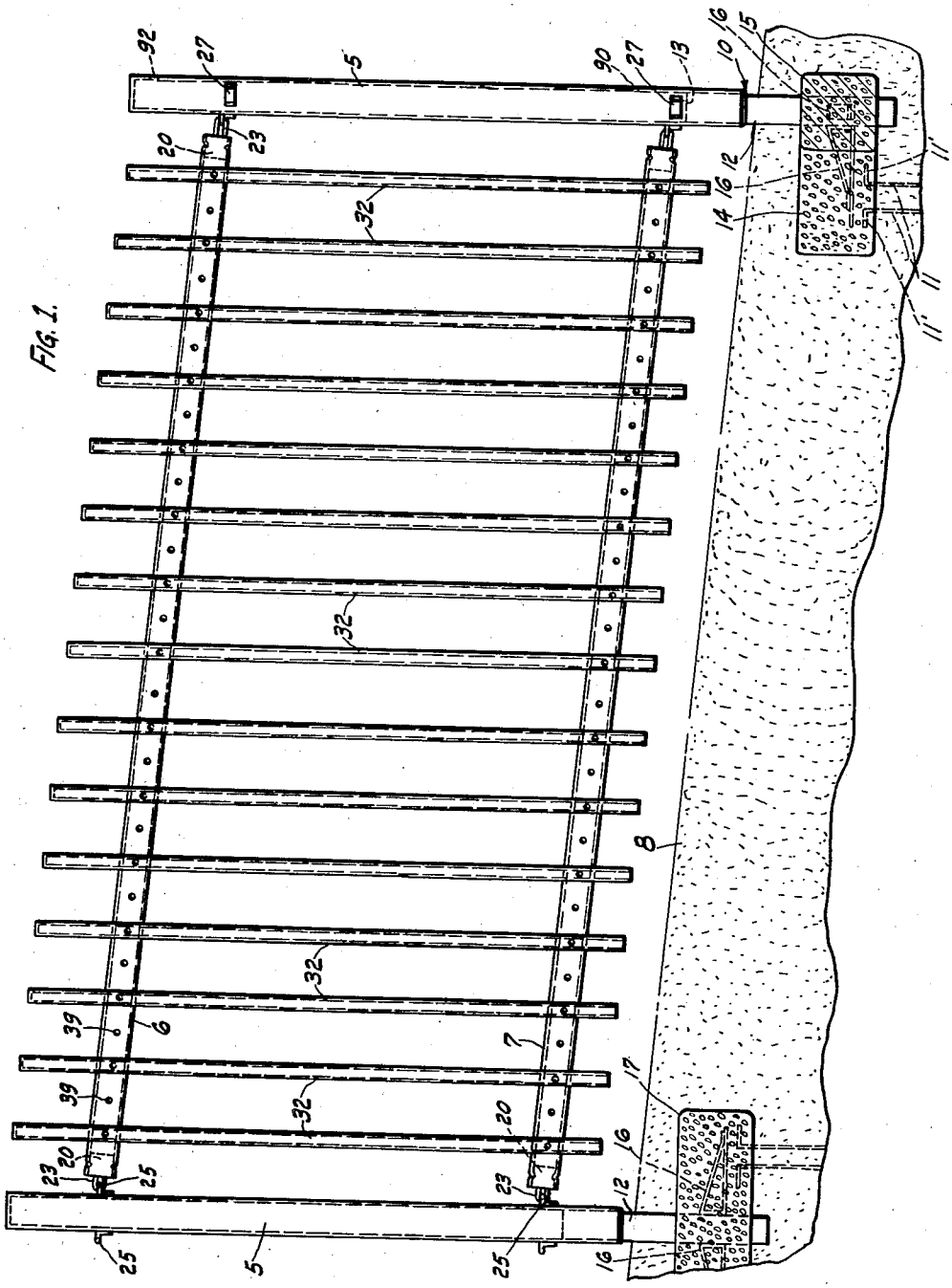


FIG. 1.

INVENTOR.
ROBERT LUNDY.
BY Walter E. Schirmer
ATTORNEY.

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FENCE STRUCTURE

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FIG. 2.

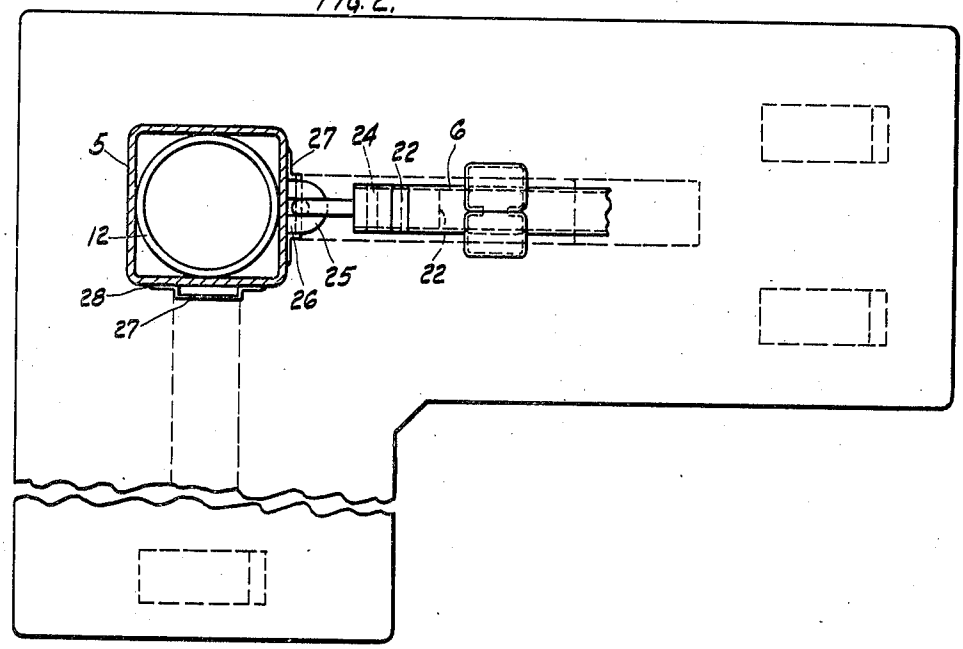


FIG. 3.

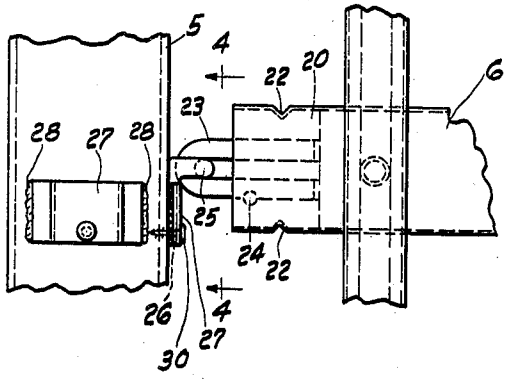
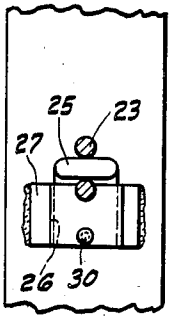


FIG. 4.



INVENTOR.
ROBERT LUNDY.
BY Walter E. Schirmer
ATTORNEY.

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FENCE STRUCTURE

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FIG. 5.

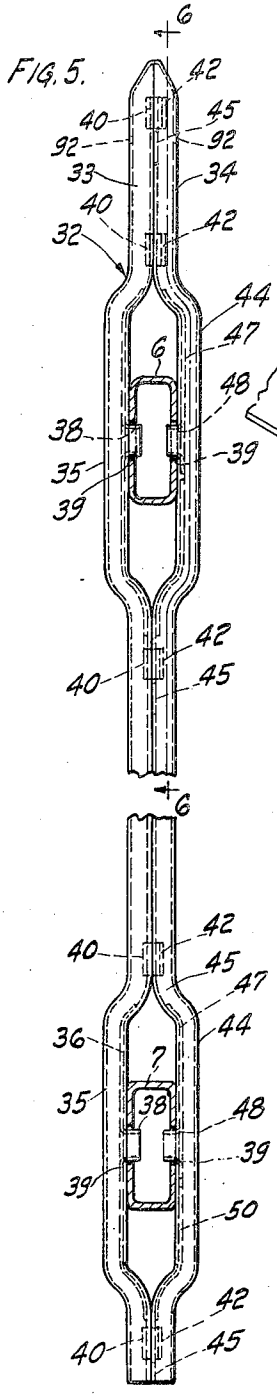


FIG. 6.

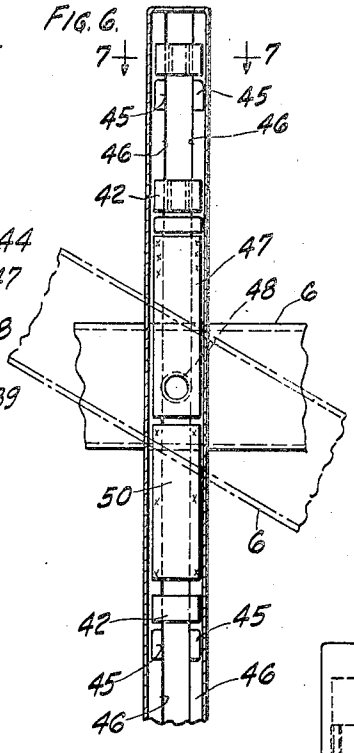


FIG. 12.

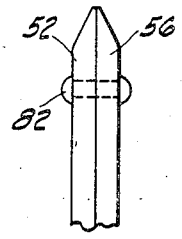


FIG. 10.

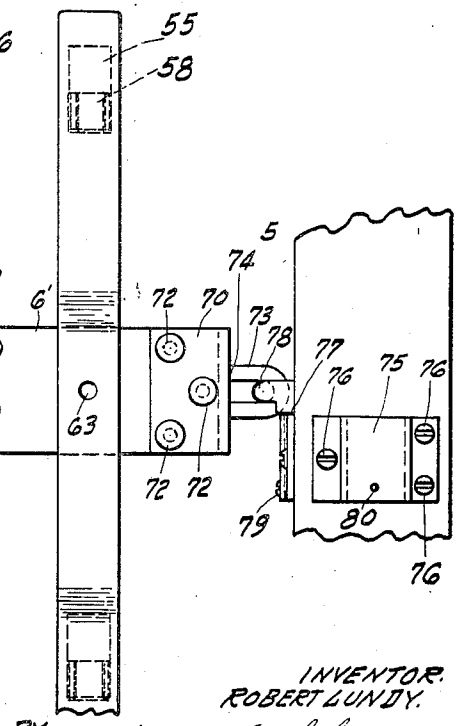
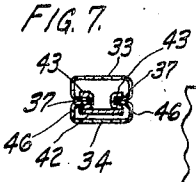


FIG. 7.



INVENTOR.
ROBERT LUNDY.

BY Walter E. Schirmer

ATTORNEY.

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FENCE STRUCTURE

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FIG. 8.

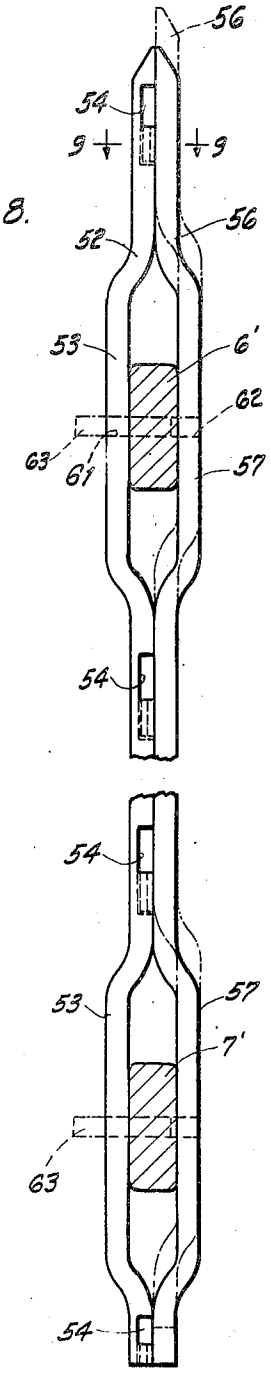


FIG. 9.

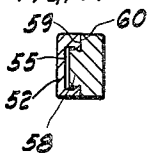
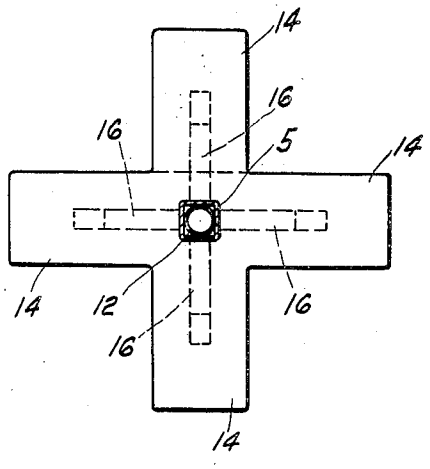


FIG. 11.



INVENTOR.
ROBERT LUNDY.
BY Walter E. Schirmer
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,327,311

FENCE STRUCTURE

Robert Lundy, South Bend, Ind.

Application February 24, 1941, Serial No. 380,276

16 Claims. (Cl. 256—22)

This invention relates to a fence structure, and more particularly is concerned with the provision of a fabricated fence useful for ornamental enclosure of gardens, lawns and the like.

One of the primary objects of the present invention is to provide a fence of this type which can be readily assembled at the point of installation, and which is formed of prefabricated parts so designed and related as to be secured together without the use of any special tools or equipment.

Another feature of the present invention is to provide a fence structure which can be definitely positioned to the grade of the particular land upon which it is located, and which is of the picket type and is so designed that regardless of the grade or angle of the rails, the pickets will always remain in a vertical position.

Still another feature of the present invention resides in the design of a fence of this type in which the rails can be cut to predetermined lengths and the various fastening mechanisms and the like for securing the pickets to the rails and for securing the rails to the posts can all be incorporated prior to delivery to the point of erection, the actual erection of the fence being accomplished in a short time without the use of any special equipment or the like.

A further advantage of the present invention is that the picket spacing can be varied as desired at the time of erection.

A still further advantage of the present construction is the provision of a post and rail assembly whereby the rails have substantially universal connection and support at the posts, and consequently can be angled in any vertical or horizontal position, depending upon the grade and the contour of the enclosure about which the fence is erected.

A further advantage provided by the present construction is the provision of a predetermined footing for the posts, so designed that for the erection of the various types of posts, such as corner posts, end posts, and the like, the footing will be arranged to accommodate the particular stresses to which the post is subject. This eliminates employing post hole diggers and unnecessary labor incident thereto.

It is contemplated that the present construction will employ rolled shapes of sheet metal or the like for both the rail or picket construction with the posts being formed of tubular metal material, or of wood, rubber, plastic, glass or any similar material. Thus a fence having a permanent finish can be provided, eliminating necessity of painting or the like.

The particular interlocking arrangements for securing the pickets to the rails is of extreme importance as it allows pivotal movement of the rails relative to the pickets to accommodate the varying grades of the land and, at the same time, insures positive locking of the pickets in position to prevent their displacement from the rails under ordinary usage. This interlocking arrangement also provides a uniform symmetrical decorative appearance.

Other objects and advantages of the present invention will be more apparent from the following detailed description which, taken in conjunction with the accompanying drawings, will disclose to those skilled in the art the particular construction and operation of the present invention.

In the drawings:

Figure 1 is an elevational view of a section of fence in erected position embodying the present invention;

Figure 2 is a sectional view showing the footing arrangement for a corner post;

Figure 3 is a detail view in elevation showing the universal support of the rail on the post;

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 3;

Figure 5 is an elevational view of a picket showing the manner in which it is assembled on the upper and lower rails;

Figure 6 is a sectional view through one of the picket elements taken substantially on line 6—6 of Figure 5;

Figure 7 is a transverse section showing the interlocking arrangement between the two picket elements, taken on line 7—7 of Figure 6;

Figure 8 is a view corresponding to Figure 5 showing a modified picket construction;

Figure 9 is a sectional view taken on line 9—9 of Figure 8;

Figure 10 is an elevational view showing a modified construction for connecting the rail to the post;

Figure 11 is a more or less diagrammatic view of a footing for a center post construction; and

Figure 12 is a diagrammatic illustration of a means for permanently securing the picket elements together.

Referring now in detail to the drawings, in Figure 1 there is disclosed two posts 5, which posts form one section of a fence embodying the present invention. Connected between the two posts are the upper and lower rail members 6 and 7, respectively, preferably formed of tubular material, and, in the particular embodiment illus-

trated, being inclined at an angle to the horizontal to accommodate the slope of the ground 8. It will be noted that the posts 5 are hollow tubular members and are supported in vertical position by means of post supporting assemblies, indicated generally at 10. These assemblies include a vertically extending member or stud post 12 which has telescoping engagement within the lower end of the tubular post 5 projecting thereinto, as indicated at 13, to support the post 5 in true vertical position. The lower end of the stud post 12 extends into a concrete footing which may be precast if desired and set into the ground, or may be formed as a dry mix of concrete and gravel which is carried in a suitable form, such as a fiber or paper container, shaped to the required section and finally set in position by the addition of water. At the right hand end of Figure 1, the post supporting assembly 10 comprises an angle shaped footing, including the one concrete foot 14 which extends in the direction of the rails 6 and 7, and a normally extending foot 15 for supporting the post against stresses at right angles to the direction of the rails.

Preferably, the stud post 12 has normally directed brackets 16 secured thereto prior to the addition of the footings 14 and 15 so that the brackets 16 firmly anchor the stud post within the footings 14 and 15, thereby providing a very rigid support for the posts 5. A similar construction is shown for the left hand post 5 in Figure 1, which has the stud post 12 supporting the same vertically, this post being provided with the brackets 16 set into the concrete footings 17, which footings extend in the vertical plane of the rails 6 and 7.

Where the footings are poured during erection of the fence, it may be desirable to provide anchors 11 which are driven into the ground below the excavation for the footing, having projecting angle portions 11' which then become keyed into the concrete when it is poured.

Considering now in detail Figures 2 and 3 which disclose the connection of the rails 6 and 7 to the posts 5, the rails may be of tubular rectangular section and are provided in their ends with block members 20 which are preferably secured against axial displacement by means of instruck portions 22 locking the block members in position. Each of the block members is arranged to have incorporated therein a U-shaped bracket 23 which has the ends thereof extending into the block member 20 and locked in position by a transverse pin 24. The base portion of the U-shaped member 23 is adapted to receive the arcuate portion 25 of a supporting member, which has a normally directed lip or flange 26 adapted to be received within the bracket or cleat 27 secured to the post 5. Each of the cleats 27 includes a laterally offset intermediate portion and two end flange portions which are welded as indicated at 27 to the face of the post 5. It will be seen that by reason of the two U-shaped members 23 and 25 connected in the manner shown, the rail 6 has substantially universal support on the post 5 for movement in a transverse plane relative thereto, and also for movement in a vertical plane. In order to secure the lip portion 26 of the member 25 against displacement from the post 5, a drive screw 30 or similar securing means is provided for locking the lip portion 26 within the cleat 27, thus providing a rigid support preventing removal of the rail.

Each of the rails 6 and 7 in the form of the invention shown in Figure 1 is provided with a construction of this type at the ends thereof for connection to the posts.

Considering now the mounting of the pickets 32 upon the rails 6 and 7, each of the pickets 32 includes two picket elements 33 and 34, both preferably formed of rolled sections and of general channel formation with inturned edges. The picket element 33 is provided with longitudinally spaced offset portions 35, each of which has on its inner face a stamped strip 36 projecting between the two inturned edges 37 and preferably spot welded or otherwise secured in position. Intermediate the ends of the strip 36 it is provided with an extruded portion 38 which is adapted to be centered in the longitudinally spaced openings 39 formed in the rails 6 and 7. These openings 39 are spaced a uniform distance apart over the entire length of the rail, and it is apparent that the spacing of the pickets 32 can be varied by allowing a certain number of openings between each of the pickets. In the form of the invention illustrated, the pickets are secured to alternate openings, but it is apparent that they could be secured in the successive openings, or can be arranged to provide any desired spacing. The member or element 33 is also provided at spaced intervals along its open face with bracket members 40, which bracket members, as shown in detail in Figure 7, have a projecting head portion 42 and outturned end flanges 43 which may be spot welded or otherwise suitably secured to the inturned edges 37 of the element 33. These brackets with the projecting head portions 42 form suitable clamps for securing the opposite picket element 34 in position. The element 34 is provided with the laterally offset longitudinally spaced portions 44 for surrounding the rails 6 and 7, and the edges of this element are provided with cut out portions 45 in the inturned edges 46 thereof which, when the element 34 is initially placed in position against the face of the element 33, receives the head portions 42 of the brackets 40, allowing the facing edges 37 and 46 of the two elements to come into abutment.

The element 34 is then moved vertically downwardly while retaining the faces of the two elements in abutment, and the heads 42 of the brackets 40 slide in behind the edges 46 of the element 34, firmly clamping the two elements 33 and 34 together.

Within each of the offset portions 44 of the element 34 there is provided a strip 47 closing the space between the edges 46, and preferably spot welded into position. The strip 47 is provided with an extruded portion adjacent one end thereof adapted to fit into the opening 39 formed in the rails 6 and 7. The end of the strip 47 adjacent the extruded portion 48 is unsupported so that it may be sprung outwardly into the element 34 during initial positioning, and as the element 34 is moved downwardly into clamped position, this member will spring into the openings 39 when it moves into alinement therewith. A second closure strip 50 is provided for closing the gap between the edges 46 within the opening formed by the offset portion 44 and the rail in order to prevent the accumulation of moisture, dirt and the like within the channel section of the element 34.

Considering now the form of the invention shown in Figures 8 and 9, the pickets in this form of construction have been modified so that in place of a rolled section, a solid picket element of desired stock is provided. Also, in place of tubular rails 6 and 7, solid rails 6' and 7' are

provided which have suitable apertures formed in longitudinally spaced relation therealong. The picket element 52 of this form of the invention comprises a piece of flat stock of metal, wood, plastic or the like which is provided with the offset portions 53 and with longitudinally spaced recesses 54 formed transversely therein. Below each of the recesses 54 the member 52 is provided with a channel-shaped slot, indicated generally at 55 in Figure 9. The opposite picket element 56 is also provided with the offset portions 57 for surrounding the rails 6' and 7', and is provided with suitable projections 58 forming heads, as indicated in Figure 9, adapted to enter into the channel-shaped recesses 55 for clamping the elements 52 and 56 together. In the assembly of this construction the element 56 is first placed into position in the dotted line arrangement, as indicated in Figure 8, wherein the projections 58 are freely disposed in the recesses 54 with the adjacent faces 59 and 60 of the two elements in abutment. The element 56 is then moved downwardly, moving the projecting heads 58 into the channel-shaped slots for locking the two elements together.

In order to maintain the pickets on the rails, each of the offset portions 53 and 57 of the pickets is provided with the openings 60 and 62, respectively, and when the picket element 52 is first placed into position, a suitable pin 63 is driven through the openings 60 and partially through the rails 6' and 7', thereby locking the picket element 52 to the rails. After the picket element 56 has been moved downwardly into clamped position with respect to the element 52, the pins 63 are driven further to pass through the rails 6' and 7', and into the openings 62 of the element 56, the pins preferably being of a length such as to be finally positioned with the ends flush with the outer surfaces of the offset portions 53 and 57 of the picket.

In Figure 10 I have provided a modified form of connection between the posts 5 and the rails 6'. In this form of construction, the end of the rail 6' is adapted to be received within a suitable clevis member 70 which is riveted as by means of rivets 72, or otherwise rigidly secured over the end of the rail 6'. The clevis member 70 has a projecting U-shaped bracket 73 corresponding to the bracket 23 of Figures 1 and 2, which may be welded or otherwise secured to the base of the clevis member, as indicated at 74. The posts 5 in place of having the cleats 27 welded thereto, have the cleats 75 provided thereon and screwed into position by means of the drive screws 76 which firmly secure the cleat in position. Mounted within the cleat is a supporting member 77 which extends into the central offset portion of the cleat 75 for rigid support therein and which has at its upper ends, an arcuate portion 78 forming a universal joint connection with the U-shaped member 73. Preferably, the member 77 is retained in position by means of a drive screw 79 extending through the opening 80 in the cleat, and into the member 77 to retain it against vertical displacement.

It will be noted that in each of the forms of the invention thus far described, the offset portions of the picket elements are of considerably greater vertical extent than the vertical extent of the rails 6, 7, 6' and 7'. This allows the rails to be angled with respect to the vertical extent of the pivots, as indicated diagrammatically in Figure 6, without changing the vertical positioning of the pickets. Consequently, the pickets remain upright regardless of the contour of the ground upon which the fence is erected.

In Figure 11 I have disclosed a footing construction for a post in which rails extend in all four directions therefrom. This post 5 is supported upon a stud post 12, which in turn has brackets 16 secured at 90° angles thereto. The brackets 16 are each embedded in a concrete footing 14 which may be precast thereabout, and insures a solid support for the stud 12 with the stud being anchored against pull in any direction. It is apparent that a T-shaped footing might be provided by eliminating one of the feet 14 and the corresponding bracket on the stud post 12 if a post was subjected to stresses in only three directions. It is also apparent that the rails may extend at angles with respect to the faces of the posts 5 due to the universal joint connection provided by the members 23 and 25 or the members 73 and 77.

In Figure 12, I have disclosed diagrammatically a means for securing the picket elements permanently together by means of a rivet 82 driven through the upper end of the picket elements. This may be provided in any of the forms of the invention disclosed if it is desired to permanently fix the picket elements against unauthorized removal. However, with the present construction, the fence as erected without the use of the rivets, may be taken apart readily by merely sliding the extruded portion 48 of the strip 47 out of the rail by the insertion of a suitable instrument between the edges 46 of the element 34 immediately above the rails. The element 34 can then be moved vertically to disengage the clamping relationship with the element 33. Similarly, in the embodiment shown in Figure 8, removal of the pins 63 will allow the pickets to be disassembled.

It is to be understood that a single picket element may be employed instead of mating elements, attached by means of rivets or the like to the rails for pivotal movement.

Also, the posts 5, if tubular, are provided with openings 90 and 92, at top and bottom for preventing condensation therein. Similarly, if tubular pickets are employed, air holes are provided for circulation to prevent accumulation of moisture within the elements.

It is therefore believed apparent that I have provided a novel type of metal fence construction which is capable of innumerable variations of design and styling, and in which the picket elements will always remain in vertical position regardless of the angularity required in the rails due to the contour of the ground. Further features of the invention include the design of the structure to facilitate rapid assembly and disassembly of the elements, including the rails relative to the posts and the pickets relative to the rails.

It is believed obvious that numerous changes in the construction herein shown might be made without in any way departing from the underlying principles of the present invention, and I therefore do not intend to be limited except as defined by the scope and spirit of the appended claims.

I claim:

1. A fence construction comprising vertical tubular post members, means projecting from the ground for rigidly supporting said posts in position, tubular rails extending between said posts, means forming universal connections between

the end of each rail and the associated posts, and pickets each comprising a pair of cooperating picket elements adapted to be clamped to said rails at predetermined points therealong, said elements having pivotal connection with said rails whereby each picket maintains a true vertical position regardless of the inclination of the rails relative to a horizontal plane.

2. A fence comprising a pair of spaced posts, an upper and a lower rail having universal connections at their ends to said posts and assuming an inclination therebetween corresponding to the grade of the ground between said posts, a plurality of pickets spaced along said rails intermediate said posts, each of said pickets comprising mating picket elements adapted to be clamped together on said rails, and means in said picket elements for pivotally connecting them in clamped position to said rails at predetermined points whereby said connections accommodate inclination of said rails while said pickets remain in parallel vertical position.

3. In a prefabricated fence, a plurality of vertically spaced rails, pickets for said rails comprising mating picket elements each having longitudinally spaced laterally offset portions adapted to fit about said rails, means on said picket elements adapted to interlock said elements in facing engagement, and means in the offset portions of said elements operable upon interlocking thereof for pivotally connecting said pickets to said rails.

4. The construction as set forth in claim 3 further characterized in that said rails are tubular in section and provided with longitudinally spaced alined pairs of openings for receiving said pivot means.

5. The construction of claim 3 wherein said offset portions are of appreciably greater length than the height of said rails, whereby said rails may extend at an angle to the horizontal without affecting the vertical positioning of said pickets.

6. A fence construction comprising a post member, a pair of longitudinally spaced brackets secured in vertical alinement to said post member and defining vertically opening recesses therewith, a pair of rails, means secured to the end of each of said rails including a projecting clevis, an eye member engaging said clevis and having an offset flange portion engageable in said recess, and means for securing said flange portion in said recess to provide a universal connection of the rail to said post member.

7. The construction of claim 6 wherein said rails are of tubular form and said clevis means includes a block member secured in the end of said rail.

8. The construction of claim 6 wherein said rails are solid and said means secured to the ends of said rails includes a U-shaped bracket riveted over the end of the rail, with the clevis projecting therefrom.

9. In a fence construction, a plurality of rails having longitudinally spaced transverse openings therethrough, pickets for said rails each comprising two mating picket elements, each element having longitudinally spaced offset portions intermediate the ends thereof for receiving said rails, the mating faces of said elements having means operable upon relative movement therebetween for locking said elements together to form a picket, said offset portions thereby defining elongated longitudinally extending openings through which said rails extend.

10. The construction set forth in claim 9 further characterized by the provision of means in said offset portions engageable in said rail openings upon locking of said elements together for pivotally connecting said pickets and rails.

11. The construction of claim 9 wherein said locking means comprises a plurality of interengaging elements on the mating faces of said elements disposed on opposite sides of each of said offset portions.

12. The construction of claim 9 wherein said picket elements are channel-shaped in section with inturned ends, and said locking means includes means carried by one of said elements having a projecting head portion wider than the space between the inturned ends of the other element, and slots formed in the last-named inturned ends for receiving said head portion, said head portion engaging behind said inturned ends upon relative longitudinal movement of said elements when in abutting engagement.

13. The construction of claim 9 wherein said locking means comprises a projecting head on one element and a vertical recess in the face of the other element adapted to receive said head.

14. In a prefabricated fence construction, a plurality of vertical post members, upper and lower rail members having universal connection at their ends to said post members, longitudinally spaced transverse openings in said rails, and picket members comprising mating elements having means engageable in said openings for pivotally mounting said picket members therein on opposite sides of said rails, said elements having interlocking means for clamping them together in position on said rail members.

15. The construction of claim 14 further characterized by the provision of elongated vertical mating recesses in said picket elements accommodating angular positioning of said pickets relative the longitudinal axis of said rail members.

16. In a prefabricated fence construction, a pair of vertically spaced rails having transverse openings spaced regularly longitudinally therealong, two-piece picket members clamped together about said rails and having means engaging in said openings for pivotally securing said picket members in vertical position on said rails regardless of the inclination thereof, clevis means at the ends of said rails, eye means engaging said clevis means and having offset flange portions, and posts provided with recesses in which said flange portions may be engaged for universally connecting said rails to said posts.

ROBERT LUNDY.