

1,234,674.

2 SHEETS—SHEET 1.

Fig. 2.

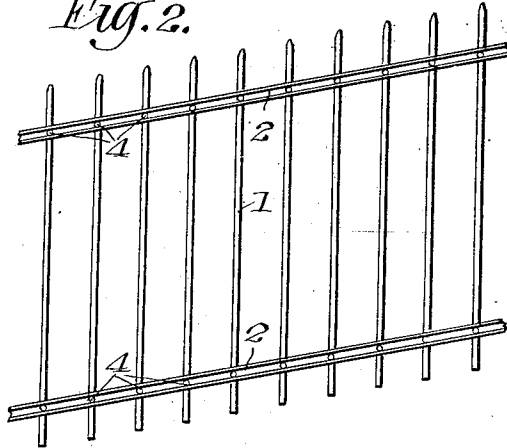


Fig. 4.

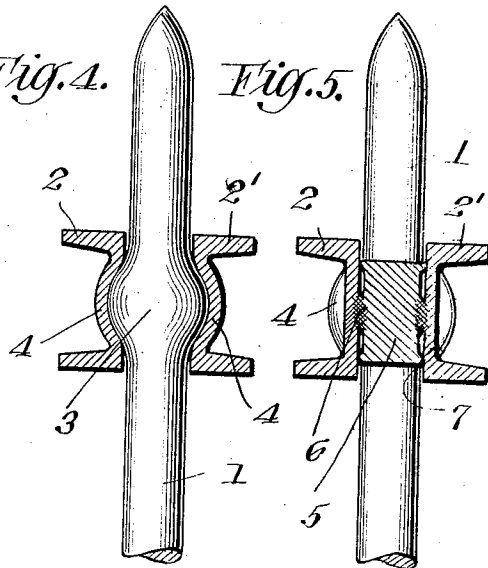
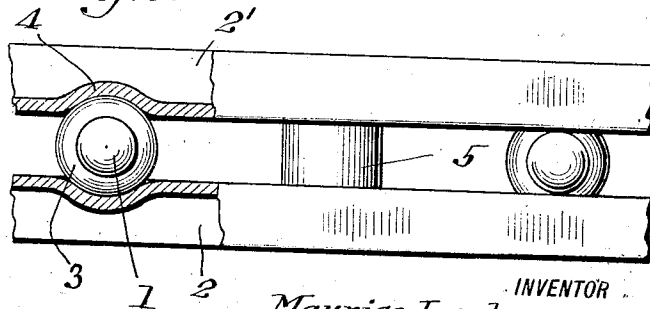


Fig. 6.



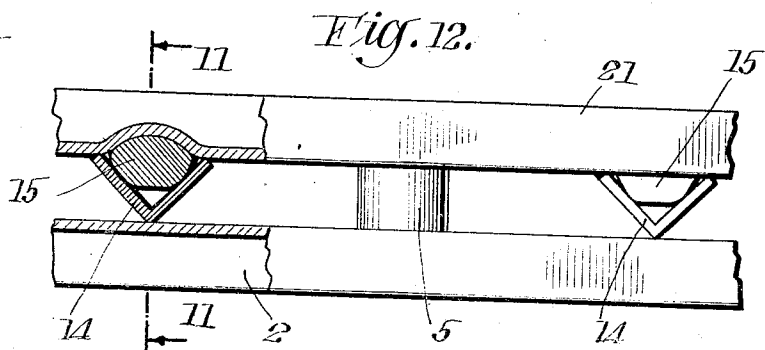
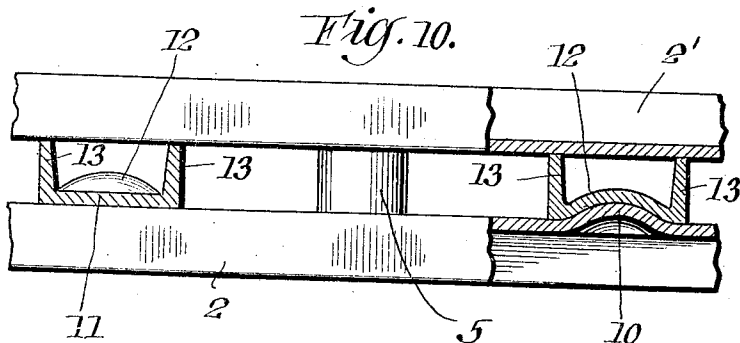
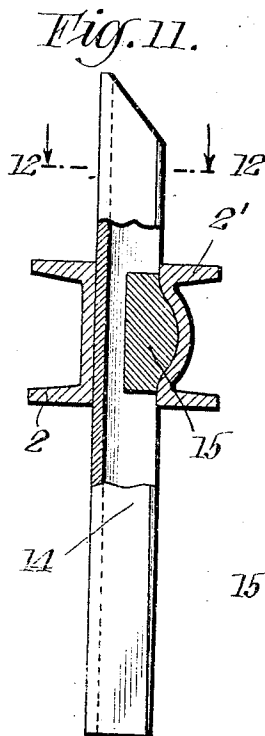
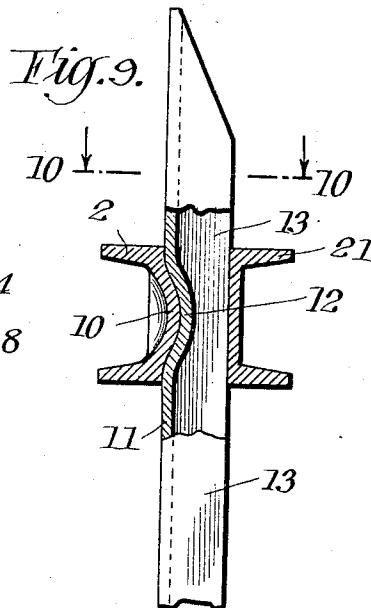
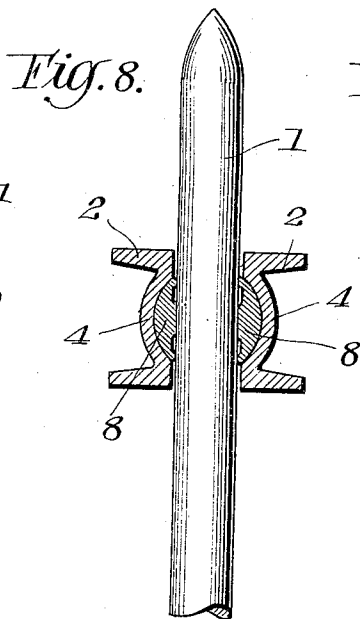
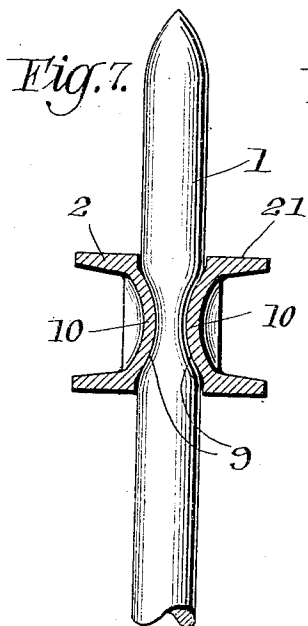
BY

BY
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ATTORNEYS.

1,234,674.

M. LACHMAN.
GRADABLE FENCE.
APPLICATION FILED SEPT. 27, 1915.

Patented July 24, 1917.
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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GRADABLE FENCE.

1,234,674.

Specification of Letters Patent.

Patented July 24, 1917.

Application filed September 27, 1915. Serial No. 52,803.

To all whom it may concern:

Be it known that I, MAURICE LACHMAN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Gradable Fences, of which the following is a specification.

My present invention relates to the construction of fences or other inclosures and particularly to a "gradable fence"; that is, the structure can be readily made, after manufacture of the same is complete, to take any grade or slope of the ground upon which it is installed and the pickets will remain vertical.

The object of the invention is to avoid the necessity of making a special fence structure for varying grades of ground upon which it might be desired to erect it and at the same time to attain a structure which will be strong and lasting.

A further object is to provide a gradable fence in which the original strength of the parts is maintained.

It has been the general practice heretofore when building a fence for erection on ground having more or less grade or slope to survey the land and manufacture the fence to conform to such survey, the pickets and rails of the fence being in this case rigidly secured to each other. This necessarily adds greatly to the cost of the fence.

According to this invention the pickets and rails are so connected together that one is free to turn or change its position relative to the other so that the fence can be made to conform to any grade after it has been completely manufactured and the pickets will be maintained in a vertical position.

To these ends the invention consists in the improved construction of fence or other inclosure hereinafter more particularly described and then specified in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a fence constructed in accordance with this invention, the parts being shown in their relative positions as installed on level ground.

Fig. 2 is a similar view of the same section of fence illustrating the same when installed on a grade.

Fig. 3 is an enlarged front elevation of

a portion of the fence shown in Figs. 1 and 2.

Fig. 4 is a transverse vertical section taken on the line 4—4 Fig. 3, the picket being shown in elevation and broken away between the rails. In this figure and in the following figures the connection of the picket with the upper rail only is shown, it being understood that the connection with the lower rail or any number of rails which may be employed is merely a duplicate of the connection or joint shown.

Fig. 5 is a transverse section taken on the line 5—5 Fig. 3.

Fig. 6 is a plan looking down on top of the structure, part of the rail at the joint being broken away.

Figs. 7 and 8 illustrate modifications in the manner of forming the joint or connection between the picket and rails.

Fig. 9 illustrates a further modification and Fig. 10 is a horizontal section of a part of a fence structure having joints as illustrated in Fig. 9, the section being taken on the line 10—10 Fig. 9.

Figs. 11 and 12 are vertical section and horizontal section respectively of a further modification; the section in Fig. 11 being taken on the line 11—11 Fig. 12 and the section in Fig. 12 being taken on the line 12—12 of Fig. 11.

In the drawings 1 indicates metal pickets and 2 indicates metallic rails of which there may be any desired number and which are intersected by the pickets as is usual in fence constructions. Preferably each rail comprises a pair of spaced bars 2, 2' between which the pickets 1 are located.

At each intersection of the rails and pickets a pivoted joint or swiveling connection is made between the rail and picket so that in the completed structure the picket and rail are free to alter or shift their relative position with respect to each other in the plane of the fence, one member of said swiveling connection being formed on the rail and the other on the picket. This pivoted or swiveling connection may be accomplished in many ways but in the preferred form a joint in the nature of a ball and socket joint between the two members at each intersecting point is provided as thereby the members are not weakened and maintain at the least their original strength.

The ball and socket joint may be provided in any suitable manner, the ball part being formed on either member and the co-acting socket on the other member.

5 In the form of the invention illustrated in Figs. 1 to 6 inclusive, the ball 3 is formed at the desired place on the picket 1, which is a round rod, preferably by expanding or swelling the metal of the picket itself. This
10 may if desired be readily accomplished in any suitable type of electric heating apparatus wherein the picket is held in suitable clamps and an electric current passed from one clamp to the other. As the material of
15 the picket between the clamps heats due to the passage of the current, pressure is applied longitudinally of the picket preferably by moving one or both of the clamps toward the other and an upset, ball or protuberance
20 3 is obtained. The manner of attaining this ball or upset electrically is so well known that further description is deemed unnecessary.

The rails which are preferably formed of
25 two channel-shaped bars 2, 2' for strength, are arranged back to back and each bar is provided with a socket, recess or cavity 4 in which the ball 3 seats, there being enough freedom of movement between the ball 3
30 and sockets 4 to permit shifting of the angular relation of the rail relative to the picket in the plane of the joint.

The bars 2, 2' of the rails are secured together in proper spaced relation to hold
35 the pickets at one point of the rails, yet permit relative angular movement of the same, by means of spacing members preferably in the form of a button 5 disposed between the bars 2, 2' in the spaces between the pickets
40 1. The buttons may be secured to the bars 5 in any desired manner but preferably by electrically welding them to each bar. The welding may be readily effected by providing protuberances or nibs 6 on opposite faces
45 of the buttons (see Fig. 5) and welding these protuberances to the surface of the bars as will be readily understood by those skilled in the electric welding art. The buttons are also preferably provided with
50 an annular ridge or flange 7 on each surface which after the weld is completed bears against the surface of the bar and conceals the bur resulting from the upsetting action in welding the protuberance or nib 6.

55 Instead of providing the picket with a ball by the operation above described a pair of disks or pieces 8 such as shown in Fig. 8, each having a convex outer surface, may be electrically welded or otherwise integrally
60 secured to the opposite sides of the picket. In which ever way the ball is provided it will be seen that it is substantially integral with the picket.

If desired the ball and socket joint may be
65 provided as shown in Fig. 7 in which the

picket 1 is provided with oppositely disposed recesses or cavities 9 at the desired point of intersection with the rail and the bars 2, 2' each provided with a convex protuberance 10 engaging in the recesses 9. The
70 cavities 9 and protuberances 10 may be readily formed in a suitable press by proper dies.

Referring to Figs. 9 and 10, the pickets are formed of channel-shaped bars 11 in the
75 base of which a socket or cavity 12 is formed at the desired point of intersection. The protuberance 10 of the bar 2 engages in this socket and permits turning. In this case the flanges 13 of the picket 11 merely bear
80 against the inner surface of the bar 2' which does not need to have any further connection with the picket, the bars 2 and 2' being secured together in proper spaced relation
85 by the buttons 5 as heretofore.

In the modification illustrated in Figs. 11 and 12, the picket is in the form of a V-shaped bar 14, the apex of which bears
90 against the inner surface of the bar 2. At the desired point of intersection preferably the picket is provided with a block 15 having a convex outer surface, said block being suitably secured to the picket in the
95 space between the free edge of the V shape. The securing of the block may be done in any manner, by welding if desired. The convex surface of the block seats in the cavity, or socket 10, of the bar 2' and permits
100 turning, the bars 2 and 2' being secured together by spacing members 5 as in the previous cases.

It will be understood that the invention is capable of being carried into practice in numerous ways and that it is not limited to the constructions shown and described
105 except as may be expressed in the appended claims.

What I claim as my invention is:—

1. A fence comprising intersecting rails and pickets and a semi ball and socket joint
110 at the intersections thereof, the members of said joint being substantially integral with the rail and picket respectively.

2. In a metal fence, rails, pickets intersecting said rails and a semi ball and socket
115 joint forming the connection between the rails and pickets, the members of said joint being substantially integral with the rail and picket respectively.

3. In a fence, the combination of a rail
120 comprising a pair of spaced bars, a picket located between said bars and pivoted with respect thereto and independent spacing means between said bars by which said bars are secured to each other.

4. A fence comprising a rail, a picket intersecting said rail, a semi ball and socket joint at said intersection and means for securing said picket to said rail.

5. A fence comprising a picket, a rail
130

comprising a pair of spaced bars between which the picket is located, a connection in the nature of a ball and socket joint between the rail and picket and means joining the spaced bars of the rail to each other.

6. A fence comprising a picket, a rail comprising a pair of spaced bars between which the picket is located, a connection in the nature of a ball and socket joint between the rail and picket and spacing means between the bars of the rail.

7. A fence comprising a pair of spaced bars forming the rail, a picket disposed in the space between said bars and intersecting said rail, a connection in the nature of a ball and socket joint between the rail and picket and spacing means between the bars of the rail and adapted to join the bars together.

8. A fence comprising picket and rail members, a protuberance on one member and a cavity in the other member in which the protuberance seats and swivels.

9. A fence comprising picket and rail members, a ball-shaped part on the picket and a socket in the rail forming a seat for the ball-shaped part and in which said part is free to swivel.

10. A fence comprising picket and rail

members, a semi-ball-shaped part on one of said members and a socket in the other member in which said semi-ball-shaped part is secured to permit turning of the picket members with relation to the rail members in the plane of the fence.

11. A fence having a swiveling connection between its rails and pickets, said connection being adapted to allow the pickets to turn with relation to the rails in the plane of the fence, one member of the swivel being formed on the rail and the other on the picket.

12. A fence the picket and rail members of which have a swiveling connection adapted to allow the picket to turn with relation to the rail in the plane of the fence, said swiveling connection being formed by a ball-shaped part on the picket pivotally connected to the rail.

Signed at New York, in the county of New York and State of New York, this 25th day of September, A. D. 1915.

MAURICE LACHMAN.

Witnesses:

F. B. TOWNSEND,
REMINGTON SCOTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."