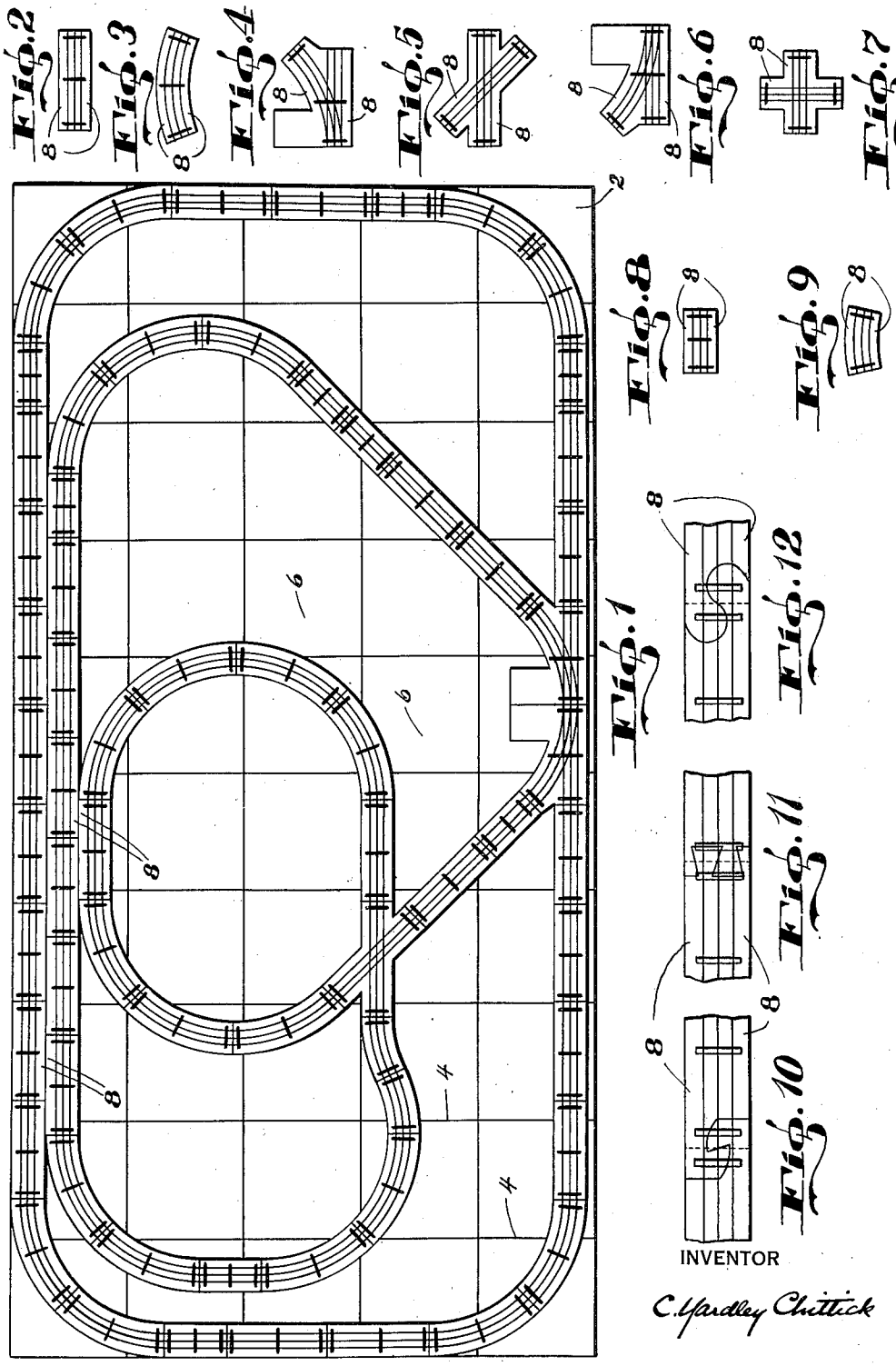
April 1, 1941. C. Y. CHITTICK 2,236,894

MEANS FOR DETERMINING MINIATURE RAILROAD TRACK LAYOUT

Filed June 13, 1940



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Patented Apr. 1, 1941

2,236,894

UNITED STATES PATENT OFFICE

2,236,894

MEANS FOR DETERMINING MINIATURE RAILROAD TRACK LAYOUT

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Application June 13, 1940, Serial No. 340,249

8 Claims. (Cl. 35—7)

This invention relates to a means of determining in advance whether or not objects of a known shape will fit within a given space without the necessity of placing the objects in actual position.

In particular my invention relates to a ready means of determining whether or not toy railroad tracks will fit within a known space.

As is well known, toy trains are sold extensively throughout the United States, and the sale of these articles is particularly heavy just before Christmas. In general, trains bought at this time are purchased usually with the intent of giving them as Christmas presents to children, and because of the fact that they are to be in the nature of a surprise, it is often difficult for a purchaser to determine whether or not the tracks so purchased will fit in the intended place of use unless accurate space measurements and track measurements are made beforehand.

All of this is usually difficult to do because of the rush of business prior to Christmas, with the result that additional track may have to be purchased to complete the desired circuit or extra track purchased unnecessarily must be returned to the store or else remain unused. Furthermore, the calculations required are generally beyond the mathematical capability of the ordinary purchaser.

To eliminate this difficulty I have devised the following equipment which may be cheaply and conveniently prepared and which may be distributed to retail dealers throughout the country for the use of their customers. By the use of my device a prospective customer will be enabled to purchase exactly the right number of pieces of straight or curved track, switches, crossovers and other track forms to complete any desired circuit within the available space.

Other objects and accomplishments of my invention will become apparent as the description proceeds with the aid of the accompanying drawing, in which

Fig. 1 shows a plan view of my invention, including a board or sheet with a track circuit laid thereon, indicating accurately the exact number of sections of the various size track required.

Fig. 2 represents a section of straight track.

Fig. 3 represents a section of curved track.

Fig. 4 represents a left-hand switch.

Fig. 5 represents a forty-five degree crossover.

Fig. 6 represents a right-hand switch.

Fig. 7 represents a ninety degree crossover.

Fig. 8 represents a half section of straight track.

Fig. 9 represents a half section of curved track.

Fig. 10 shows a track construction in which the ends are arranged to interlock.

Figs. 11 and 12 show further interlocking constructions.

Referring to the drawing, I provide first a sheet **2** of cardboard or other material capable of being embossed or printed or otherwise marked upon. Using any desired scale, sheet **2** is ruled at right angles, as at **4**, in spaces representing any convenient unit. For the sake of example, each space in the drawing represents one foot, so that sheet **2** is covered with a series of squares **6** one foot on each side. This sheet should preferably be ruled to represent a space larger than the space that is ordinarily available in a house where toy trains might be used. For example, a convenient size might be ten feet by fifteen feet. In this way, large as well as small installations may be accurately determined.

If, for example, a manufacturer of toy track wished to utilize this invention, he would carefully determine the dimensions of the various kinds of track manufactured, the principal forms of which are shown in Figs. 2 to 9. Using these dimensions, it is then contemplated that a series of pieces representing track forms be cut from cardboard or other suitable material, to the same scale as the marking on the sheet **2**. Thus, for example, if the actual section of straight track were ten inches long, a piece of cardboard (see Fig. 2) representing this section, if cut on the same scale as the sheet **2**, namely one inch equals one foot, would be ten twelfths of an inch in length. The same practice would be followed with all of the other parts, as in Figs. 3 to 9, it being contemplated that each of the cardboard sections would be a scale reproduction of each of the actual pieces of track as to length.

One of the particular features of novelty of the invention, however, resides in the fact that the cardboard sections, while to scale as to length, are made to greater width than the track. This is necesasry in order that the track sections, when laid on the board, will allow clearance for trains to pass, even though the sections be in longitudinal contact with each other. If the track sections are not made sufficiently wider than the track itself, then the user finds it very difficult to estimate and allow the proper clearance when laying the track. If the track sections are of the proper width, that is, the actual track width plus proper clearance, it follows that any track pattern whatsover that will fit within the confines of the board or the selected area will be such that when real track are laid in the intended space,

they will be found to fit with accuracy and with proper clearance therebetween so that trains on adjacent tracks may pass without interference.

A further advantage of having the sections of greater than proportional width is that when the track sections are placed end to end, the abutting portions, being wider, provide greater stability in assembling and the accuracy at the joints is increased. This feature is particularly helpful in connection with the laying of curves. Furthermore, the manufacturing problem is facilitated because of the greater ease in cutting a wide end to the proper angle.

In order to render the device more realistic, it is contemplated that each track section will be printed in an appropriate manner to represent the particular type of track. The printing of the track will, of course, be to exact scale and in so doing there will be available along the longitudinal edges of each section an area **8** which, together with the corresponding abutting area **8** on an adjacent section, will provide the necessary clearance above referred to.

Experiments have shown the approximate maximum number of pieces of track that can be laid within any given area. The number of pieces, of course, is controlled by the radius of the curves and the lengths of the various types of tracks. For example, if the present invention is used to determine track layouts of that size of toy track commonly known as "0" gauge, in which the curves (see Fig. 3) are formed to a circle having a diameter to the third or middle rail of 28⅝ inches, and with each curve section subtending an arc of 45 degrees, and in which each whole piece of straight track is 10 inches long (see Fig. 2), with switches (see Figs. 4 and 6), in which the straight portion thereof is 10 inches in length, while the curve portion is equal to one section of curve track, it has been found that under the most favorable circumstances, in an area of 5 feet by 10 feet, approximately the following numbers of pieces of track may be used: 50 pieces of straight track; 40 pieces of curve track; 10 switches (on the average 5 right-hand and 5 left-hand); 2 forty-five degree crossings; 10 half sections of straight track; and 4 half sections of curve track.

Thus, in manufacturing a suitable board and accompanying track sections, it is possible to determine approximately the maximum number of pieces that can be used, and if not less than this number of track sections is supplied, the user will always have available a sufficient number of all types of pieces to produce any track pattern and at the same time there will be no unnecessary parts supplied to add to the cost of the device.

For convenience the board may be foldable along a middle line by a suitable hinge, as, for example, a strip of cloth as is customarily used in folding gameboards. This will enable the invention to be sold in a smaller package.

The track forms may be made to scale of the various track sizes now in common use, but in every case the track sections must be sufficiently wider than the actual track in order to provide for passing clearances.

A prospective purchaser in using the equipment would merely need to know the dimensions of the room or table on which the tracks were to be laid to enable him to determine quickly the exact number and kinds of pieces of track that would have to be purchased to produce any desired circuit. In carrying out the preferred procedure, the user would lay off on card **2** an area of the selected dimensions and would then place on the card, within the confines of the selected area, sections of track. As the sections are wider than the track width to provide the necessary clearances, they may be abutted end to end to form accurate curves, straightaways, sidings and the like, as shown in Fig. 1, until a suitable track formation has been determined. Having accomplished this, it is then merely necessary to count the number of straight sections, curves, switches and other forms to determine exactly how many pieces would be required to lay a track of the proposed forms that would fit within the confines of the selected space.

In Fig. 1, the entire card which represents a space ten by five was used. For the circuit shown it is observed that 29 straights, 9 half straights, 22 curves, 2 half curves, one right switch, one left switch and one 45 degree crossover are required.

In some cases I have found it desirable to arrange the track sections so that they may be held together when in position. Quite often in the course of assembling the track, the board on which the pieces are laid will be accidentally moved or tilted so that the sections, if unconnected, will be displaced, upsetting the track plan. To avoid this condition, I have devised track sections made as shown in Figs. 10, 11 and 12, in which the abutting ends are interlocked in such manner that while they may be easily put together and taken apart, they will nevertheless maintain their positions against accidental displacement.

A prime requisite of the interlocking construction is that each end of each type of track will always be adapted for interlocking engagement with either end of all other pieces. By this it is meant that either end of any piece of track, whether straight or curved, switch crossing or otherwise, will always be capable of engagement with either end of any other piece. This can best be accomplished by having the end formations of all pieces identical. The particular formation is relatively immaterial, except that it must be of some form of interlocking construction of which illustrative types are shown in Figs. 11, 12 and 13.

When the interlocking track construction is used, the over-all length of each track section will be in excess of the length of similar type track sections that do not have interlocking connections. However, when a plurality of sections are interlocked, the average length of the sections will be the same as that of an ordinary track section, so that the result after the track is assembled on the board will be the same.

Ordinarily the pieces will interlock with a slight amount of play therebetween so that they may be forced a trifle from their true positions in exactly the same manner that the real track may be forced, if necessary.

A further feature of my construction includes making the board of material that has a surface with a relatively high coefficient of friction so that when the track sections, whether with plain or interlocking ends, are laid thereon, they will be less likely to be displaced upon movement or tilting of the board. Furthermore, the under surfaces of the track sections may likewise have a relatively high coefficient of friction to further minimize the chance of misplacement.

I am aware that manufacturers of toy trains do provide booklets showing sample track layouts, which state the number of pieces required to make such circuits, but the shortcoming of such sample arrangements is that rarely does the particular circuit disclosed occupy the particular space available, nor is there any opportunity for experimentation. By the use of my invention, the sale of toy track will be facilitated and complete layouts may be positively determined without the necessity of actually laying the track.

I claim:

1. The combination of a board ruled to a selected scale and a plurality of pieces representing miniature railroad track cut to the same scale as to their effective longitudinal dimensions but wider as to their lateral dimension, the total excess of width of each piece over the scaled width of the track being at least as much as the scaled clearance necessary between parallel positioned track to permit the free passage of trains that may be positioned thereon.

2. In combination, a board ruled to a selected scale and a plurality of pieces representing miniature railroad track and cut to the same scale as to longitudinal dimension, said pieces comprising straight sections, curved sections, half straight sections, half curved sections, switches and crossovers, said pieces being of greater proportional width than said track whereby pieces abutting along their longitudinal dimensions will give indication of track spacing adequate to permit free passage of trains moving thereon.

3. For use in predetermining miniature railroad track layouts capable of fitting within a predetermined space, a board ruled to a selected scale and a plurality of pieces representing various sections of track cut to the same scale longitudinally, each piece having means along both longitudinal edges to abut against corresponding means on any other piece that may be placed alongside thereof, said abutting means being of sufficient lateral width to space said pieces far enough apart so that if the miniature railroad tracks which they represent were placed in corresponding positions, trains on said tracks could pass without interference.

4. Pieces for use in predetermining possible miniature railroad track layouts capable of fitting within a predetermined space, each of said pieces being cut to length to a selected scale and representing a particular type of miniature railroad track, said pieces when placed end to end being representative of the accumulated length of a corresponding assembled group of actual pieces of miniature track, each of said pieces being cut to a width on the selected scale greater than the scaled width of the particular type of miniature railroad track, whereby when two of said pieces are placed in sidewise abutting engagement, they will indicate at least a minimum spacing between the tracks represented by said pieces to permit cars thereon to pass without engagement.

5. Pieces representing miniature railroad track and cut to a selected scale, said pieces having symmetrical formations cut in both ends whereby each end may be positively connected to an end of any other piece, the average length of the pieces when in connected position being equal to the sum of the same number of pieces of actual track reduced to the same scale, each piece having laterally extending abutting portions adapted to engage corresponding abutting portions on other pieces whereby the scaled over-all width of said pieces is greater than the over-all width of the actual track sections if reduced to the same scale, whereby the minimum lateral spacing of the actual track sections to provide free passage of trains thereon may be determined.

6. Pieces representing miniature railroad track and cut to a selected scale, the length of said pieces being equivalent to the length of the track represented, the width of the pieces being sufficiently greater than the width of the track represented so that when two pieces are placed side by side in abutting relation they will give an indication of the distance the miniature track must be spaced apart in order that trains thereon may pass without interference, the ends of the pieces being cut at right angles to their longitudinal dimension and being of a width greater than the scaled width of the miniature railroad track whereby the engaging surfaces of the pieces when in end to end abutment will provide mutual support for accurate alignment of the pieces.

7. Pieces representing miniature railroad track and cut to a selected scale, the length of said pieces being equivalent to the length of the track represented, the width of the pieces being sufficiently greater than the width of the track represented so that when two pieces are placed side by side in abutting relation they will give an indication of the distance the miniature track must be spaced apart in order that trains thereon may pass without interference, the ends of said pieces having symmetrical formations cut therein whereby each end may be positively connected to the end of any other piece, said pieces when connected end to end by said formations representing in scaled length the accumulated total of the length of an equal number of assembled pieces of said miniature track.

8. A plurality of pieces representing miniature track sections cut to a selected scale, said pieces when placed end to end representing the length of said actual track sections if reduced to the same scale, the width of each of said pieces being greater than the width of the miniature track sections if reduced to the same scale whereby said pieces when placed in sidewise engagement will give a direct indication of the distance the miniature track must be spaced apart in order that trains thereon may pass without interference, and means for connecting said sections end to end, said means comprising identical interlocking formations on both ends of each piece.

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