To all whom it may concern:

Be it known that I, Robert Minshull, a citizen of the United States, residing at Harvard, in the county of McHenry and State of Illinois, have invented a new and useful Method for Making Slotted Tubular Tracks, of which the following is a specification.

My invention relates to a certain new and useful method for making slotted tubular track and it consists in certain procedure and manipulation hereinafter more particularly set forth.

The various steps in following out my method are illustrated, together with the general nature of the apparatus useful for that purpose, in the accompanying drawings, in which:

Figure 1 shows the stock at the beginning of the first operation of the preferred form embodying my invention together with the apparatus used in the first operation; Fig. 2, a similar view illustrating the close of the first operation; Fig. 3, a view illustrating in cross-section the apparatus desirable for the second step of my preferred form of method and the position which the stock occupies at the beginning of said step; Fig. 4, a similar view showing an intermediate portion of the second step; Fig. 5, a similar view at the close of the second step; Fig. 6, a view showing the position which the work occupies at the beginning of the third step of the preferred form of the method together with the apparatus used in practicing this step; Fig. 7, a perspective view of the completed work; Fig. 8 is a view similar to Fig. 1, showing the first step of a modified form of my method; Fig. 9, a similar view at the close of the first step of the modified method; Fig. 10 is a view showing the apparatus used in connection with the second step of the form of method, together with the work in the position which it occupies at the beginning of such step, and Fig. 11, a view similar to Fig. 10, showing the work at the close of the second step of the modified form of the method.

Referring to the drawings, particularly to Fig. 7, it will be seen that the track, or rail, which is manufactured in accordance with my invention is of that type which is slotted at the bottom and is adapted to receive within it a barn-door hanger having wheels, or rollers, roughly conforming to the curvature of the track, and having a hanger-portion which projects through and runs in the slot. In track of this character, there is a very powerful spreading strain which tends to open the track at the bottom, and the opening effect of this strain is greatly increased if the slot be made any wider than is necessary. It is also desirable, in connection with track of this kind that the slot be made of absolutely uniform width from end to end, in order that the hanger may not be bound on the one hand by too narrow a slot, or left free to wabble by too wide a slot.

The common method of making track of cylindrical form, which has no slot, is to bend the two edges of the blank which is to form the track, so that it takes roughly the form shown in Fig. 3 of the drawings, and then to place this blank in a vertical position on one side of a die of the type shown in Fig. 6, excepting for the spacing block at the bottom of said die, which as it descends upon the blank thus formed will roll the upwardly projecting edge into a complete curve, which will meet the lower edge of the blank at the bottom of the die. The obvious manner, to one skilled in the practice of making non-slotted track out of making slotted track, is to take a blank bent to the form shown in Fig. 3, then to place it in a die exactly like that shown in Fig. 6 with the spacing bar at the bottom and with one edge projecting up vertically, and then to bring the other die down upon it so as to bring the upper edge around almost to a complete circle until it touches the opposite side of the spacing bar at the bottom. This practice is open to two serious defects which are remedied by my present invention. In the first place that practice brings one edge of the blank up to the spacing-bar as the last operation of the process, and as a result, any inequalities in the width of the blank, which will almost inevitably occur, will be taken out of the width of the slot with exceedingly undesirable results, and in the second place, the track will have its edges brought together toward the spacing-bar so that any spring which the metal may have will tend to separate the adjacent edges. I have, therefore, departed entirely from the method used in making non-slotted track out of
sheet-metal and have adopted the following general procedure. For the purpose of avoiding any possible springing of the track, I bend the blank to such a form that it has a sharper curvature at its center than is desired in the resulting track, and then in completing the track, I flatten this curvature so that any set which the metal may have tends rather to contract than to expand the slot whereby the track is made peculiarly resistant to spreading strains exerted by an inside hanger. I, furthermore, so manipulate the blank that its two edges are brought against the spacing-bar of the die before the ultimate curvature of the track is formed, whereby the slot will be made of absolutely the same width from end to end, it being formed first, and any inequalities of the blank will be taken up by irregularities in that part of the track whose bend is last formed, which will in practice be a part above the tread of the hanger where such irregularities can be of no possible detriment.

The various steps of my method are shown in detail in the drawings above described. Referring to the preferred form which is illustrated in Figs. 1 to 6, inclusive, it will be seen that the blank is first laid upon a female die A and struck by a male die A', having a flat central portion and two curved edges in the form of arcs of circles whose curvature is substantially that of the desired track. This brings the blank to the form shown in Fig. 3, from which figure it will be seen that the blank is then placed upon a female die B and struck by a male die B'. The male die B' has a curved portion, oval in cross-section, the bottom portion b of which has a steeper curvature than that of the desired track. A narrow spacing-web b' connects this oval portion of the die B' with the movable member of the die-press in the manner illustrated. As this male die descends upon the blank, the blank takes the position thereon shown in Fig. 4, the two edges of the blank already formed wrapping themselves about the oval portion of the die. When the male die is raised, the blank can be slipped off endwise, when it will be found to be of oval form with a somewhat wider slot than it ultimately ought to have, and with a deeper curvature on its upper surface. In this condition the work is placed in the female part C of the die shown in Fig. 6, which said part is semi-cylindrical in form with a spacing-block c along its bottom. The work is then struck by the counter-part or movable portion C' of the die which is exactly like the part C except that it omits the spacing block. This bends the blank from the position shown in solid lines to that shown in dotted lines in Fig. 6. In the first instance, the edges of the blank are forced together on the spacing bar so that the slot becomes of exactly the desired width throughout its length and then as the moving die descends, the top of the track is flattened out to the desired curvature and the track is rounded in proper form. It will thus be seen that not only is any set which may there be in the metal of such a nature as rather to force the adjacent edges of the blank together in the completed track than to cause them to separate, but in addition any irregularities in the width of the blank will be taken up by the amount to which the blank will be flattened in that part of its width instead of being taken up in the width of the slot. The track thus produced is therefore stronger under the strains of use and more uniform from end to end than is the track made by any method lying within the information of those skilled in the art of making round track.

Referring to Figs. 8 to 11, inclusive, the modified form of procedure is illustrated. In accordance with that method, the blank is placed in a female die D and struck by a male die D' which bends it into the form shown in Fig. 9, that is a U-shaped form with a sharper bend at the center than that which will ultimately be the bend of the top part of the track. After being placed in this position, the blank is inverted, as shown in Fig. 10, placed in a pair of dies exactly like the dies C, C' used in practicing the preferred form of my method. As the die C' descends, it first strikes the top of the blank and forces the lower edges thereof around the curvature of the die C until they strike the spacing-bar at the bottom, exactly as is the case when the blank is formed in the manner set forth in the preferred form of my method. After the edges have found the spacing-bar the remainder of the operation follows in the manner already set forth. It will be seen that this method partakes of the two important features of my method.

It will be understood that the two separate features of my method are of great importance individually, although their combination produces what I believe to be the most desirable method possible of making track of this character. It is, however, possible to devise methods whereby each feature may be used without the other. Thus it is probably possible to give the sharp curvature to the center of the blank even if my method of bringing the edges against the spacing-bar in the first instance is not adopted, and it is quite evidently possible to bring the edges of the blank against the spacing bar in the first instance and subsequently to form the remainder of the track to the desired curvature when the first sharp curvature is entirely omitted. I, therefore, by describing these two improvements in combination, wherein they are of particular and special advantage, do not in-

977,118
What I claim as new, and desire to secure by Letters Patent, is—

1. In a method of manufacturing lengths of slotted hollow track, the steps which consist in imparting to the central portion of the blank a curvature sharper than that desired in the finished track, bringing the edges of the blank to the required distance apart to form the slot and thereafter pressing the blank into its final contour while resisting edgewise movement along substantially the length of the slot.

2. In a method of manufacturing lengths of slotted hollow track, the steps which consist in imparting to the central part of the blank a curvature sharper than that desired in the finished track, bringing the edges of the blank to the required distance apart to form the slot, resisting further movement of the edges of the slot toward each other, and pressing the blank into its final contour while the movement of the edges is so resisted.

ROBERT MINSHULL.

In presence of—
R. N. Jacobs,
S. E. May.