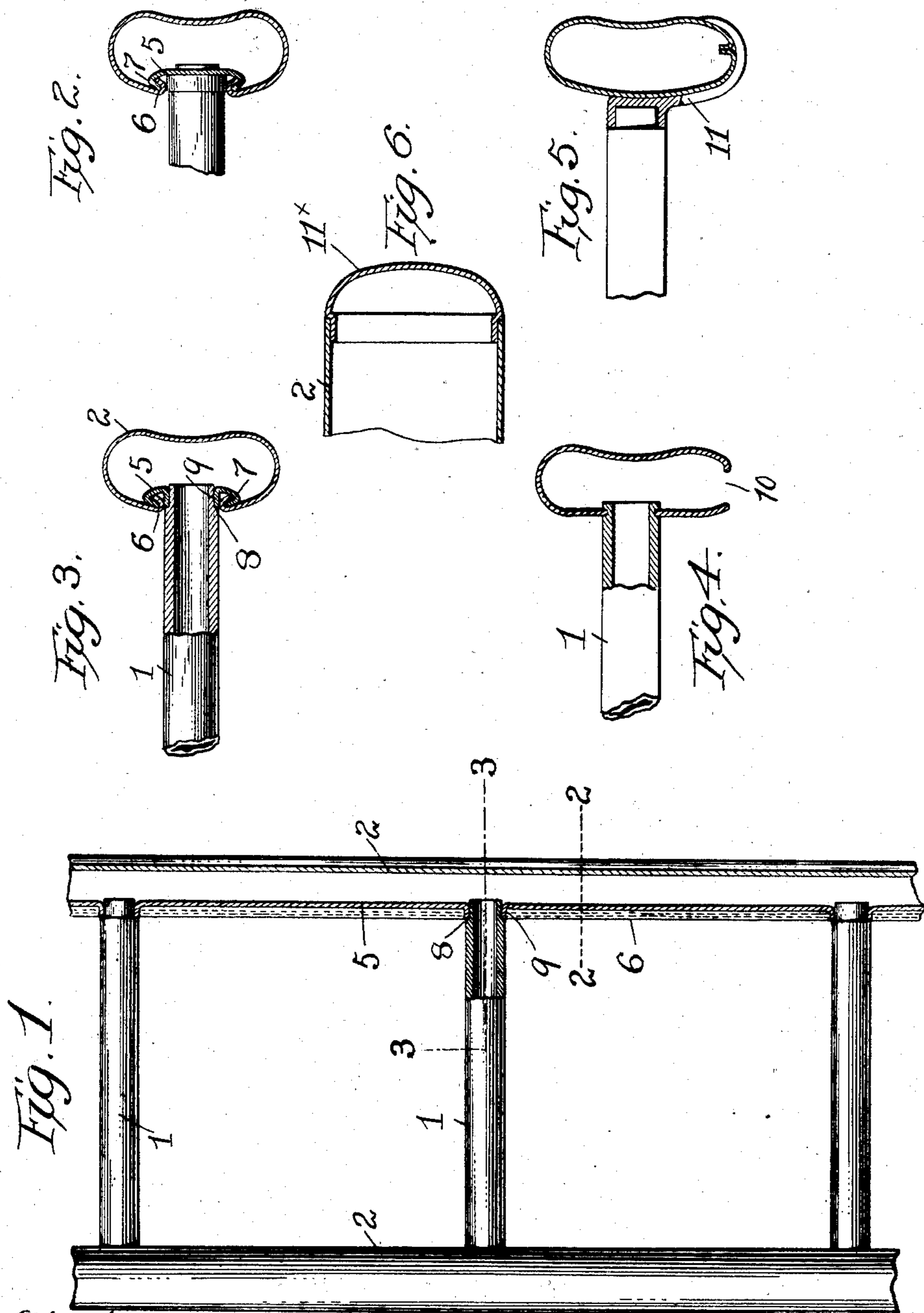


M. B. REACH.  
EXERCISING LADDER AND LIKE APPARATUS.  
APPLICATION FILED MAR. 18, 1907.

909,024.

Patented Jan. 5, 1909.



Attest  
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# UNITED STATES PATENT OFFICE.

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## EXERCISING-LADDER AND LIKE APPARATUS.

No. 909,024.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed March 18, 1907. Serial No. 363,087.

*To all whom it may concern:*

Be it known that I, MILTON B. REACH, citizen of the United States, residing at Springfield, Massachusetts, have invented certain new and useful Improvements in Exercising-Ladders and Like Apparatus, of which the following is a specification.

My invention relates to ladders and while designed particularly for use on children's playgrounds are made of wood and as these posed to the weather it will be understood that my invention is not limited in this respect as a ladder of my construction can be used in other situations as in gymnasiums and for other purposes.

The ladders used at present in children's playgrounds are made of wood and as these under exposure deteriorate rapidly they soon splinter and serious accidents have resulted from this cause.

My object is to provide a ladder of steel or other suitable metal of simple, economical and strong construction and in which the side rails will present a smooth surface from end to end at the parts or portions which are to be grasped by the hands or upon which the user slides.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings Figure 1 is a front view of a ladder of my improved construction, a part of the same being shown in section. Fig. 2 is a cross sectional view on line 2—2 of Fig. 1. Fig. 3 is a cross sectional view on line 3—3 of Fig. 1. Figs. 4 and 5 are views similar to Fig. 2 of modifications. Fig. 6 is a sectional view of a detail.

In these drawings 1 indicates the rungs and 2 the side rails. Both of these parts are formed hollow. The general form of the side rails is analogous to that of an ellipse it in a cross section presenting a geometric figure having a longer or major and a minor or shorter axis extending at right angles to the major axis. This provides a rail which may be readily grasped by the hand while at the same time the general cross sectional shape of the side rail offers great resistance to the strains resulting from the necessary use of such ladder in spans of considerable and varying lengths. The side rail is formed with a depression on the

outer side to better receive the hand. I secure the side rails to the rungs in a manner to leave the surface of the side rails smooth from end to end on their outer and upper sides where they are grasped by the hand or where they afford surfaces to be slid upon by the user and said feature of presenting a smooth exterior may also be carried out in connection with the lower part of the side rail. One way of forming this connection is illustrated in Figs. 1, 2 and 3 from which it will be seen that the rungs are secured to side members 5 extending throughout the length of the ladder, and these side members, rail sections or supplemental rails as they may be termed, are connected to the side rails proper preferably by the turned edges 6, of the said side rail engaging and interlocking with the turned edge 7 of the said side or intermediate members 5.

Before the parts are attached, the side rail 2 is of such form that its turned edges 6 lie further apart than in the position represented in the drawings and the said rail being formed of steel has a resilient quality which permits the separated edges 6, 6 to be sprung towards each other so as to grasp and interlock with the edges of the intermediate fastening member. The side rail is thus secured to the intermediate rail or member by first springing the separated edges of the side rails towards each other and then releasing them so that the tendency of the resilient side rail to return to the shape it had before being united with the intermediate rail will serve to unite the parts firmly together and no other fastening means of any description are employed to hold the side rail and the intermediate rail together.

The rungs may be secured to the intermediate rail in a variety of ways. It may be, for instance, shouldered as shown at 8 Fig. 3 and its reduced end simply driven into an opening in the boss 9 where it is held by the driving fit of the parts.

Important advantages result from the construction shown: The fastenings between the side rail and the rungs are located at the inner side of the tubular side rail leaving all the outer, upper and under part of said side rail free and unobstructed, thus presenting a smooth gripping surface; the intermediate rail or attaching device not only ties the side rail to the rungs but it also

serves to secure the rungs together; further the attaching device is arranged within the tubular side rail—so that there are no projecting fastening devices on the exterior of the inner wall of the side rail, this also being left smooth from end to end and as the edges 6 of the side rail are turned inwardly no raw edges are exposed for contact with the hand or parts of the body.

10 In the making up of the ladder it will be understood that the rungs are first attached to the intermediate rails or fastening devices 5 presenting in effect a ladder construction in itself and to this is added the tubular or hollow side rails which as above described are preferably sprung into connection with the intermediate fastening members. I do not limit myself to the fastening devices or members 5 in the form of rails extending continuously from end to end of the side rails as other arrangements may be provided without departing from the fundamental principle of my invention, though in this connection I may still retain the interlocking feature of the side rails and the intermediate fastening devices.

In Fig. 4 I show a tubular side rail or one which is substantially so, it however having an open lower side at 10. The hollow rungs are secured by riveting the ends of the said rungs within the side rails. The opening in the lower part of the side rail will permit this to be done. In this form also the outer and upper parts of the side rails present smooth unbroken surfaces to be grasped by the hand or for the hand to slide along or as a slide way for the child or user.

Fig. 5 shows a further modification in which the same general characteristics exist in that exterior upper and outer side portions of the rail are free from end to end. The intermediate fastening member is in the form of a bracket 11. These brackets are attached to the rungs in any suitable manner and the hollow side rails are made to rest in these brackets and are there secured.

Some features of my invention may be employed in structures other than ladders and I therefore do not limit myself in this respect.

Reverting again to the form shown in Figs. 1, 2 and 3 I would state that I prefer to unite the side rail with the supplemental rail by drawing the side rail thereon, this may be effected by pressing together the flanged edges of the side rail at one end thereof so that they can be engaged by the flanges or turned edges of the supplemental rails and then by exerting the required force, the side rail is drawn longitudinally so that it will engage throughout its length the supplemental rail, it gradually closing into the condition shown in Figs. 2 and 3 as the

drawing action proceeds. The intermediate member may be formed as a part of the rung whether formed integrally therewith or attached thereto. The side rails are closed by cap pieces 11\* of sheet metal having portions driven into the ends of the hollow side members. In Fig. 5 the brackets may be brazed to the side rails.

An important feature of my construction is that the hollow side rail is, in effect, locked to the rung frame for it will be noticed by drawing the side rail into place its edges bear on the rungs and thus there can be no movement of the said edges towards each other such as would tend to disengage its bent flange from the bent edge of the supplemental rail or bar. No amount of strain or pressure therefor will cause the collapse of the side rail and the disengagement of its edges from the supplemental rail, and this drawing and locking action may be carried out with other forms of fastening than the continuous supplemental rail.

I claim as my invention:

1. In combination in apparatus of the class described, rungs, a supplemental rail at the ends of the rungs, having outwardly turned edges and a hollow main side rail having inwardly turned edges engaging those of the supplemental rail, substantially as described.

2. In combination, the rungs, the side rail having the bent edges, the intermediate members between the side rails and the rungs having bent edges interlocking with the bent edges of the side rails, the edge of the side rail finding a limiting bearing against the rungs to prevent disengagement of said interlocked edges, substantially as described.

3. In combination, the rungs and side rails, the connecting members, said rails and members having flanges and said rails being sprung into position and having their edges bearing on the rungs, substantially as described.

4. In combination, the rungs, the side rails and the intermediate member connecting the side rails and rungs, said intermediate member having flanges forming sockets to receive the ends of the rungs, substantially as described.

5. In combination the rungs, the side rails and intermediate members for connecting the rungs and side rails, said intermediate members having flanges forming sockets to receive the ends of the rungs and said rungs being shouldered to bear on the edge of the flanges, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

MILTON B. REACH.

Witnesses:

WALTER DONALDSON,  
JAMES M. SPEAR.