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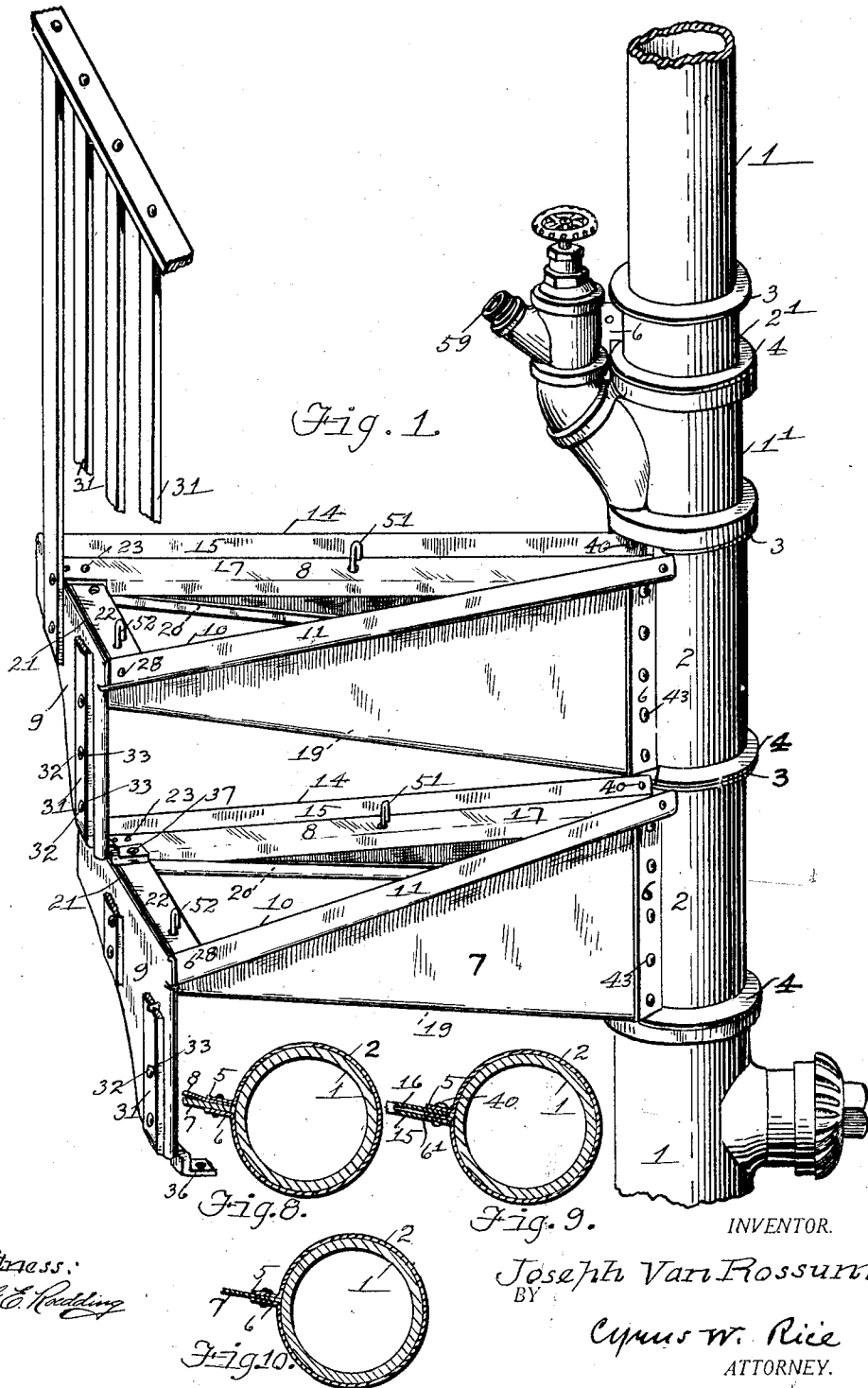
J. VAN ROSSUM

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WINDING STAIRS STRUCTURE

Filed June 15, 1925

2 Sheets-Sheet 1



Witness:
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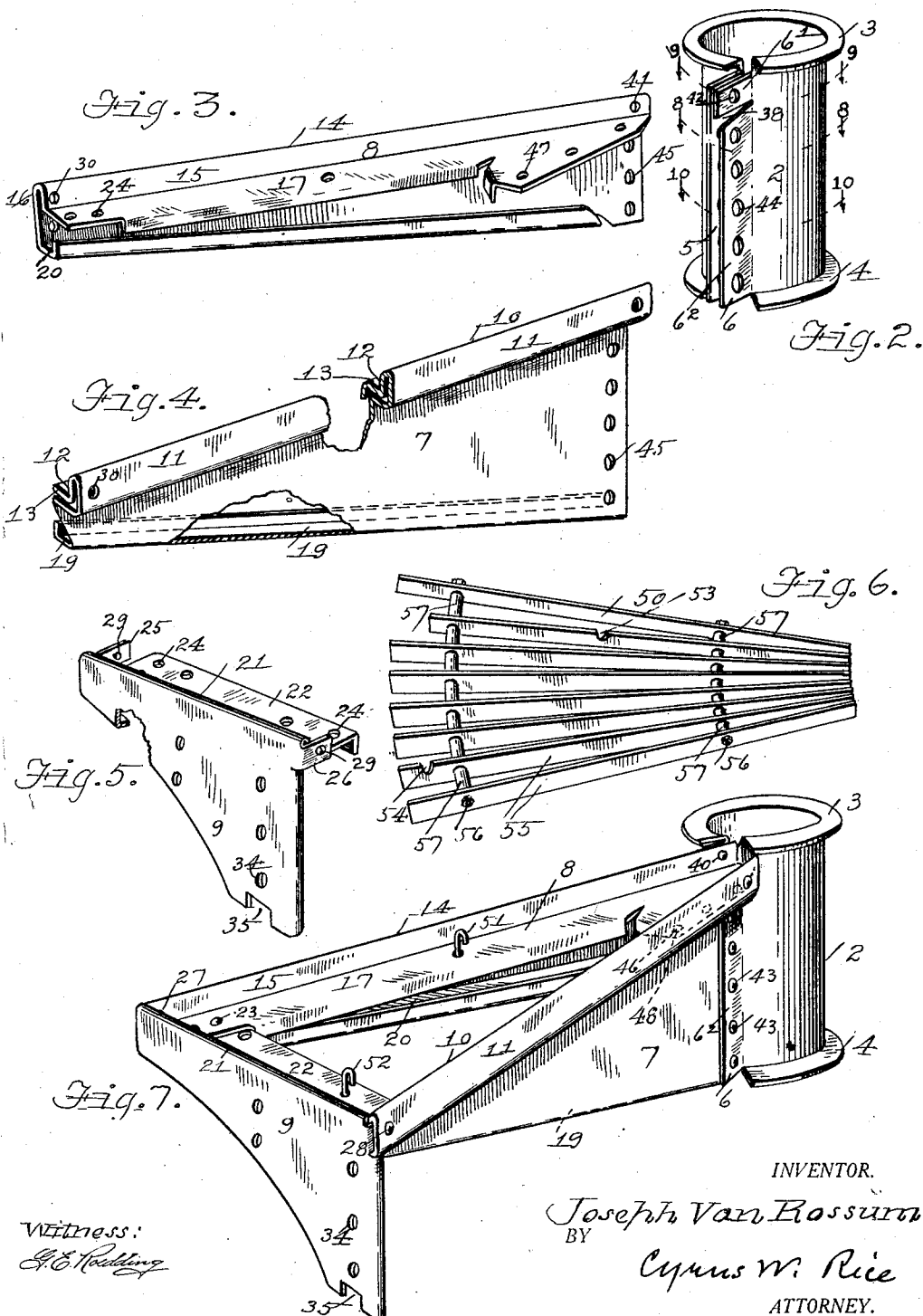
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UNITED STATES PATENT OFFICE.

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WINDING-STAIRS STRUCTURE.

Application filed June 15, 1925. Serial No. 37,048.

The present invention relates to winding stairs structures; and its object is to provide such a structure improved in various respects hereinafter appearing.

5 This object is attained by, and the invention finds preferable embodiment in, the structure hereinafter particularly described in the body of this specification and illustrated by the accompanying drawings, in which:

10 Figure 1 is a view in perspective of a winding stairs structure, the step treads being omitted in this view;

Figure 2 is a view in perspective of a collar whereby a step of the structure is supported;

15 Figure 3 is a view in perspective of the rear bracket of one of the steps;

Figure 4 is a view in perspective of the front bracket thereof;

20 Figure 5 is a view in perspective of a support for the outer end of a step;

Figure 6 is a plan view of a step tread;

Figure 7 is a view in perspective of one of the steps, the step tread being omitted;

25 Figure 8 is a horizontal sectional view of the supporting post or pipe of the structure and of the supporting collar of one of the steps, taken on line 8—8 of Figure 2;

Figure 9 is a like view of the same taken on line 9—9 of Figure 2; and

30 Figure 10 is a like view of the same taken on line 10—10 of Figure 2.

In the embodiment of the invention chosen for illustration by the drawings and for detailed description in the body of this specification, a winding stairs structure, particularly adapted for use as a fire-escape, is shown, having a vertical hollow supporting post or pipe 1 and a series of helically-disposed stair steps carried thereby. Each of these steps comprises a sleeve or collar 2 embracing the post and having annular end flanges 3, 4, so that in assembling the steps the lower flange 4 of one step may rest on the upper flange 3 of the next step below. As shown, this collar is split and formed with radially extending flanges 5, 6. Each step comprises also brackets 7, 8 angularly disposed relatively to the supporting post and having their inner ends secured to the radial flanges 5, 6 of the collar; each step comprising also the support 9 for its outer end, whose lower front portion rests on the rear portion of the step below. These brackets and this support are preferably formed of sheet metal bent to form the parts or portions hereinafter described. The front bracket 7 has adjacent its upper edge 10 a

flange comprising spaced vertical portions 11, 12 and an inwardly extending portion forming a horizontal ledge or shelf 13 located below said upper edge; and the rear bracket 8 has adjacent its upper edge 14 a flange comprising spaced vertical portions 15, 16 and an inwardly extending portion forming a horizontal ledge or shelf 17. These brackets have adjacent their lower edges gutters 19 and 20 respectively, extending longitudinally toward the supporting post and inclined downwardly, each gutter extending laterally inwardly or toward the other further than the ledges 13, 17 above them extend, in order to catch water dripping from said ledges and conduct the same toward the supporting post. The support 9 for the outer end of the step has a flange 21 extending upwardly to approximately the level of the upper edges 10, 14 of the brackets, then downwardly and then inwardly to form a horizontal ledge or shelf 22 connected adjacent its ends to the ledges 13, 17 of the brackets, as by rivets 23 passing through the holes 24 in said parts. This support also has tongues 25, 26 extending between the portions 15, 16 and 11, 12 of the brackets' flanges and secured thereto as by rivets 27, 28 passing through the holes 29, 20. This support 9 rests at its lower front edge on the rear part of the next step below, being secured thereto by a baluster 31 secured to the support as by rivets 32 passing through the holes 33, 34 and having its lower end bent to pass through a recess 35 in the support and perforated at 36 to receive a rivet 37 for thus securing it in position.

One of the radial flanges, 6, of the collar or sleeve 2 is split at 38 to form an upper portion 6¹, which is embraced by the inner ends of the portions 15, 16 of the rear bracket's flange, one of said portions 16 being embraced by radial flange 5 and the upper part 6¹ of the other radial flange 6, (as seen in Figure 9), these parts being securely connected as by a rivet 40 passing through the holes 41, 42. The brackets are secured between the collar's radial flange 5 and the lower part 6² of the other radial flange 6 as by rivets 43 passing through holes 44 and 45; and the ledges 13, 17 of the brackets are secured together as by rivets 46 passing through the holes 47, 48.

The step tread 50 of the step is seated on the ledges 13, 17, 22 and extends to approximately the level of the brackets' upper edges 10, 14, being held in place as by screw hooks 51, 52 engaging in the recesses 53, 54 and

passing downwardly through said ledges. These step treads are desirably formed of flat bars 55 disposed angularly relatively to the post 1 and edge up as shown. These bars
 5 are connected by rods 56 passing there-through and carrying spacing members 57 between adjacent bars. The supporting pipe 1 may comprise a section 1¹ provided with a
 10 a stand pipe for fire protection. The short collar 2¹ rests on the upper edge of this pipe section.

The invention being intended to be pointed out in the claims, is not to be limited to or
 15 by details of construction of any particular embodiment thereof illustrated by the drawings or hereinbefore described.

I claim:

1. In a winding stairs structure, a step comprising: a collar; a pair of brackets angularly
 20 disposed, secured at their inner ends to the collar and having mutually-approaching horizontal ledges below their upper edges; a step tread seated on the ledges.

25 2. In a winding stairs structure, a step comprising: a pair of brackets angularly disposed, secured at their inner ends to the collar and having mutually-approaching horizontal ledges below their upper edges, at
 30 least one of the brackets having a gutter below its ledge and extending laterally nearer the other bracket than said ledge extends and being longitudinally inclined downwardly toward the collar; a step tread seated on the
 35 ledges.

3. In a winding stairs structure, a step comprising: a collar; a pair of brackets angular-

ly disposed, secured at their inner ends to the collar and having adjacent their upper edges
 40 flanges comprising spaced vertical portions; a support for the outer end of the step having tongues secured between said portions of the flanges respectively; a step tread carried by the brackets.

4. In a winding stairs structure, a series
 45 of steps, each comprising: a collar; a pair of brackets angularly disposed, secured at their inner ends to the collar and having adjacent their upper edges flanges comprising spaced vertical portions; a support for the
 50 outer end of the step having tongues secured between said portions of the flanges respectively; a step tread carried by the brackets; a baluster secured to said support and extending thereunder to a point of attachment
 55 to the step below.

5. In a winding stairs structure, a step comprising: a collar; a pair of brackets angularly
 60 disposed, secured at their inner ends to the collar and having adjacent their upper edges flanges comprising spaced vertical portions and inwardly extending portions forming horizontal ledges below the upper edges
 65 of the brackets; a support for the outer end of the step having an inwardly extending flange secured adjacent its ends to the ledges of the brackets, and tongues secured between said portions of the brackets' flanges respectively; a step tread seated on the ledges of
 70 the brackets.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this
 9th day of June, 1925.

JOSEPH VAN ROSSUM.