Dec. 15, 1959 A. A. WAGNER 2,917,084

END CAPS FOR PIPE RAILINGS

Filed Sept. 5, 1957

Fig. 1

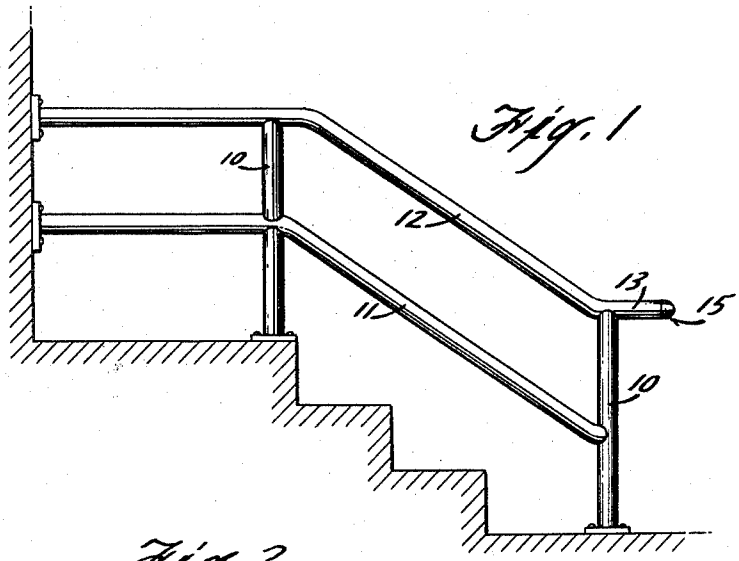


Fig. 2

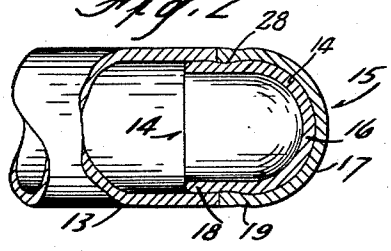


Fig. 3

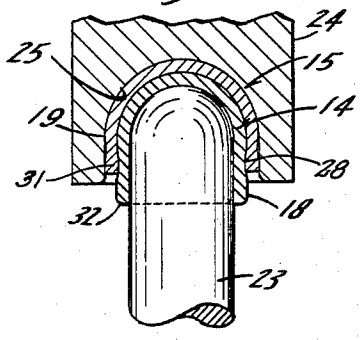


Fig. 4

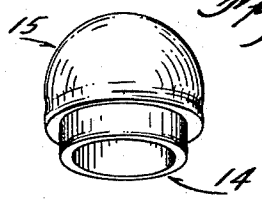
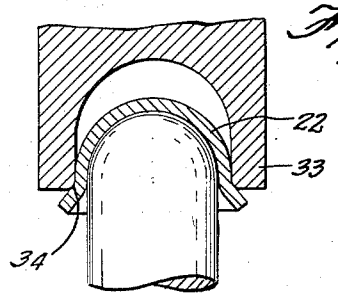


Fig. 5



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END CAPS FOR PIPE RAILINGS

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3 Claims. (Cl. 138—89)

This invention relates to improvements in end caps for pipe railings.

Heretofore it has been conventional in the art to weld end caps to close the otherwise open ends of railing pipes. The device of the present invention eliminates the need for welding, the novel fabricated end cap herein disclosed being readily secured to the open end of a railing pipe with a press fit. The absence of a weld improves the appearance of the railing.

My novel end cap consists of mating concentric hemispherical portions having tangentially extending coaxial sleeve portions. The inner sleeve portion is longer than the outer sleeve portion and is telescopically received as a dowel within the pipe railing to connect the cap to the pipe. The outer sleeve portion has its end offset from the end of the inner sleeve portion to provide a shoulder which abuts against the end of the pipe and defines the interconnected position thereof. The cap thus has a double wall in the area where the rail is most exposed to injury.

My method of fabricating the end cap is believed to be novel. Both inner and outer cap portions are desirably formed from substantially identical discs or annular blanks. The first blank is formed over a mandrel and the second blank is formed over the first blank without removing it from the mandrel.

Other objects, features, and advantages of the invention will appear from the following disclosure in which:

Figure 1 is a side elevation, partly in section, of a stairway and pipe railing to which the claimed end cap is applied.

Figure 2 is an enlarged fragmentary cross section taken through an end cap as applied to an open ended railing pipe.

Figure 3 is a fragmentary axial cross section taken through a die set in the final step of forming the end cap.

Figure 4 is a perspective view of an end cap fabricated according to the present invention.

Figure 5 is a cross section taken through a die set at an intermediate stage in the formation of the inner cap member.

A conventional pipe railing may consist of uprights **10** and cross pipes **11**, **12**. Pipe **12** may be extended beyond upright **10**, as shown at **13** and in ordinary course will have an open end. In the device of the present invention, the open end is closed by my novel end cap which consists of an inner member **14** and an outer member **15**. The respective members **14**, **15** comprise concentric hemispherical portions **16**, **17** and tangentially extending coaxial sleeve portions **18**, **19**. Sleeve **18** has greater axial extent than sleeve **19** and functions as a dowel telescopically received within the open end of the pipe **13**. The

end of sleeve **19** acts as a shoulder to define the seated position of the cap therein.

Both members **14**, **15** of the composite end cap are desirably fabricated from annular discs substantially identical in size and configuration. The inner member **14** is formed about mandrel **23** whereafter outer member **15** is formed about inner member **14** which still retains the mandrel. The die **24** has a cavity **25**, the radius of which is slightly smaller than the radius of preformed member **14** plus the thickness of member **15**.

Inner member **14** is formed with an annular external groove **28**, somewhat exaggerated in the drawings. In the course of closing the die **24** as shown in Figure 3, the pressure of the slightly undersized die **24** rolls or flows the metal of outer cap member **15** into the groove **28** in the form of a rib **31** which engages with the groove **28** to interlock the members together.

The manner in which groove **28** is formed is suggested in Figure 5. In forming the inner member **14**, a die **33** engages the blank **22** to bend it at **34**. Figure 5 indicates a mid-point in the stroke of the die. Even after the die has completed its stroke to straighten out the blank to its tubular form **18**, a residuum of the bend **34** remains as groove **28**.

The outer annular edge of sleeve **18** is chamfered or beveled as shown at **32** to facilitate its entry into the bore of the pipe **13**. The external diameter of the sleeve **18** may be just a trifle greater than the internal diameter of the pipe **13**, thus requiring a press fit effected by hammering the end cap into the otherwise open end of pipe **13**. In seated position the parts are securely fastened and can not be withdrawn except with great difficulty.

The composite end cap fits very neatly on the end of the pipe railing and there is no welding bead or the like to disfigure the joint. The double wall thickness of the cap is exceptionally sturdy to better absorb such impact shocks as may be imposed thereon.

I claim:

1. The combination with an otherwise open ended railing pipe, of an end cap closure therefor and comprising mating concentric hemispheres having tangentially extending circumferentially continuous coaxial sleeves, the outer sleeve having a shoulder axially offset from the end of the inner sleeve for abutment against the end of the pipe railing, the inner sleeve extending beyond said shoulder to constitute a dowel of substantially fixed circumference slightly greater than the inner circumference of the railing pipe and telescopically received within the railing pipe with a press fit.

2. The device of claim 1 in which said inner sleeve has an annular groove on the outer surface thereof, said outer sleeve being provided with an annular rib on the inner surface thereof and interlocked with said groove.

3. The device of claim 1 in which the outer end of the inner sleeve is chamfered to facilitate entry thereof into the railing pipe.

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