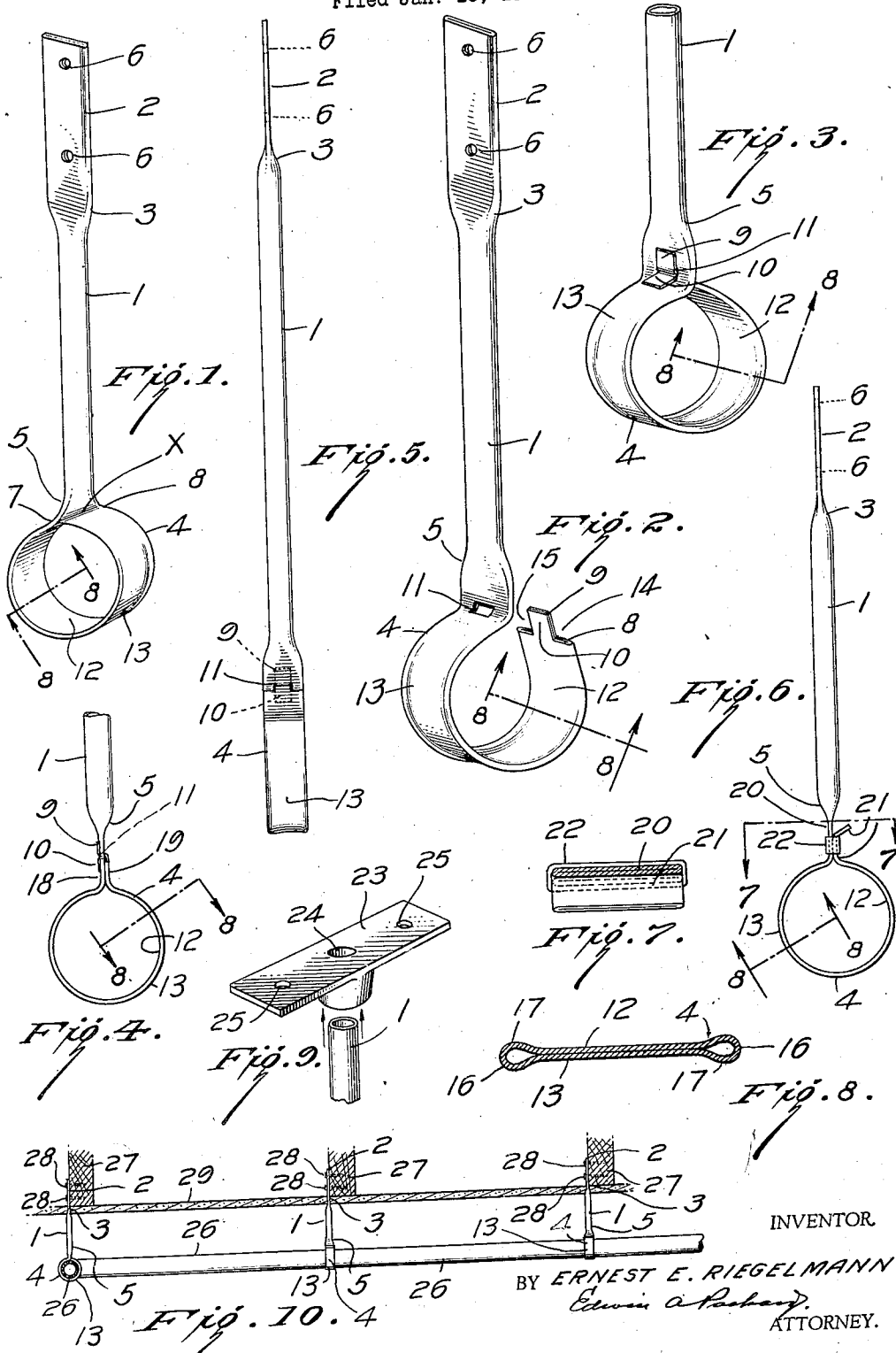


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PIPE HANGER

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## PIPE HANGER

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The invention hereof primarily pertains to improvements in and relating to hangers for supporting pipes, cables and analogous members of substantial length requiring localized supporting means therefor at various sections spacedly disposed lengthwise thereof.

An object of the invention is to provide hangers—(a) which will afford proper support for the pipes; (b) which will afford play or provide for sufficient swinging or bending to allow movement incident to the expansion and contraction of the pipes; (c) which are simple, easy to manufacture and relatively inexpensive to produce; (d) which are easy to apply; (e) which are of a character to facilitate fast, quick and ready application in the field and (f) which lead to easily altering the length thereof—as by shortening the body portion thereof, and to changing the altered or normally “fixed” ends thereof whereby the hangers are easily converted and readily adapted to provide the required support for pipes disposed at different distances from ceiling, wall, beam, or other support to which the hangers are attached or from which they are carried.

A further object of the invention is to provide hangers which when in place will reflect or impart a neat and pleasing appearance for and to the assembled construction of which they constitute a part, and to provide hangers which are devoid of objectionable protuberances or dust and dirt collecting sections or pockets whereby there are realized relatively continuous smooth and even surfaces which are readily cleaned and which at the most afford only a little opportunity for dust to lodge or dust to collect thereupon.

The more important features of this invention revolve about the employment of a tube of strong readily bendable material, such as a section or piece of copper tubing, as the foundation or basis of the pipe hanger or main pipe hanger element. The pipe hanger as generally employed, is secured to a beam or other suitable carrying support so as to depend therefrom. For convenience in understanding the invention, the upper end of such hanger will be referred to as the normally fixed or attached end. That intermediate portion between the beam or attached end and the pipe supported thereby will be referred to as the tubular main body portion or section while the lower portion which engages, surrounds and carries or positions the pipe will be referred to as the pipe surrounding portion or looped section or even as a flattened section bent so as to provide a ring shaped formation or eye. While herein the parts of the hangers may be referred

to as above outlined, it will be understood and appreciated that the hangers which constitute the basis of this case may be employed in manners other than as suspended or depending hangers as they may be employed in a manner in which the intermediate body sections are horizontally disposed whereby the hangers thus functioning as horizontal spacing elements or as horizontally extending carrying members or in a manner in which the intermediate body section is vertically disposed with the looped ends uppermost whereby the hangers thus function as struts or as upwardly extending carriers.

A complete pipe hanger made from a single piece of pipe or section of tubing will embody a flattened upper or normally attached end section, a tubular middle or intermediate body section and a flattened lower or ring providing section.

In other words, the opposite end sections of a straight piece of cylindrical tubing are flattened as by hammering, pressing or rolling and the intermediate section of the tubing is left untouched or unaltered. One of the flattened end sections is then punched, drilled or otherwise provided with apertures herein termed nail holes for receiving nails, screws, or any other form of means employed for fixing, securing or attaching the hangers to the beams or other structural members from which the hanger depends or by which it is carried.

The other or lower flattened end section is initially bent laterally so that the portion proximate the body section extends substantially or approximately at right angles with respect to the geometrical axis of the intermediate tubular body section. The lower flattened portion is also bent so as to gradually curve downwardly, thence laterally under but vertically spaced from the integral right angle bend above referred to, thence upwardly and to final loop or substantially ring closing position, to wit, to a region whereat the outer or free end of the lower flattened section is in a region at least substantially as far back as the location whereat the aforementioned right angle bend was initiated or is located. In other words, when in place and supporting a pipe there is a looped or eye formation providing a pipe holding ring providing and embodying inner and outer ring shaped plates or sections integrally connected at and along the edge sections thereof, or as otherwise expressed, at and along the marginal portions of the ring shaped formation because of the material of the piping section being

allowed to remain as part of the ring providing formation.

A hanger of the type just referred to is assembled in place with respect to the pipe by slipping the looped or ring providing formation endwise on, over and along the pipe or it can be assembled with the pipe in the approximate position which it is to occupy (a) as by leaving or having the looped portion or ring providing formation only partially formed or partially closed; (b) by slipping or springing the partially open loop or ring portion by transverse movement with respect to and into supporting engagement with the pipe and (c) by thereafter bending or positioning the deformed loop or ring shaped portion into the proper ring shaped formation and by applying or adjusting any fixing or securing means or instrumentality for the outer or extreme end of the loop or ring if any such further securing means or instrumentality is to be employed.

Instead of having the normally attached end of the pipe hanger provided with an attaching section that is integral with or that is a continuation of, the tubular intermediate body section, it is feasible for certain modified forms of construction to employ a separately fixed or attached section to which the tubular body is connected as by brazing, soldering, swaging, riveting, screwing or otherwise. A basic and fundamental feature of this invention revolves about a hanger element having a tubular body portion or section, and an integrally connected loop section or ring providing formation of which the ring is defined by or embodies inner and outer ring shaped plates integrally connected at and along the opposite edges thereof because of the metal of the original tube being left as marginal connecting means preferably in bead formation, disposed between, at and along said plates or ring shaped sections.

Hangers for realizing different forms of the invention are illustrated in the accompanying drawing which constitutes a part of this specification. Also in said drawing there is illustrated a manner in which the hangers may be employed.

In said drawing:

Fig. 1 is a perspective view illustrating one form.

Figs. 2 and 3 are perspective views illustrating a second form.

Figs. 4 and 5 are front and side views illustrating a third form.

Figs. 6 and 7 are front and sectional views illustrating a fourth form.

Fig. 8 is a typical cross-section or transverse view of a ring or eye portion of a hanger and is a view taken as on line 8-8 of Figs. 1, 2, 4 or 6. This figure is at a scale somewhat larger than that of the figures mentioned.

Fig. 9 is a perspective view illustrating a form of construction that can be employed as an alternative type of construction for the secured or attached end of the hangers shown in the forms of hangers of Figs. 1 to 7.

Fig. 10 is a view indicative of the manner by which the hangers can be employed for supporting a pipe beneath a ceiling construction through the medium of hangers secured to and depending from the ceiling beams.

Reference is now made to the drawing in detail. The several hangers are shown with the attached or normally fixed end portion, uppermost, with the eye or ring shaped section lowermost and with the intermediate or body portion vertically disposed. The description applies to the

hangers in the positions illustrated but it will be borne in mind that the hangers are suitable for use in diverse positions and for different types of employment. In each of the hangers illustrated the body portion or intermediate section of the hangers is of the same shape and cross-section of the piece of tubing from which the hangers are made, in other words the portion of the tubing providing the vertical body portion or section of the hangers has been left unchanged.

The several hangers of Figs. 1 to 7 inclusive are each made from a single piece of tubing and embodies a tubular body section 1, preferably circular in cross-section, a flattened upper or attached section 2 which is thin but relatively wide, a transition portion 3 gradually decreasing in thickness and corresponding increase in width in passing from the tubular body section to the flattened attached end section, a flattened lower or ring providing section 4 and a transition portion 5 gradually decreases in thickness and correspondingly increasing in width in passing from the tubular body section 2 to the flattened lower end section. The flattened upper or normally fixed end of each hanger is provided with nail holes or apertures 6 for receiving whatever type of securing means is employed be it nails, screws, bolts or the equivalent.

As to the ring providing section 4 it is to be noted that the portion of the tube from which it is developed is initially flattened to a substantial extent. This flattening is preferably accomplished in such a manner that the flattened sides of the tube do not quite touch each other preferably so as not to unduly crush the curved edges thereof. Thereafter the flattened section is bent into ring formation. The bending into ring formation causes the outer strip or strip portions 13 (see Fig. 8) to stretch to a certain extent and to come into engagement with the inner strip or strip portion 12 and there is left at and along the edges of the resulting ring the curved sections 16 each of which curved sections provides a bead formation having a space left at 17. These bead formations provide effective stiffening elements disposed between, at and along the edges or peripheral ends of the eye or ring-shaped sections. The outermost face or surface of the outer strip or strip portion 13 and the innermost surface of the inner strip or strip portion 12 is then left slightly concave in cross-section because of the bead formations left at 16. All of this leads to advantageous strengthening features and rigidity imparting characteristics inherent in the eye portion of the hanger construction.

The foregoing description applies to each of the several forms.

The ring shaped section or pipe receiving eye 4 of Fig. 1 is formed by bending the flattened lower portion substantially laterally to the left from a thin wide part 7 of the lower transition portion 5 and thereafter gradually in a manner to complete the ring or eye 4 with the free or outer end 8 thereof proximate the thin wide part 7, from which the bending was initiated. The eye 4 which is thus formed is relatively strong and rigid. The eye can be made still stronger by applying soldering as along the line X.

If a particularly secure type of pipe supporting construction is desired such may be further attained by sweating or brazing the entire ring or eye section to the pipe supported thereby. The soldering or brazing material is readily held and retained in place within and with respect to the ring during the sweating or brazing operation.

The transverse concavity of the inner surface of the ring, or of the strip portion (b) thereof aids to a certain extent in retaining the solder or brazing material in place during this operation. This statement applies to each form of hanger construction shown.

The eye of Figs. 2 and 3 is made so that the free or outer end 8 can be fixed in place by tangs or tabs 9 and 10. In Fig. 2 the eye is left partially closed to permit springing or bending outwardly when assembling the hanger by lateral or transverse movement over a pipe. In this figure there is shown a hole 11 for receiving the tabs. This hole is preferably punched and of rectangular formation. It is feasible, however, to employ a round drilled hole at this place. The tabs are respectively integral with the inner and outer ring layers or strips 12 and 13 and are formed by notching—at 14 and 15—the free end of the flattened ring providing section 4. In regard to this ring section, and in fact in regard to all ring sections, it is to be noted, as has already been pointed out, that the inner and outer ring layers or strips 12 and 13 are integrally connected the full length of the ring edges because of metal of the original tubing being left at 16.

In Fig. 3 the ring shaped section is shown closed and the tabs 9 and 10 after insertion through the hole 11 have been bent respectively upwardly and downwardly to fastening or holding position.

The form of holder shown in Figs. 4 and 5 embodies the features of construction of the form of Figs. 2 and 3 except for a fairly longer straight flattened section being left at 18 and 19.

According to Figs. 6 and 7 the holder is constructed with a relatively long straight flattened section at 20, with a fairly long, straight flattened section 21 at the free end of the eye and a sliding ring 22 is provided for slipping downwardly over the end 21 when in place whereby the ring 22 can lock the free end 21 in position relatively to the relatively straight shank portion 20. To further secure the members in assembled position the uppermost end 21 is preferably bent outwardly as indicated by broken lines. The straight flattened sections 20 and 21 are shown in Fig. 7 as having been pressed or hammered to substantially bring the otherwise existing bead formations thereat in alignment with or flush with the surfaces of the plate sections connected thereby.

The broader aspects of the invention contemplate the employing of other forms of means for attaching the hangers in place. For example, it is feasible to omit or even cut off the upper flattened end and to employ a socket member typified by the construction shown in Fig. 9. According to this figure a socket member 23 is provided with an opening 24 for receiving the upper end of the body section 1 of the hanger, the latter of which can be secured in place as by screw threads, brazing, upsetting the body end when forced in place in the socket opening 24 or by any other suitable manner. Holes for screws or other fastening means are provided at 25.

Fig. 10 shows in assembled relationship a pipe 26, three hangers typified by any of the pipe hangers already above described for supporting the pipe 26 from overhead beams 27, and nails 28 for securing the hangers in place. A ceiling construction is also indicated at 29. From the general assembly or relationship illustrated, it will

be noted that the hangers provide a neat and attractive appearance when in place.

Each of the hangers described herein is of a construction permitting it to be assembled on a pipe that is to be supported thereby either by stringing the eye or loop portion of the hanger by lengthwise movement with respect to the pipe or by transverse movement with respect to the pipe either when the eye is only partially completed or by opening the eye for that purpose.

If a particular hanger is longer than required it can be readily shortened in the field. The attached or normally fixed end can be readily flattened and nail holes are readily punched therein for the reception of the nails or other securing means. The hangers are preferably made of copper. However, they can be made of any suitable tubular material that is sufficiently strong and readily bendable, or of a character that permits the flattening required for either the attached end or for the eye-providing end. Copper tubing has been described because it is excellent for resisting moisture and deterioration from exposure. Moreover, it is an easy metal to work. Copper tubing adapts itself to installing conditions. The eyes made therefrom are relatively strong and have sufficient rigidity for the work normally imposed thereupon particularly since the inner and outer ring layers thereof are integrally connected along the edge portions of the ring.

The beads that develop along the edges of the ring substantially aid in imparting the rigid and strong characteristics to the ring.

It will be manifest that tubes of other metals can be employed for realizing the advantageous characteristics of the invention. Local conditions may dictate that tubing other than copper tubing may be preferred as the basic material for hangers for certain particular uses.

The novel features considered characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation and use together with the objects and advantages thereof, will be readily appreciated and understood from the foregoing description in connection with a specific embodiment herein shown and described.

I claim:

1. A one piece pipe hanger element made from a piece of pipe and comprising as successively merging sections a tubular body portion, a progressively tapering and correspondingly widening transition portion and a flattened portion bent into ring shaped formation for receiving the member to be supported and of which ring providing portion there are left, as the result of flattening the original pipe and the bending of the flattened portion, juxtapositioned inner and outer ring shaped strips integrally connected along the opposite lateral edges thereof because of the original metal being left thereat.

2. A pipe hanger element as defined in and by claim 1, according to which the remote end of the ring shaped formation is connected to the initially bent section of the flattened portion providing the ring shaped formation in the region proximate the transition portion.

3. A pipe hanger element as defined in and by claim 1, according to which an aperture is provided in a flattened region proximate the wide end of the transition portion and according to which two protruding members are provided at the remote end of the flattened portion which

is bent into ring shaped formation and of which one of said protruding members is integral with and extends from the inner ring shaped strip while the other of said protruding members is integral with and extend from the outer ring shaped strip and which protruding members are disposed for passing through said aperture and are sufficiently long for oppositely bending with respect to each other for securing the remote end of the flattened portion in ring completing position.

4. A pipe hanger element as defined in and by claim 1, according to which an intermediate short straight section substantially paralleling the tubular body portion is left between the transition portion and the proximate end of the flattened portion which is bent into ring shaped formation, according to which a short straight section is left at the remote end of the flattened portion that is bent into ring shaped formation and so as to have an outwardly bent position with respect to the ring shaped formation, and according to which there is provided means for securing said intermediate and outer short straight section in juxtaposed position with respect to each other.

5. A pipe hanging element as defined in and by claim 1, according to which an intermediate short straight section is left between the transition portion and the proximate end of the flattened portion which is bent into ring shaped formation, according to which an outer short straight section is left at the remote end of the flattened portion which is bent into ring shaped formation, and according to which there is provided a movable locking member shaped and disposed for engaging the intermediate and outer short shaped section in a manner for retaining them in ring completing position.

6. A one piece pipe hanger made from a single

piece of piping and comprising as successively merging sections a normally fixed flattened end portion that is thin and relatively wide as compared with any cross sectional dimension of the original pipe, a transition portion progressively decreasing in width until the cross-section thereof is that of the original piece of piping, a body portion of substantial length which conforms in cross sectional shape to that of the original piping, a second transition portion progressively decreasing to a thin but relatively wide portion, and a thin wide flattened portion bent into ring formation for receiving a pipe member to be supported thereby, and providing juxtaposed ring shaped strips integrally connected along each marginal edge of the ring formation.

7. A one piece pipe hanger as defined in and by claim 6, and according to which the normally fixed flattened portion is provided with nail openings.

8. A one piece pipe hanger as defined in and by claim 6, according to which the normally fixed flattened portion is provided with nail receiving apertures spacedly disposed along the same, and according to which means is provided for securing the extreme end of the ring providing portion in loop completing position.

9. A pipe hanger element as defined in and by claim 1, according to which the edges or peripheral ends of the ring have a bead formation.

10. A pipe hanger element as defined in and by claim 1, according to which the original metal integrally connecting the inner and outer strips of the ring-shaped formation provides bead portions at and along each peripheral end of the ring and whereby the innermost and outermost faces of the ring formation are transversely concave.

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