Aug. 22, 1933.

B. NORD

1,923,276

EAVES TROUGH HANGER

Filed Jan. 4, 1932

2 Sheets-Sheet 1

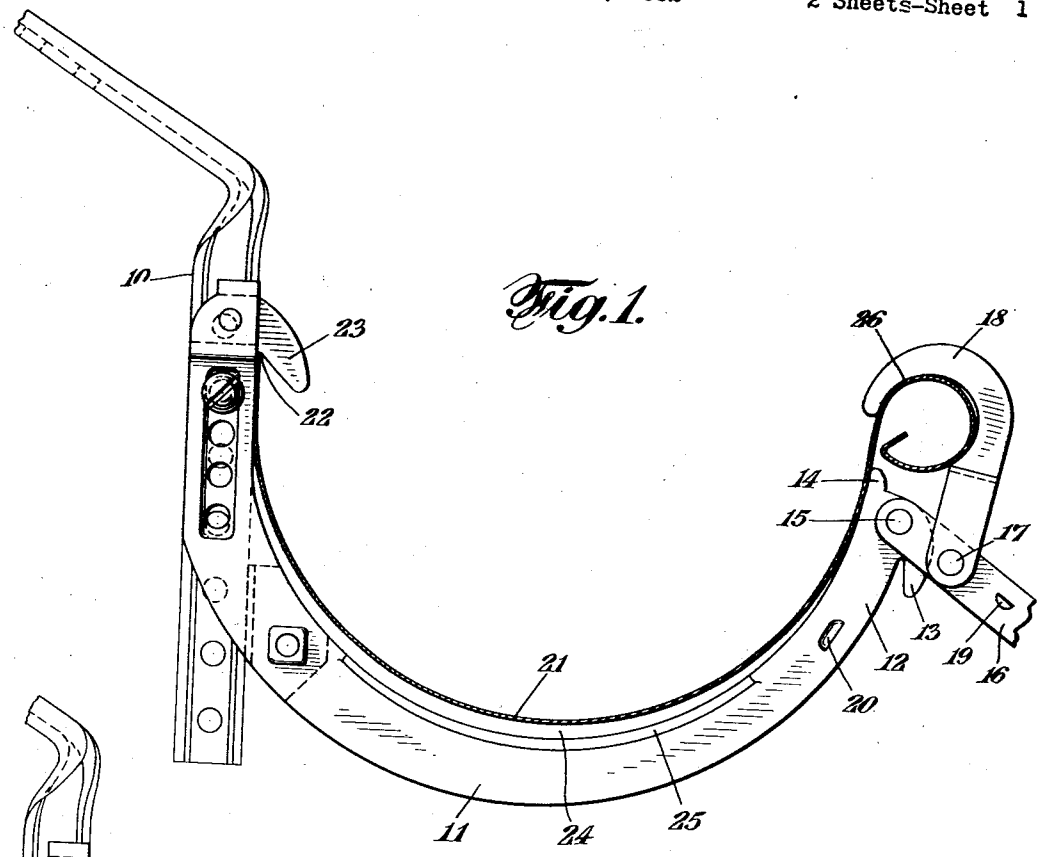


Fig. 1.

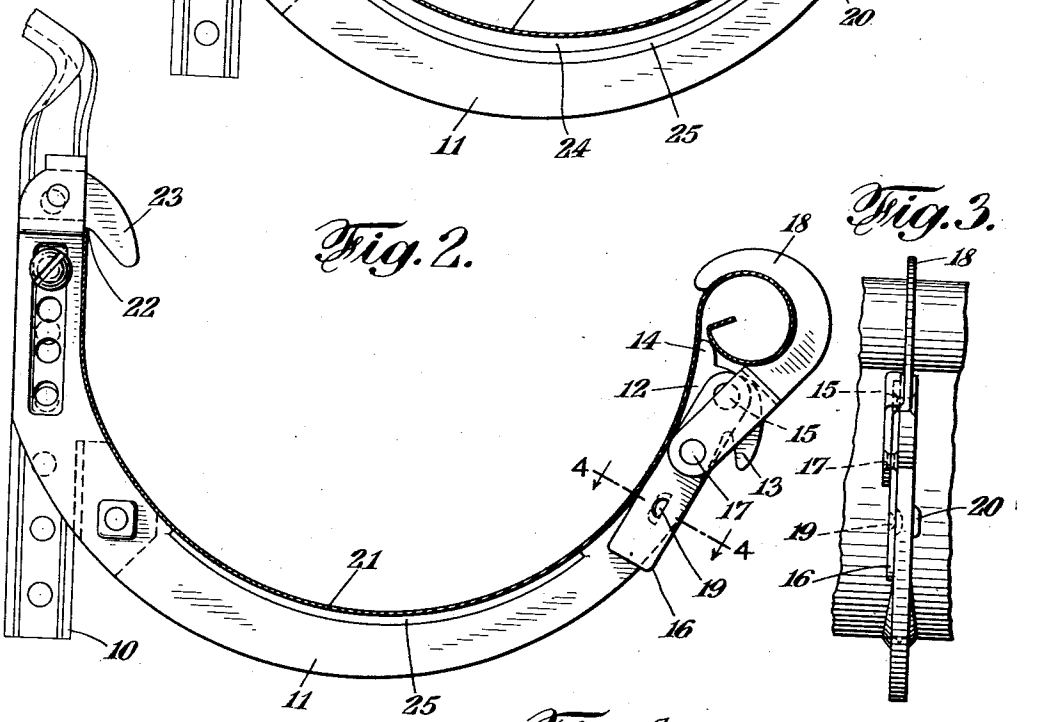


Fig. 2.

Fig. 3.

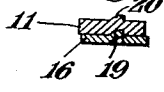


Fig. 4.

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2 Sheets-Sheet 2

Fig. 5.

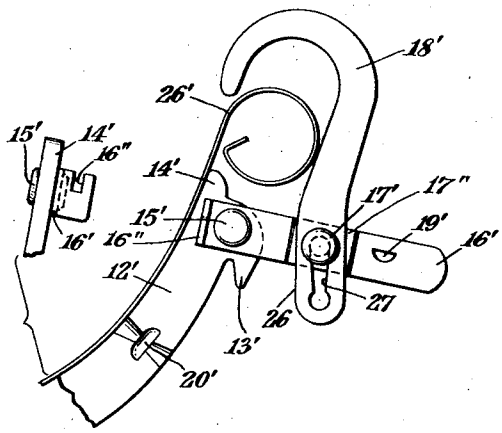


Fig. 6.

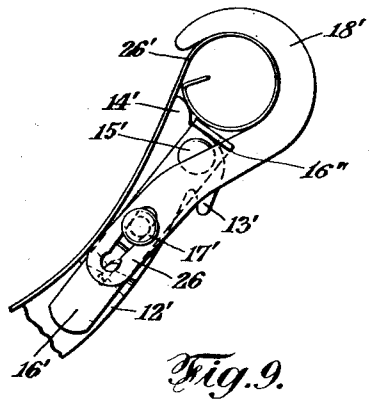


Fig. 9.

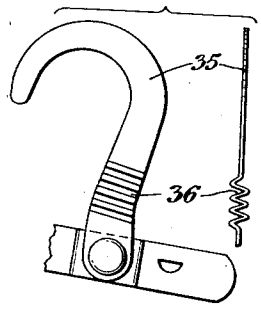


Fig. 7.

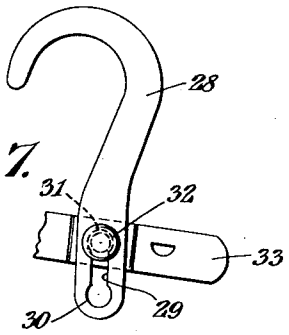


Fig. 8.

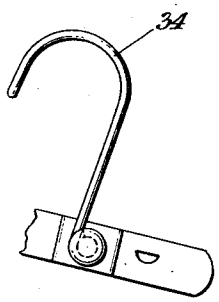
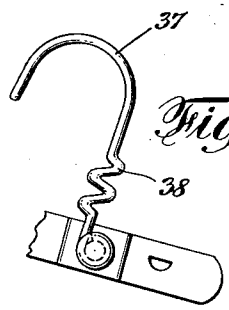


Fig. 10.



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UNITED STATES PATENT OFFICE

1,923,276

EAVES TROUGH HANGER

Benjamin Nord, Bayside, N. Y., assignor to Whitney Metal Products Corp., New York, N. Y., a Corporation of New York

Application January 4, 1932. Serial No. 584,639

13 Claims. (Cl. 108—29)

This invention relates to eaves trough hangers of the so-called "circle" type similar to that described and claimed in my pending application Ser. No. 567,370, filed by me October 7, 1931, and particularly to gutter bead fastening means.

In eaves trough hangers of the circle or strap type, particular attention is devoted to the fastening of the outer bead of the trough or gutter, so that the gutter will not only properly contact with its support, for instance the circle, but whereby the bead is fixed in place and firmly held against the circle's outer end.

Fastening devices intended for the aforesaid purpose, in the shape of wire or strap clips of different design and construction where employed before and were intended for tightly seating the trough and its bead in the hanger. Due to the fact, however, that all the work of fastening is to be mainly done by workers suspended by either scaffolding or ladders, it becomes very clear that unless the trough fastening means are prepared for unfailingly accomplishing its purpose, it is hardly possible to expect from the workers to securely fasten the trough and its bead as is required of good workmanship.

Therefore, all the previously used devices, consisting of only partially prearranged material and requiring bending or other adjustment to firmly grip the trough bead, usually prove inadequate and even hazardous for the workers.

The present invention is adapted to obviate the necessity of exposing the workers to danger, due to eliminating all operations which were heretofore necessary in order to securely fasten the trough and to fix the bead in place. Furthermore, my invention assures the proper placing of the trough in its hangers and the correct attachment of the bead, relative to the hanger end. Moreover, my device facilitates such proper attachment of the trough within its hanger without tools, instantaneously, and has the advantage of permitting the disengagement of the trough, whenever desired, without destroying the effectiveness of my trough attaching means for future use, when for instance a trough is to be replaced.

The prime object of my invention, therefore, is to provide an eaves trough hanger with effective, readily-operable trough bead attaching means, whereby dependency upon skilled manual labor is eliminated, and whereby the attaching, detaching, or reattaching of a gutter may be repeatedly accomplished without detriment to the proper suspension and adequate fastening of the gutter to the hanger.

The foregoing and further objects will become more readily apparent from the following description, and the accompanying drawings, forming part of my disclosure, but by no means intended to limit the same to the specific showing illustrated, and in which

Fig. 1 is a side elevation of a circle suspended from a shank, equipped with my gutter bead fastening device in its open position.

Fig. 2 is a similar side elevation of a circle with my gutter fastening device in its closed position.

Fig. 3 is an end view of Figure 2, and

Fig. 4 is a cross-sectional view taken on line 4—4 of Figure 2.

Fig. 5 illustrates a modified form of my gutter bead fastening device in its open position.

Fig. 6 illustrates the same modified form in its closed position.

Fig. 7 illustrates a similar modified form with a changed slot arrangement therein.

Fig. 8 illustrates a plain wire hook, attachable to my device.

Fig. 9 illustrates a modified form of the hook, provided with a resilient portion, and

Fig. 10 illustrates a wire hook provided with a resilient portion.

Referring to the drawings, numeral 10 indicates a shank, from which is suspended circle 11, the outer end 12 of which is provided with the usual hook 13, and a gutter bead seat 14. Between the latter and hook 13 there will be seen attached at 15 a lever 16, to which is hingedly secured at 17 a hook-shaped bead engaging member 18. This construction comprises virtually a toggle-joint, by means of which member 18 is brought from its open position, shown in Figure 1, to its closed position, shown in Figure 2, by the operation of lever 16 towards the shank. When lever 16 is brought to its extreme closing position, shown in Figure 2, its notch 19 engages a similar notch 20 provided in the outer end 12 of the circle, whereby the movement of lever 16 is effectively prevented, unless the latter is forcibly dislodged from its closed position.

In observing Figure 1, it will be seen that eaves trough 21, prior to being locked to the circle, is placed into the latter so that its inner edge 22 bears against limiting hook 23 of the circle, while its curved portion is spaced, as indicated at 24, from the bearing seat 25 of the circle. At the same time the bead 26 of the gutter is in its partially unfolded, loose position, while hook-shaped member 18 is loosely placed over the bead.

The moment lever 16 is operated in downward direction, bead 26 will be caused to roll up upon itself, while at the same time the curved portion

of the trough is caused to gradually seat itself against the circle bearing 25, as clearly illustrated in Figure 2.

Lever 16 having reached its extreme locking position, draws hook-shaped member 18 with it, whereby the trough is put under sufficient tension so that its surface completely adheres to that of the circle.

When it is desired to unlock or replace the trough, lever 16 is pried away from the circle so that notch 19 disengages recess 20. Thus freed, lever 16 may be swung up to a position, shown in Figure 1, and higher, whereby the bead attaching member 18 may be completely freed and swung to the right and clear the trough bead.

The construction illustrated shows that hook member 18 comprises a simple stamping, the hook-shaped end of which is in alignment with the vertical centre plane of the circle, while the attached end of member 18 is offset in order to properly connect with lever 16.

It is obvious that member 18 may be produced in different ways and that instead of a single hook, a double or channel-shaped hook arrangement may be provided, and that the toggle construction may be changed to suit various requirements. It is further obvious that the shape of the trough bead attaching means may be altered to accommodate various shapes of trough beads.

In Figures 5, 6 and 7 there are illustrated various shapes of trough bead attaching hooks constituting modifications of the hook shown at 18 in Figures 1, 2 and 3.

In Figures 5 and 6 there is again shown a circle member provided at its outer end 12 with a similar end hook 13' and an upper bead receiving extension 14', against which the rolled-up end of trough bead 26' is intended to rest. At 15' there is shown the fulcrum point of lever 16', provided with a stationary rivet 17' engaging the lower portion of hook 13'. Lever 16' is also provided with a notch closure 19', adapted to engage the depression 20' in the circle.

The lower end of hook member 13' is shaped somewhat different from the hook shown in Figure 1, in that this lower portion 26 is provided with a tapering slot 27, which is wider at its upper end and gradually reduces against its lower end. The purpose of this slot arrangement is to provide a gradually increasing pressure by the hook against bead 26', as lever 16' is moved towards its locking position. When lever 16' is forced down, pin 17' engages the wider end of slot 27 and gradually is drawn against the narrower end of the slot and, so to speak, wedges pin 17' into position. Through this arrangement, a greater pressure and tension is exerted against the bead, holding the latter in intimate contact with the circle.

Pin 17' is secured to a raised part 17'' of lever 16', and the fulcrumed end of the latter has a bent-over extension 16'', provided with a slot, adapted to engage hook 18' in its locked position with the bead. This extension limits the movement of the locked hook in the direction towards the bead.

In Figure 7 a hook 28 is illustrated which is similar in construction to that shown at 18' in Figures 5 and 6, with the exception that its slot 29 has parallel inner faces, whereas, its ends 30 and 31 are round, and are intended to accommodate pin 32. The operation of this pin in slot 29 is very similar to that described in connection with Figures 5 and 6, the only difference being, that in this case I rely upon the resiliency of the material to exert sufficient pressure against the pin, when drawn down into the slot by the downward operation of lever 33.

Figure 8 represents a mere substitute of hook 18', shown in Figure 1, in that a plain resilient wire member 34 is employed instead of a flat metal hook 18. Otherwise the operation remains identical with that described in connection with Figures 1 and 2.

In Figures 9 and 10 are shown modified forms of the hook member. In Figure 9 there is shown a metal hook 35 which in every respect resembles hook 18 of Figure 1, with the exception that between its attaching end and the hook end the material is corrugated, as seen at 36. This corrugation renders the hook portion resilient and produces a tension when the hook is in engaging position with the bead, and further provides an automatic adjustment of the length of the hook when different size of beads are to be held down by the latter. In Figure 10, wire hook member 37 is also provided with a corrugated portion 38 intended for the same purpose as that explained in connection with Figure 9, that is, to permit the attachment of the hooks with beads of different sizes, and rendering the hook self-adjusting, and its connection with the bead resilient and under constant tension.

Obviously the modification shown in Figures 5, 6 and 7 serve for similar purposes, as they allow their attachment and their adjusting themselves to different bead sizes, while holding the bead under tension, induced by the frictional engagement of pins 17' and 32, respectively, with slots 27 and 29, respectively.

Thus, while I have shown and described specific forms of my device, be it understood that modifications and improvements may be incorporated therein, without departing from the broad scope of my invention involving the instantaneous attachment of a trough bead to an eaves trough hanger without the requirement of tools or any other appliances and without the necessity of depending upon the skill of the worker and without exposing him to danger while attaching the trough to the hanger.

Be it therefore understood that I shall have the right to employ any modifications or improvements of instantaneous trough attaching means as broadly set forth in the annexed claims.

I claim:

1. The combination with an eaves trough hanger, of gutter-bead fastening means provided at the outer end of the hanger and permanently associated therewith, and comprising lever operated bead engaging means, the latter comprising a lever pivotally associated with said outer hanger end, a substantially hook-shaped member pivotally connected with said lever and adapted to engage the bead of a trough.

2. The combination with an eaves trough hanger, of a gutter-bead fastening means provided at the outer end of the hanger and permanently associated therewith, and comprising lever operated bead engaging means, the latter comprising a lever pivotally associated with said outer hanger end, a substantially hook-shaped member pivotally connected with said lever and adapted to engage the bead of a trough, said lever and said hanger end provided with means for keeping said lever in its locked position.

3. The combination with an eaves trough hanger, of gutter bead attaching means, comprising a gutter bead engaging member and an operating

lever pivotally connected with said member, and operatively associated with said hanger.

4. The combination with an eaves trough hanger, of lever and toggle-joint actuated trough bead fastening means permanently and operatively associated with the outer end of the hanger and comprising a trough bead engaging member and a lever operatively secured to said hanger and said bead-engaging member.

5. The combination with an eaves trough hanger, of trough bead fastening means permanently and operatively associated with the outer end of the hanger, said means comprising a bead engaging member and a lever, the latter pivotally connected with said hanger end, said bead engaging member pivotally connected with said lever.

6. The combination with an eaves trough hanger, of trough bead fastening means permanently and operatively associated with the outer end of the hanger, said means comprising a bead engaging member and a lever, the latter pivotally connected with said hanger end, said bead engaging member pivotally connected with said lever, and means provided with the latter for locking it in its operative position, when said bead engaging member engages the bead of a trough.

7. The combination with an eaves trough hanger of the "circle" type, of an adjustable gutter bead fastening means comprising a toggle-joint operated bead engaging member adapted to fasten the bead in place at increasing tension as it is forced into engagement with the bead.

8. The combination with an eaves trough hanger of the "circle" type, of adjustable, toggle-joint operated gutter bead fastening means, comprising a lever hingedly connected with said hanger, a hook member operatively connected with said lever and adapted to bring a bead under increasing tension when forced into engagement with the latter.

9. The combination with an eaves trough hanger of the "circle" type, of adjustable toggle-joint operated gutter bead fastening means, comprising a lever hingedly connected with said hanger, a hook member operatively connected with said lever and adapted to bring a bead under increasing tension when forced into engagement with the latter, said hook provided with means for facilitating its adjustment relative to the bead.

10. The combination with an eaves trough hanger of the "circle" type, of adjustable toggle-joint operated gutter bead fastening means, comprising a lever hingedly connected with said hanger, a hook member operatively connected with said lever and adapted to bring a bead under increasing tension when forced into engagement with the latter, said hook member provided at its operative connection to said lever with a combination hinge and slot arrangement.

11. The combination with an eaves trough hanger of the "circle" type, of adjustable, toggle-joint operated gutter bead fastening means, comprising a lever hingedly connected with said hanger, a hook member operatively connected with said lever and adapted to bring a bead under increasing tension when forced into engagement with the latter, said hook provided with a resilient portion between its attaching and hook ends.

12. The combination with an eaves trough hanger of the "circle" type, of adjustable toggle-joint operated gutter bead fastening means, comprising a lever hingedly connected with said hanger, a hook member operatively connected with said lever and adapted to bring a bead under increasing tension when forced into engagement with the latter, said hook provided with means for facilitating its adjustment relative to the bead, said lever provided with means for limiting the inward movement of the hook when the latter is in bead engaging, locked position.

13. In combination with an eaves trough hanger having provisions for seating a gutter-bead, lever operated gutter-bead fastening means adapted to draw a gutter-bead against such seating provisions of the hanger said fastening means comprising a bead-engaging hook member and a lever operatively connected with the hanger and said hook member.

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