

June 28, 1955

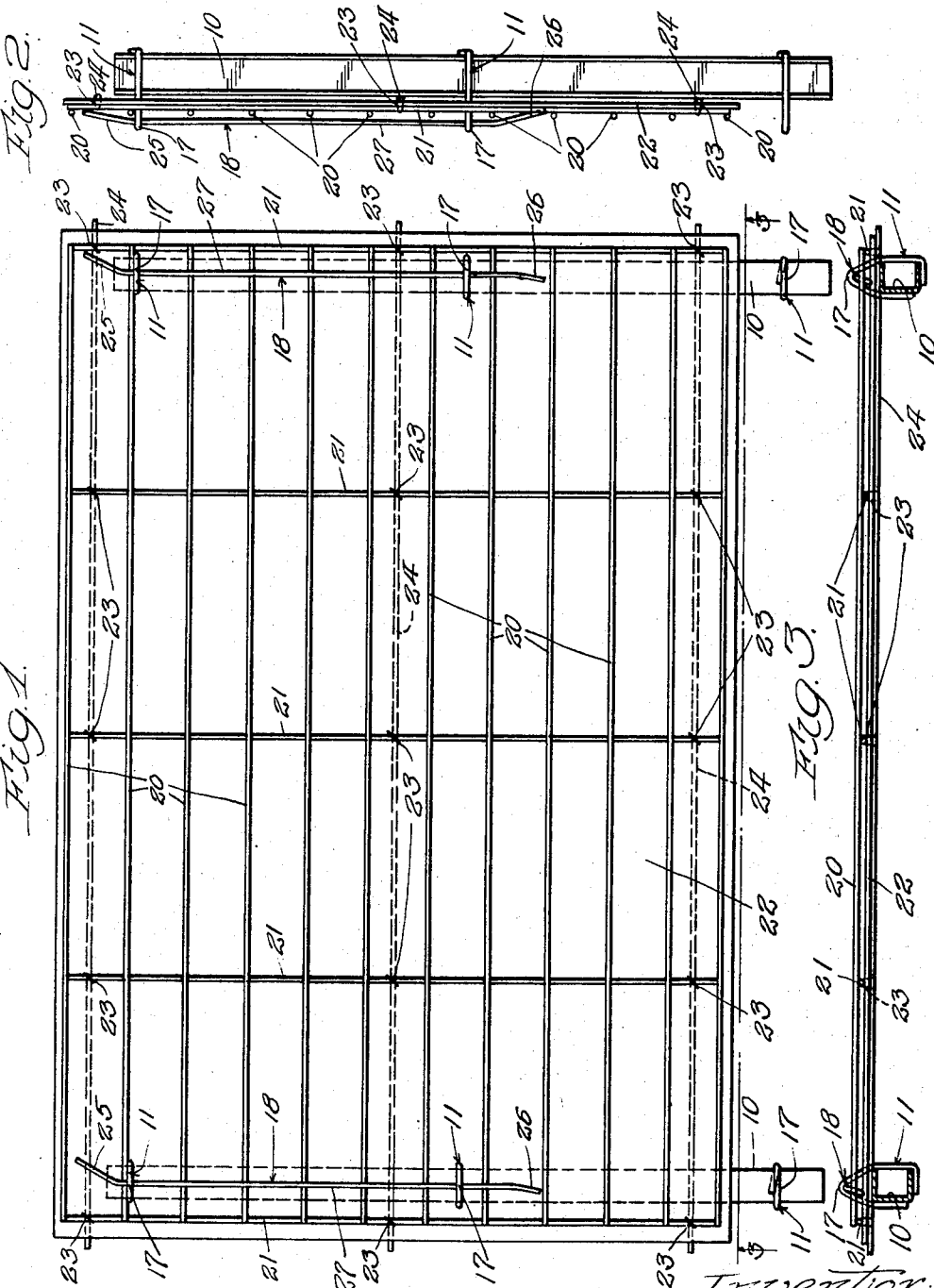
H. H. ROBINSON

2,711,643

CLIP RETAINED LATH

Filed Feb. 24, 1951

3 Sheets-Sheet 1



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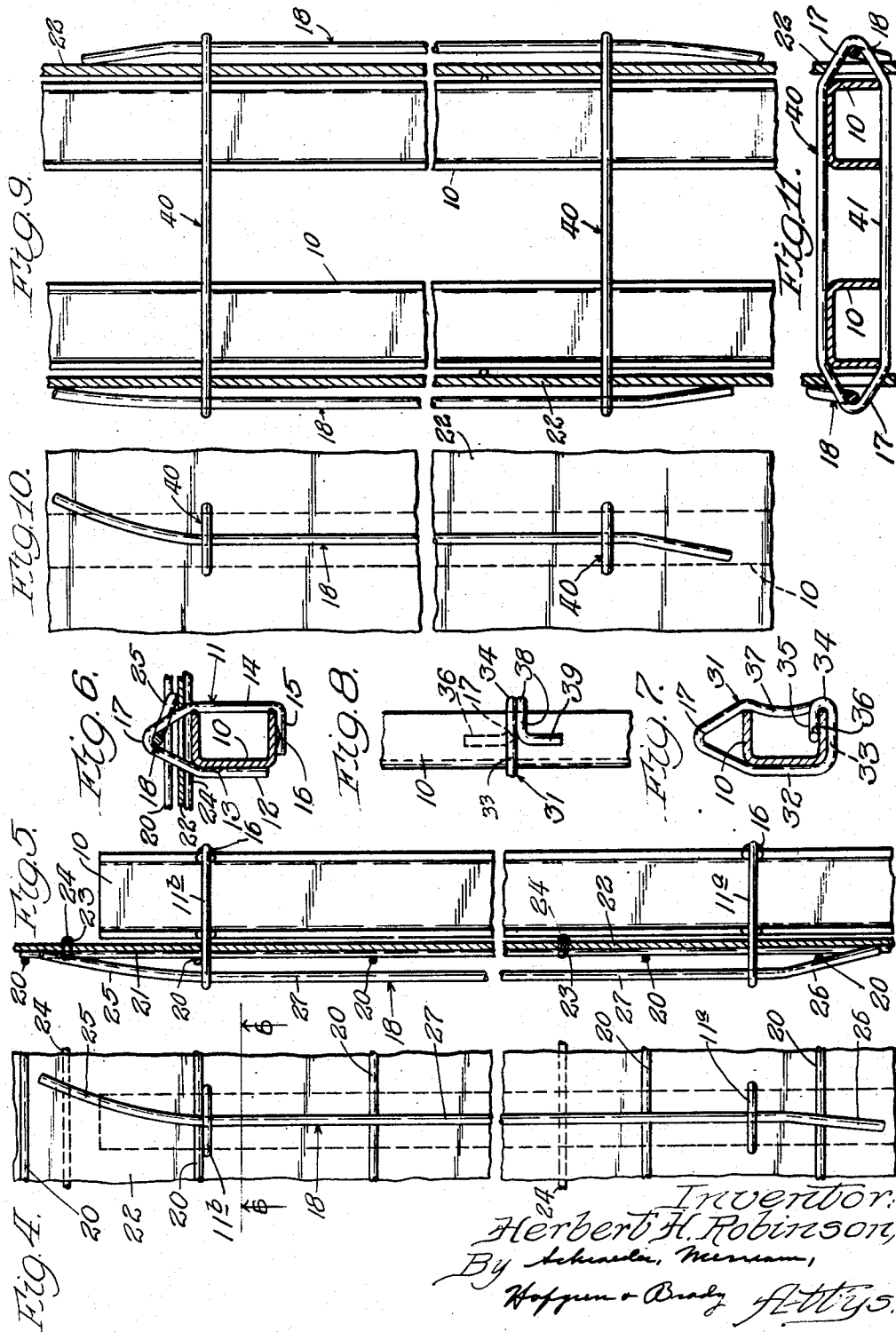
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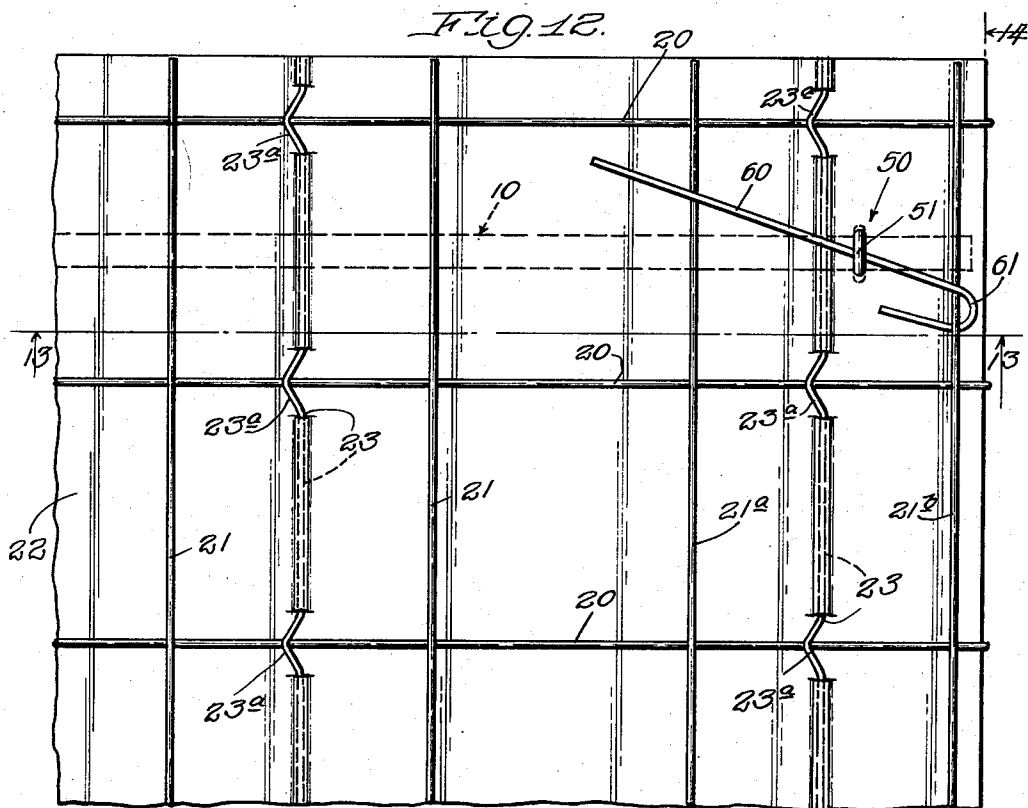
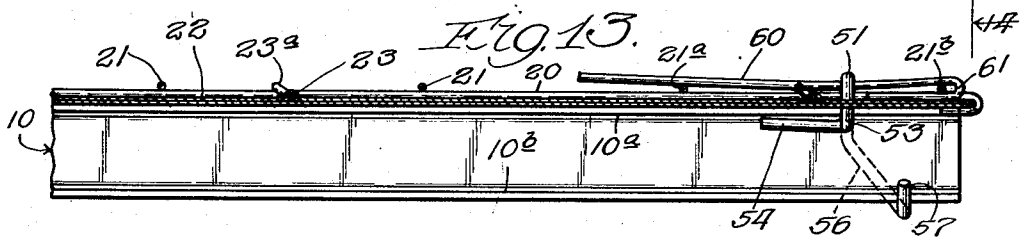
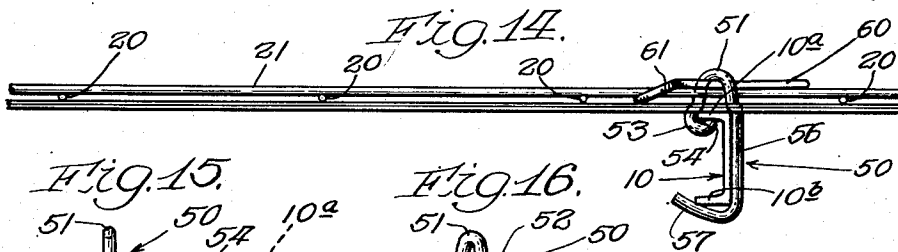
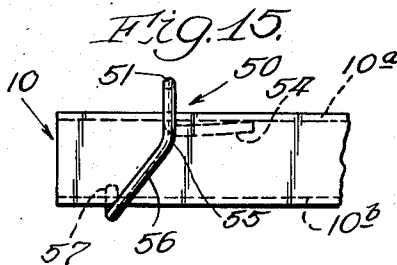
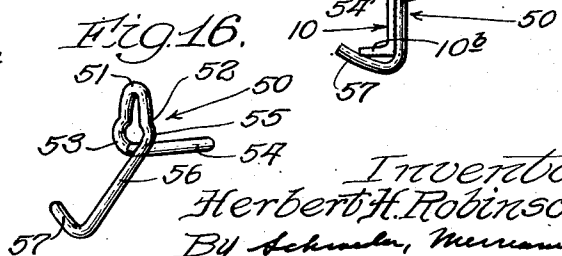
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2,711,643

CLIP RETAINED LATH

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Application February 24, 1951, Serial No. 212,643

5 Claims. (Cl. 72—120)

This invention relates to a retaining means, and more particularly to a retaining means for securing lath or similar material in position.

This application is a continuation-in-part of my pending application, Serial No. 147,006, filed March 1, 1950, now abandoned.

A number of forms of lath are used for a plaster base both in industrial and home construction. One of the oldest forms is the common wood lath which consists of strips of wood nailed at regular intervals to the studs and which serves as the material upon which the plaster is laid. An improvement over the wood lath is the wire lath or expanded metal lath which also may be secured to the studs or to the structural members in the building and over which the plaster coat is laid. Still a third form of lath is the fiber-backed lath which consists of a number of small rods or wires spaced about 2 inches apart and joined by a transverse rod about every 6 or 8 inches. A fiber or heavy paper backing is provided against which the plaster is laid with the rods serving to reinforce the plaster similar to reinforced concrete. This latter type of lath, which I sometimes hereinafter refer to generally as metal lath, is particularly advantageous where the plaster is to be applied by the most advanced methods, that is spraying. Two workmen spraying on plaster can do more work in a day than a dozen men applying plaster by the old methods. Where plaster is sprayed, however, some form of continuous backing must be employed and for this purpose the fiber-backed metal lath is particularly suitable. Obviously, if ordinary unbacked expanded metal lath or wood lath is used no surface is provided which will stop the spray plaster and allow it to build up to the required thickness.

Modern construction of industrial buildings often contemplates the use of steel channel irons in place of the common wood studding. This steel type of construction is also finding favor in family dwellings. The use of steel channels or other metallic members as studs or other supports introduces a new problem of securing the lath in place. Obviously, the lath cannot be nailed in position. It has been customary to secure the lath by means of wires which are pushed through the lath, looped around the beam or channel iron and then brought back through the lath and the ends twisted together. This is rather tedious work and becomes quite difficult when employed with fiber-backed lath inasmuch as the installer cannot see through the fiber backing and thus cannot guide the securing wire visually. I am familiar with one of the commonly employed methods of securing metal lath and fiber-backed lath to steel supports which comprises welding a hairpin-like wire to the channel iron with the ends protruding into the space to be plastered. Fiber-backed lath and metal lath are placed in position with the sharp ends of the wire protruding therethrough, which ends are then bent over around the lath to hold it in place.

There are several important disadvantages in this hair-

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pin type of fastening means. One of the important disadvantages is that the protruding ends of the wire are quite sharp and a number of injuries to workmen have occurred by their falling against the sharp ends during the process of positioning the lath. Torn clothing, skin and scalp are common accidents with this particular type of fastening means and workmen generally are opposed to using it. A further disadvantage from the structural standpoint is that the lath is secured only at spaced points rather than being supported along a continuous line. Thus the lath is apt to sag with the weight of the plaster between the points where it is secured.

I have invented and am herein disclosing and claiming a new type of fastening means for lath which eliminates the above difficulties. The fastening means of this invention does not present sharp points to cut or otherwise injure workmen; it may be secured in place on the supports before they are placed in position or after they are in position. Furthermore, the fastening means of this invention may be secured in place by welding, or in another embodiment thereof, may be snapped in position as the work progresses. Furthermore, as a part of my fastening means I provide an elongated lock device which supports the lath, not at a single point, but rather along a line and thus more firmly and securely holds the lath against sagging.

The invention will be described in conjunction with the accompanying drawings, in which:

Fig. 1 is a plan view of a pair of structural supports in the form of channel irons with a section of fiber-backed lath held in position by the fastening means of this invention;

Fig. 2 is an end view of the device shown in Fig. 1;

Fig. 3 is a side view of the apparatus shown in Fig. 1;

Fig. 4 is an enlarged detail plan view of the fastening means;

Fig. 5 is an end view of the apparatus shown in Fig. 4;

Fig. 6 is a sectional view taken along line 6—6 of Fig. 4;

Fig. 7 is a view similar to Fig. 6 of a modified form of the invention;

Fig. 8 is a plan view of the bottom portion of Fig. 7;

Fig. 9 is a vertical section taken through a partition wall showing a somewhat modified form of construction;

Fig. 10 is a side elevation of one side of Fig. 9;

Fig. 11 is a horizontal section taken through Fig. 9;

Fig. 12 is a view similar to Fig. 1 showing a modified form of construction;

Fig. 13 is a sectional view along line 13—13 of Fig. 12;

Fig. 14 is a sectional view along line 14—14 of Fig. 12;

Fig. 15 is a fragmentary view showing the modified form of fastening device in position on a channel iron; and

Fig. 16 is a perspective view of the fastening device alone.

While this invention is susceptible of various modifications and alternative constructions, it is herein shown and will hereinafter be described in its preferred embodiments. It is not intended, however, that the invention is to be limited thereby to the specific constructions disclosed. On the contrary, it is intended to cover all modifications and all alternative constructions falling within the spirit and scope of the invention as defined in the appended claims.

Referring now to Figs. 1 to 6 of the drawings, I show a pair of structural supports in the form of channel irons 10. These supports may be in the wall or ceiling of the structure and thus may be either vertical or horizontal. At spaced intervals along each support I secure a fastener 11. Each of the fasteners 11 is formed into the shape shown from a piece of heavy gauge wire. Thus each fastener is provided with a first leg portion 12 adapted

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to be secured as by the weld 13 to the base of the channel iron, a second leg 14 which spans the gap between the two side portions of the channel and a bent portion 15 adapted to be secured as by the weld 16 to the inner leg of the channel. Extending away from the channel and toward the space to be plastered is an integral blunt loop 17. This loop is made sufficiently long as to extend beyond the face of the lath placed against the supports to permit the insertion of a lock device 18 thereinto. Normally the depth of the loop, that is the space between the outer leg of the channel and the end of the open portion of the loop, will be in the order of $\frac{1}{4}$ to $\frac{1}{2}$ inch.

With a number of fasteners 11 secured to the channel irons 10 as shown in Fig. 1, the lath may be positioned over the channels with the loop portion 17 extending through the lath. I have chosen to illustrate this invention as used in conjunction with fiber-backed metal lath which consists of a number of parallel wires or rods 20 spaced approximately 2 inches apart and secured at 6 to 8 inch intervals to transverse rods 21. A fiber backing 22 is located on the opposite side of the wires 20 and 21 and secured thereto by means of a number of wire loops 23 which wrap around the transverse wires 21 and longitudinal wire 24 located on the opposite side of the fiber backing.

In placing this type of lath in position, it is merely necessary to locate it on the channel irons and then to press it against the fiber backing at the location of the fasteners 11. This will cause the blunt loop 17 to pierce the fiber backing and extend through as shown in the drawings. With the lath so positioned it is then held in place by the lock devices 18.

The locking devices 18 comprise a heavy wire having a bent portion 25 at one end and a second bent portion 26 at the other end with an intermediate straight portion 27 between the two ends. As best seen in Figs. 4 and 5, the end portion 25 is bent downwardly and to the right with respect to the straight portion 27 while the end portion 26 is bent downwardly and to the left. As will be apparent from the description and drawings, the upper portion 25 could be bent in the opposite direction, that is to the left, and the lower portion 26 could be bent to the right, the terms "left" and "right" being used only for clarity of description.

In inserting the lock device 18 one of the ends, for example the end 25, is inserted through the lower fastener 11 (which I have indicated at 11a in Figs. 4 and 5) and is moved along over the top of the intervening wires 20 and inserted through the upper fastener which I have designated 11b. In inserting the lock device through the two loops as just described, the lower end 26 is held in a rotated position so that the bent portion extends away from the plane of the lath material. With the lock device inserted through the two loops, it is rotated to the left, for example, until it reaches the position shown. During this rotation the upper end 25 is rotated from its original position wherein it pointed to the left of the portion 27 to the position shown where it points to the right of that portion. This, in effect, rotates the end portion 25 past "dead center," and the lock device thus snaps into position and maintains itself securely in that position to hold the lath material. The portion 27 of the lock device may bridge the intervening longitudinal wires 20 or may be so constructed as to be in contact with the intervening wires and thus to support the lath along the line between the fasteners 11. The same effect may be secured when using wire or expanded metal lath.

In the embodiment just described, each fastener 11 was held in position by welding. In the form of the invention illustrated in Figs. 7 and 8, I show a fastener 31 which may be snapped into position. As will be seen from an examination of Figs. 7 and 8, the fastener 31 is shaped as to have a leg 32 extending along the base of the channel iron. This leg is bent so as to have a

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portion 33 extending across the inner side of the channel iron, a portion 34 bent around the end of the inner side, a portion 35 extending inwardly on the face of the inner side opposite the portion 33 and an end portion 36 which extends longitudinally of the channel iron. The other side of the fastener is provided with a bowed leg 37 bridging the space between the ends of the two sides of the channel iron. A portion 38 is bent over the edge of the inner side of the channel iron and a portion 39 extends longitudinally along the face of the inner edge of the channel opposite to the face along which the portion 36 extends and in the opposite direction. The device 31 may be snapped into position by the workmen as the work progresses. The natural tension in the fastener serving to hold it in place against sliding movement and the portions 36 and 39 extending longitudinally of the channel quite effectively preventing rocking of the fastener. The fasteners 31 provide a blunt loop 17 through which the lock device 18 may be extended as in the previous embodiment.

A somewhat modified form of fastening device is shown in Figs. 12 to 16 inclusive. Referring to those figures, there is shown a lath material having a fiber backing 22 provided with a plurality of longitudinal wires 20 and transverse wires 21. The transverse wires are welded or otherwise secured to the longitudinal wires at their junction and a reinforcing wire 23 extends on the under side of the fiber backing and is provided with a number of loops 23a through which the longitudinal wires extend. As in the previous embodiments, the fastening device is to be secured to a supporting member which may take the form of the channel iron 10 and to be pressed through the lath material, in the instance shown, the fiber backing 22, so that the loop of the fastener is on the side of the lath material opposite to the support and so that the lath material may be held in position by inserting a clip or other fastener through the loop.

The modified form of fastener 50 is provided with a blunt loop portion 51 which is compressed on opposite sides as indicated at 52 in order to give a slight pointed effect to the loop to aid it in penetrating the fiber backing. The entire fastener is formed of resilient wire which is reversely bent at 53 to form one leg 54 which extends substantially at right angles to the plane of the loop portion. On the other side of the loop the wire is bent at 55 at an acute angle with respect to the loop to provide the downwardly extending portion 56 which connects the loop with the other end 57 of the wire. This latter end is bent inwardly toward the loop and is positioned at right angles to the end 54.

As best seen in Figs. 14 and 15, the fastener 50 may be positioned over the channel iron 10 so that the reversely bent portion 53 is at the edge of the upper leg 10a of the channel iron with the end 54 extending longitudinally along the channel iron and away from the loop. The end 57 may then be snapped under the bottom leg 10b of the channel iron to hold the device in proper position on the channel iron. It will be noted that both end portions extend way from the loop and along the channel. This spread effect of the ends of the fastener serves securely to hold it in position against wobble or movement thereon. In snapping the fastener on the channel the end 57 rests against the side of the channel while the portion 53 is positioned at the edge of the upper leg 10a. Force can then be exerted against the portion 56 by the thumb to slide the end 57 across the outer surface of the other leg 10b of the channel until it reaches the position shown in Fig. 14. A definite snapping action will be noted when it has reached this point and the natural resilience of the wire from which the fastener is constructed permits it to be so applied without deformation. Obviously the device is intended to be positioned only once and if the fastener is re-

peatedly attached and removed it may eventually become deformed.

With a number of the fasteners 50 snapped onto the channel member 10, the lath material may then be placed in position against the supports and pressure exerted at the location of the loops 51 to press the loops through the fiber backing. A fastening device which may take the form of the hook-shaped element 60 is then inserted through the loop to hold the lath in position. Referring to Fig. 12, the element 60 may be provided with a hook 61 to be hooked over one of the wires 21, e. g., the wire 21b, with its other end extending under the wire 21a and thus firmly to hold the lath in position. Other forms of devices to take the place of the element 60 may, of course, be used, for example, those shown in conjunction with Fig. 1.

Quite often in the construction of buildings a simple partition wall is formed which is thick enough only to accommodate the structural members constituting the wall, such as the vertical studs, leaving space between the studs sufficient to accommodate electrical conduits, heating ducts and the like. Where such a construction is encountered I prefer to use a modified form of fastener shown in Figs. 9 to 11 inclusive. For purposes of illustration, I show a pair of vertical studs in the form of channel irons 10 which are spaced apart as shown. The fastener 40 is in the form of an endless wire 41 with the sides spaced apart a distance as to contact the base and the outer edges of each channel iron as shown in Fig. 11. The fastener may be secured to the channel iron by welding in the same manner as the fastener 11. A loop 17 is formed at each end of the fastener 40 through which the lock device 18 may be inserted in the manner described. The insertion of the lock device, of course, occurs after the loops have been pushed through the fiber backing 22 of the lath material as shown.

I claim:

1. A wall structure comprising a plurality of spaced parallel channel irons each having a base supported at right angles to the plane of the wall and a pair of spaced parallel legs; a plurality of clips on each channel iron, each of said clips comprising a length of resilient metal wire having a loop formed intermediate the ends thereof, said loop extending outwardly from one leg of the channel iron and having two side portions extending inwardly toward the channel iron from the apex of the loop, said loop and side portions defining a plane, a reverse bend in the clip at the end of one side portion and curving around the free edge of said one leg of the channel, said clip having a first end portion extending from said reverse bend away from one side of said plane and substantially at right angles thereto, said first end portion being in contact with the inner face of said one leg, a bend in the clip at the end of the other side portion of the loop to provide an intermediate portion in the clip extending at an acute angle substantially diagonally across the base of the channel away from the opposite side of said plane, said clip having a second end portion extending across the outer face of the other leg substantially at right angles to the intermediate portion; a sheet of paper-backed metal lath having one side positioned against said channel irons to have a plurality of said loops projecting therethrough; and lock devices inserted through said loops and contacting the other side of said lath to secure the lath to said channel irons.

2. In a wall structure, apparatus of the character described comprising a channel iron having a base supported at right angles to the plane of the wall and a pair of spaced parallel legs; a plurality of clips on said channel iron, each of said clips comprising a resilient member having a loop formed therein extending outwardly from one leg of the channel iron and having two side portions extending inwardly toward the channel iron from the apex of the loop, said loop and side portions defining a plane, a reverse bend in the clip at the end of one of the

side portions and curving around the free edge of said one leg, said clip having a first end portion extending from said reverse bend away from one side of said plane and in contact with the inner face of said one leg, a bend in the clip at the end of the other side portion of the loop to provide an intermediate portion in the clip extending substantially diagonally across the base of the channel away from the opposite side of said plane, and said clip having a second end portion extending across the outer face of the other leg of the channel.

3. Apparatus for securing metal lath to a channel iron support comprising a resilient metal wire clip having a loop formed therein intermediate the ends thereof, said loop having two side portions extending away from the apex of the loop, said loop and two side portions defining a plane, a reverse bend in the wire at the end of one side portion, said wire having a first end portion extending from said reverse bend away from one side of said plane and substantially at right angles thereto with the terminus of said end portion being displaced toward the apex of the loop, a bend in the wire at the end of the other side portion of the loop to provide an intermediate portion of wire extending at an acute angle away from the opposite side of said plane, said wire having a second end portion extending substantially at right angles from the end of the intermediate portion and substantially parallel to said plane with the terminus of the second end portion being displaced from the end portion generally toward the loop, said clip being adapted to be positioned on a channel iron with the loop extending away from one leg of the channel, with the reverse bend curving around the free edge of said leg and with the first end portion in contact with the inner face of said leg, said second end portion of the clip being adapted to overlie the outer face of the other leg of the channel and with the intermediate portion of the clip being adapted to extend substantially diagonally across the base of the channel iron.

4. Apparatus for securing metal lath to a channel iron support comprising a resilient metal clip having a loop formed therein intermediate the ends thereof, said loop having two side portions extending away from the apex of the loop, said loop and side portions defining a plane, a reverse bend in the clip at the end of one side portion, said clip having a first end portion extending from said reverse bend away from one side of said plane and substantially at right angles thereto, a bend in the clip at the end of the other side portion of the loop to provide an intermediate portion in the clip extending at an acute angle away from the opposite side of said plane, said clip having a second end portion extending substantially at right angles from the end of the intermediate portion and substantially parallel to said plane, said clip being adapted to be positioned on a channel iron with the loop extending away from one leg of the channel, with the reverse bend curving around the free edge of said one leg and with the first end portion in contact with the inner face of said one leg, said second end portion of the clip being adapted to overlie the outer face of the other leg of the channel and with the intermediate portion of the clip being adapted to extend substantially diagonally across the base of the channel iron.

5. Apparatus for securing metal lath to a channel iron support comprising a resilient clip having a loop formed therein intermediate the ends thereof, said loop having two side portions extending away from the apex of the loop, said loop and side portions defining a plane, a reverse bend in the clip at the end of one side portion, said clip having a first end portion extending from said reverse bend away from one side of said plane, a bend in the clip at the end of the other side portion of the loop to provide an intermediate portion in the clip extending away from the opposite side of said plane, said clip having a second end portion extending substantially at right angles to the intermediate portion, said clip being adapted to be positioned on a channel iron with the loop

extending away from one leg of the channel, with the reverse bend curving around the free edge of said leg and with the first end portion in contact with the inner face of said leg, said second end portion of the clip being adapted to overlie the outer face of the other leg of the channel and with the intermediate portion of the clip being adapted to extend substantially diagonally across the base of the channel iron.

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