L. M. PERROTT.

REINFORCING MEMBER OF CONCRETE BUILDING CONSTRUCTIONS.

APPLICATION FILED MAY 7, 1919.

1,318,405. Patented Oct. 14, 1919.

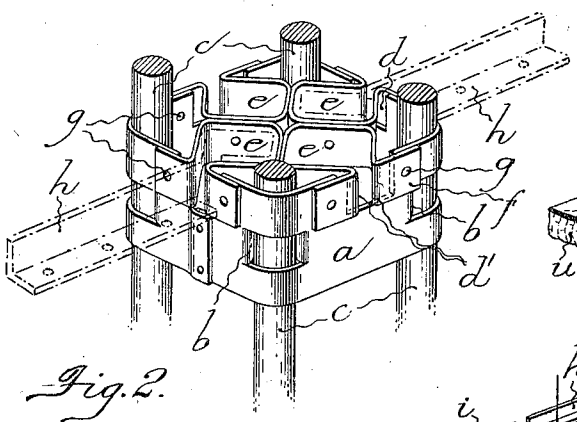


Fig. 2.

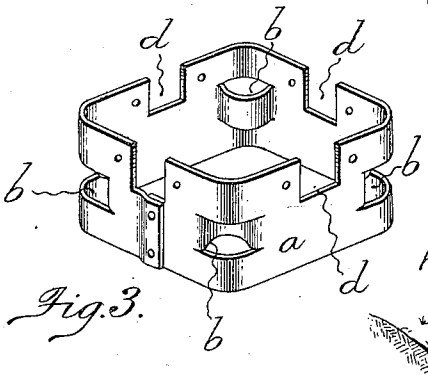


Fig. 3.

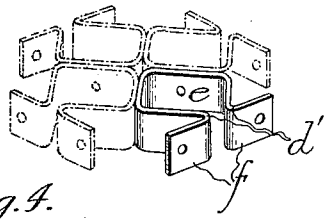


Fig. 4.

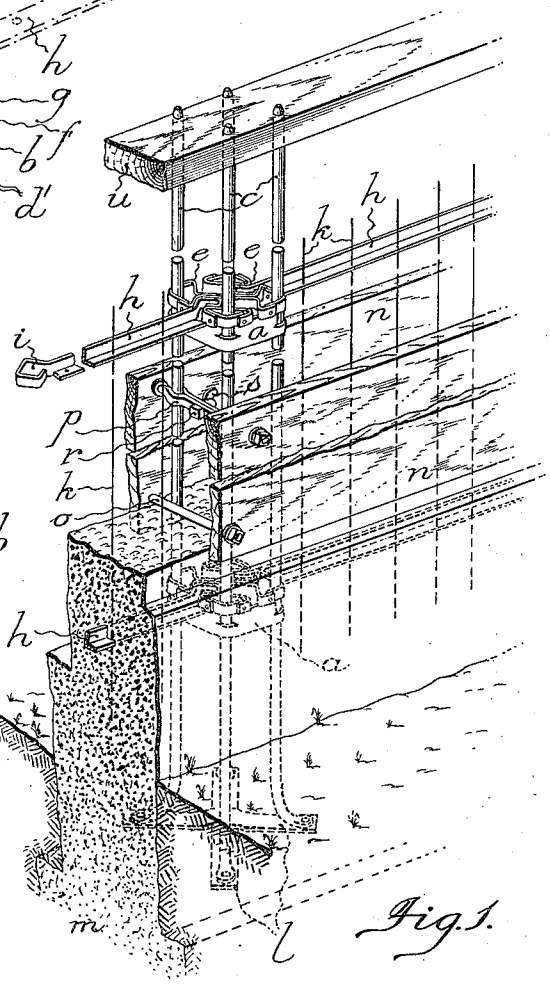


Fig. 1.

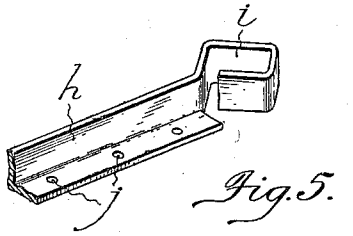


Fig. 5.

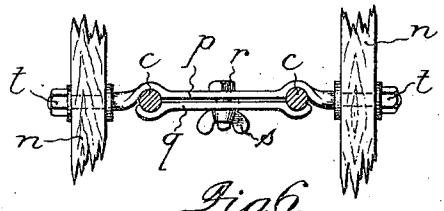


Fig. 6.

Inventor.
L. M. Perrott
By H. R. Kerslake
Atty.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LESLIE MARSH PERROTT, OF MELBOURNE, VICTORIA, AUSTRALIA.

REINFORCING MEMBER OF CONCRETE BUILDING CONSTRUCTIONS.

1,318,405. Specification of Letters Patent. Patented Oct. 14, 1919.

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To all whom it may concern:

Be it known that I, LESLIE MARSH PERROTT, subject of the King of Great Britain, residing at 243 Collins street, Melbourne, in the State of Victoria, Commonwealth of Australia, architect, have invented certain new and useful Improvements in Reinforcing Members of Concrete Building Constructions, of which the following is a specification.

This invention relates to improvements in the reinforcing members of concrete building constructions and refers especially to combined spacing and connecting devices for the reinforcing frames adaptable for the walls of concrete buildings and the like and which are erected prior to the placing in position of the molds or forms for the concrete.

It is customary to form the reinforcing frames of concrete constructions of a number of main vertical columns having a number of horizontal members which are secured to each other by keys, bolts or other approved means, the said horizontal members being arranged to support vertical wires, rods or netting.

The object of the present invention is to provide means whereby a plurality of main vertical reinforcing bars can be secured parallel to each other in groups forming vertical columns the said means for securing the said vertical members also accommodating the ends of horizontal reinforcing bars in such a manner that they can be easily and quickly secured at right angles to the main vertical bars forming a joint which will not obstruct the pouring of the concrete or necessitate the ramming of the same to insure it binding effectually around the reinforcing members.

I accomplish the above mentioned object by providing a combined spacing and connecting device or clip which comprises a band or flat bar metal having loops formed therein to embrace the main vertical bars and hold them at equidistances apart and having two or more loop shaped members secured thereto for engaging shaped ends formed on the horizontal reinforcing bars.

More particularly the combined spacing and connecting device or clip comprises a rectangular shaped band of wrought bar iron or steel having loops formed at each corner which are adapted to fit tightly around the vertical main bars. The sides of the band are provided with upwardly opening recesses or sockets which are adapted to accommodate loop shaped ends of the horizontal members which are adapted to receive correspondingly shaped ends formed on the horizontal bars and the said bars are supported on the bottom of the upwardly opening recesses formed in the sides of the band.

In order that the invention may be readily understood reference will now be had to the accompanying sheet of explanatory drawings, wherein—

Figure 1 is a view in perspective of a concrete wall in course of erection and reinforced with bars secured together by combined spacing and connecting devices constructed in accordance with the present invention.

Fig. 2 is a view in perspective of a combined spacing and connecting device.

Fig. 3 is a view in perspective of the band portion of the combined spacing and connecting device.

Fig. 4 is a view in perspective of the loop shaped members for attachment to the band, one member being shown in full lines and three in broken lines.

Fig. 5 is a view in perspective of the end portion of a horizontal bar.

Fig. 6 is a view in plan, showing a spacing device for supporting the boards for molding the concrete and hereinafter is fully described.

In these drawings the reference letter *a* designates the rectangular band which is formed by bending and riveting the ends of a piece of flat bar metal. The corner parts of the band are formed with loops *b* which are shaped by disks to fit tightly around the main vertical bars *c*. The ends of the vertical bars are made slightly tapered to permit of them entering the loops more or less readily and when the band is driven into position it is retained in place by the frictional grip of the loops on the said bars. The sides of the band *a* midway between the loops *b* are formed with upwardly opening recesses *d* which are approximately one third the depth of the said band. The said recesses *d* are adapted to accommodate the neck portions *d'* of rectangular loop shaped members *e* of flat bar metal having outwardly bent end portions *f* which are secured by rivets *g* or the like to the outside of the said band.

The rectangular loop shaped members *e* extend inwardly from the sides of the band and their contiguous portions are riveted together to insure rigidity of construction. The neck of the loop shaped members *e* are made just sufficiently wide to permit of the ends of the horizontal bars *h* passing freely therebetween and the ends of the said bars *h* are formed with loops *i* which fit snugly into the loop shaped members *e*.

The horizontal bars preferably are formed of angle iron and part of the horizontal flange at each end is removed to permit of the extensions of the vertical flange being formed into loops *i*. When the shaped ends of the horizontal bars *h* are inserted in the loop shaped members *e* they are supported on the bottom of the recesses *d* in the band *a* and the ends of the horizontal flanges abut against the sides of the said band. The horizontal bars *h* are formed with a series of holes *j* through which may be threaded a plurality of light reinforcing wires *k* or through which wires may be passed to securely fasten wire netting (not shown) or the like to the main reinforcing bars.

In the foregoing description I have described the band *a*, the loop shaped members *e* and the loops on the ends of the horizontal bars as being rectangular in shape but it will be obvious that these parts may without difficulty be made circular or be given any other preferred shape without departing from the spirit and scope of the invention.

The bottom ends of the main vertical bars *c* can be turned outwardly and riveted to cross plates *l* to form a base for supporting the said vertical bars in an upright position on a foundation *m* when the reinforcing frame is being erected.

The boards *n* forming the mold for shaping the concrete walls are secured to the vertical members in such a way that each section of concrete will lie directly above the section previously poured and the walls will thereby be formed quite vertical and smooth.

The said boards may be of any approved depth and their lower edges are clamped by means of bolts *o* to the upper edges of the previously poured and partially set section of concrete. The upper edges of the boards *n* are spaced apart by means of spacing bars *p* which are shaped to partially embrace one or more of the main vertical bars and in order to insure the boards remaining in their set position the spacing bars *p* are secured to the said bars by means of a clamping plate *q* and bolt *r*. The clamping plate *q* is furnished with recesses which partially embrace the vertical bars *c* and the said bars are gripped tightly between the spacing bar and the clamping plate *q* by screwing up a winged nut *s* on the bolt *r*. The ends of the spacing bar are provided with screwed extensions which pass through holes in the boards *n* and are fitted with nuts *t*.

When the section of concrete last poured has set or partially set the bolts *o* may be removed and the winged nuts *s* unscrewed sufficiently to permit the boards to be moved upwardly into postion for pouring the next section.

A combined spacing and connecting device constructed as hereinbefore described may be placed on two, three or four vertical bars to form a column and it may be arranged to receive and hold the ends of two, three or four horizontal bars placed in line with or at right angles to each other.

The upper ends of the vertical bars may be arranged to project beyond the top of the concrete wall and to pass through holes formed in a "top plate" *u* to which the roofing rafters are secured in the ordinary way.

The invention while being particularly adaptable for spacing and connecting the reinforcing members in concrete building constructions will be found equally efficient for spacing and connecting the reinforcing members employed in forming concrete bridges and other similar constructions.

I claim:—

1. A combined spacing and connecting device for the main vertical and horizontal bars of a frame for reinforcing concrete building constructions, comprising a band fitting around and frictionally engaging two or more vertical rods, and coöperative interengaging means carried within the band and at the ends of the horizontal bars for connecting the horizontal bars to the band.

2. A combined spacing and connecting device for the main vertical and horizontal bars of a frame for reinforcing concrete building constructions, comprising a rectangular band fitting around and frictionally engaging four vertical rods, and socket members carried within the band at the corners thereof for engaging shaped ends formed on the horizontal reinforcing bars.

3. A combined spacing and connecting device for the main vertical and horizontal bars of a frame for reinforcing concrete building constructions, comprising a band having rounded corners, loops formed on the inner faces of the corners for frictionally engaging two or more vertical bars, and loop shaped members fitted to the said band for engaging shaped ends on the horizontal reinforcing bars.

4. A combined spacing and connecting device for the main vertical and horizontal bars of a frame for reinforcing concrete building constructions comprising a band having loops formed therein at spaced intervals to frictionally engage two or more vertical bars and having suitable spaced recesses therein, and loop shaped members

having their neck portions fitted in the recesses in the said band and shaped ends formed on the horizontal reinforcing bars engaged in the recesses.

5. A combined spacing and connecting device for the main vertical and horizontal bars of a frame for reinforcing concrete building constructions, comprising a band having loops for frictionally engaging two or more vertical bars, recesses in the sides of the band, loop shaped members having narrow neck portions fitting into the said recesses, and outwardly turned ends on the loop shaped members riveted to the sides of the said band.

6. In a frame for reinforcing concrete building constructions the combination with a plurality of vertical and horizontal bars of, a band fitting around and having loops for frictionally engaging two or more vertical bars, loop shaped members fitted to the band, and shaped ends on the horizontal bars adapted to fit snugly into the loop shaped members.

7. In a frame for reinforcing concrete building constructions the combination with a plurality of main vertical and horizontal bars of, a band fitting around and having loops frictionally engaging two or more vertical bars, recesses in the sides of the bands, loop shaped members fitted to the band and having narrow neck portions engaged by the recesses therein, and shaped ends on the horizontal bars adapted to fit snugly into the loop shaped members and rest upon the bottom of the recesses in the sides of the said band.

8. In a frame for reinforcing concrete building constructions the combination with a plurality of vertical and horizontal main bars of, a band fitting around and having loops frictionally engaging two or more vertical bars, means on the said band for engaging shaped ends formed on the horizontal bars, a spacing bar shaped to partly embrace two or more vertical bars, a clamping plate shaped to partly embrace the opposite sides of the vertical bars, a bolt for securely fastening the spacing bar and clamping plate to the vertical rods, screwed extensions on the ends of the spacing bar passing through boards for molding the concrete, and nuts on the screwed extensions for fastening the said boards to the spacing bar.

9. In a frame for reinforcing concrete building constructions the combination with a plurality of vertical and horizontal main reinforcing bars of, a band fitting around and having loops frictionally engaging two or more vertical bars, recesses in the sides of the band, loop shaped members fitted to the band and having narrow neck portions engaged by the recesses therein, shaped ends on the horizontal bars adapted to fit snugly into the loop shaped members and rest upon the bottom of the said recesses, a spacing bar and clamping plate slidably engaging a pair of vertical bars, a bolt for securely fastening the spacing bar and clamping plate to the said pair of bars, screwed extensions on the ends of the spacing bar adapted to pass through boards for molding the concrete poured around the frame, and means for fastening the board to the said screwed extensions.

In testimony whereof I have affixed my signature in the presence of two witnesses.

LESLIE MARSH PERROTT.

Witnesses:
P. M. BORMERUP,
WILLIAM A. ASHTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."