No. 637,506. Patented Nov. 21, 1899.

D. FRIES.

LOCK JOINT FOR IRON CONSTRUCTIONS.

(Application filed Apr. 12, 1899.)

(No Model.)

Fig. 1.

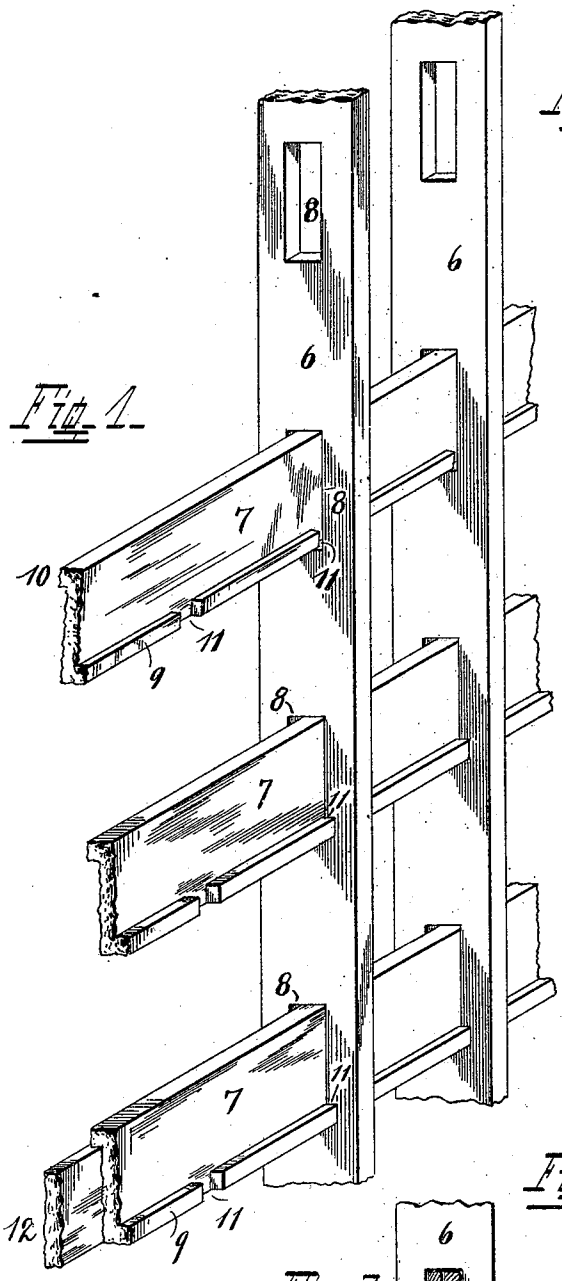


Fig. 2.

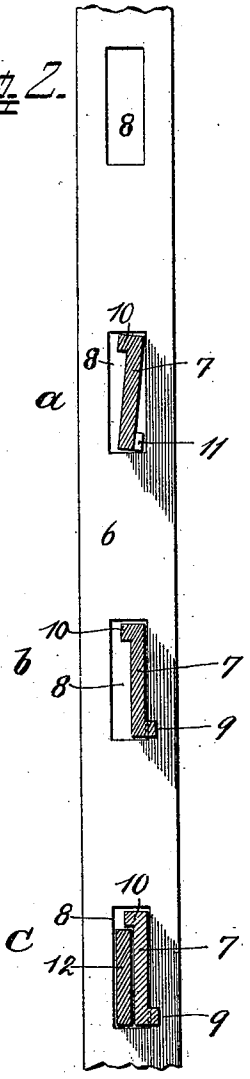


Fig. 3.

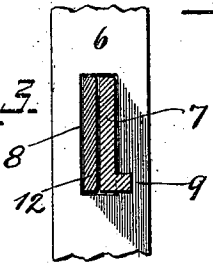
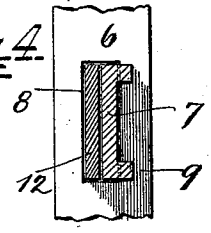


Fig. 4.



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UNITED STATES PATENT OFFICE.

DANIEL FRIES, OF CINCINNATI, OHIO.

LOCK-JOINT FOR IRON CONSTRUCTIONS.

SPECIFICATION forming part of Letters Patent No. 637,506, dated November 21, 1899.

Application filed April 12, 1899. Serial No. 712,701. (No model.)

To all whom it may concern:

Be it known that I, DANIEL FRIES, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented a new and useful Lock-Joint for Iron Constructions; and I do declare that the following is a clear, full, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference characters marked thereon, which form a part of this specification.

This invention relates to iron structures such as occur in architectural iron-work, construction of buildings, bridges, jailwork, fences, &c., and particularly to that part of the construction which involves a joint for connecting at an angle two members of an iron structure and where such members are in shape of rods, bars, or rails, &c.

The object of my invention is to provide an improved lock-joint whereby two members of the kind stated and to be so connected hold each other in place without the aid of bolts, screws, or rivets, &c.

In the following specification, and particularly pointed out in the claims at the end thereof, is found a full description of my invention, together with its parts and manner of construction, all of which are also illustrated in the accompanying drawings, in which—

Figure 1 shows in a perspective view a number of bars about to be connected by means of my improved joint, the latter being also shown completed. Fig. 2 is a vertical section of Fig. 1. Figs. 3 and 4, in views similar to the preceding one, show modified constructions of my joint.

The members to be connected at an angle are shown as flat bars, (designated by numerals 6 and 7,) and in general the connection may be stated to be in this way, that one bar receives the other one within an opening in it and wherein it is held in a manner that neither bar can be moved on the other. For such purpose bar 6 is provided with an opening 8, which is intended to receive bar 7. This latter is shaped as shown—that is, it has short flanges 9 and 10 projecting from its edges in opposite directions. Opening 8 is of sufficient size to be capable of receiving bar 7, with its flanges, when in a slightly-tilted position and as shown at *a* in Fig. 2. One of the flanges—9, for instance—has a notch 11 cut into it, which is of a depth to bring its bottom or deepest part in line with the lateral surface of said bar and of a width which enables it to receive the thickness of bar 6. Bar 7 is moved onward through opening 8 until one of the notches in its flange 9 arrives in a position opposite bar 6, after which it is straightened out and returned to an upright position—that is, to one parallel to the sides of opening 8 and as shown at *b* of the drawings. The movement of bar 7 to this position causes notch 11 to receive part of bar 6, whereby the position of the former bar becomes fixed longitudinally. The engagement of the notch in bar 7 with bar 6 is maintained by a key-bar 12, inserted beside it and filling the unoccupied part of opening 8, as shown at *c*. It will now be seen that bars 6 and 7 are locked to each other without the use of bolts, rivets, or screws and in a manner which prevents either one to move or leave its position with reference to the other. This condition prevails as long as key-bar 12 remains in position, which is readily accomplished, since it only needs to be secured against displacement in an endwise direction. Any suitable construction may be used to thus secure bar 12. Flange 10 covers the interstice between the two flat sides of bar 7 and key-bar 12.

In the modifications shown in Figs. 3 and 4 there are no flanges projecting from bar 7 in opposite directions and as a consequence it need not be tilted for introduction into opening 8. The width of the latter must, however, be at least equal to the thickness of bar 7 combined with the extent of projection of the flanges. In Fig. 4 bar 7 consists of a shallow channel-bar having two flanges projecting in the same direction, each of which must be notched.

The construction and formation of this joint as explained are of course repeated as often as occasion requires it in a certain structure.

Having described my invention, what I desire to protect by Letters Patent is as follows:

1. In a joint for connecting bars at an angle, the combination of a bar having a flange projecting therefrom with a notch provided

therein, a bar disposed at an angle to the bar first mentioned and having an opening adapted to receive this latter endwise, such opening being larger than the flanged bar, the excess being at least equal to the depth of the notch of the flange, which notch is fitted to receive the other bar and a key-bar of a size sufficient to fill out the unoccupied part of the opening in the one bar when this latter is engaged by the notch of the flanged bar.

2. In a joint for connecting bars at an angle, the combination of a bar 7 having a flange 9 provided with a notch 11, a bar 6 having an opening 8 adapted to receive bar 7, the notch in the flange of which is adapted to engage bar 6 and an additional bar 12 fitted to fill out the unoccupied part of opening 8, when notch 11 is in engagement with bar 6.

3. In a joint for connecting bars at an angle, the combination of a bar having an opening, two bars adapted to fill out this opening when occupying the same side by side and flanges projecting outwardly from one of these bars within the opening and to either side of the latter.

4. In a joint for connecting bars at an angle, the combination of a bar 6, having an opening 8, a flat bar 7, having flanges 9 and 10 projecting therefrom in opposite directions and adapted to occupy part of opening 8, flange 9 being notched to receive part of bar 6 and a bar 12 fitted to occupy the balance of opening 8, and below flange 10, which latter covers the interstice between the two bars occupying opening 8.

In testimony whereof I hereunto set my hand, this 10th day of April, 1899, in presence of two witnesses.

DANIEL FRIES.

Witnesses:
C. SPENGEL,
FRED GSTREIN.