

Connecting construction for pipes, e.g. scaffolding

The invention relates to a connecting construction for pipes and other elongate members, in particular for application with scaffolding and such like, more particularly a construction in which one pipe end has been deformed to define two opposing wall parts with respective slots for receiving a key or a similar connecting element whereby the relevant pipe end can be secured to another pipe.

Such a connecting construction is known from DE-A-3407425. With this known construction the end of the pipe to be connected with a vertical extending pipe is pressed flat; the walls lying closest to each other have slots and recesses and in the walls lying the furthest apart have slots. Further, the vertical pipe has to be provided with flanges, which can cooperate with the deformed end of the other pipe. The edges of certain parts of the deformed pipe end are flanged inwards and welded together to make the end sufficiently strong.

Such deformation is complex and thus expensive. Further, it is hard for such a connection to receive torsional stresses, occurring around the vertical axis, without extra struts being fitted. Such torsional stresses occur as a result of the wind or by treading the scaffolding or by pouring concrete on a concrete encasing supported by the scaffolding.

It would therefore be desirable to overcome these difficulties and to provide a connecting construction of the abovementioned type which is simpler in construction and thereby cheaper to manufacture and at the same time offers more

resistance to occurring loads.

The present invention provides a connecting construction comprising first and second elongate members which are to be connected together, the first member being provided with a plate which is substantially at right angles to the longitudinal centre line of the first member and which has at least one leg projecting away from the first member and having at least one slot, one end portion of the second member being U-shaped in transverse cross section, the opposite limbs of the U-shaped end portion having respective slots for receiving a connecting element which also passes through the said one slot in the said one leg of the plate.

The invention, in one embodiment, provides a connecting construction in which two pipes are to be connected with each other and a vertically extending pipe is provided with a cruciform or cross-shaped plate, which is substantially at right angles to the axis of the pipe and at least one slit or slot having been provided in each of the legs projecting outside the pipe, while the end of the other pipe has been made U-shaped and the _____

opposing limbs of the U-shaped part have been provided with slots or slits for receiving a key or other connecting element which likewise can be led through the slot in one of the legs of the cross-shaped plate.

5 Owing to this, manufacturing of the pipe ends and achievement of the connection between two pipe ends is simple, while a tight connection is obtainable.

Achievement of the connection can be further simplified when the thickness of the cross-shaped plate is substantially smaller than the distance between the limbs of the U-shaped part.

By this, it is also prevented that the end edge of the U-shaped pipe part comes into contact with any welded joint with which the cross-shaped plate has been secured to the pipe concerned.

In particular, the possibility is present to provide each leg of the cross-shaped plate with two mutually parallel extending slots at both sides of a plane running through the axis of the pipe.

20 To one leg of the cross-shaped plate being mounted to the vertical pipe, then, both a horizontal pipe and a diagonal extending pipe can be connected.

To achieve a best possible transmission of forces between the various parts, it can be provided for, that the cross-shaped plate, the place of mounting thereof on the pipe concerned and the deformation of the end of the other pipe are arranged in such a way that the centre lines of both pipes connected to each other are substantially in one plane.

30 Further it can be provided for, that the slits in the cross-shaped plate and in the U-shaped pipe end have been provided in such a way that the U-shaped pipe end by the key being mounted into it (or other connecting element) is pressed against a part of the horizontal plate or of the pipe connected therewith both in vertical and in horizontal direction. Owing to this, a resistance against bending in two directions can be obtained.

The end part of each leg of the cross-shaped plate can be deflected out of the plane over a certain angle and

in such a direction that the end edge of this end part is at a distance from the wall part of the pipe which rests on the leg concerned.

Because of this, an optimal wedging effect of the key
5 or other connecting element can be obtained. Moreover, a space is created in which a part of the key is held, that stays behind in one of the slots of the U-shaped part of the relevant pipe end and has to be fitted into the other two slots on achievement of a connection, so that the key can
10 not get lost.

When one talks of a key, any other connecting element can be understood by this, that can perform the same function.

The invention is further explained with the help of an
15 embodiment, depicted in the drawings, wherein:

Fig. 1 shows a plan view of a connecting construction according to the invention;

Fig. 2 shows a side view of the construction of fig. 1; and

20 Fig. 3 shows a sectional view of the construction according to the line III-III of fig. 2.

With the connecting construction represented in the drawing a vertical pipe or post 1 is connected to a horizontal pipe 2.

25 To the pipe 1 a substantially plane, cross-shaped plate 3 is connected by weld seams 4. The pipe extends through an opening 5 in the plate 3.

The plate 3 comprises a central part 6, being connected to the pipe 1, and four legs 7, with in each of them two
30 slots 8. The end part 9 of each leg 7 is deflected downward by an angle β , in such a way that the end edge 10 thereof is under the horizontal top plane 11 of the plate 3.

The end 12 of a pipe 2 is deformed in such a way that it is substantially U-shaped. This U-shaped part is thereby
35 double-walled. The opposite limbs 13 of the U-shaped part 12 are provided with slots 14, 15 respectively.

The distance a between the limbs 13 is considerably larger than the thickness d of the plate 3 so that also the bottom edge 16 of the end part 9 of a leg 7 remains free of

the lower limb 13 of the end 12 of the pipe 2.

After the pipe end 12 has been laid onto a leg 7 a key 17 is put through the slots 14, 8 and 15 so that the pipe end 12 is pressed against the pipe 1 and/or a part of the plate 3. As seen in fig. 2 the left side edge 18 of the key 17 will lie against the pipe end 12 and that in particular against the left end edges of the slots 14 and 15 and the right side edge 19 of the key 17 will lie against the leg 7 namely against the right end edge of the slot 8. Through this, a tight connection between the pipes 1 and 2 is obtained.

The bottom end of the key 17 can be provided with a projecting part 20 and the width of the slots 8 and 15 can be so large that this part 20 can move through these slots 15 whereas the width of the slot 14 is smaller, so that the part 20 of the key 17 can not pass through. The key 17 will thus remain coupled to the pipe 2 and can not get lost.

As appears in particular from fig. 1 the central lines 21 and 22 of the pipes 1 and 2 respectively lie in same plane 23, for obtaining a best possible transmission of force between the pipes.

While to the one part of a leg 7 of the cross-shaped plate 3 a horizontal pipe 2 has been coupled, the other part of the same leg can be connected to for example a strut.

It will be clear that only one possible embodiment of a connecting construction according to the invention is illustrated in the drawings and is described above and that many modifications can be made without falling beyond the scope of the invention as defined in the following claims.



6.

claims

1. A connecting construction comprising first and second elongate members which are to be connected together, the first member being provided with a plate which is substantially at right angles to the longitudinal centre line of the first member and which has at least one leg projecting away from the first member and having at least one slot, one end portion of the second member being U-shaped in transverse cross section, the opposite limbs of the U-shaped end portion having respective slots for receiving a connecting element which also passes through the said one slot in the said one leg of the plate.

2. A connecting construction as claimed in claim 1, in which the thickness of the plate is small relative to the distance between the limbs of the U-shaped end portion.

3. A connecting construction as claimed in claim 1 or 2, in which the said one leg of the plate has two mutually parallel extending slots lying at opposite sides of a plane containing the longitudinal centre line of the first member.

4. A connecting construction as claimed in any preceding claim, in which the plate, the place of its mounting on the first member, and the U-shaped end portion of the second member are designed in such a way that the longitudinal centre lines of both members connected to each other lie substantially in one plane.

5. A connecting construction as claimed in any preceding claim, in which the slots are provided in such a way that the U-shaped end portion is pressed against a part of the plate



and/or the first member, both longitudinally and transversely of the first member, by the connecting element when mounted on the slots.

6. A connecting construction as claimed in any preceding claim, in which the free end part of the said one leg is deflected from the plane of the plate in such a direction that the end edge of this end part is at a distance from the limb which rests on the said leg.

7. A connecting construction as claimed in any preceding claim, in which the slot in one limb of the U-shape portion is narrower than the slot in the leg and the slot in the other limb.

8. A connecting construction as claimed in claim 7, in which the connecting element has a projecting part, the width of the slot in the leg shaped plate and of the slot in the said other limb is so large that this projecting part can be passed therethrough, and the width of the slot in the said one leg is so small that the projecting part can not pass through it.

9. A connecting construction as claimed in any preceding claim, in which the plate is cruciform, having four said legs.

10. A connecting construction as claimed in any preceding claim, in which the members are pipes, the end of the second pipe having been deformed to a U-shape.

11. A connecting construction substantially as described with reference to, and as shown in, the accompanying drawings.

12. Scaffolding including a connecting construction according to any preceding claim.
