

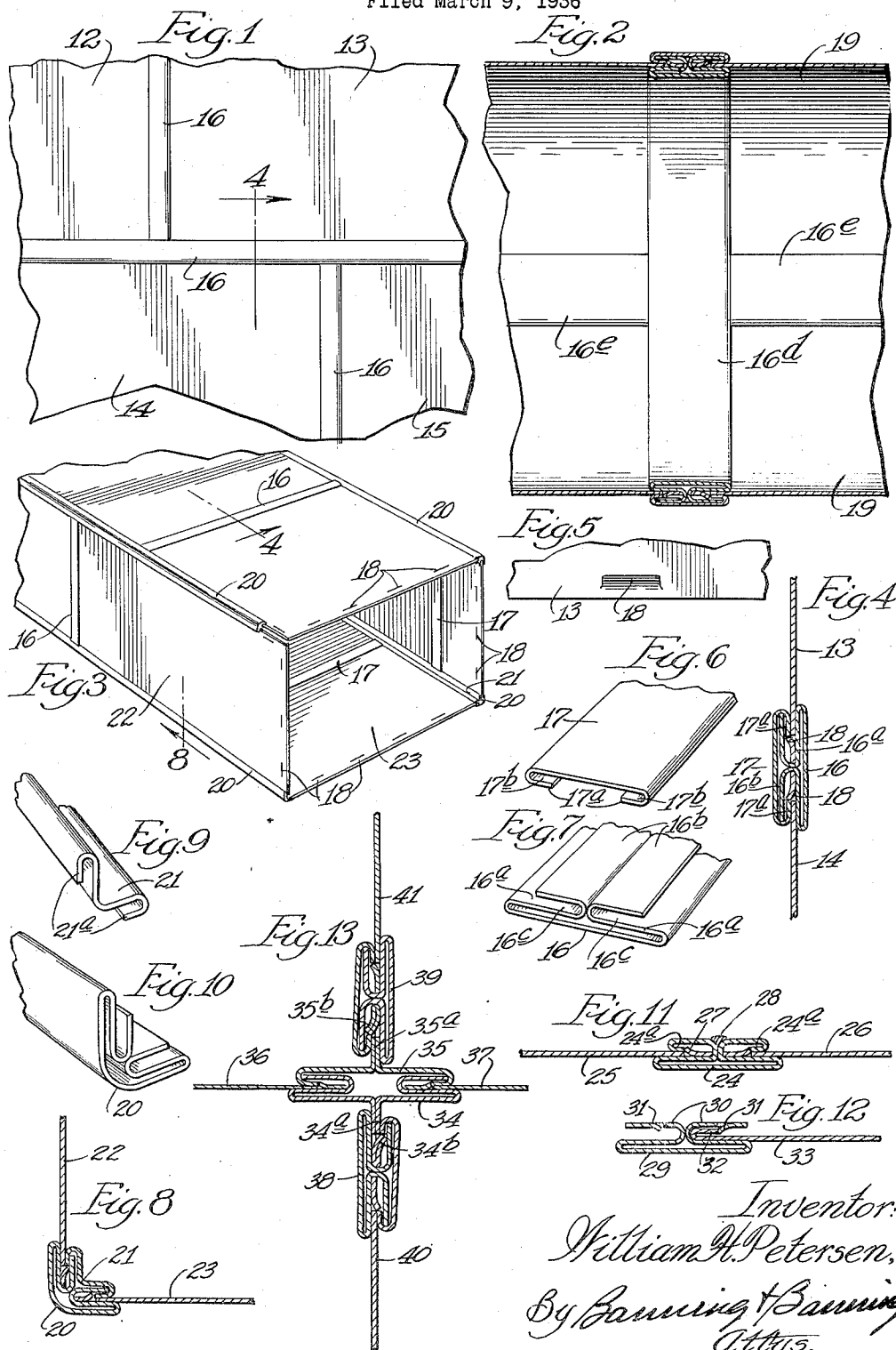
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METAL JOINT FOR SHEETS OR PIPE

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METAL JOINT FOR SHEETS OR PIPE

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2 Claims. (Cl. 189—36)

An object of this invention is to provide a simple, efficient and inexpensive means for joining a sheet of metal to another sheet where the sheets are either plain or curved.

Another object is to provide a similar corner joint for use in metal tubes of rectangular cross section, metal furniture, cabinets, metal radiator covers, metal buildings, and the like.

Another object is to provide such a joint or lock which can be assembled or erected by unskilled labor and with a minimum of tools.

These and other objects, as will hereinafter appear are accomplished by this invention which is fully described in the following specification and shown in the accompanying drawing, in which—

Figure 1 is a partial front elevation showing four sheets joined in accordance with this invention;

Fig. 2 is a partial longitudinal section of a round tube made up of two sections of sheet metal bent into tubular form and joined in accordance with this invention;

Fig. 3 is a partial perspective of a tube rectangular cross section similarly assembled;

Fig. 4 is an enlarged partial section on the line 4 of Figs. 1, 2 or 3;

Fig. 5 is a front elevation showing a portion of a flat sheet with an upwardly struck tongue parallel to and near one edge;

Figs. 6 and 7 are perspective views of two sheet metal cleats having complementary portions for securing to each other and shown assembled in Fig. 4;

Fig. 8 is a partial enlarged section on the line 8 of Fig. 3;

Figs. 9 and 10 are somewhat enlarged perspective views of metal cleats shown assembled in Fig. 8;

Figs. 11 and 12 are partial transverse sections of modified forms of joints; and

Fig. 13 is a partial transverse section through a cross having still other modifications.

The embodiment illustrated in Fig. 1 comprises a number of rectangular sheets 12, 13, 14, 15, lying in the same plane and secured together by means of metal cleats 16. These cleats are shown enlarged in Fig. 4 and disassembled in Figs. 7 and 8. Referring to Fig. 8, each cleat 16 has return bends 16^a which preferably meet near the center and are bent outwardly forming two parallel edges 16^b which are spaced a short distance 16^c from the portion 16^a.

A second cleat 17 has inwardly turned edges 17^a spaced from the main body so as to form

channels 17^b which are adapted to enclose the parallel edges 16^b. To assemble these two cleats the cleat 17 is forced endwise over the parallel edges 16^b of the cleat 16, as shown in Fig. 4. A space is still left between the portions 17^a and 16^a, and this is adapted to receive the sheets 13, 14 which are preferably driven in from the sides.

In order to lock these sheets in the cleats I have provided inwardly struck tongues 18 (Fig. 6) which are turned so that they face the edges 17^a and spring in back of these edges as they pass them, as is clearly shown in Fig. 4. Thus by forming a number of tongues 18 along one edge, as is shown in Fig. 3, the cleats can readily be assembled thereover, and once assembled cannot be readily disassembled except by drawing the sheet longitudinally through the cleat.

In Fig. 2 is shown a modified form of cleat in which the straight cleat 16 is replaced by a curved cleat 16^d which in cross section is the same as that shown in Fig. 4. In order to make the cleat 16^d flat, cleats 16 and 17 are made of proper length and assembled, after which they are bent into the circular form.

In Fig. 8 is shown a cross section of a corner cleat which is quite similar to the straight cleat of Fig. 4. This consists of an outer cleat member 20 and an inner cleat member 21 which are similar to the cleats of Fig. 4, except that they are adapted to receive metal sheets 22, 23, at an angle to each other (in this case 90°) instead of in the same plane as in Fig. 4. The sheets 22, 23 are provided with upwardly struck tongues which are adapted to pass and engage the edges 21^a (Fig. 9) of the cleat 21.

Thus it will be seen that the rectangular tube of Fig. 3 may be extended indefinitely, using flat metal sheets 22, 23 which in large installations may be previously cut to form the tongues 18. These may be formed in any suitable press, such as a power press, a rotary press, or the tongues may be formed one at a time by means of a hand punch, no accuracy being required in spacing the tongues longitudinally. It will also be observed that a long air duct or the like may be built up into sheets and cleats of odd lengths, but the widths of the sheets must be uniformly maintained except where it is desired to vary the size of the air duct. In order to complete the duct the round sheets and cleats are accurately cut to measure so as to end the air duct at the desired point.

In assembling the tube of Fig. 2, the sheet 19 is bent and having the tongues previously formed therein is assembled on the cleats 16^a.

Two sections of pipe are then secured together by assembling them on the circular cleat 16^d. Thus it will be seen that a very simple and efficient means is provided for securing together sheets and cleats to form ducts, as in Fig. 3, tubes, as in Fig. 2, and a substantially flat side wall, as in Fig. 1. It will also be understood that by making the cleats and sheets of the necessary thickness and strength they may be used for making metal furniture, such as desks, cabinets, refrigerator covers, as well as metal buildings.

It will readily be understood by one skilled in this art that the air duct of Fig. 3 may be given a 90° turn, and that by choosing the angle of the cleats 20, 21, it can be given a 45° turn, or to any desired angle.

In the modified form shown in Fig. 11 a cleat 24 replaces the two cleats 16 and 17 of Fig. 4, the sheets 25, 26 having tongues 27 similar to those of Figs. 4 and 5. In this case the edges of the cleat are turned inwardly to form edges 24^a with which the tongues 27 engage in the same way that the tongues 18 of Fig. 4 engage the edges 17^a of the cleat 17. If desired, the cleats 24 may be soldered at intervals 28 to stiffen the cleat.

In Fig. 12 is shown still another modification of the lock in which a cleat 29 is provided with a return portion 30 in which is inwardly pressed a tongue 31 adapted to engage the folded back edge 32 of a sheet 33. In other words, this is a reversal of the parts of the lock shown in Fig. 11.

In Fig. 13 is shown still another modification of the invention in which four sheets are brought together along a common line. In this case two cleats 34, 35 are formed similar to the cleats 16, 17 except that the backs of these cleats are given additional lateral extensions 34^a, 35^a. These two cleats are assembled as before and are adapted to receive and lock the edges of sheets 36, 37 in the same way that the cleats 16, 17 lock the sheets 13, 14. The extensions 34^a, 35^a, are provided with upstruck tongues 34^b, 35^b, which are adapted to engage cleats 38, 39, each of the latter cleats being like the cleat combination 16, 17 of Fig. 4, and these are adapted to receive and lock sheets 40, 41 in the same way that the cleat assembly 16, 17 holds the sheets 13, 14.

I claim:

1. A joint for assembling and supporting a pair of flat metal sheets in uniform alignment, comprising a cleat in the form of a strip bent flat upon itself to provide oppositely directed channels each having an inner straight sheet edge abutting portion adjoining a pair of closely spaced walls, one of the walls of each channel having an inturned free edge portion lying between the opposed sides of said pair of walls with the inner edge of said free edge portion extending for a substantial distance parallel with and spaced a definite distance from the inner sheet edge abutting portion which joins said pair of walls, and a sheet of metal having one edge portion adapted to fit snugly between the opposed sides of said pair of walls and to abut the adjoining portion thereof, said edge portion of the sheet having one or more struck up tongues having a straight edge portion arranged to abut the edge of said inturned edge portion between said pair of walls when the edge of said sheet is in substantial abutting relation with the straight adjoining portion of said pair of walls.

2. A joint for assembling and supporting a pair of flat metal sheets in desired angular relation, comprising a cleat having a pair of channels, each of said channels directed in said angular relation having an inner straight sheet edge abutting portion adjoining a pair of closely spaced walls, one of the walls of each channel having an inturned free edge portion lying between the opposed sides of said pair of walls with the inner edge of said free edge portion extending for a substantial distance parallel with and spaced a definite distance from the inner sheet edge abutting portion which joins said pair of walls, and a sheet of metal having one edge portion adapted to fit snugly between the opposed sides of said pair of walls and to abut the adjoining portion thereof, said edge portion of the sheet having one or more struck up tongues having a straight edge portion arranged to abut the edge of said inturned edge portion between said pair of walls when the edge of said sheet is in substantial abutting relation with the straight adjoining portion of said pair of walls.

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