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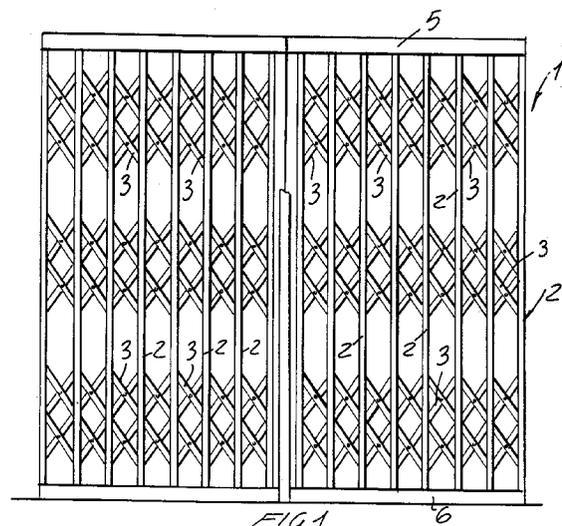
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Collapsible gate with built-in antitheft means and method for making it.

A collapsible gate with a built-in antitheft means comprises a plurality of uprights which, at the ends thereof, are engaged with a guide top rail and a guide bottom rail, the uprights being movably connected by means of scissors crossed rods.

The main feature of the invention is that each of the uprights is formed by a pair of C-shape section members, opposite to one another and coupled by means of connecting pins welded, at the end portions thereof, to the inner surface of the central wall of the C-shape section members, at least a portion of the pins forming an articulation fulcrum or pivot center for the rods.



BACKGROUND OF THE INVENTION

The present invention relates to a collapsible or extensible gate, including built-in anti-theft means, and also relates to a method for making this gate.

As is known, the continuous increase of thefts in apartments, villas and the like has compelled to design and install on window and doors safety means or devices.

In particular, by considering the problem of the door and window frames, there are at present used gates which are generally formed by metal section member uprights which are connected to one another by scissors crossing rods allowing the uprights to be displaced with respect to one another, the uprights being guided, in their displacements, by a top rail and a bottom rail.

In a conventional arrangement, the mentioned uprights are made starting from a pair of C-shape section members which are opposite to one another and connected by pivot pins, engaging in holes formed on a central portion of the section member and upset so as to provide a firm coupling.

With such an arrangement, however, the heads of the rivets project from the section member bodies, and these heads can be easily cut-off by using a chisel and a hammer, thereby providing a poor protection against possible thefts.

Another drawback is that the rivets or pins must be manually engaged in holes preliminarily formed through the section members, which requires a lot of labour since this operation can not be easily automated.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a collapsible or extensible gate, including anti-theft means, for door or window frames in general, which does not include any pins or rivets to be applied by means of mechanical operations and which, as stated, can be easily removed by cutting.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a collapsible gate for window and door frames which can be automatically made, so as to greatly reduce its making cost.

Yet another object of the present invention is to provide such a collapsible gate which, being devoid of any projecting rivet heads, has a very improved aesthetic configuration, while providing a very safe and reliable operation.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a collapsible gate including built-in anti-theft means, for door and window frames

in general, comprising a plurality of uprights engaged at respective end portions thereof with a top guide rail and a bottom guide rail, said uprights being movably connected to one another by crossing scissors rods, characterized in that each of said uprights comprises a pair of C-shape section members, opposite to one another and connected by fixing pin elements which are welded, at respective end portions thereof, to an inner surface of a central portion of the C-shape section members, at least a portion of said pin elements defining an articulation fulcrum for said rods.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic view illustrating a collapsible or extensible gate for window and door frames in general, according to the present invention;

Figure 2 illustrates several types of pin elements which can be used for assembling the subject collapsible gate;

Figure 3 illustrates an automatic apparatus for automatically applying the pin elements to the C-shape section members forming the uprights of the subject collapsible or extensible gate;

Figure 4 illustrates a head assembly for supplying and welding the pin elements;

Figure 5 illustrates an operating step in which the pin elements are applied and welded to a C-shape section member;

Figure 6 illustrates an operating step in which there are assembled the crossing scissors like rods;

Figure 7 illustrates an operating step in which there is assembled a second C-shape section member;

Figure 8 is a cross-sectional view illustrating an upright and clearly showing the pin elements coupling the section members and the connection of the upright sliding trucks with respect to the guide section members;

and

Figure 9 is an exploded view illustrating the connection of the rods to the uprights.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the collapsible or extensible gate, including built-in anti-theft means, for window and door frames in general, according to the present invention,

which has been generally indicated at the reference number 1, comprises, in a known manner, a plurality of uprights 2 which are connected to one another by means of a plurality of connecting rods 3, which are scissors-like pivoted to one another, so as to allow the several uprights to be displaced.

As shown, the uprights 2 are engaged, at their end portions, respectively with a top guide section member 5 and a bottom guide section member 6.

The main feature of the present invention is that each upright is constituted by a pair of C-shape section members, indicated respectively at 10 and 11, which are opposite to one another.

More specifically, the section members 10 and 11 are connected by means of pin elements 20, which are welded to the inner surface of the central portion 12 of each section member, so that these connecting elements do not present outwardly extending projections.

Some of the pivot elements 20, welded to the inside of the section members 10 and 11, are provided for forming the articulation fulcrum region for the middle portion of the rods 3, which, at their end portions, are connected by means of pin elements 21 which are slidably guided inside the C-shape section member.

Moreover, as already stated, at their top end portions, the uprights 2 engage with a top guide rail.

To this end, there is provided a small truck 30, provided with wheels, which can slide inside the section member, the truck being connected to the end portion of the upright by means of one of the welded pin elements 20.

In the method for making the collapsible gate, which is shown in a more detailed way in Figures 3 to 7, there is at first applied one of the section members, for example the section member 10, on the working surface of an automatic machine 40, including an operating head 41 allowing the pin elements 20 to be automatically supplied, which pin elements are arranged, with a very high accuracy, at the inner surface of the central portion 12 of the section member 10.

After having properly located each pin element 20, the head portion of the pin element 20 is welded by means of an electric discharge and, to this end, the pin elements 20, as is shown in Figure 2, will be provided with lugs 20a adapted to facilitate the welding operation.

After having affixed the pin elements 20 on the section member 10, at some of the pin elements there are engaged the rods 3 which, at their end portions, are connected by means of further pin elements 21 which are slidably guided within the C-shape section member.

After having applied the rods and pins, as well as the small trucks, the other section member 11 is applied, by performing, by means of a welding head 45, the welding of the ends of the pin elements 20 facing the section member 11 so as to properly assemble the

uprights, without any projecting portions.

By the disclosed method, it is possible to make, by means of fully automatized operating cycles, a collapsible gate which is very safe against possible thefts, since it is devoid of any projecting pins, and, moreover, has very good aesthetic features.

Another important aspect of the present invention is that the collapsible gate, owing to its fully automatic making method, can be made with a very reduced making cost.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. A collapsible gate including built-in antitheft means, for door and window frames in general, comprising a plurality of uprights engaged at respective end portions thereof with a top guide rail and a bottom guide rail, said uprights being movably connected to one another by crossing scissors rods, characterized in that each of said uprights comprises a pair of C-shape section members, opposite to one another and connected by fixing pin elements which are welded, at respective end portions thereof, to an inner surface of a central portion of the C-shape section members, at least a portion of said pin elements defining an articulation fulcrum for said rods.
2. A collapsible gate, according to Claim 1, characterized in that said pin elements are articulated at a middle position of said rods.
3. A collapsible gate, according to Claims 1 and 2, characterized in that said rods, at the end portions thereof, are articulated to further pin elements which are slidably guided by said section members.
4. A collapsible gate, according to one or more of the preceding claims, characterized in that said pin elements, at their end portions, are provided with lugs adapted to facilitate the butt welding of said pin elements to said section members.
5. A method for making a collapsible gate, provided with antitheft means, according to one or more of the preceding claims, characterized in that said method comprises the steps of applying, by means of an automatic machine, at least a pin element to the inner face of the central portion of a C-shape section member, butt welding the pin

elements on the section member, and connecting to at least one of the pin elements rods articulated at their middle portions and connected, at their other end portions, to further pin elements slidably guided in the C-shape section member and then superimposing a further C-shape section member and butt welding the pin elements at the inner surface of said further C-shape section member.

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- 6. A method, according to Claim 5, characterized in that said method further comprises the step of automatically supplying the pin elements and automatically performing said welding step.

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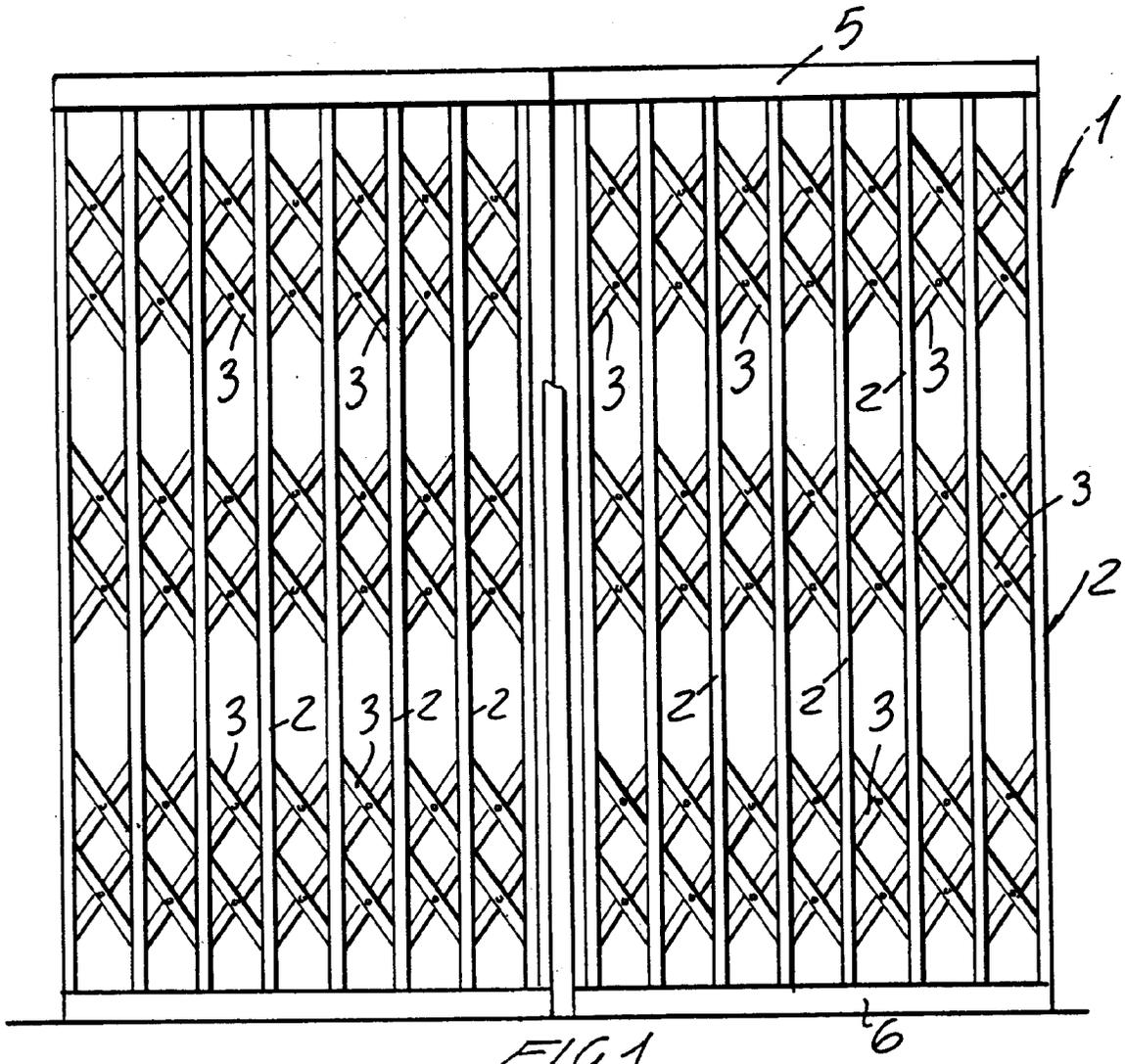
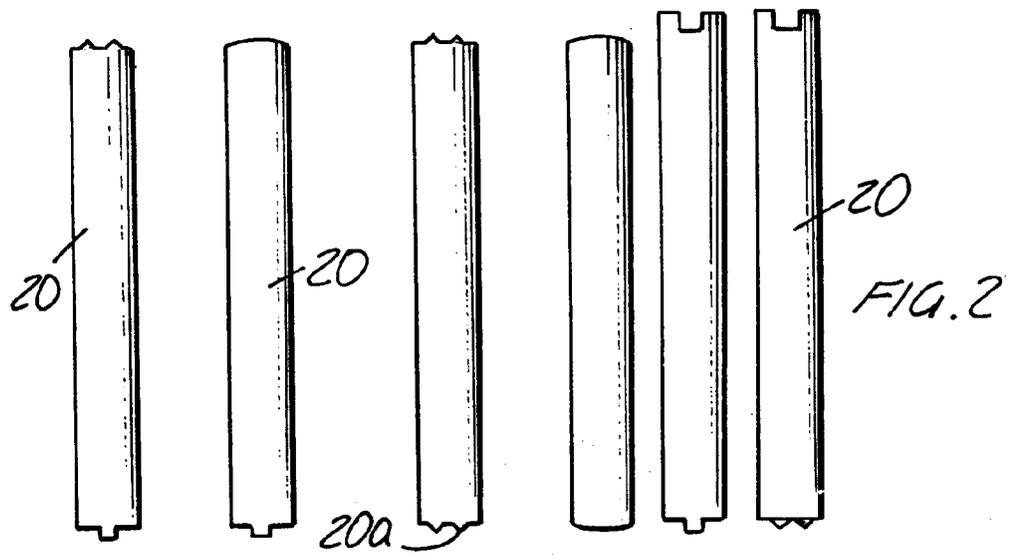


FIG. 1



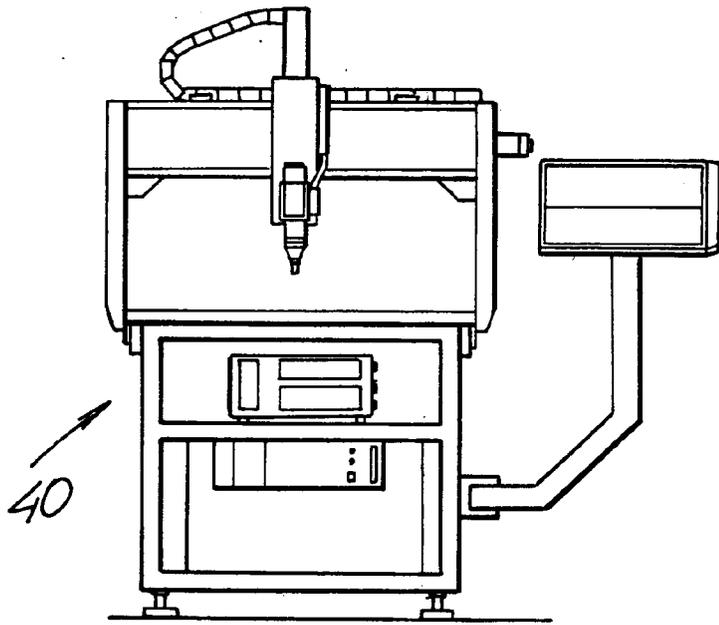
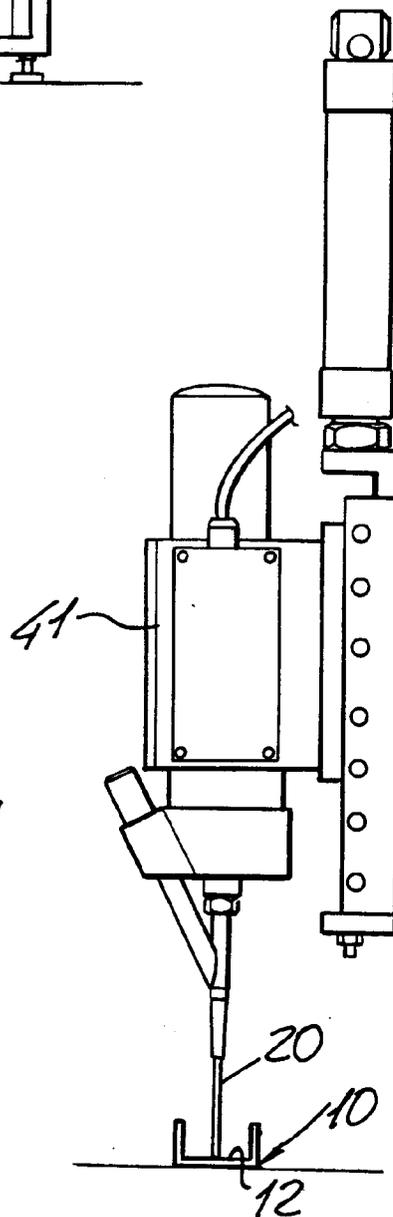
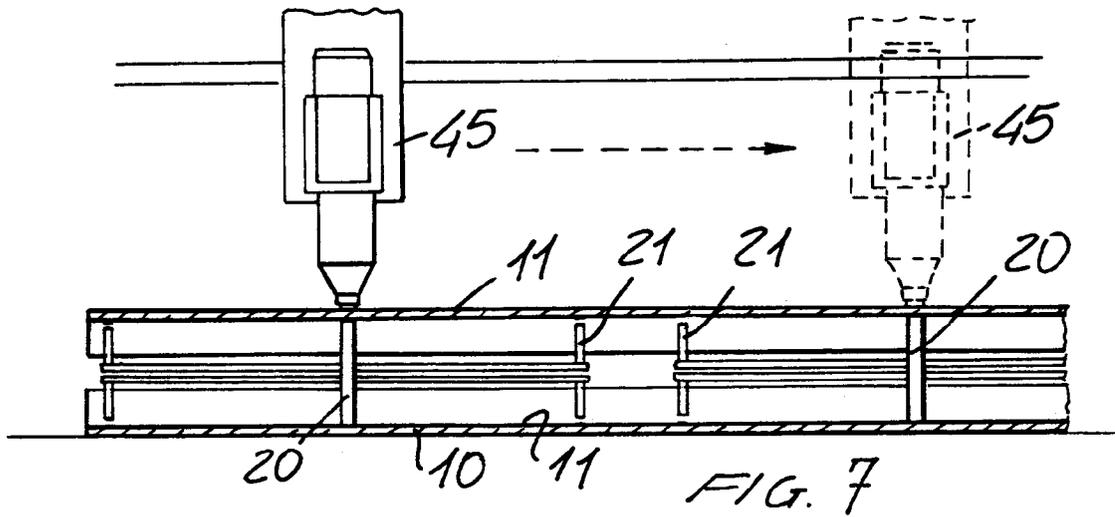
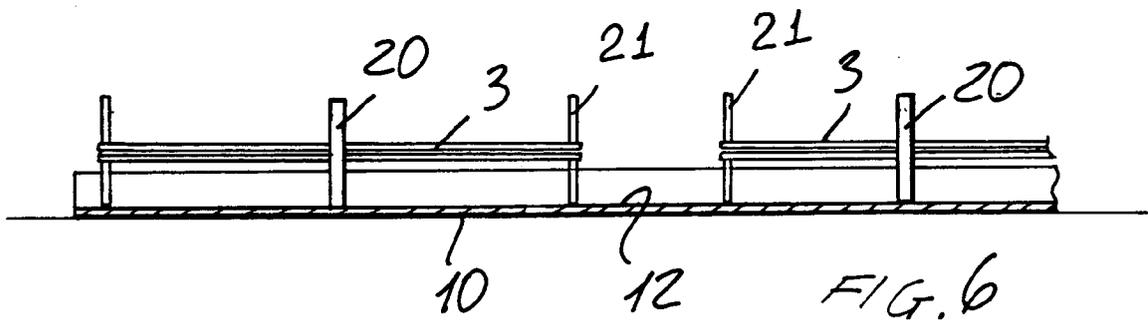
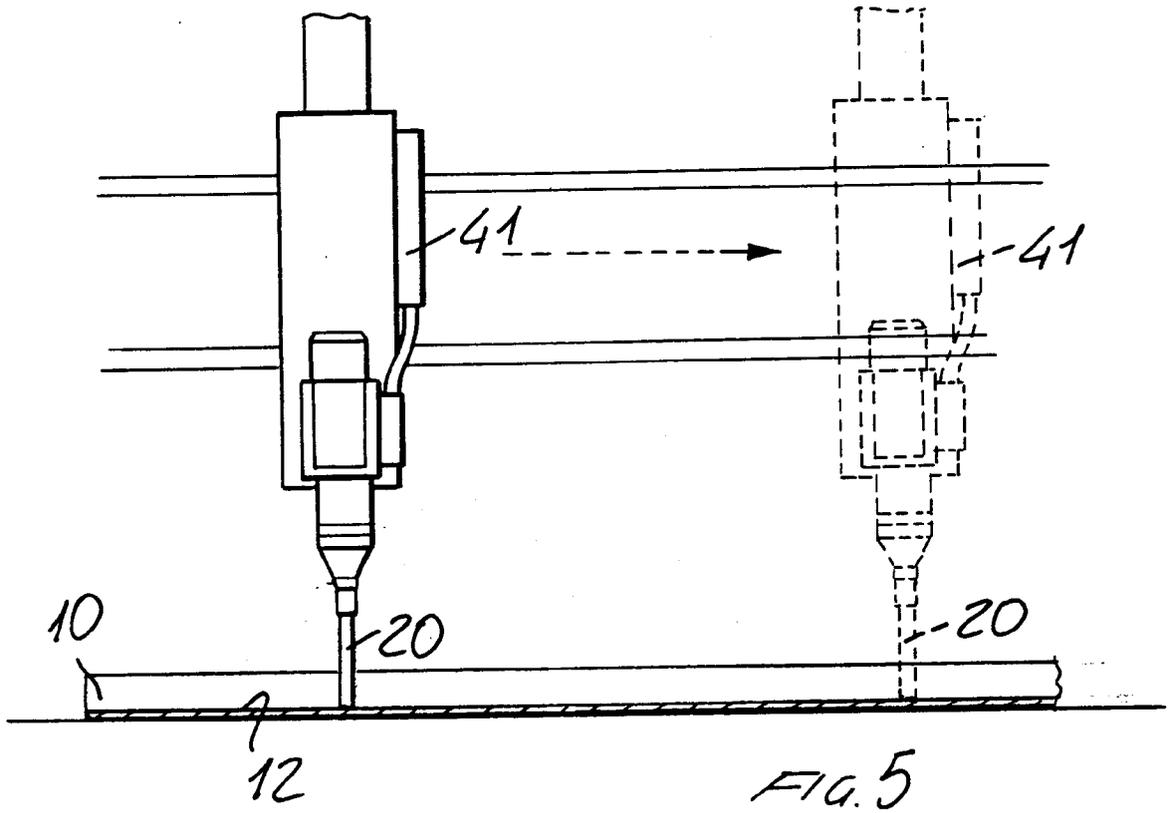


FIG. 3

FIG. 4





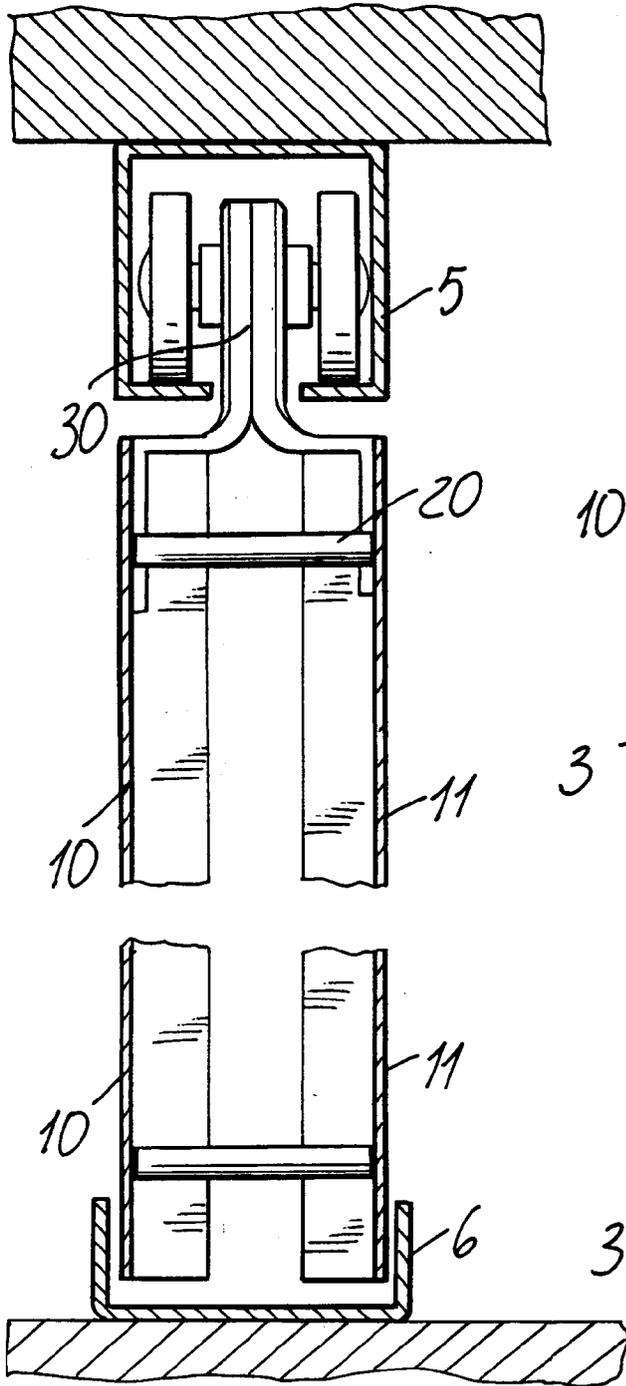


FIG. 8

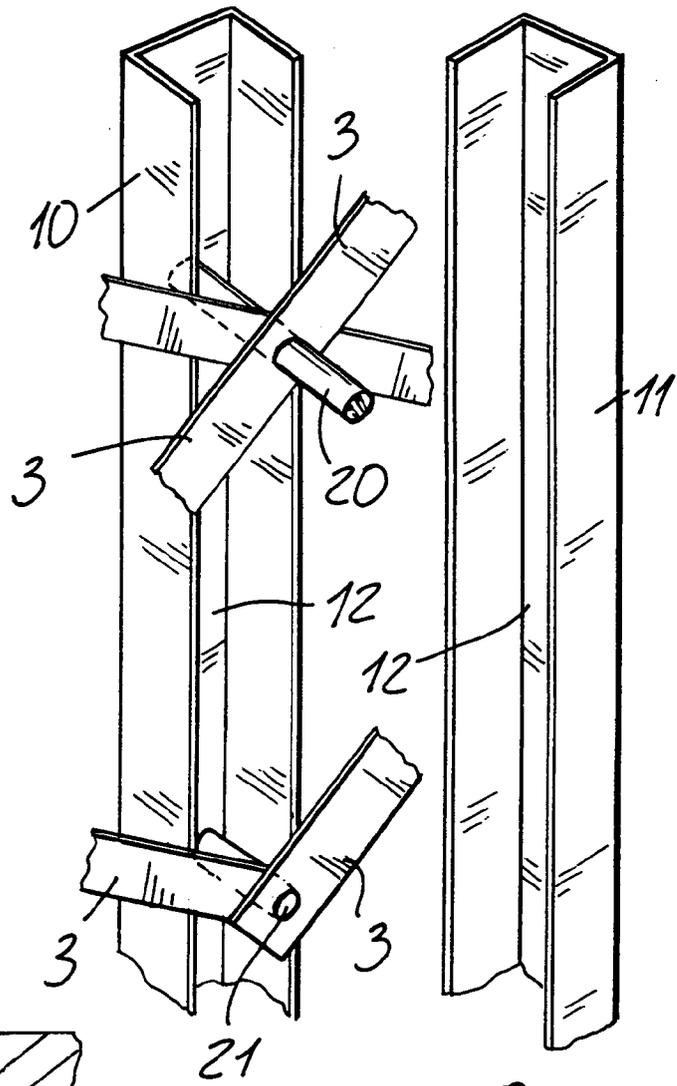


FIG. 9