July 7, 1959 E. K. GEYSER 2,893,522

CURTAIN WALL

Filed Oct. 16, 1956 2 Sheets-Sheet 1

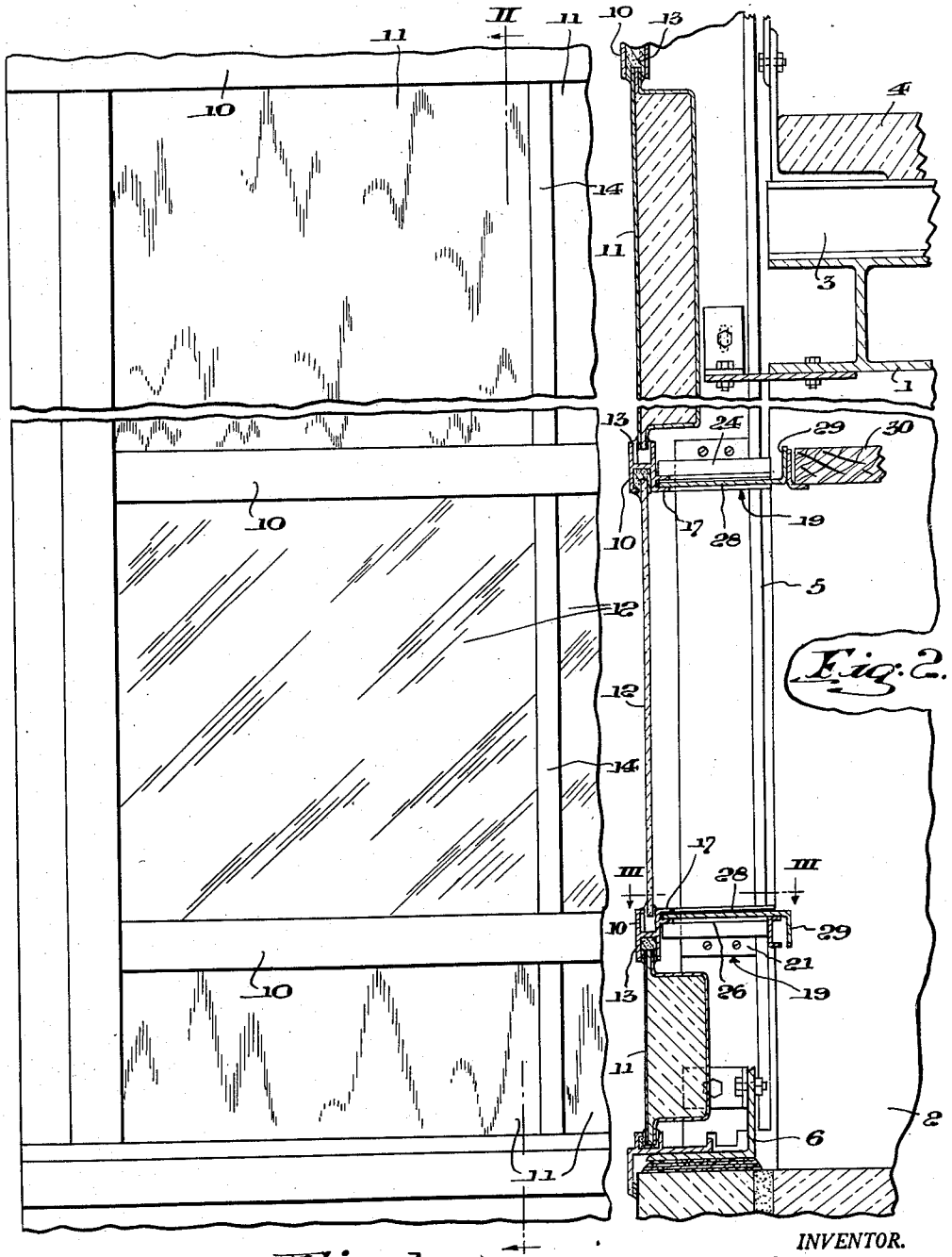


Fig. 2.

Fig. 1.

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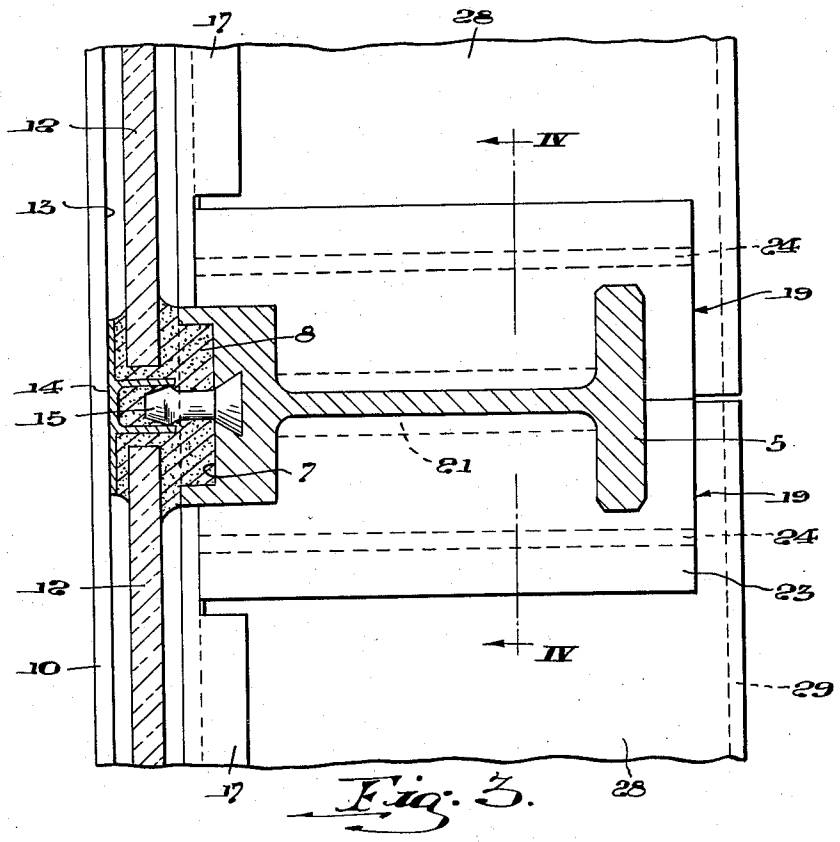


Fig. 3.

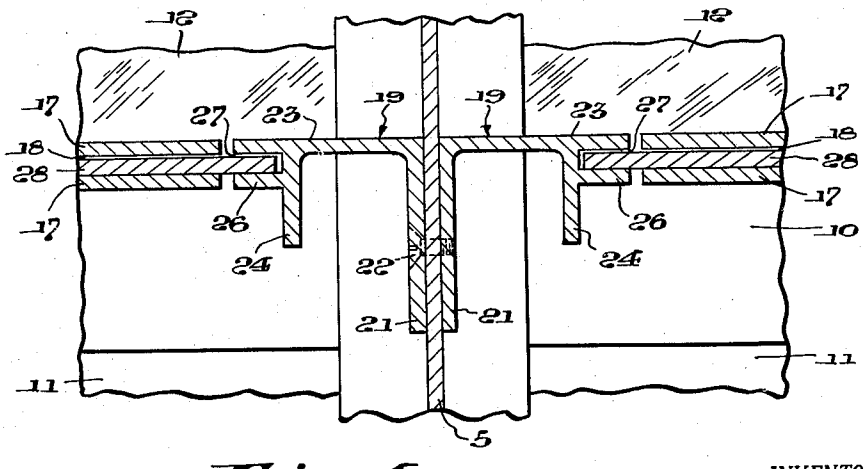


Fig. 4.

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CURTAIN WALL

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1 Claim. (Cl. 189—34)

This invention relates to curtain walls used with the framework of structural steel buildings.

It is common practice to erect a building by constructing a framework of beams and girders which form the skeleton of the building and take the loads. The skeleton then is enclosed by walls that are hung on the outside of the framework. Such walls are called curtain walls because they have nothing to do with supporting the building, but merely enclose it like a curtain. When a curtain wall is formed from metal panels and panes of glass supported by horizontal bars attached to the outside or front of vertical members secured to the outside of the building framework, the spaces between the vertical members above and below the windows should be closed off, for otherwise those spaces would be open from top to bottom of the building. In the past, it has been rather time-consuming and expensive to do the job, because of the difficulty of holding the necessary material in place.

It is among the objects of this invention to provide a curtain wall, in which the spaces between its vertical supporting members can quickly and easily be closed at predetermined levels, and in which the members that are used for that purpose are supported to a large extent by the horizontal bars that support the panels and glass panes of the wall.

In accordance with this invention the vertical panels and glass panes, which form the skin of a building of the curtain wall type, are held in place by horizontal bars that extend across the front of vertical members secured to the outside of the framework of the building. The backs of the horizontal bars at predetermined levels are provided with horizontal ledges. Brackets are secured to the sides of the vertical members and have laterally projecting members at the same levels as the ledges of the bars. These ledges support the ends and front edges of horizontal metal plates spanning the spaces between adjacent vertical members. Thus, a plate may be disposed at the top of each window to close the space between it and the adjacent edge of the ceiling, and another plate may be disposed at the bottom of each window to form a window stool.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a fragmentary outside or front view of my curtain wall;

Fig. 2 is a vertical section taken on the line II—II of Fig. 1;

Fig. 3 is a horizontal section taken on the line III—III of Fig. 2; and

Fig. 4 is a fragmentary vertical section taken on the line IV—IV of Fig. 3.

Referring to Fig. 2 of the drawings, the framework of a building is formed in a well-known manner from steel beams **1** supported by columns **2**. The beams are located at each floor level and at the roof level. Spanning the top beams **1** are the roof joists **3** for supporting the roof insulator **4**, above which is the roof itself. The

building framework is enclosed by a curtain wall which is hung from the beams.

The curtain wall includes laterally spaced vertical members **5**, which are connected in any suitable manner to the outside of the horizontal beams extending along each side of the building. These vertical members extend from top to bottom of the building, or as far as the curtain walls extends. Their lower ends may rest on angles **6** supported by masonry at ground level or above. These vertical members are similar in shape to I-beams, as shown in Fig. 3. That is, each has front and rear flanges joined by an intermediate web. The front flange may be thicker than the rear flange and may be provided in its front surface with a recess **7** for receiving calking compound **8**. Extending across the front of the vertical members at predetermined levels are horizontal bars **10**, which are attached in any suitable manner to the vertical members. The purpose of these bars is to support the metal panels **11** and glass window panes **12** that enclose the steel framework. Preferably, each horizontal bar is provided with upper and lower channels **13** for receiving the panels and glass panes and the calking compound that seals them in place. The side edges of the glass and panels overlap the vertical members, but do not meet. The joint between them is calked and may be covered with a trim strip **14**, which has a pair of rearwardly projecting ribs that frictionally receive the front ends of pins **15** projecting forward from notches in vertical members **5**.

With the wall described thus far, it will be seen that the space between each pair of adjacent vertical members **5** would be open from top to bottom of the building, because the floors and ceilings will not extend out between them. It is the purpose of this invention to provide means for closing that space at certain levels. Accordingly, the horizontal bars **10** at the top and bottom of the windows are each provided with preferably a pair of rearwardly projecting ledges **17** spaced apart vertically to form a horizontal groove **18** between them, as shown in Fig. 4. Also, at the opposite ends of each groove there are brackets **19** secured to the adjoining vertical members **5**. Each bracket is notched or recessed to receive the flanges of the adjoining vertical member so that a vertical portion **21** of the bracket can rest flat against the web of the vertical member, to which it can be connected by screws **22**. The horizontal part **23** of the bracket is provided near its free side edge with a vertical strengthening flange **24** parallel to vertical portion **21**. Projecting horizontally from the outer face of this flange is a ledge **26**. The portion of horizontal part **23** spaced vertically from this ledge forms another ledge, and the space between forms a groove **27** that is located at the same level as groove **18** in the adjoining horizontal bar.

Consequently, there is a front groove and a pair of end grooves between each two vertical members. These grooves receive the front edge and the opposite ends of a horizontal metal plate **28** which spans the space between the opposed brackets **19**. The rear edge of the plate projects behind the brackets and is bent to form a vertical flange **29** that stiffens the plate. Although only the lower ledges are necessary for supporting the plate, the use of upper ledges too is preferred because they cover the edges of the plate and keep it from tilting up, and also because the can serve as lower supporting ledges when the brackets are inverted as shown at the top of the window in Fig. 2. The plate at the top of each window closes the space between the ceiling **30** and the horizontal bar **10** at the same level. The plate at the bottom of the window forms a stool. The space inside the building between the rear flange of the stool and the underlying floor can be closed and finished in any desired manner.

It will be seen that with this invention it is a simple matter to close off the space between any pair of vertical members **5** by merely sliding a metal plate **28** into grooves **18** and **27**. Grooves **18** are located in horizontal bars **10**, which have to be installed anyway, and brackets **19**, containing grooves **27**, are easy to fasten to the vertical members wherever desired.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claim, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

In a building, a building framework, a plurality of laterally spaced vertical curtain wall members secured to the outside of said framework, a plurality of vertically spaced horizontal members extending across the front of the vertical members and secured thereto, the horizontal members being spaced from the framework by said vertical members and being provided with upper and lower channels for holding the tops and bottoms of vertical panels and glass panes to enclose the vertical members

and framework, horizontal metal plates at predetermined levels projecting rearwardly between the vertical members from the back of the horizontal members to the framework, the back of the horizontal members being provided with rearwardly opening horizontally extending grooves receiving the front edges of said plates, and brackets secured to the sides of the vertical members at said levels and forming laterally opening horizontal grooves receiving the ends of said plates, whereby the space between said vertical members at said levels is closed by the brackets and plates.

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