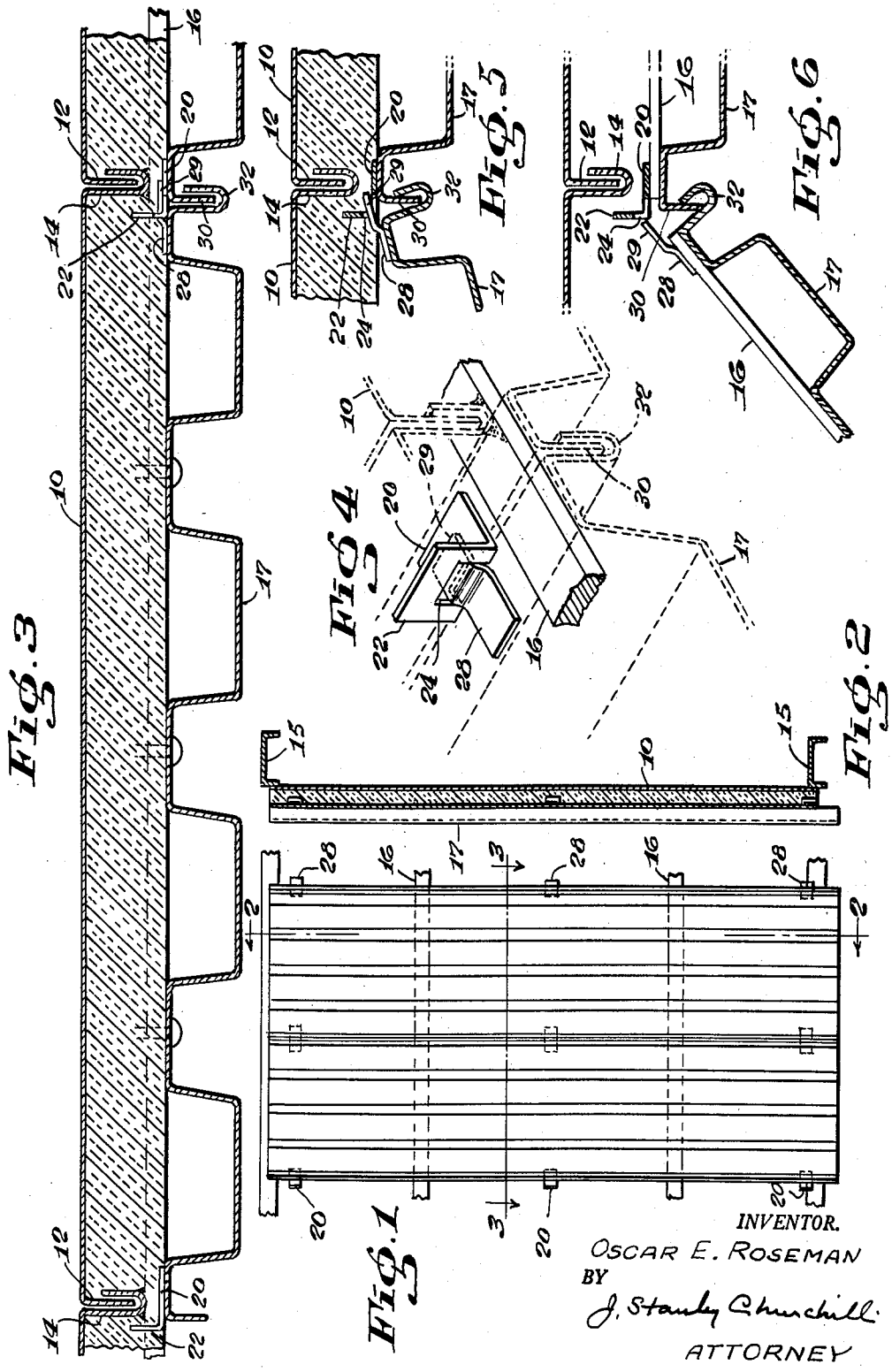
Oct. 27, 1959 O. E. ROSEMAN 2,910,150

WALL PANEL

Filed July 29, 1953



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2,910,150

Patented Oct. 27, 1959

2,910,150

WALL PANEL

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Application July 29, 1953, Serial No. 370,987

1 Claim. (Cl. 189—34)

This invention relates to an insulated sheet metal wall panel and method of erecting the same.

In general the object of the invention is to provide a lightweight wall panel structure which may be erected with minimum field labor, which is attractive in appearance, and which may be manufactured in substantially prefabricated form in an economical manner.

A further object of the invention is to provide a novel method of erecting the present wall panel units involving a minimum of erection expense.

With these general objects in view and such others as may hereinafter appear, the invention consists in the wall panel structure, in the method of erecting the same, and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claim at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention:

Fig. 1 is a side elevation of an assembled wall panel;

Fig. 2 is a cross section taken on the line **2—2** of Fig. 1;

Fig. 3 is a cross section taken on the line **3—3** of Fig. 1;

Fig. 4 is a perspective detail illustrating the side lap locking means for connecting together adjacent corrugated sheets of the outer facing sheet of the panel;

Fig. 5 is a detail of the position occupied by adjacent panel sections preparatory to swinging the second panel sheet into position; and

Fig. 6 is a cross-sectional detail view illustrating a modified form of the invention.

In general, the present invention contemplates the provision of a structure of panel involving novel panel units which may be easily and quickly assembled in the field with a minimum of field labor. The panel unit comprises an inner metal facing sheet which is preferably flat and provided with male and female lips on opposite side edges. A plurality of the inner facing sheets are bolted or otherwise secured to metal girders or other parts of the frame of the building and with the male and female lips of the facing sheets interlocked, as illustrated in Fig. 3. The space within the inner facing sheets is filled with insulating material such as fiber glass or the like.

The outer component of the panel unit comprises an outer metal facing sheet preferably corrugated and which is provided with male and female lips corresponding to the male and female lips of the inner facing sheets. In order to reinforce and stiffen the structure, the outer metal facing sheet is preferably secured to a sub-girt system herein shown as comprising a plurality of longitudinally spaced and transversely extended metal bars or metal members constituting the sub-girts. Adjacent ends of the outer facing sheets are provided with tongue and slotted metal members respectively and which are welded or otherwise secured to half corrugations from which the marginal male and female lips depend, and in the erection of the outer sheets of the panel units the panel unit to be erected is first assembled to hook the female lip

on the marginal edge thereof around the depending male lip of the adjacent end of the previously erected outer sheet, and then the outer sheet of the panel to be erected is swung about the end of the male lip as a pivot to guide the tongue member through the slot in the slotted member attached to the margin of the previously erected outer sheet. The opposite end of the outer sheet being erected is then bolted or otherwise secured to the sub-girt which is fastened to the bottom of the female lip of the inner facing sheet of the succeeding panel unit, thereby producing a structure in which the only field operations required are the securing and the attaching of each sub-girt to the female lip of the outer facing sheets, as will be described. With this construction each panel unit is secured to the framework of the building through the connection of the tongue and slotted members at one end of the outer sheet and through fastening at the opposite end to the sub-girt which is attached to the bottom of the lip of the inner facing sheet of the next succeeding panel unit, it being understood that the sub-girt at its forward end is not attached to the female lip of the outer panel adjacent thereto.

Referring now to the drawings, **10** represents the inner facing sheets which are flat and each provided with male and female lips **12** and **14** along the marginal edges thereof. The inner facing sheets are secured in any convenient manner to the framework of the building represented by the horizontal girders **15**. The outwardly extending female lips have secured to them by welding a lightweight sub-girt system, and as illustrated in Fig. 3 the sub-girts **16** are of a length sufficient to extend across several panel sections. After the inner facing sheets have been erected, the sub-girt system is fastened to the female lips in the positions illustrated in Figs. 3 and 4. Each corrugated outer facing sheet **17** is provided at one end with an angle piece **20** having an upturned portion **22** provided with a slot **24** in the lower portion thereof. The opposite end of the corrugated outer facing sheet is provided with a tongue member **28** having a slightly raised portion **29** adapted to be capable of being slid through the slot **24** in the manner illustrated in detail in Fig. 4. It will be observed that the cooperating tongue and slotted members **20, 28** of adjacent corrugated outer facing sheets are disposed in spaced relation from the individual sub-girts so that in the erection of the wall panel structure the tongues projecting from the forward end of each outer facing sheet may be readily introduced into the slot **24** in the adjacent cooperating angle piece **20** when one outer facing sheet is swung from the position indicated in Fig. 5 to the position indicated in Fig. 3, and when the latter has been swung into the position shown in Fig. 3, the entire structure may be secured together by fastening the corrugated sheet preferably by means of screws **21** to the sub-girts. In other words, the inner facing sheets are secured to the framework of the building, the sub-girts at their rear ends are welded to the female lips of the inner facing sheets, the corrugated sheets are positoned at their forward ends by the cooperating tongue and slot connection, and the outer facing sheet is attached to the sub-girts.

During erection the male and female lips **30, 32** may be caulked with a suitable waterproofed compound, and if desired the female lips crimped to provide a more weathertight joint. The space between the sub-girt system and the inner facing sheet preferably may be provided with insulation **34**, such as fiber glass or the like.

In a modified form of the invention, as illustrated in Fig 6, the tongue member **28** and the slotted angle piece **20** may be formed integrally with individual sub-girts **16**, as shown.

While the preferred embodiment of the invention has been herein illustrated and described, it will be under-

stood that the invention may be embodied in other forms within the scope of the following claim.

Having thus described the invention, what is claimed is.

An insulated sheet metal wall panel structure comprising a plurality of panel units erected side by side, each unit comprising a flat inner metal facing sheet adapted to be secured to the framework of a building and having outwardly extended male and female lips respectively along opposed marginal side edges, the male lip comprising an upstanding flange and the female lip comprising an upstanding U-shaped flange, the male lip of one sheet projecting into the female lip of an adjacent sheet, a sub-girt system comprising a plurality of elongated transversely extended lightweight sub-girts secured in spaced relation to the bottom of the inwardly extended female lips of adjacent inner facing sheets, an outer corrugated facing sheet having similar outwardly extended male and female lips along opposed marginal side edges and engaged in cooperating relation, each outer corrugated sheet having a plurality of laterally projecting tongue members secured in spaced relation along the inner face of the marginal side edge provided with the female lip, and a plurality of laterally projecting angle members provided with slots and secured in spaced relation along the inner face of the marginal side edge provided with the male lip, said tongue and groove members being spaced from and independent of said sub-girts,

the tongue members of one outer sheet being engaged in the slots of an adjacent outer sheet, each slot being disposed to provide clearance for entrance of the tongue in the slot simultaneously with engagement of the adjacent male and female lips during assembly by first engaging the U-shaped female lip of a sheet being assembled with an adjacent male lip of a previously assembled sheet with the sheet being assembled being held at an angle relative to the normal plane of the wall and by then swinging the sheet inwardly to effect engagement of the tongues with the slots, means securing the outer sheet to the sub-girts intermediate the lip portions of the sheets, and a body of insulation filling the space within the inner facing sheet and between the marginal lips thereof.

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