J. M. RUDE.

CELLULAR STEEL.

APPLICATION FILED APR. 30, 1910.

**1,000,758.** **Patented Aug. 15, 1911**

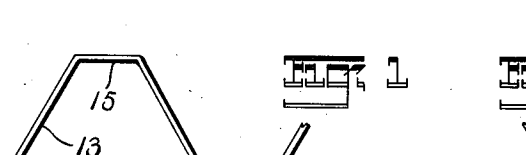


Fig. 1

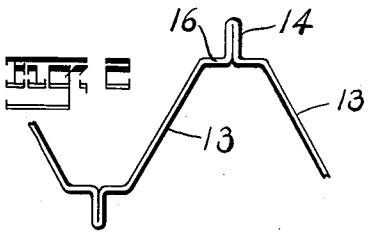


Fig. 2

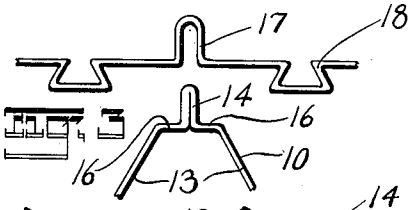


Fig. 3

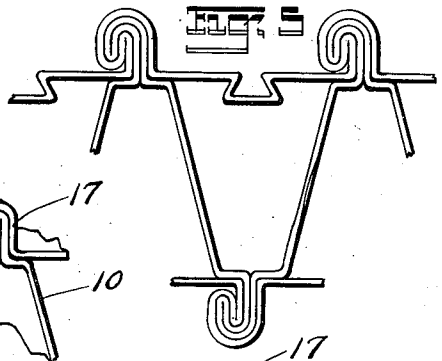

Fig. 5

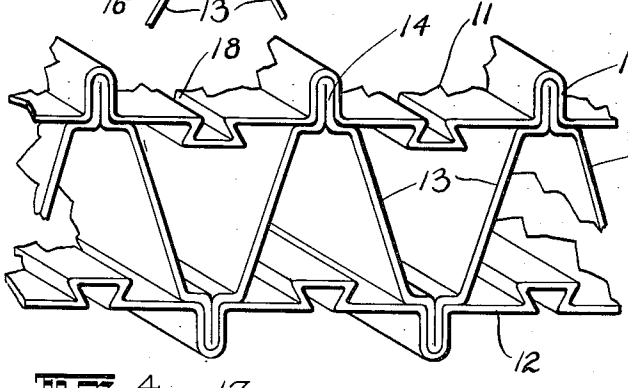


Fig. 4

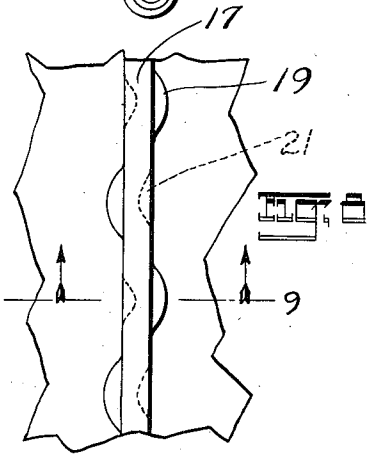


Fig. 6

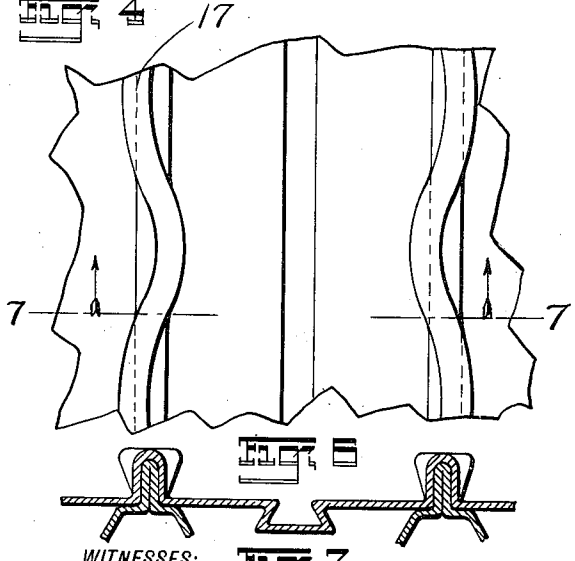


Fig. 8

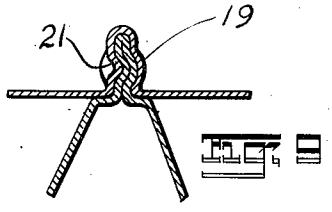


Fig. 9



Fig. 7

WITNESSES:

W. Thornton Bogert

E. M. Calcutt.

INVENTOR

James M. Rude

BY

Walter F. Murray

ATTORNEY

# UNITED STATES PATENT OFFICE.

JAMES M. RUDE, OF COVINGTON, KENTUCKY, ASSIGNOR TO THE STEEL FIREPROOF CONSTRUCTION COMPANY, OF COVINGTON, KENTUCKY, A CORPORATION OF KENTUCKY.

## CELLULAR STEEL.

1,000,758. Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed April 30, 1910. Serial No. 558,589.

*To all whom it may concern:*

Be it known that I, JAMES M. RUDE, a citizen of the United States of America, and resident of Covington, county of Kenton, and State of Kentucky, have invented certain new and useful Improvements in Cellular Steel, of which the following is a specification.

This invention relates to cellular metal for forming fireproof walls, partitions, ceilings or floors.

An object of this invention is to produce a new and improved cellular metal, and a simple, effective and easy process of manufacturing such metal. This and other objects I attain by means of the process and the cellular metal herein described and illustrated in the drawings accompanying this application and forming a part thereof.

Figure 1 is a partial sectional view and illustrates one step in the process of forming a corrugated web, which forms a detail of my invention. Fig. 2 is a sectional view corresponding to Fig. 1, and illustrates a subsequent step in the process of forming the corrugated web. Fig. 3 is a fragmental view of a cover or exterior plate, which forms a detail of my invention, in connection with a fragmental sectional view of the web, as it appears prior to securing the plate in place on it. Fig. 4 is a fragmental perspective view of cellular metal embodying my invention. Fig. 5 is a fragmental sectional view and illustrates a modified form of cellular metal, which embodies my invention. Fig. 6 is a plan view of cellular metal, such as that shown in Fig. 4, and illustrates one method of securing the exterior or cover plate to the web. Fig. 7 is a section along the line 7—7 of Fig. 6. Fig. 8 is a fragmental plan view of cellular metal and illustrates a second method of securing the exterior or cover plate to the troughing, and Fig. 9 is a sectional view along the line 9—9 of Fig. 8.

Referring to the drawings:—the cellular metal illustrated as embodying my invention consists of a corrugated web or troughing 10 and exterior or cover plates 11 and 12. The troughing is formed of sheet metal, pressed, rolled, or otherwise formed to provide panels 13 and locking ridges 14, which are located at the apexes of the troughing between adjacent panels. In forming the troughing, the sheet metal is first pressed to form the panels 13 and intermediate flat surfaces 15, which are located between the panels, as illustrated in Fig. 1. A rib 14 is then formed between each pair of adjacent panels 13, and these ribs, when formed, comprise the apexes of the troughing. Each rib is formed in the metal, which composes one of the surfaces 15, and is preferably so formed that a shoulder 16 is located on each side of the rib, between the rib and the adjacent panel.

The exterior or cover plates 11 and 12 are formed of sheet metal, and are stamped, rolled, or pressed, to provide a series of parallel grooves 17, which extend across the sheet metal and are adapted to receive the apexes or ribs 14 of the troughing. These grooves 17 are formed on the inner sides of the cover plates, and consequently form ridges or ribs on the outer sides of the plates. Dove-tail or key slots 18 are also provided in the cover plates and are located between the grooves 17. These slots 18 extend parallel to the groove 17 and may, if desired, be formed in the sheet metal at the same time the grooves are formed. The slots 18 are preferably formed as illustrated, that is, with the opening located on the outer faces of the plates, but this construction may be varied, so that they form a dove-tail tongue or ridge on the outer surfaces of the plates, instead of the dove-tail slot. After the plates 11 and 12 are formed, the next step in the process of forming the cellular steel, is to assemble the troughing 10 and the plates and to secure the plates to the troughing. After the plates are located on the troughing, so that an apex or rib 14 of the troughing is located in each groove 17 of the plates, the grooves are compressed and forced into gripping contact with the ribs, thereby locking the plates in place on the troughing. In compressing the grooves, I preferably distort the walls of the grooves, for the purpose of forming a firmer and more positive connection between the plates and the ribs.

In Figs. 6 and 7, I have illustrated one method in which the walls of the grooves 17 are corrugated along their length during the pressing operation. In Figs. 8 and 9, I have shown a second method of distorting the walls of the grooves 17, and it consists in pressing the grooves to form a series of alternately arranged lugs 19 and

depressions 21, formed along the groove. Either of these methods is effective in forcing the walls of the grooves into gripping contact with the ribs 14. When the first method is employed, that is, the method illustrated in Figs. 6 and 7, I preferably corrugate adjacent ridges, so that the corrugations are located opposite to each other, as illustrated. This arrangement is advantageous where the cellular metal is employed as a wall or a partition and is covered with concrete or a plaster, since it prevents the plastering from slipping, and in addition to this the corrugations strengthen the ribs and stiffen the cellular metal.

In Fig. 5, I have illustrated still another method of locking the cover plates in place on the troughing. This method consists in distorting the walls of the grooves 17, so that both the walls of the grooves and the ribs 14 are doubled over. This arrangement positively locks the cover plates to the troughing and provides an exceedingly stiff ridge on the outer surface of the cellular metal.

The key slots 18 are provided to form a locking means for holding the concrete or plastering, or any other material, in place on the cellular metal. When concrete or plastering is employed, the material while plastic is formed into the slot and consequently forms a key, which engages the slot to hold the material in place after it has settled.

While I have illustrated the troughing 10 as provided with panels 13 of equal width, it will be apparent that this is not essential, and it will also be apparent that when the material is employed in a curved wall or column construction, it will be necessary to make the spaces between the groove 17 on the outer cover plate larger than those of the inner cover plate. This and other variations fall within the spirit and scope of my invention.

What I claim is:—

1. Cellular metal consisting of troughing composed of a metal sheet bent to form adjacent panels and ribs between the panels, and cover plates provided with grooves which engage the ribs of the troughing.

2. Cellular metal comprising a troughing composed of a metal sheet bent to form inclined panels with ribs between the panels, and cover plates provided with grooves, each of which receives a rib of said troughing, and is distorted and pressed into engagement with the rib.

3. Cellular metal consisting of a corrugated web, cover plates provided with grooves which receive and engage the apexes of the web, and key slots formed in the plates and located between the grooves.

JAMES M. RUDE.

Witnesses:
WALTER F. MURRAY,
E. W. MCCALLISTER.