This invention relates to a method of making and assembling expansion shields.

More particularly stated, the invention relates to expansion shields of the type comprising a pair or a plurality of complementary sections which are laterally expandable into gripping engagement with a wall opening.

Such shields as now manufactured are made or cast in individual sections in poured molds and the sections are assembled manually to form the completed expansion shields.

This invention has for its salient object to simplify the making and assembling of expansion shields of the character described thereby cutting down the number of operations required.

Another object of the invention is to provide a simple, practical and efficient method or process of economically manufacturing shields of the character described.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is a plan view of a casting comprising a group of units or longitudinal shield sections interconnected by casting sprues;

Fig. 2 is an end elevation of the casting shown in Fig. 1, looking toward the right;

Fig. 3 is an end elevation of the casting, looking toward the left;

Fig. 4 is an elevational view illustrating the manner in which the individual shield sections are assembled on the casting unit;

Fig. 5 shows the completed expansion shield in elevation;

Fig. 6 is an end elevation of the shield shown in Fig. 5;

Fig. 7 is an elevational view partly in section illustrating a press and the casting and individual units assembled thereon, the press being constructed and arranged to assemble the individual sections on the grouped sections;

Fig. 8 is a view similar to Fig. 7 but showing the press closed and the shield sections assembled and severed from the connecting sprues; and

Fig. 9 is an end elevation of one end of the press shown in Fig. 8, illustrating the manner in which the lugs are closed on the shield sections to clamp the sections together.

The invention briefly described consists of a method of making expansion shields by casting a group of shield units connected together by casting sprues, assembling therewith individual shield units or sections, the individual shield units and the shield units of the group being complementary, causing bendable lugs on certain of the units to embrace portions of the complementary units and in the same operation severing the sprues from the interconnected units.

Further details of the invention will appear from the following description.

Fig. 1 illustrates a casting comprising a plurality of longitudinal expansion shield sections 10 which are interconnected by lateral sprues 11 and 12 and what may be termed a longitudinal sprue 13 having a sprue head 14 at one end thereof. This casting is preferably made by die casting and it will be noted that the shield sections 10 at the right of the central or longitudinal sprue 13, as shown in Fig. 3, are provided with lugs 15 and 16.

It will be obvious that the interconnected shield sections or shield units 10 shown in Fig. 1 are adapted to form one-half of an expansion shield.

The units 10 are assembled with complementary units 20 and 21 shown in Fig. 4, it being noted that the units 20 have lugs 15, 16 and the units 21 are not provided with lugs. As shown in Fig. 4, the units 20 are assembled on the units 10 at the left of the sprue 13, as shown in Fig. 1, and the units 21 are assembled with the sections or units at the right of the sprue 13.

Figs. 7, 8 and 9 illustrate one form of apparatus or press for assembling and clamping the shield sections. The press comprises an upper member 30 having a central downwardly extending plunger 31 and a pair of slidably mounted plungers 32 and 33 which are slideable in the press 30 and are held in downward position by springs 34, the movement of the plungers 32 and 33 under the action of the springs being limited by nuts 35. Each of the plungers 32, 33 is V-shaped at its lower end or has a V-shaped recess 35 therein, as shown in Fig. 9.

The lower press member 40 has a pair of upwardly extending supports 41, 42 secured thereto. These supports have formed therein V-shaped recesses 45 which register with and correspond to the V-shaped recesses 36 in the plungers 32, 33. The casting shown in Fig. 1 is supported on the lower press member, as shown in Fig. 7, and the individual shield units or sections 20, 21 are assembled on the shield sections 10 of the casting in the manner illustrated in Figs. 4 and 7.

The upper press member is then lowered and the plungers 32, 33 descend and engage the lugs 15, 16 and cause these lugs to embrace the complementary shield sections in the manner shown in Fig. 9. At the same time the plunger 31 en-
gages the sprues 11 and 12 and severs these sprues from the shield sections 10.

Thus, when the press has completed its downward movement the shield sections 10 have been severed from their interconnecting sprues and the complementary shield sections have been clamped thereto by the lugs 15, 16.

From the foregoing specification it will be seen that a simple, practical and efficient method of assembling and connecting complementary shield sections has been worked out and it should be understood that the invention is not limited to the particular apparatus illustrated and no limitations are intended other than those expressed in the following claims.

What I claim is:

1. The method of making expansion shields consisting of casting a group of unit portions of said shields connected together by casting sprues, assembling therewith individual, longitudinally divided portions of said shields, complementary to the unit portions of said group, said first-named portions or said complementary portions having bendable lugs thereon adapted to circumferentially embrace the other portions, pressing said lugs into holding relation and by the same pressing motion severing the sprues to form completed shields.

2. The method of making and assembling sectional expansion shields which consists of die casting a plurality of longitudinally divided shield sections in an interconnected group, assembling with the interconnected group of shield sections individual longitudinally divided shield sections, said last-named sections and the shield sections of the interconnected group being complementary, certain of the longitudinally divided sections having embracing means engageable with their complementary sections to hold the two complementary sections in assembled relation, closing said embracing means to clamp the complementary sections together and severing the casting sprues from the interconnected sections.

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