

C. E. SIMPSON.
 DIE FOR PRESSING BRICKS.
 APPLICATION FILED MAY 13, 1908.

916,796.

Patented Mar. 30, 1909.
 2 SHEETS—SHEET 1.

Fig. 1.

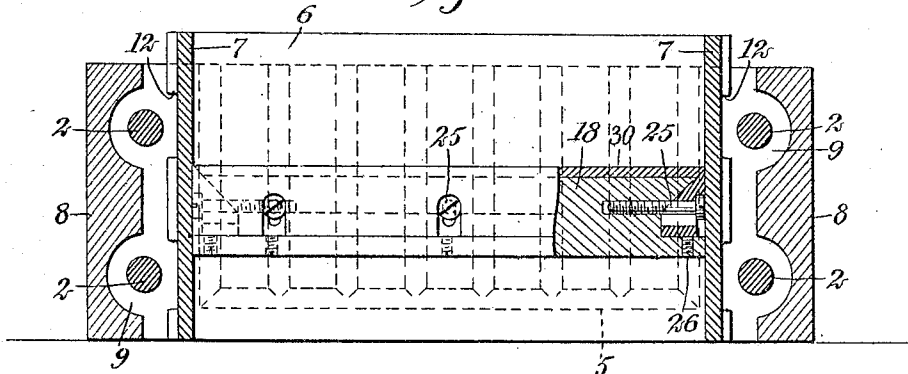


Fig. 2.

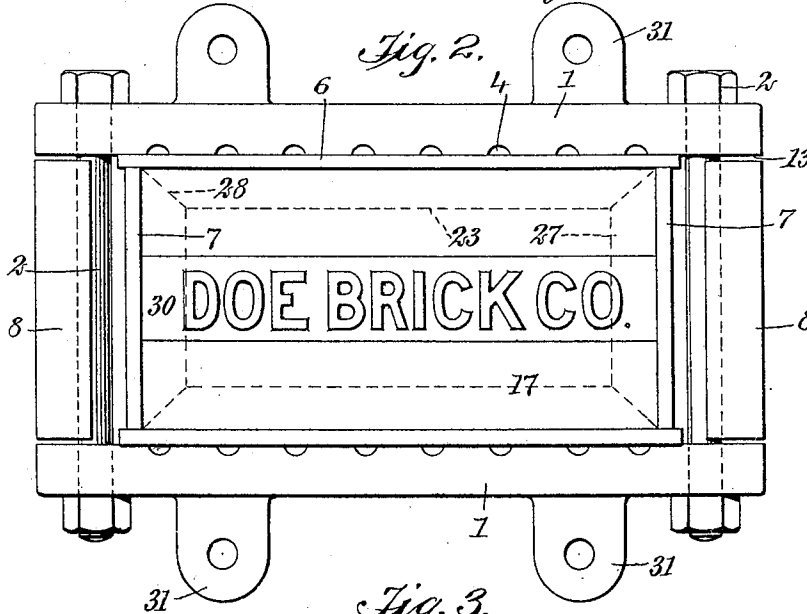
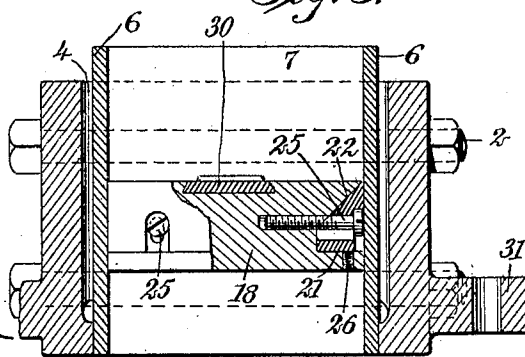


Fig. 3.



WITNESSES

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INVENTOR

Charles E. Simpson

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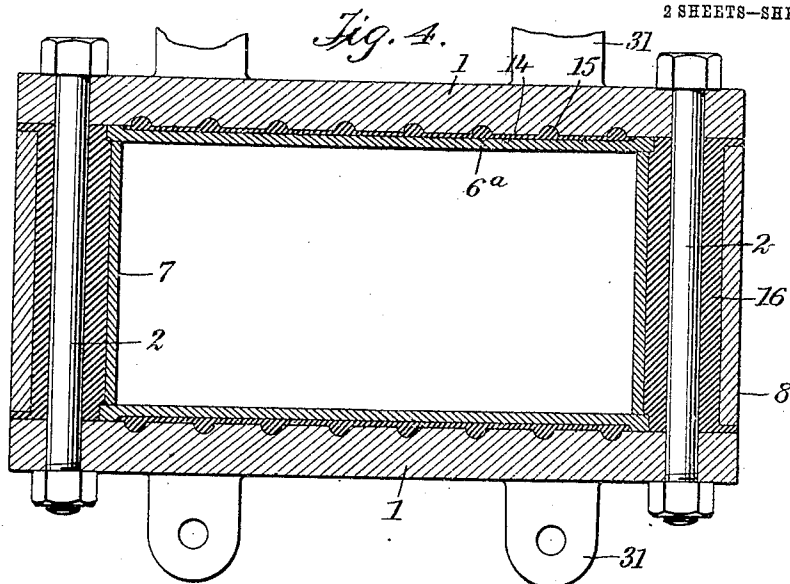
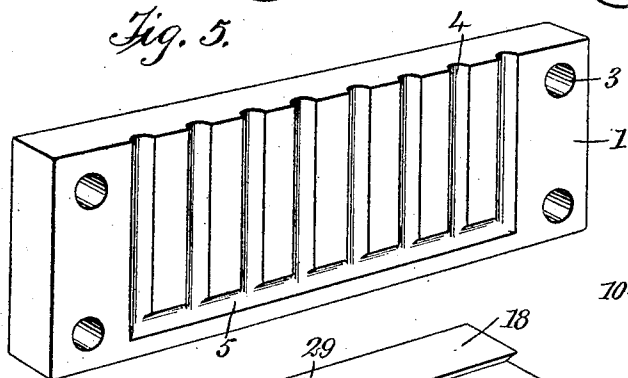
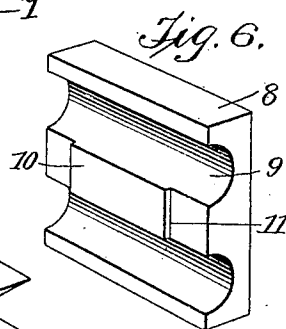
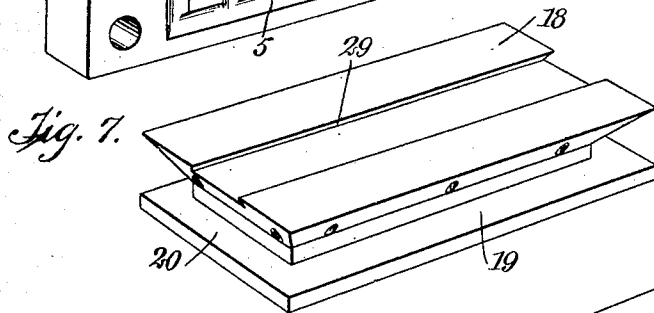
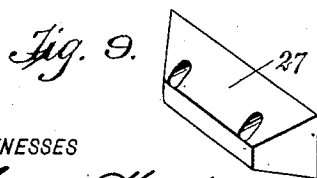
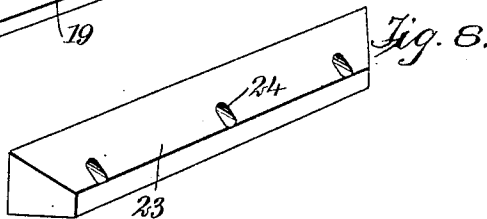
ATTORNEYS

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES E. SIMPSON, OF PORTSMOUTH, OHIO.

DIE FOR PRESSING BRICKS.

No. 916,796.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed May 13, 1908. Serial No. 432,611.

To all whom it may concern:

Be it known that I, CHARLES E. SIMPSON, a citizen of the United States, and a resident of Portsmouth, in the county of Scioto and State of Ohio, have invented a new and Improved Die for Pressing Bricks, of which the following is a full, clear, and exact description.

This invention relates to dies such as used by brick makers for impressing the face of bricks. As usually constructed, such dies comprise liners formed of plates and these plates become worn by usage so that they must be frequently replaced.

The object of this invention is to provide means for forming an improved die, and to provide a construction for the die which will enable the liners or liner plates to be reversed after one side becomes worn. In this way I substantially double the period of usefulness of the liner plates.

A further object of the invention is to provide an improved construction for the follower or plunger of the die, which impresses the face of the brick, so that this part may adjust itself to the increasing dimension of the die as it becomes worn.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal vertical section through a die constructed according to my invention and illustrating the parts in the process of forming the die; this view shows the plunger of the die partly in elevation and partly in section; Fig. 2 is a plan of the die showing the parts in the same relation indicated in Fig. 1; Fig. 3 is a cross section through the die, a part of the plunger being shown in elevation; Fig. 4 is a horizontal longitudinal section through the die, showing the same after the liner plate has been reversed as suggested above; Fig. 5 is a perspective showing the inner face of the side plate of the body of the die; Fig. 6 is a perspective showing one of the end walls or end plates of the body of the die; Fig. 7 is a perspective showing the body of the plunger or bottom of the die; Fig. 8 is a perspective showing one of the

longitudinal wear strips which are applied to the sides of the plunger; and Fig. 9 is a view similar to Fig. 8, but showing one of the end strips of the plunger.

Before proceeding to a detailed description of the die and the manner of forming the same, it will facilitate the disclosure to state that after constructing the die the parts which form the body of the die are placed in their proper relative positions, and in such a way that they clamp the liners or liner plates in the proper position to form a die or molding space. In doing this, certain spaces are left between the liner plates and the body of the die, and these spaces are filled with Babbitt metal which is poured into them and allowed to harden. After the Babbitt metal becomes hard, a solid body is formed for the die which holds the liner plates in position. After the liner plates become worn to such an extent as to prevent further use of the die, the die is taken apart and the worn liner plates are replaced in the die in reverse position, whereupon the parts having been assembled as before, the spaces are refilled with Babbitt metal so as to form a complete die with the unworn faces of the liner plates presented on the interior.

Referring more particularly to the parts, 1, 1 represent the side plates of the body of a die. These plates are connected by four clamping bolts 2, passing through the openings 3 disposed near the corners of the plates, as indicated. These side plates are formed on their inner faces with a plurality of vertically disposed parallel grooves 4, and these grooves pass through the upper faces of the side plates but do not pass to the lower faces or edges thereof. At their lower ends they communicate with a common groove or longitudinal duct 5 which is similarly formed to the grooves 4. In this way a channel system is formed on the inner faces of the side plates. On the inner sides of the side plates, liners or liner plates 6 are provided, and between the ends of these plates, end liners or liner plates 7 are clamped by means of the bolts 2, as will be readily understood. As indicated, the side plates project at their ends beyond the ends of the liner plates 6, and the spaces thus formed are nearly filled by the end blocks or end plates 8 of the mold, which are held in the position indicated in Fig. 2 when the die is being formed. The form of these end blocks

is clearly illustrated in Fig. 6. On their end faces they have enlarged semicircular cavities or chambers 9, which are parallel with each other and which are adapted to form spaces around the bolts 2, as indicated in Fig. 1. The flat face 10 formed between the cavities 9 is formed with jogs or shoulders 11 which increase the holding power of the Babbitt metal on the end blocks. The edges of the liner plates 6 at the ends are provided with notches 12 for a similar purpose, as indicated in Fig. 1.

In forming the die, the liner plates 6 and 7 are clamped in position, as shown in Fig. 2, and with the end blocks 8 held as shown, the spaces between the end liners 7 and the end blocks are filled with Babbitt metal. This Babbitt metal flows into the narrow openings 13 which are formed between the ends of the end blocks and the side plates 1, then the babbitt is allowed to harden and in this way forms solid ends for the die. The die is then used until the liner plates 6 become worn; as these plates become worn, the surfaces of the plates between the end liners 7 will become depressed. The die is then taken apart and the babbitt backing removed from the liners; the bolts with the end babbitt are then heated so as to melt off the Babbitt metal. The parts are then assembled again with the side liners disposed in a reverse position. The ends of the die are formed solid by the aid of the Babbitt metal, and in addition to this, the grooves or channels 4 are filled with Babbitt metal so as to form a backing behind the side liners 6.

The complete die with the reversed liner plates is very clearly illustrated in Fig. 4, in which the worn liner parts 6^a are represented with a depressed rear face. This depressed rear face is disposed against the side plates 1, 1, so as to form a narrow cavity 14 which is filled with Babbitt metal 15, as indicated. In this way the Babbitt metal forms a substantial backing for the side liner plates so that they will support the pressure developed in the die, even if they are quite thin themselves. In this view the manner in which the bolts 2 are embedded in the Babbitt metal 16 which is used as the ends of the die, is very clearly illustrated. In this connection attention is called to the fact that this Babbitt metal 16 forces its way into the notches 12 formed in the ends of the side liners 6, so as to assist in preventing any tendency of these side liners to shift in a vertical direction, that is, in the direction in which the plunger 17 of the die moves. Attention is also called to the fact that the bolts 2 are embedded in the Babbitt metal 16 supports the end liners 7 and forms a substantial backing for the same to resist the pressure from the interior of the die.

The construction of the plunger of the die will now be described: The body 18 of this plunger is clearly illustrated in Fig. 7, and

consists of a heavy plate which is formed on its longitudinal side edges with deep grooves 19, and similar grooves 20 are formed at the ends or end edges of the plate. The form of these grooves is clearly illustrated in Fig. 3. It will be noted that they have substantially flat bottom faces 21, and inclined upper faces 22. In the grooves 19, longitudinal adjustable strips 23 are placed, which fit the outline of the grooves nicely, as indicated. These adjusting strips 23 are provided with slots 24 which receive adjusting screws 25 which pass inwardly from the outer side faces of the strips. These adjusting screws have threaded connection with the body of the plunger, as shown. In the lower face of the plunger, set screws 26 are provided, the ends of which thrust against the under faces of the strips. By loosening the adjusting screws 25, the set screws 26 may be tightened up so as to advance the strips upwardly. This will adjust the strips outwardly, as will be readily understood, so as to increase the over-all dimensions of the plunger. The end grooves 20 of the plunger are provided with adjusting strips 27 which are similar to the adjusting strips 23, and similarly adjusted. The ends of the strips 23 and 27 are cut on a bevel so that they meet together on 45 degree lines 28, as indicated in Fig. 2. As the strips are adjusted outwardly, gaps or openings will be formed at the lines 28, but these gaps or cracks will quickly become filled with clay from the "green" bricks so that they will not be instrumental in marring the face of the brick. On the upper face of the plunger body 18, an undercut groove 29 is formed, by means of which the removable die plate or face plate 30 is held in position, as indicated in Fig. 3. This die plate will bear characters, such as the name of the manufacturer of the bricks. Both of the side plates 1 may be provided with outwardly projecting lugs 31, which enable the die body to be held in the press.

The advantage in providing the channels on the inner faces of the side plates, is that they provide a space communicating with the narrow chamber or cavity formed between the side liner plates and the side plates. In this way the molten metal poured into the cavities at the sides does not harden with too great rapidity, as might otherwise occur. This insures a complete filling of the cavity with the metal so that a substantial backing is formed for the liner.

If desired, the end blocks may be omitted, but their presence is advantageous in that it enables a smaller quantity of the filler or Babbitt metal to be used at the ends, also by reason of the gaps 13 at the ends of the blocks 8 which become filled with the babbitt, there is less tendency for the shrinkage of the babbitt in cooling, to draw away from the side plates 1.

I prefer to use Babbitt metal for the purpose suggested on account of its low fusing point. The body of the die is preferably formed of cast iron and the liners of steel.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. A die having side plates, bolts connecting the same, liner plates disposed on the inner faces of said side plates, end liner plates clamped between said first liner plates by said bolts, and a metal having a low melting point disposed in the spaces between said side plates and beyond said end liner plates, and forming a backing for said end liner plates, said side plates having channels formed on the inner faces thereof.

2. A die having side plates with depressions on the inner faces thereof, clamping bolts connecting said side plates, reversible side liner plates held on the inner faces of said side plates, and end liner plates held between said side liner plates and holding said liner plates in position.

3. A die having side plates, channel systems formed on the inner faces thereof, side liner plates held against the inner faces of said side plates, end liner plates disposed between said side liner plates near the ends thereof, said side plates having their ends projecting beyond said side liner plates, clamping bolts connecting the projecting ends of said side plates, and affording means for clamping said liner plates in position, and a metal having a low fusing point poured around said bolts between the ends of said side plates and forming a backing for said end liner plates.

4. A die having side plates, channel systems

formed on the inner faces thereof, side liner plates held against the inner faces of said side plates, end liner plates disposed between said side liner plates near the ends thereof, said side plates having their ends projecting beyond said side liner plates, clamping bolts connecting the projecting ends of said side plates, and affording means for clamping said liner plates in position, and a metal having a low fusing point poured around said bolts between the ends of said side plates and forming a backing for said end liner plates, said side liner plates projecting beyond said end liner plates and having notches adapted to be engaged by said metal to secure said side liner plates.

5. A die having side plates, clamping bolts connecting the same, blocks disposed between the said side plates and nearly bridging the space therebetween, a filler of metal having a low fusing point, filling the space between said side plates and carrying said blocks, and end liner plates backed by said filler.

6. A plunger for a die, having a plate-body substantially filling the die, having undercut side edges with inclined faces, wear strips having faces seating on said inclined faces and having mitered end faces, and means for adjusting said strips outwardly on said inclined faces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. SIMPSON.

Witnesses:

EMMA JOHNSTON,
FRANK W. MOULTON.