

UNITED STATES PATENT OFFICE.

EDGAR R. SUTCLIFFE, OF LEIGH, ENGLAND.

PROCESS OF MAKING BRICKS OR BLOCKS.

SPECIFICATION forming part of Letters Patent No. 744,431, dated November 17, 1903.

Application filed January 27, 1903. Serial No. 140,770. (No specimens.)

To all whom it may concern:

Be it known that I, EDGAR ROUSE SUTCLIFFE, a subject of the King of Great Britain, residing at Leigh, in the county of Lancaster, England, have invented new and useful Improvements in Processes of Making Blocks or Bricks from Concrete or other Material Containing a Cementing Medium, of which the following is a specification.

10 This invention relates to a process for obtaining a brick or block the density of which is substantially the same throughout its mass, and has for its object the production of a better brick, with its sides smooth and regular
15 and its edges firm and sharply defined. Artificial bricks and blocks of this nature are made of sand, gravel, slag, ashes, and other refuse and such like materials, and usually contain lime or Portland cement as the binding medium, the material being pressed into
20 shape on a brick-press, and hitherto great difficulty has been experienced in getting the outer surfaces and corners of the bricks well pressed, owing to the difficulty of evenly filling the mold before the pressure comes on.
25 This is due to the tendency which the materials have, especially those of a gritty nature, such as sand and lime, of piling up in the center while filling, in consequence of which
30 the material in the center of the brick is filled up denser than the outer parts of the mold, a condition which remains even after strickling the mold-top level, and results ordinarily in the center of the finished brick being very
35 dense and the outer parts weak and crumbling, owing to the latter not receiving sufficient pressure.

In the manufacture of bricks of this nature the material, consisting of about three per
40 cent. of sand and about seven per cent. of lime, by weight, is first thoroughly ground and mixed together, the cementing medium being added in as small a proportion as possible—say, from about three to fifteen per
45 cent. of the mixture, by weight, depending largely upon the thoroughness of the grinding and mixing. A suitable amount of moisture is added to bring the material to such a consistency that it can easily be fed into the
50 molds in which the pressure is applied and so as to effect the setting of the cementing medium. The mixed material is then fed

into the molds of the press either by hand or, preferably, by an arrangement on a press made for the purpose, in which a revolving
55 mold-table passes beneath a feeding-pan, which supplies the material to the mold and strickles it off level as the mold passes on. In any case the mold must be strickled level, and the particular feature of my invention is
60 that instead of passing on the mold to receive its pressure by means of a flat plunger under the press-head of the press, as is ordinarily done, I introduce an intermediate step, which consists of giving the material in the mold a
65 preliminary pressure applied so as to press the material from the center of the mold to the sides. This is done, preferably, by means of a wedge-shaped plunger, which may, if desired, be shaped to force the material into the corners
70 of the mold by a movable face to the bottom of the mold or by other suitable means so employed that when the final pressure is put on by flat-faced surfaces, whether with a central projection or not, the material in the mold
75 is presented to such surfaces with the central area of the mold somewhat depressed, so that the main part of the pressure comes on the material around the outer parts of the
80 mold, which thus are pressed as dense as or even denser than the central part, and the edges receive the full pressure used. This results in a brick with sharp edges, which is
85 densest, as required, on its outer faces. The finished brick is thus rendered more presentable than heretofore and is more durable in an exposed situation. It may be that the depression in the center of the brick is not completely closed by the final pressure; but this
90 is not of importance and may even be an advantage, as giving the benefit of the indentation known technically as a "frog," which improves the binding together of a wall or other structure when the bricks are in use
95 and which has been very difficult to accomplish on this class of brick hitherto. After pressure, as above described, these bricks may be taken direct to a chamber in which they are subjected to the action of steam in a
100 closed chamber under pressure from one hundred to one hundred and fifty pounds per square inch for a period varying from three to ten hours, which very effectively increases the toughness of the bricks or blocks and has

the further great advantage that it causes them to set hard and ready for early use instead of having to be kept frequently for several weeks if only natural setting and hardening are relied on.

From the foregoing description it will be noted the novel feature of the process is that the pressure from the center to the outside by the wedge-shaped plunger is a preliminary pressure only, that such pressure is only effective when applied from the top, as it is intended to counteract the piling up of the material due to the action of gravity in filling the mold, and that such preliminary pressure is followed by a final pressure from the top with a flat plunger to close the central hole to attain the desired end of finishing the brick with hard sharp edges and densest on its outer faces.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The herein-described process of producing bricks the density of which is equally imparted to its sides, edges and corners which consists in subjecting the brick to a plurality

of successive operations upon the same side and which includes the step of the positive displacement of the material from the center toward the edges producing thereby a depression at the center and then subjecting the brick to a flat pressure disposed equally upon its upper surface thereby closing the central depression and giving increased firmness to the sides, edges and corners.

2. The herein-described process of producing bricks which consists of and includes the step of the positive displacement of the material from the center toward the edges producing thereby a depression at the center and closing the central surface depression by a flat pressure, the pressing-surfaces having unequal area and operating successively.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

E. R. SUTCLIFFE.

Witnesses:

JAMES HENRY ELLISON,
HENRY ARTHUR CARR.