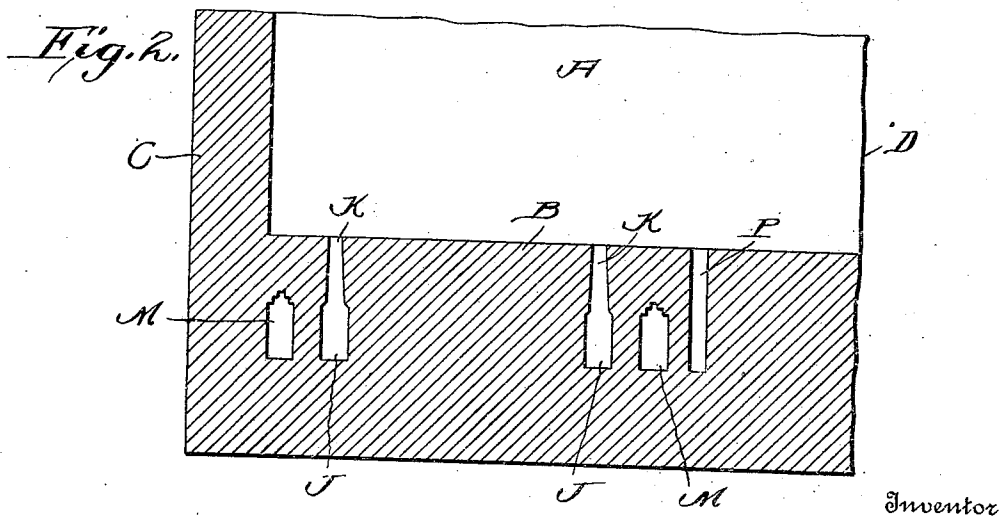
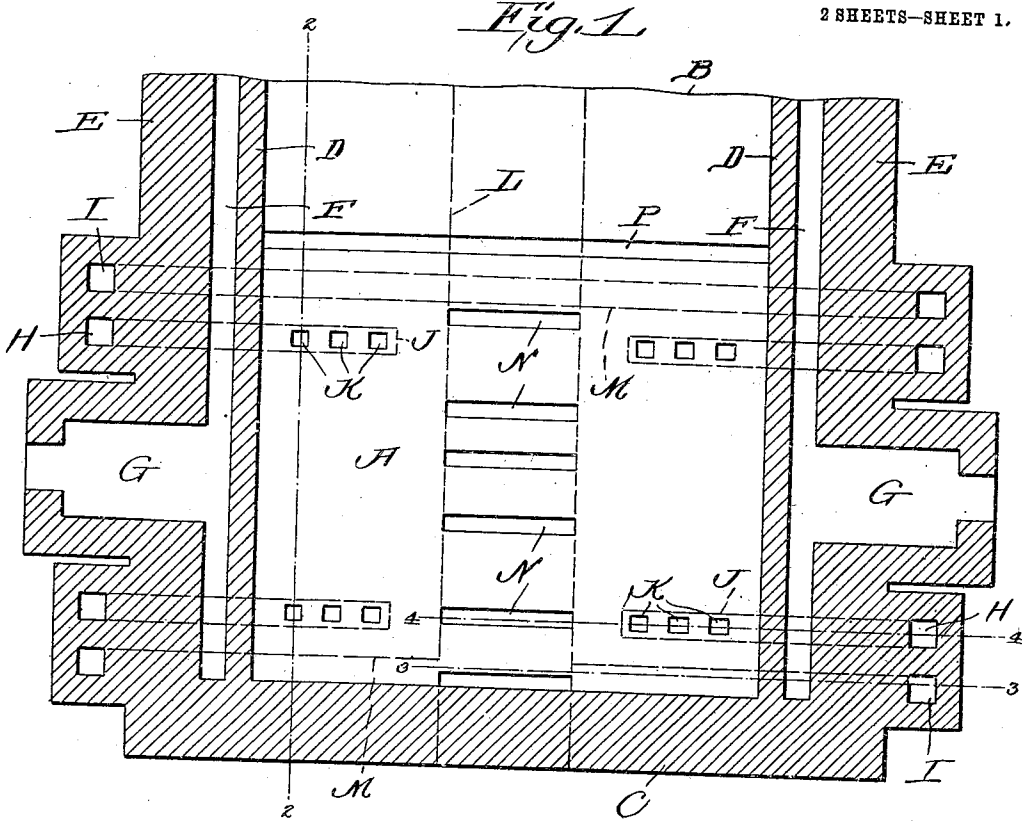


961,266.

Patented June 14, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

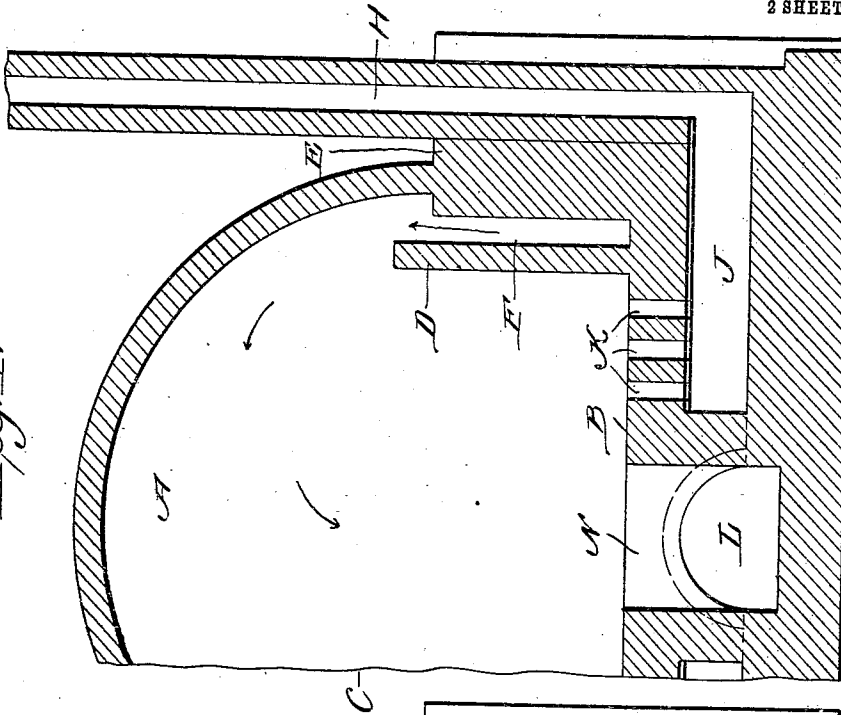
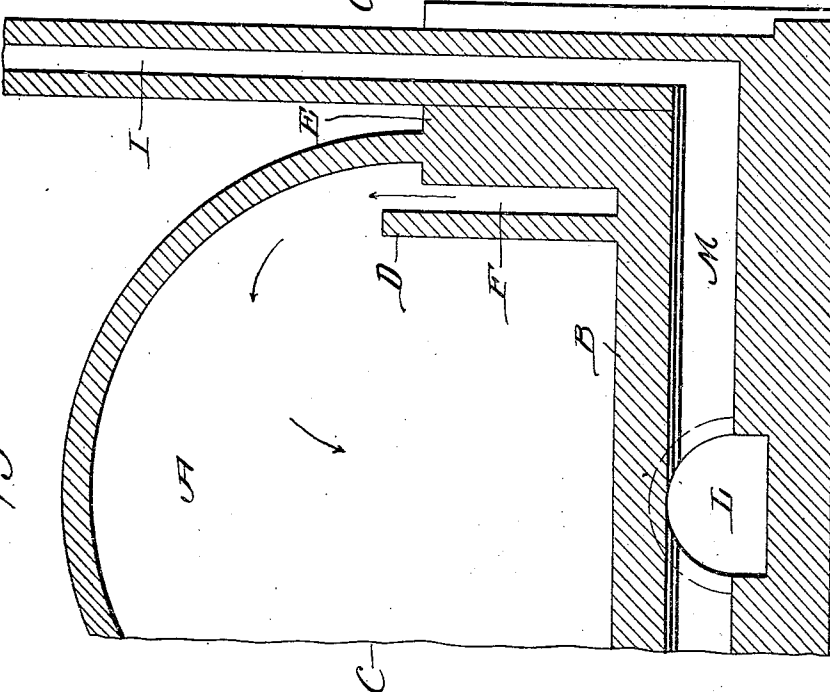


Fig. 3.



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To all whom it may concern:

Be it known that I, MATT F. SWANSON, citizen of the United States, residing at town of Reading, in the county of Livingston and State of Illinois, have invented new and useful Improvements in Kilns, of which the following is a specification.

My invention relates to down-draft kilns for the burning of bricks and other wares; and it consists in the durable and efficient kiln hereinafter described and particularly pointed out in the claims appended.

In the drawings, accompanying and forming part of this specification: Figure 1 is a horizontal section of one end portion of a kiln constructed in accordance with my invention, taken in a plane slightly above the floor of the burning chamber. Fig. 2 is a detail longitudinal vertical section taken in the plane of the line 2—2 of Fig. 1. Figs. 3 and 4 are detail transverse vertical sections, taken in the planes indicated by the lines 3—3 and 4—4, respectively, of Fig. 1.

Similar letters of reference designate corresponding parts in all of the views of the drawings.

The kiln is preferably constructed of brick and comprises a burning chamber A and a solid and consequently strong and durable base B, the upper side of which forms the floor of said chamber.

End walls C, one of which is shown in Fig. 1, and inner and outer side walls D and E rise from the solid base B; the said inner and outer side walls D and E being separated by intervening spaces F which extend between and connect the chamber A and furnaces G so as to enable products of combustion to pass from the latter up into the former, after the manner indicated by arrows in Figs. 3 and 4. I have shown but two furnaces, but it will be understood that furnaces will be similarly arranged at intervals throughout the length of the kiln.

Arranged at opposite sides of each furnace G are pairs of uptakes H and I, and leading from the lower ends of the uptakes H inwardly through the base B are flues J. The inner ends of the flues J are arranged at opposite sides of the longitudinal center of the kiln, and the inner portions of each flue are connected by three (more or less) vertically-disposed openings K with the chamber A.

Extending longitudinally through the base B and occupying the longitudinal cen-

ter thereof is a passage L which is, by preference, sufficiently large to receive a man, and leading horizontally from said passage L and through the base B to the upper ends of the uptakes I are horizontal flues M. It will also be observed by comparison of Figs. 1 and 4 that at intervals of its length the passage L is connected through vertically-disposed openings N with the chamber A.

At the opposite side of the furnaces, flues and vertically-disposed openings described, with reference to the end wall C, I provide in the base and in communication with the chamber A a transverse recess P which is preferably extended throughout the width of the said chamber and is preferably of the proportional depth shown in Fig. 2. The said recess serves the important purpose of permitting expansion of the floor of the chamber A when the same is highly heated, and in such manner that the expansion of the heated floor is prevented from forcing outward the outer walls. Expansion recesses such as P will be formed in the floor of the burning chamber A at suitable intervals in the length of the kiln, preferably at points intermediate groups, each of which comprises furnaces, uptakes, flues and vertically-disposed openings such as shown in Fig. 1 and hereinbefore described.

In the practical use of the kiln, the bricks or other articles to be burned are suitably stacked in the chamber A, and fires being lighted in the furnaces G, the products of combustion pass therefrom upward through the spaces F into the chamber A, then downward through the chamber, then downward through the openings K and N into the flues J and passage L, respectively, then outward through the horizontal flues J and M, and then upwardly through the uptakes H and I to the atmosphere.

It will be gathered from the foregoing that my novel kiln is possessed of high efficiency, that is to say—is adapted to burn brick and other articles in a short time and with the consumption of but little fuel; also, that with the exception of the passage L, recess P, flues and vertically disposed openings described, the base of my novel kiln is solid and therefore strong and durable; also, that the floor of the burning chamber A is provided with comparatively few large openings, as contra-distinguished from the great number of small openings usually provided in down-draft kiln floors, and that

therefore there is but little liability of the said openings being choked with refuse such as sand and chippings from bricks or tiles. It follows from this that the kiln is adapted to be operated for a long period without cleaning, which is obviously an important advantage. It will further be appreciated from the foregoing that a man can enter the passage L and clean the cross flues M, and inasmuch as the said passage L extends a considerable distance, say one foot, lower than the cross flues, the kiln can be operated an entire season without the necessity of cleaning the said passage L.

While I have shown and described one form of my invention, it is to be understood that I am not limited to the details or the form or relative arrangement of parts disclosed, but that extensive modifications may be made therein without departing from the spirit thereof.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:

1. A kiln having a base and a burning chamber arranged above the base and an end wall rising from the base and forming part of said chamber and also having furnaces at its opposite sides, inner and outer walls at opposite sides, spaces between said walls and connecting the furnaces with the upper portion of the burning chamber, pairs of uptakes arranged at opposite sides of each furnace, a large passage extending through the base, at an intermediate point in the height thereof and midway between the furnaces and extending to the exterior of the kiln, vertically disposed openings formed in the floor of the burning chamber and connecting the latter with said passage at intervals in the length of the passage, flues leading horizontally through the base

and in opposite directions from said passage to some of the uptakes, flues leading horizontally through the base, at opposite sides of the passage, and to other uptakes at opposite sides of the kiln, and vertically disposed openings formed in the floor of the burning chamber and connecting the latter with the last-named flues; the said kiln being further provided in its base, at the opposite side of the vertically disposed opening with reference to the end wall, with a transverse recess that is open at its upper side and communicates with the burning chamber of the kiln and also with the said large passage and extends at opposite sides of the latter and is adapted to prevent expansion of the base from forcing outward the outer wall of the kiln.

2. A kiln having a base and a burning chamber arranged above the base and also having furnaces at its opposite sides connected with the burning chamber, uptakes, a large passage extending through the base, midway between the furnaces and also extending to the exterior of the kiln, vertically disposed openings formed in the floor of the burning chamber and connecting the latter with the large passage at intervals in the length thereof, horizontal flues connecting the large passage with some of the uptakes, other horizontal flues connected to other uptakes, and vertically disposed openings formed in the floor of the burning chamber and connecting the latter with the last-named flues.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MATT F. SWANSON.

Witnesses:

FRED. A. MAETTIG,
H. W. BORGLIN.