(No Model.) 4 Sheets—Sheet 1.

W. A. WILFORD.

BRICK KILN.

No. 527,255. Patented Oct. 9, 1894.

Fig. 4

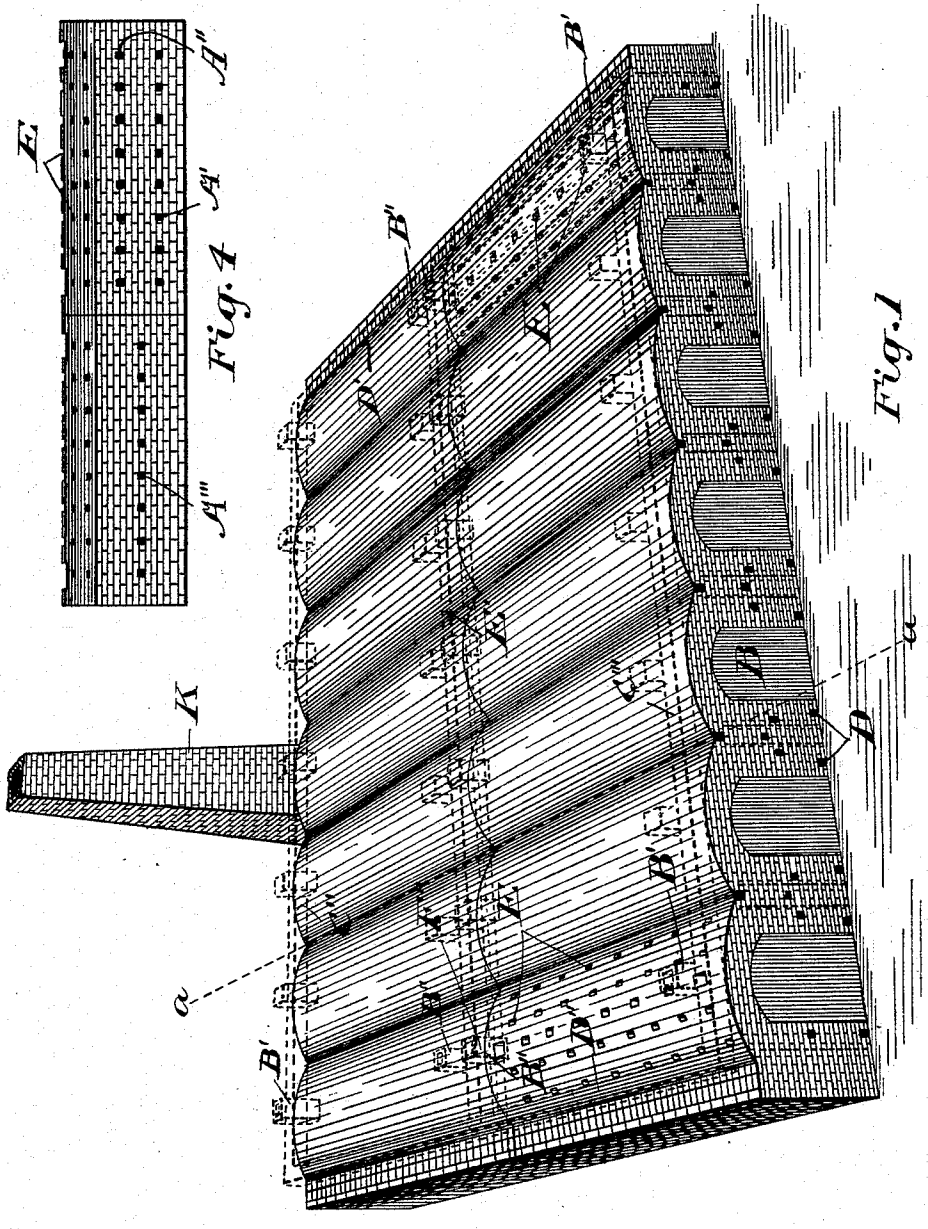


Fig. 1

Witnesses
J. E. Cameron
W. J. McMillen

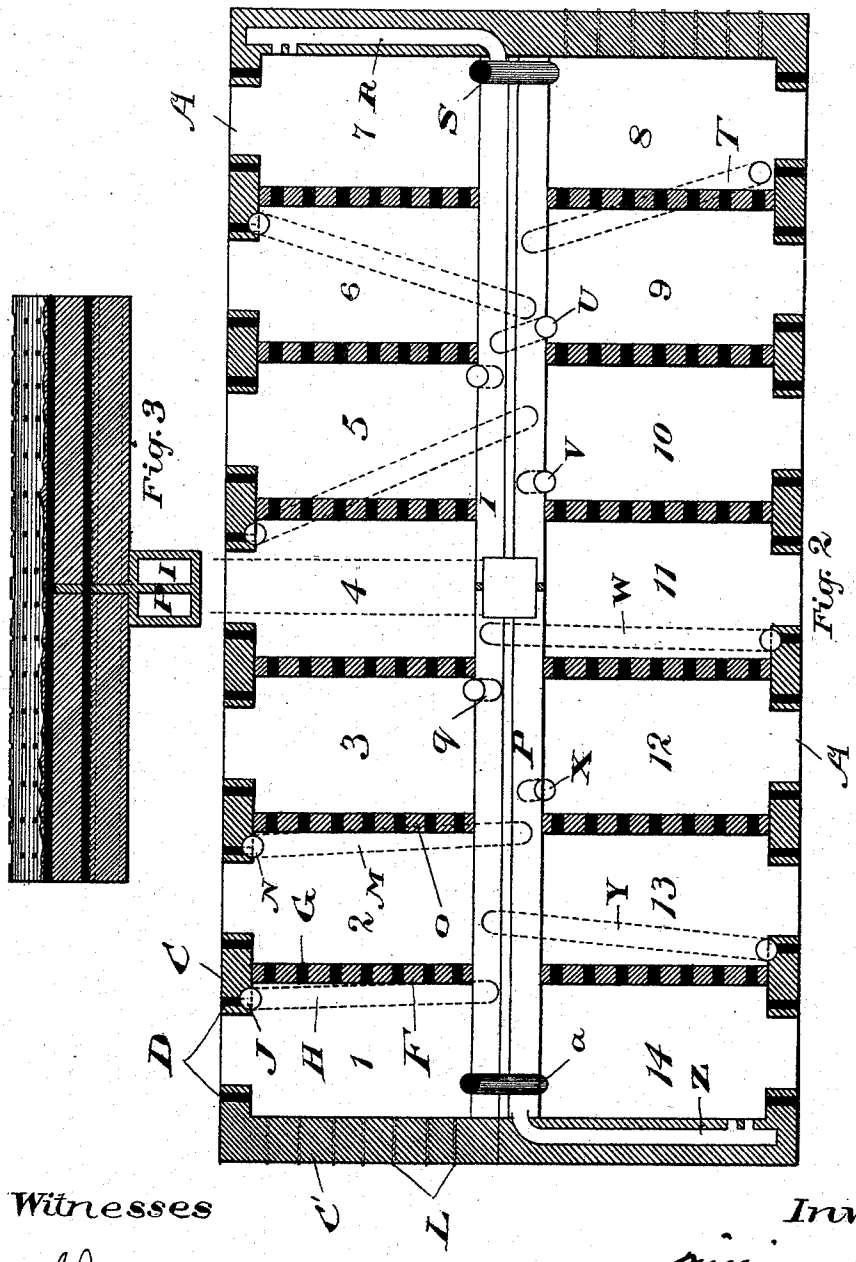
Inventor
William A. Wilford
by C. A. Perkins
his Atty

(No Model.) 4 Sheets—Sheet 2.

W. A. WILFORD.

BRICK KILN.

No. 527,255. Patented Oct. 9, 1894.



Witnesses

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N. G. McMillan

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Attys

(No Model.) 4 Sheets—Sheet 3.

W. A. WILFORD.

BRICK KILN.

No. 527,255. Patented Oct. 9, 1894.

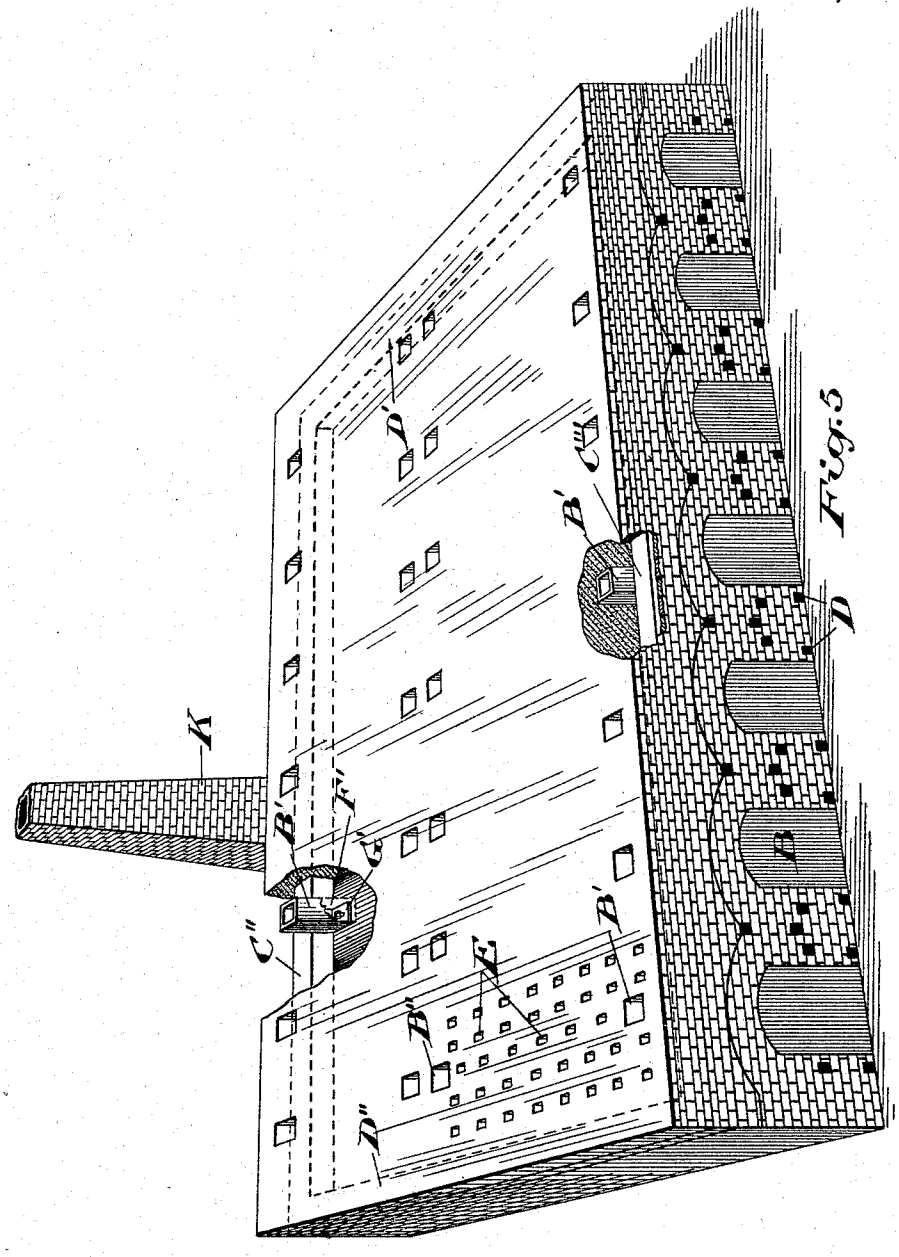

Fig. 5

Witnesses

J. E. Lamerson

H. G. McMillan

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by C. H. Riches

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(No Model.) 4 Sheets—Sheet 4.

W. A. WILFORD.

BRICK KILN.

No. 527,255. Patented Oct. 9, 1894.

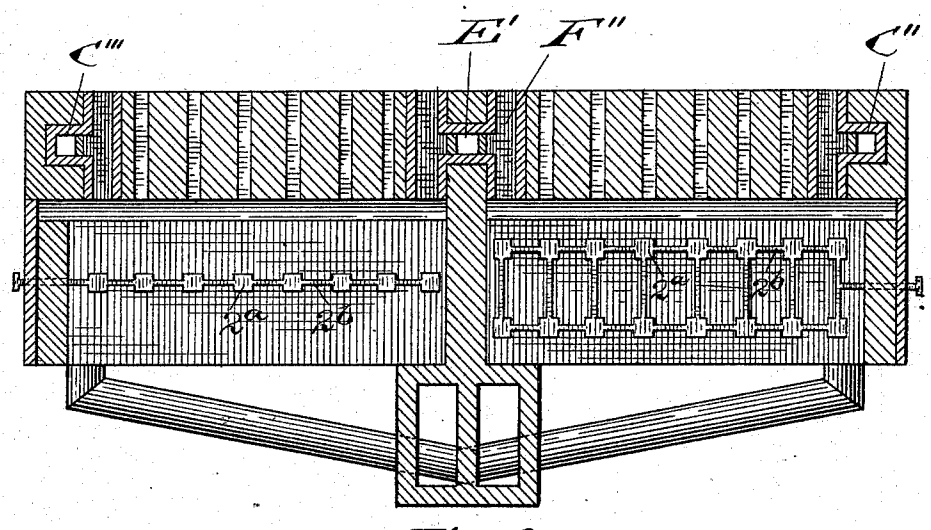

Fig. 6

Witnesses
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Foulds

Inventor
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by C. H. Riches
his atty

UNITED STATES PATENT OFFICE.

WILLIAM A. WILFORD, OF TODMORDEN, CANADA.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 527,255, dated October 9, 1894.

Application filed April 14, 1894. Serial No. 507,560. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. WILFORD, brick-maker, of Todmorden, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Brick-Kilns; and I hereby declare that the following is a full, clear, and exact description of the same.

The object of this invention is to build a brick kiln of a series of independent adjacent chambers with intervening walls having horizontal passages formed therethrough from chamber to chamber to permit of the passage of the heated gases and flames from one chamber into the next adjoining chamber, in order that a continuous fire can be kept up thereby, and also provide each of the chambers with a series of openings formed through the end walls to admit of a current of air to assist combustion within the chamber, and also to provide each chamber with a series of openings through the top to admit of the entry of the fuel to feed the fire within the chamber, and also to provide each chamber with a separate outlet to permit of the escape of the gas from the chamber to a main flue, and to provide an outlet from the main flue to the atmosphere, the whole device being arranged as hereinafter more fully set forth and more particularly pointed out in the claims.

In the drawings: Figure 1 is a perspective view showing a series of fourteen independent adjacent chambers, with the outer structure removed. Fig. 2 is a sectional plan view of Fig. 1 showing the arrangement of the chambers, and the relation of each chamber to the chambers next adjoining. Fig. 3 is a vertical sectional view of two of the chambers on the lines *a*—*a* Fig. 1. Fig. 4 is an end elevation. Fig. 5 is a perspective view of the complete structure partially in section, Fig. 6 is a tranverse sectional view of the brick kiln.

Like letters and numerals of reference refer to like parts throughout the specification and drawings.

The kiln consists of a series of independent adjacent chambers numbered 1 to 14 respectively. Each of these chambers is provided at its front end with an opening A to admit of the entry and removal of the brick to be burned. This opening A is closed when the chamber is filled by metallic plate B. Formed through the front end wall C of the chamber 1 are a series of passages D to permit of the entry into the chamber 1 of a sufficent current of air to support combustion within the chamber. Formed through the top of the chamber 1 are a series of openings E through which the fuel is introduced into the chamber. Separating the chamber 1 from the chamber 2 is a partition or dividing wall F, and formed through this partition or dividing wall F are a series of horizontal openings G to permit of the passage of the flame and heated gases from the chamber 1 to the chamber 2, when it is necessary or required to draw the fire from the chamber 1 into the chamber 2.

To close the horizontal openings G I provide a series of dampers 2^a connected together and operated by a damper rod 2^b. As each of the chambers is provided with horizontal openings similar to the openings G, it will not be necessary to describe these openings in connection with the remaining chambers, as each of these openings is closed by a similar damper plate operated in a similar manner.

To provide for the escape of the gases from the chamber 1, while the fire is contained in the said chamber, I provide the chamber 1 with a supplemental flue H extending beneath the base of the chamber and discharging into a main flue I located and extending along the back of the chambers. It will be noticed that the opening J into the supplemental flue H is located at the front end of the chamber 1 and adjacent to the partition or dividing wall F, and that the gases are drawn to and taken from the front end of the chamber 1 by means of the opening J and supplemental flue H, and are conducted from the chamber 1 into the main flue I, from whence they are conducted to a stack K, and then discharged into the atmosphere at a suitable elevation. Formed through the side wall C′ of the chamber 1 are a series of passages L by means of which air is introduced into the chamber to support combustion. The chamber 2 is similar in construction to the chamber 1 and is provided with a supplemental flue M located below the base of the said chamber, and having an opening N

at the front end of the said chamber contiguous to the partition or dividing wall O separating the chamber 2 from the chamber 3, by means of which the gases in the chamber 2 are drawn from the chamber and discharged into a main flue P contiguous to the main flue I and running parallel therewith.

The object of discharging the supplemental flue H into the main flue I, and discharging the supplemental flue M into the main flue P is to prevent the discharge of the gases from one chamber interfering with the discharge of the gases from the other chamber while the two chambers are discharging simultaneously. The chamber 3 is similar in construction to the chamber 2, and in all respects, except that it is provided with a supplemental flue Q, discharging from its rear end into the main flue I. The chamber 4 is similar in all respects to the chamber 2, including the arrangement of the supplemental flue, while the chamber 5 is identically the same as the chamber 3. The chamber 6 is identically the same as the chambers 4 and 2. The chamber 7 is similar to the aforesaid chambers, and is provided with a supplemental flue R discharging into the main flue I, and is also provided with an opening S extending through its rear end wall and through the rear end wall of the chambers 8, by means of which the fire is drawn from the chamber 7 into the chamber 8. The chamber 8, 9, 10, 11, 12, 13 and 14 are similar in all respects to the chambers 1, 2, 3, 4, 5, 6, and 7. The chamber 8 has a supplemental flue T discharging into the main flue P, while the chamber 9 is provided with a supplemental flue U discharging into the main flue I. The supplemental flue T conveys the gases from the front end of the chamber 8 to the main flue P, while the flue U conveys the gases from the rear end of the chamber 9 into the main flue I. The rear end of the chamber 10 is fitted with a supplemental flue V which conveys the gases from the rear end of the chamber 10 into the main flue P. The chamber 11 is provided with a supplemental flue W which conveys the gases from the front end of the said chamber to the main flue I. The chamber 12 is provided with a flue X similar to the flue V, and discharging into the main flue P, while the chamber 13 is provided with a supplemental flue Y discharging into the main flue I, and conveying the gases from the front end of the chamber 13 to the main flue I. The chamber 14 is provided with a supplemental flue Z, which conveys the gases from the front end of the chamber 14 to the main flue P. Each of the chambers 2 to 14 are similar in all respects (except the arrangement of the flues) to the chamber 1, and the description of the construction of the chamber 1 will answer for the description of the construction of the remaining chambers.

In the operation of the device the bricks, &c., to be burned are placed within the chamber 1 and the fire is started within the said chamber, and the fire is fed through the openings E in the top of the chamber. After the bricks have been properly burned within the chamber 1 the fire is drawn from the chamber 1 into the chamber 2, which has been charged with the bricks to be burned, and the same operation is gone through with. After the bricks within the chamber 2 have been properly burned the fire from the chamber 2 is drawn into the chamber 3 through the openings in the partition or dividing wall between the two chambers, and this is repeated through the chambers 4, 5, 6, and 7. After the bricks have been burned within the chamber 7 the fire is then crossed from the chamber 7 into the chamber 8, and the same operation is performed until the chamber 14 is reached, from where the fire is drawn into the chamber 1 by means of openings *a* connecting the rear ends of the said chambers.

The gases discharged into the main flues I and P are discharged from the main flues I and P into the stack K, and are discharged from the stack K into the atmosphere at a suitable elevation. One of the principal advantages to be derived from this device is in being able to keep up a continuous fire throughout the kilns, and in being able to build up unburned brick within the kiln, to be burned as soon as the fire reaches it.

It will be noticed by reference to the drawings that the chamber 1 is provided with a series of openings A′ through its end wall at or near the base, and a second series of openings A″ at or near the top, while the chamber 14 is provided with a series of openings A‴ located at an elevation intermediate the elevation of the openings A′ and A″. The object of providing the chamber 14 with a series of openings A‴ is for the purpose of being able to force the fire from the chamber 14 across into the chamber 1; and the object of providing the chamber 1 with openings A′ is to assist the combustion, while the object of providing the chamber 1 with openings A″ is to provide the chamber with a current of air to cool the bricks and prevent them melting. The chamber 7 is provided with openings similar to the openings A‴ into the chamber 14, while the chamber 8 is provided with two rows of openings similar to the openings in the chamber 1.

It will be noticed by reference to the drawings that each of the chambers 1 to 14 is provided with two openings B′—B″, formed through the top into the chamber, and that located along the front of each of the chambers 1 to 7 is a flue C″, and that mounted along the top of the front of the chambers 8 to 14 is a flue C‴, and joining the ends of these flues C″ and C‴ are flues D′ and D″, and mounted upon the top of the chambers 1 to 14, at their rear ends, is a flue E′, which is also in connection with the flues D′—D″. Each of the flues C″ is provided with a series of spurs or branches F′. Each spur or branch F′ feeds into one of the openings B′, and it

might here be stated that each of the openings B′ extends to the top of the structure, and is provided with a damper plate G′, which is removed only while the air is discharging from the flue C″, and its spur or branch F′ into its respective chamber, or while the heated air is discharging from the heated chamber into the flue, that is, for instance: If the brick in the chamber 1 has been burned, the plate G′ would be removed to permit of the heated air discharging into the spur or branch F′ and flue C″, in order that the heated air could be conducted to some other chamber; but in the event of the fire being in, say chamber 12, the heated air from chamber No. 12 would be conducted by means of the flue C″ to the chamber 1, in order that the chamber 1 could be dried in advance of the fire reaching it. The flue C″ discharges into the openings B″, in the same manner as above described, and the flue E′ discharges into the rear end of the chambers in the same manner. As each of the chambers is provided with a damper plate G′, it is possible to take the heated air from any one chamber by means of the aforesaid flues, and convey it to any other chamber.

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

1. In a brick kiln, a series of independent adjacent chambers with intervening walls between them having horizontal passages opening from one chamber into the next adjoining chamber, two main flues, one of said chambers discharging into one of the main flues, and the next adjoining chamber discharging into the other main flue, and means for conveying the gases from the main flues and discharging them into the atmosphere, each of said chambers provided with a series of draft openings to supply a current of atmospheric air to the fire within the chamber, and means for supplying fuel to the fire within the chamber, substantially as specified.

2. In a brick kiln, a series of independent adjacent chambers, with intervening walls, horizontal passages connecting the chambers, means for closing the said passages, two main flues, a supplemental flue for each of said chambers, discharging into either the one or the other of the main flues, and means for conveying the gases from the main flues, substantially as specified.

3. In a continuous brick kiln the combination of a series of independent adjacent chambers, two central longitudinal main flues between the rows of chambers, a supplemental flue for each chamber, the supplemental flues of the alternate chambers discharging into one of the main flues, and the supplemental flues from the intervening chambers discharging into the other main flue, an outlet from the main flues, a series of passages formed through the walls of each of the chambers to admit of a current of atmospheric air to the chamber, a series of vertical passages formed through the top of each of the chambers to admit of the entry of the fuel to the chamber, a series of horizontal passages formed through the dividing wall or partition between the adjacent chambers to permit of the fire being drawn from one chamber into the other, substantially as specified.

Toronto, March 13, 1894.

WILLIAM A. WILFORD.

In presence of:
J. A. MACKIE,
R. BROWN.