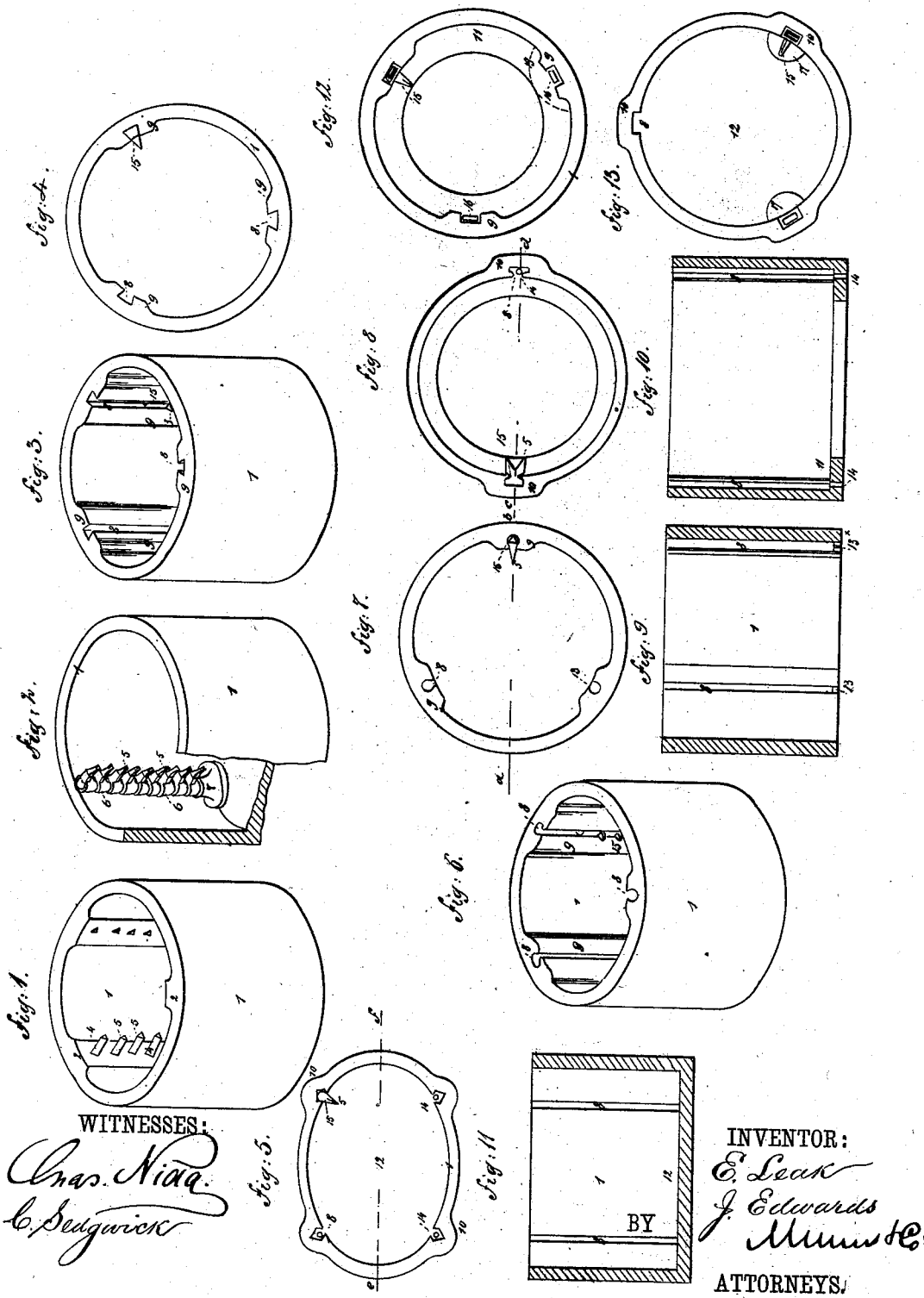
2 Sheets—Sheet 1.

E. LEAK & J. EDWARDS.

Apparatus for Supporting Pottery-Ware in Kilns and Ovens.

No. 224,450. **Patented Feb. 10, 1880.**



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2 Sheets—Sheet 2.

E. LEAK & J. EDWARDS.

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Fig. 17.

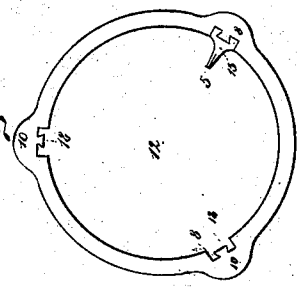


Fig. 27.



Fig. 32.

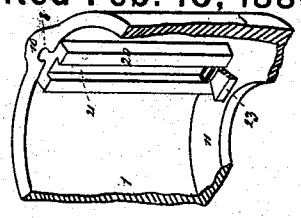


Fig. 16.

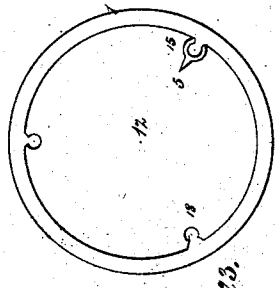


Fig. 26.



Fig. 31.

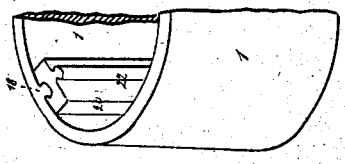


Fig. 25.



Fig. 24.



Fig. 30.

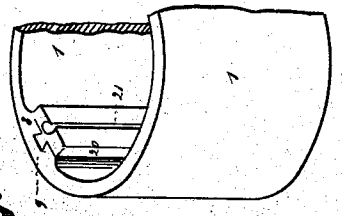


Fig. 23.

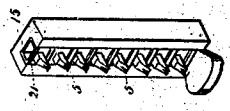


Fig. 15.

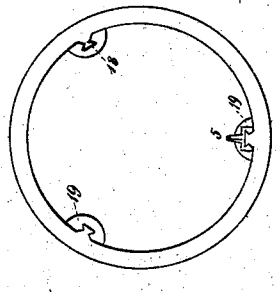


Fig. 22.



Fig. 21.



Fig. 29.

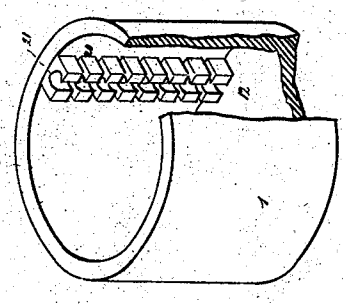


Fig. 20.



Fig. 14.

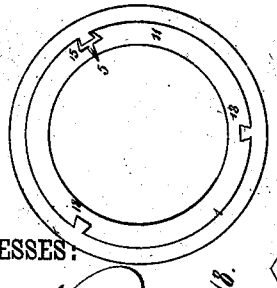


Fig. 19.



Fig. 28.

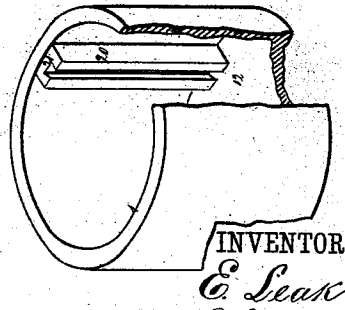
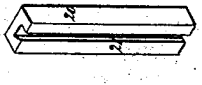


Fig. 18.



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UNITED STATES PATENT OFFICE.

ELIAS LEAK, OF LONGTON, AND JOHN EDWARDS, OF FENTON, ENGLAND.

APPARATUS FOR SUPPORTING POTTERY-WARE IN KILNS AND OVENS.

SPECIFICATION forming part of Letters Patent No. 224,450, dated February 10, 1880.

Application filed October 30, 1879. Patented in England, March 28 and November 27, 1877.

To all whom it may concern:

Be it known that we, ELIAS LEAK, of Longton, in the county of Stafford, potters' machinist, and JOHN EDWARDS, of Fenton, in the same county, manufacturer, have invented Improvements in Apparatus for Supporting Pottery-Ware in Kilns and Ovens, of which the following is a specification.

This invention, which relates to certain improvements in apparatus for supporting pottery-ware in kilns and ovens while being baked, glazed, or otherwise fired, has especial reference to the seggars in which the ware is placed and supported while in the kiln or oven.

Seggars, as hitherto used, have been made of various forms or shapes and sizes, and they are sometimes formed with inner ribs or broadened and thickened parts, in which vertical series of recesses are made, and into which removable pins are thrust, and upon the projecting ends of which pins the ware is supported. Now, these pins, unless well thrust or pushed into the said recesses, which the carelessness of the workman often prevents being done, are very liable to fall out of the same and let the ware fall or slip, by which it gets damaged.

A seggar of this make is illustrated in perspective view, on the accompanying drawings, in Figure 1, in which 1 represents the seggar; 2, the inner ribs; 3, the recesses therein; 4, the removable pins, and 5 the projecting points thereof, upon which the ware is supported.

According to another usual system the seggars are made plain within, and the ware is supported by inner projecting arms of vertical series of socket or thimble pins, which fit one within another, and the lowermost one of which is usually fitted in a foot. Now, according to this system the vertical series of supporting-pins are very liable to fall forward or sidewise and let the ware slip, and consequently get damaged.

A seggar of this make is illustrated in perspective view, partly broken away, in Fig. 2, in which 1 represents the seggar; 6, the thimble-pins, which fit one within another; 5, the points or arms thereof, which support the ware, and 7 the foot, in which the lowermost thimble-pin is placed so as to support the series above it.

The especial objects of our present invention are to prevent the liability of the ware getting spoiled through such instability of its supports, and to provide means by which it shall be rigidly supported in the seggar while being baked, glazed, or otherwise fired in the kiln or oven, and which shall also allow of the ware being placed in and removed from the seggar with greater facility and freedom from accident or damage than hitherto, thus considerably reducing the percentage spoiled, facilitating the placing and removal of the ware, and greatly economizing the production.

In order to attain these most desirable objects, we proceed as follows: According to one modification, illustrated in Figs. 3 to 8, (of which 3 and 6 are perspective views, the remaining figures representing plan views,) we make the seggar 1 with vertical grooves 8, either in its substance, as shown in Figs. 5 and 8, or in inner ribs, 9, forming part of the seggar, as shown in Figs. 3, 4, 6, and 7. These grooves may vary in number and be differently situated in relation to each other, as shown in Figs. 5, 7, and 8, depending principally upon the kind or shape of ware required to be supported. When the grooves 8 are made in the substance of the seggar, so as to economize the space within the latter as much as possible for occupation by the ware, the seggar is preferably strengthened at the parts where the grooves are made by outer ribs, 10, so as to render all parts of the seggar of about the same strength and prevent fracture thereof, due to unequal contraction under the influence of the great heat to which it is subjected in the kilns or ovens; but when the grooves 8 are made in the inner ribs or thickened parts, 9, of the seggar, the latter is formed plain externally, not then needing further strengthening at the grooved parts.

The grooves 8, besides varying in number and situation, as above described, may also be formed of a great variety of shapes, either dovetailed, angular, round, or otherwise, some of the most advantageous forms being illustrated in Figs. 5 to 8; but various other forms (not shown on the drawings) are equally as advantageous as those illustrated in these figures; and we desire that it be distinctly understood that we do not limit ourselves to any

particular forms of grooves, but use those which we find most convenient to make and most useful in practice.

According to this modification the grooves 8 are open into the interior of the seggar throughout their length, as shown in Figs. 9 to 11, but preferably only a portion of their full width or widest part, as will be best seen on reference being had to Figs. 3 to 8.

Fig. 9 represents a sectional elevation of Fig. 7 through the line *a b*. Fig. 10 represents a similar view through *c d*, Fig. 8, and Fig. 11 represents a similar view through *e f*, Fig. 5. Figs. 7 and 9 represent the improvements embodied in this modification as adapted to a bottomless seggar. Figs. 8 and 10 represent them as adapted to a seggar having an inner ledge, 11, around the bottom; and Figs. 5 and 11 represent them as adapted to a full-bottomed seggar, 12.

When using the bottomless seggars illustrated in Figs. 7 and 9 we prefer to plug up the bottom ends of the grooves 8, as shown at 13, by removable plugs, or by fast or fixed plugs, with holes $13^{\times}$ made through them, for the purposes hereinafter described; and when using the inner-ledged seggars 11 or full-bottomed seggars 12, illustrated in Figs. 8 and 10, and 5 and 11, respectively, we prefer to make holes 14 through the ledge or bottom, for the purpose also hereinafter described.

Now, according to this modification, we obtain the means of rigidly supporting the ware within the seggars by placing or simply dropping into the said grooves thereof removable supporting-pins 15, the ends of which may or may not be shaped correspondingly with the shape of the grooves to which they are adapted, and having arms which project into the seggar and support the ware in the usual manner upon points 5 thereof.

In each of Figs. 3 to 8 one groove is shown. One groove is shown as thus fitted with one or more pins, 15, the pins shown having differently-shaped arms, as hereinafter referred to.

In this modification we can use either thimble-pins—that is, pins with socket ends which fit one within another—or pins with solid ends, these ends (the parts which fit into the grooves of the seggars) being of angular, flat, square, wedge, polygonal, round, or any other convenient shape.

The shape of the arms with which the pins 15 are provided is quite immaterial, as the pins may be formed either with single or double or narrow or broad one or two nibbed arms, as described in the specifications, and illustrated in the drawings annexed thereto, of certain Letters Patent granted to us on the 28th day of March, A. D. 1877, No. 1,239, and on the 27th day of November, A. D, 1877, No. 4,457. The grooves 8 in the seggars thus prevent any movement of the series of supporting-pins 15, so that the latter are firmly kept in place and the ware rigidly supported.

The plugs 13 are adapted to the grooves 8 of the bottomless seggar, to prevent the supporting-pins 15 from falling through, and they are made removable or with holes $13^{\times}$ through them, as above described, to allow of the pins being tapped out of the grooves by a rod and hammer, should any get stuck fast therein owing to the contraction of the seggar due to the heat of the kiln or oven, or to any other cause, and the holes 14 are formed in the inner-ledged and full-bottomed seggars for a similar purpose—namely, to allow of any of the pins which may get stuck fast in the grooves being quickly tapped out.

In using seggars and pins constructed according to the above-described modification the pins only required to be dropped into the grooves, when they fall, without trouble or delay, into their proper places, and allow of the ware being placed and removed with great rapidity.

Figs. 12 and 13 represent plan views of an adaptation of this modification, in which the grooves 8 are open for the whole of their width into the seggar.

In using seggars of this construction they must be formed with an inner bottom ledge, 11, or with a full bottom, 12, or with inner extensions, 19, in the manner shown in Fig. 15, and dotted at 19, Fig. 12, and the supporting-pins 15 must be made with socket ends. The lowermost pin of each series may either fit into a suitably-shaped recess, 16, in the ledge or bottom of the seggar at the lower end of the groove 8, as shown in Fig. 12, or be placed in a widened or broadened-out foot, 17, as shown in Fig. 13, to support the series of pins and prevent them from falling forward, the sides or ribs 9 10 of the grooves 8 preventing any lateral movement thereof.

Figs. 14 to 16 represent plan views of another adaptation of this modification, in which the seggars are formed with inner ribs, 18, of a dovetailed, angular, round, or other suitable shape, some of which are shown in these figures, and down which the supporting-pins 15 are slid or dropped into position, as above described. The ends of the pins may or may not be formed correspondingly with the ribs 18, but are so formed as to be retained firmly thereby.

Fig. 15 represents a bottomless seggar made with these ribs 18, which, at their lower ends, are formed with extensions 19, to prevent the supporting-pins 15 from dropping off them. Fig. 14 represents an inner-ledged seggar, and Fig. 16 a full-bottomed seggar.

Fig. 17 represents, in plan view, a combination of the above representing a full-bottomed seggar as formed with inner grooves, 8, within and up which vertical ribs 18 extend. These ribs may be of any of the shapes above referred to, and this combination may be also applied to bottomless or inner-ledged seggars, as will be well understood from the preceding description.

According to a second modification, illustrated in Figs. 18 to 29, of which Figs. 18, 23, 28, and 29 are perspective views, the two lat-

ter views being partly broken away, the remaining figures representing plan views, we make or form the grooved or ribbed parts 20 of the seggars for supporting the pins in separate pieces or parts from the seggars, and make them with vertical grooves 21, as illustrated most clearly in Figs. 18 to 22, or with equivalent ribs 22, as illustrated most clearly in Figs. 24 to 27, in like manner as the whole seggars in the previously-described modification, the said grooves 21 or ribs 22 being of any desired shape, (some of the most suitable shapes being illustrated in the figures to which reference is drawn,) and the supporting-pins 15 fitting in or on them, as illustrated with reference to the seggars in the preceding modification. These grooved or ribbed parts or pieces, made separate from the seggars, may be either fastened or secured or made fast in one or more parts to the seggar, as illustrated in Fig. 28, by glaze, clay, or otherwise, either when they or the seggars are either in the clay state or after they have been fired; or they may be used loose from the seggars and fastened thereto or struck against the inner sides of the same at the time of being used by a piece of clay, glaze, or by any other suitable or convenient means.

The separate grooved parts 20 may also be provided with loose or separate feet, 23, as illustrated in Fig. 22, for the lowermost one of the series of supporting-pins 15 to rest in, as illustrated in Fig. 23, if the grooves 21 are open (into the seggar) for the whole of their width, as illustrated in these figures; or these separate grooved or ribbed parts 20 may be made in one or more small parts or pieces and fastened to the seggar one above another, as illustrated in Fig. 29, not necessarily touching each other, but still forming a continuous groove, 21, (or rib,) wherein (or whereon) the supporting-pins may be placed, and by which they may be firmly held.

A very great advantage is derived when thus making the grooved or ribbed parts or pieces separate from the seggars, as manufacturing potters can then make their own seggars and grooved or ribbed parts or pieces to be used therewith separately by any suitable means at hand, and then combine them together—that is, place and use two, three, or more of the separate grooved parts or pieces in any form of seggar, in any desired quantity or number, and in any desired position, depending principally upon the shape of the ware to be supported.

According to a third modification, illustrated in the perspective views, Figs. 30 to 32, partly broken away, we make the seggars with dovetailed or any other suitable-shaped vertical grooves 8, or equivalent ribs 18, as described with reference to the first modification, and fit or slide these separate grooved or ribbed parts 20, described with reference to the second modification, down within or around them, the parts 20 being at the same time, if required, fully charged with supporting-pins 15, or being subsequently filled up, as previously described. In this modification the separate parts 20 may also be provided with separate feet 23, as illustrated in Fig. 32, for the lowermost supporting-pin to rest in when the grooves 21 thereof open into the seggar for their full width, as illustrated in this figure.

In the last-described modifications, as described with reference to the first modification, the supporting-pins 15 may be used either as socket or thimble pins, and fit one within another, or they may be solid-ended and fit one upon another, socket or thimble pins only requiring to be used when the grooves in the seggars or in the separate grooved or ribbed parts 20 thereof are open for their full width; and the pins may be formed either with single or double or narrow or broad one or two nibbed arms, as previously referred to.

The above-described improved seggars and separate grooved or ribbed parts thereof which are used therewith can be formed either by hand or be molded, stamped, or pressed out, or otherwise formed, by any suitable machinery, the seggars being formed of any required form, shape, or size, and bottomless, with inner ledges, or with full bottoms, as desired.

Having now described the nature and objects of our said invention, together with the manner in which the same is to be or may be performed or carried into practical effect, we would remark, in conclusion, that we claim as our invention—

1. In the manufacture of seggars in which pottery-ware is placed and supported while being baked, glazed, or otherwise fired, the inner vertical grooves, or the equivalent vertical ribs, the said grooves or ribs being of a dovetailed or other suitable or required shape, and in or on which supporting-pins are placed, and by and upon the points or arms of which the ware is supported while being treated, as above referred to, the parts being so adapted and combined as that the said supporting-pins are firmly held and prevented from slipping and the ware is rigidly supported without danger of falling.

2. The combination, with seggars provided with grooves or ribs, as above described, of separate grooved or ribbed parts which fit in or on the grooves or ribs of the seggars, the supporting-pins being adapted to the said grooves or ribs of the said separate or detachable parts, and thus firmly held.

The above specification of our invention signed by us this 30th day of September, 1879.

ELIAS LEAK.
JOHN EDWARDS.

Witnesses:
EDWARD E. LANE,
JOHN H. COPESTAKE.