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J. P. B. FISKE.

BRICK KILN.

(Application filed Feb. 7, 1901.)

(No Model.)

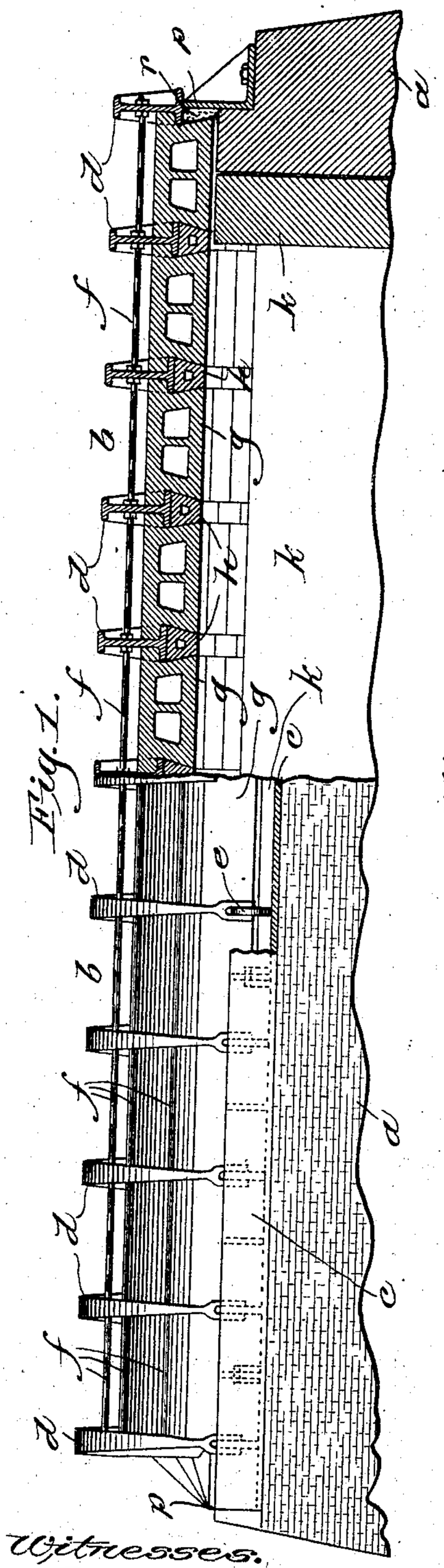

Fig. 1.

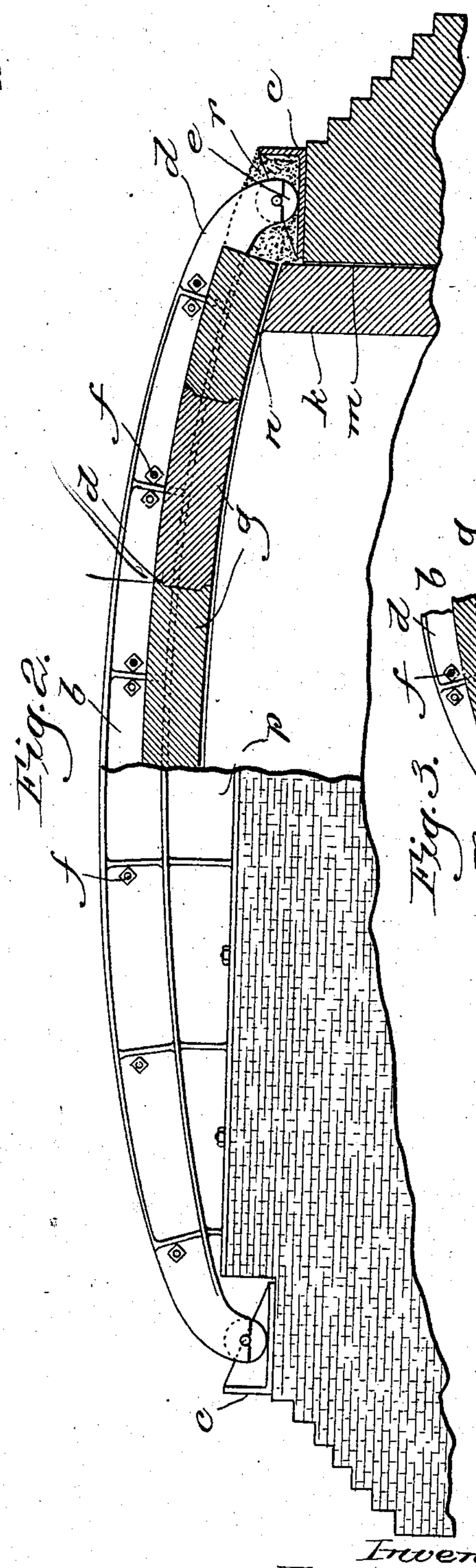

Fig. 2.

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

JONATHAN P. B. FISKE, OF NEWTON, MASSACHUSETTS.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 693,252, dated February 11, 1902.

Application filed February 7, 1901. Serial No. 46,330. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN P. B. FISKE, a citizen of the United States, residing at Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Brick-Kilns, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement in the construction of brick-kilns, having for its object the provision of a construction which will endure repeated and severe heating and cooling without the destruction or material injury of the kiln-walls and adjacent parts because of contraction and expansion.

One of the most serious and expensive difficulties in running the usual kiln is that the walls are rapidly fractured and destroyed by the expansion and contraction of the roof or crown, which tends constantly to rock or push and pull the walls, and as the latter are of masonry they fracture and crumble, thereby causing the proprietor a serious repair expense and necessitating the rebuilding of the kilns much oftener than would be necessary were it not for this trouble. It is evident, therefore, that from the practical standpoint the defect above noted is a most serious and difficult one. Accordingly I have devised a construction in which the requisite expansion and contraction can take place without injury to the kiln.

The details of construction and operation of my invention will be pointed out in the course of the following description, reference being had to the accompanying drawings, in which I have illustrated the preferred embodiment of my invention, and the latter will be more particularly defined in the appended claims.

In the drawings, Figure 1 is a side elevation of the kiln, the right hand thereof being broken away, so as to show the kiln in central vertical longitudinal section. Fig. 2 is an end elevation, partly broken away, so as to show the right-hand side thereof in vertical cross-section, exhibiting the fireproofing, side-wall construction, &c. Fig. 3 is a fragmentary view in vertical cross-section showing a modified construction.

It will be understood that my invention is not limited to any particular shape or variety of kiln, as it is applicable to all kinds, and especially to continuous kilns; but for convenience of illustration I have herein shown the same applied to a simple form of kiln consisting merely of four walls *a* and a roof or crown *b*. The walls *a* may be of any material commonly used or preferred for the purpose, being herein shown as built of bricks and cement and having a usual abutment form, broad at the base and growing narrower at the top, for providing the requisite strength and durability. Instead of building the roof or crown as a continuation of the masonry walls of the kiln I have provided the top of the wall with a receiving plate or support *c*, preferably hollow or dish-shaped, for a purpose to be presently described, and the crown or roof is provided with projecting steel beams *d*, preferably carrying at their ends rollers *e*, journaled therein to bear upon and move over the receiving-plate *c*, although I do not limit myself in this respect, as I contemplate having the beams themselves bear directly on the plate *c*, as indicated in Fig. 3.

The roof is composed of the beams *d*, spaced apart according to the size and weight of the crown and the character of use of the kiln, said beams being tied together by rods *f* and inclosing between them and being inclosed on their under sides by fireproofing, herein shown as consisting of tiles *g h*, for protecting the beams from the warping action of the heat.

Any usual kind of fireproofing construction may be used provided it terminates short of the ends of the roof-beams *d*, for the purpose which I will now describe.

On the inside of the walls *a* I provide an independent fire-brick lining *k*, which, as herein shown, is built close against the wall *a* at *m*, but entirely independent and disconnected therefrom, so that any unequal expansion of the two will not tend to destroy the lining. This lining terminates at its upper end adjacent to the end of the fireproofing portion of the roof or cover, but does not touch the same when cool, a space *n* normally existing therebetween to permit of the necessary expansion of the lining. Preferably the lining extends upwardly slightly above the top of the wall, as clearly shown in the drawings.

The roof or top of the kiln is herein shown

as arched, and at its lower ends the end beams *d* are exposed at their under side, as clearly shown in Fig. 1, so as to rest on a metal receiving-plate or supporting-beam *p*. It will be observed that both the supports *c* and *p* are provided at intervals with vertical bracing-ribs and so, preferably, are the beams *d*, the latter being also preferably gradually thickened from their outer ends to their middle portion, as is clearly shown in the left-hand portion of Fig. 1.

The above construction leaves a space around the cover of the kiln to be filled with sand or other sealing medium *r*, while still leaving all the parts next to the heat free to expand and contract without interfering with each other or with the wall of the kiln.

When the kiln is fired, the lining is free to expand upwardly and the cover is free to expand outwardly, the expansive movement thereof causing the beams to slide over the metallic surface without injury to the wall or any tendency to disrupt the same, the ends of the cover in which the under side of the metal beam rests on the metal plate *p* sliding freely laterally and the metal ends of the beams sliding freely outwardly on the plates *c*, and, on the other hand, when the kiln cools down the parts contract in a reverse manner, and yet all the time the kiln is air-tight, because of the surrounding sealing medium, which abuts against the ends of the fireproofing material of the roof and against the ends or sides, as the case may be, of the lining.

As already stated, I do not intend to limit my invention to the particular form and arrangement of parts herein shown, nor do I limit myself otherwise than is expressed in the claims taken in connection with this description.

It will be understood that in the case of a kiln made up of a plurality of distinct chambers, each chamber, consisting of the inclosing walls and a distinct covered or independent portion of the top of the kiln, will be considered the equivalent of a kiln as set forth herein.

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

1. A brick-kiln comprising inclosing walls provided at their top with a receiving-plate, a cover or crown composed of suitable fireproof material terminating adjacent to but not resting on said walls, and having metal beams extending beyond said fireproofing material and resting on said receiving-plate, and a sealing medium closing the joint around the top of the walls between said cover and said walls.

2. A kiln having walls provided at the top thereof with a support for a cover, combined with a cover having a body portion of fireproof material extending normally adjacent but not in contact with said support, and means for supporting said cover in said position, whereby a space is left between said fireproof material and said support adapted to hold a movable sealing medium for sealing the kiln-chamber air-tight along the joint between the cover and kiln-walls.

3. A brick-kiln comprising a wall, a roof, and a lining, said roof having at its under side a fireproof protection, said lining being independent of said wall and terminating short of said fireproof roof protection, and said roof and wall having coöperating bearing-surfaces for sustaining the roof movable on the wall.

4. A brick-kiln comprising a wall, a roof, and a lining, said roof having its under side provided with a fireproof protection, said lining being independent of said wall and terminating short of said fireproof roof protection, said roof and wall having coöperating bearing-surfaces for sustaining the roof movable on the wall, and a space between the end of said roof-fireproofing and said wall for the reception of a sealing medium for sealing the said opening between the roof and the lining.

5. A brick-kiln comprising a wall and a roof resting on said wall, said roof having its under side protected by fireproofing terminating short of contact with the wall, leaving a space between the end of said roof-fireproofing and said wall for the reception of a sealing medium for sealing the kiln-chamber air-tight, and means extending beyond said fireproofing for carrying the weight of the roof, said carrying means being provided with rollers bearing on the walls for permitting free expansion and contraction of the roof without liability of disturbing the walls.

6. A brick-kiln comprising an inclosing wall, a roof, said roof being provided on its under side with a fireproofing construction, means for sealing all around the roof at the joint between the roof and walls, and means for permitting said roof to expand and contract independently of said wall, said means including contacting metallic surfaces between the top of the wall and the edge of the cover.

7. A brick-kiln comprising inclosing walls, a cover or crown composed of suitable fireproofing material terminating adjacent to but not resting on said walls, and having metal beams extending beyond said fireproofing material and resting on said walls, and a sealing medium for sealing the joint between said crown and said walls and maintaining the joint closed irrespective of expanding and contracting movement of the crown over said walls.

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

JONATHAN P. B. FISKE.

Witnesses:
GEO. H. MAXWELL,
GEO. W. GREGORY.