

No. 692,894.

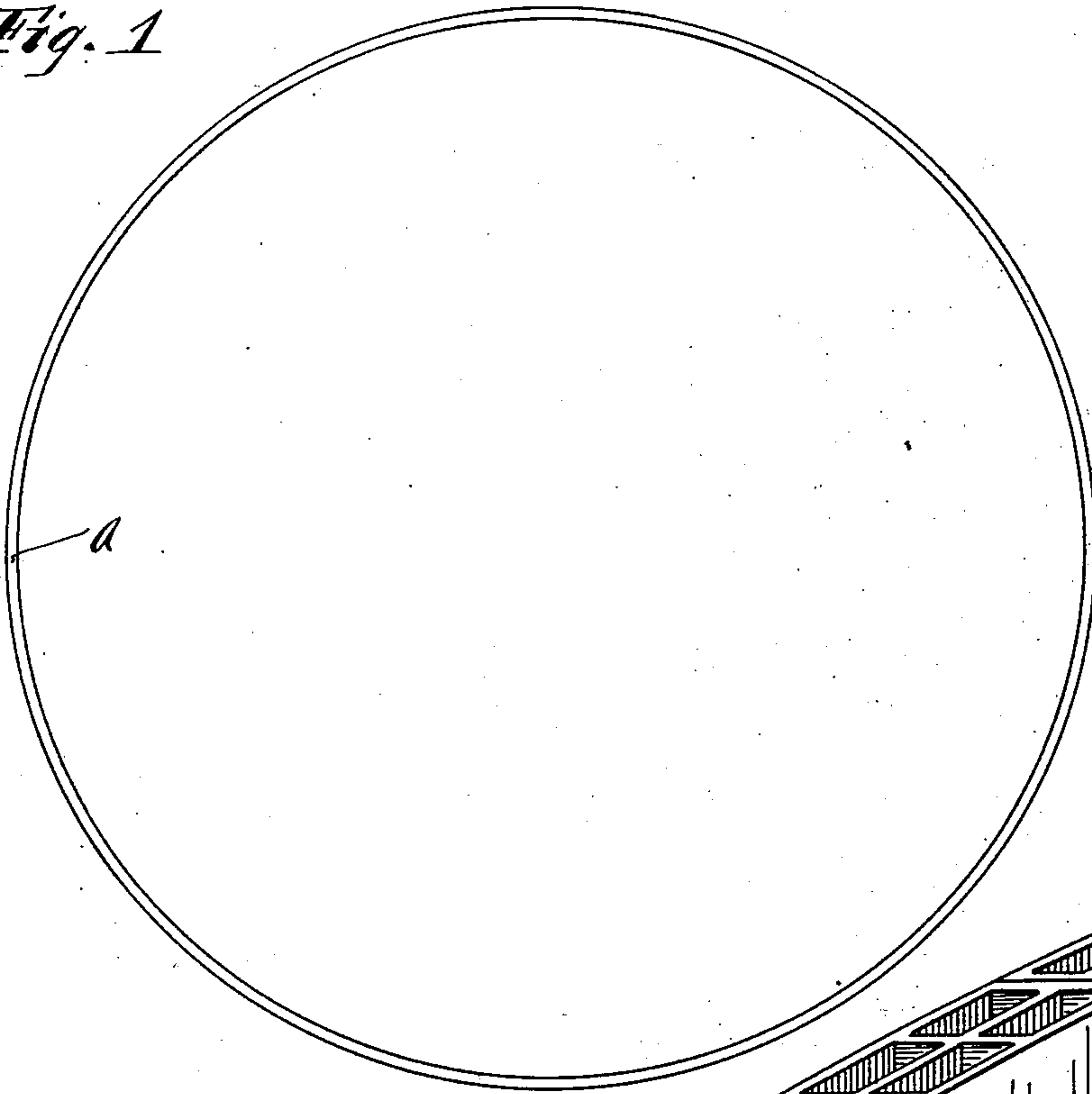
Patented Feb. 11, 1902.

F. R. McQUEEN.  
FIREPROOF GRAIN BIN.  
(Application filed July 25, 1901.)

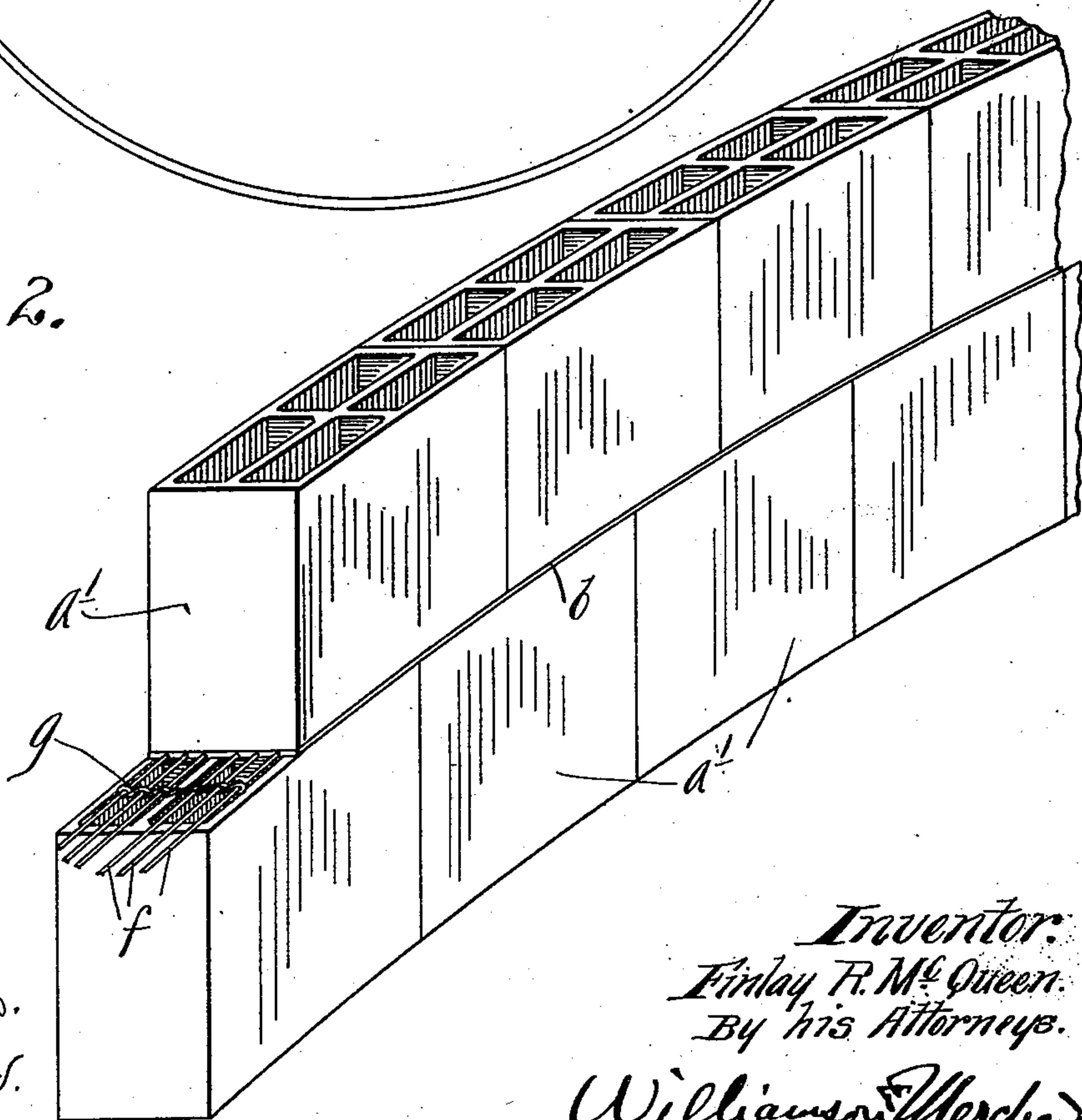
(No Model.)

3 Sheets—Sheet 1.

*Fig. 1*



*Fig. 2.*



*Witnesses*  
*Robert Otto.*  
*Harry Hilgord.*

*Inventor:*  
*Finlay R. McQueen.*  
*By his Attorneys.*  
*Williamson & Merchant*

No. 692,894.

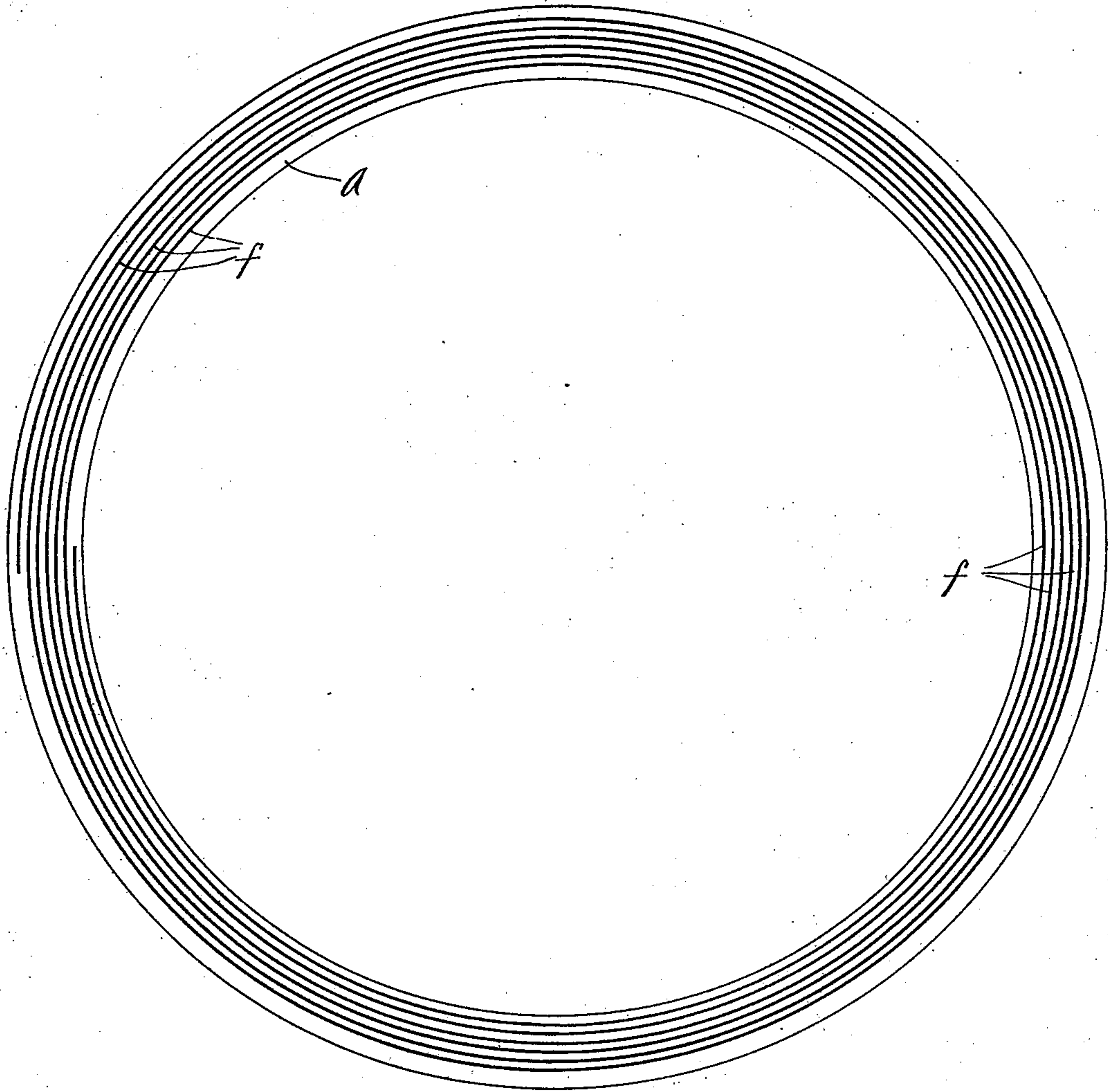
Patented Feb. 11, 1902.

F. R. McQUEEN.  
FIREPROOF GRAIN BIN.  
(Application filed July 25, 1901.)

(No Model.)

3 Sheets—Sheet 2.

*Fig 3.*



*Witnesses.*  
*Robert Otto.*  
*Harry Tilgore,*

*Inventor*  
*Finlay R. McQueen*  
*By his Attorneys.*

*Williamson Merchant*

No. 692,894.

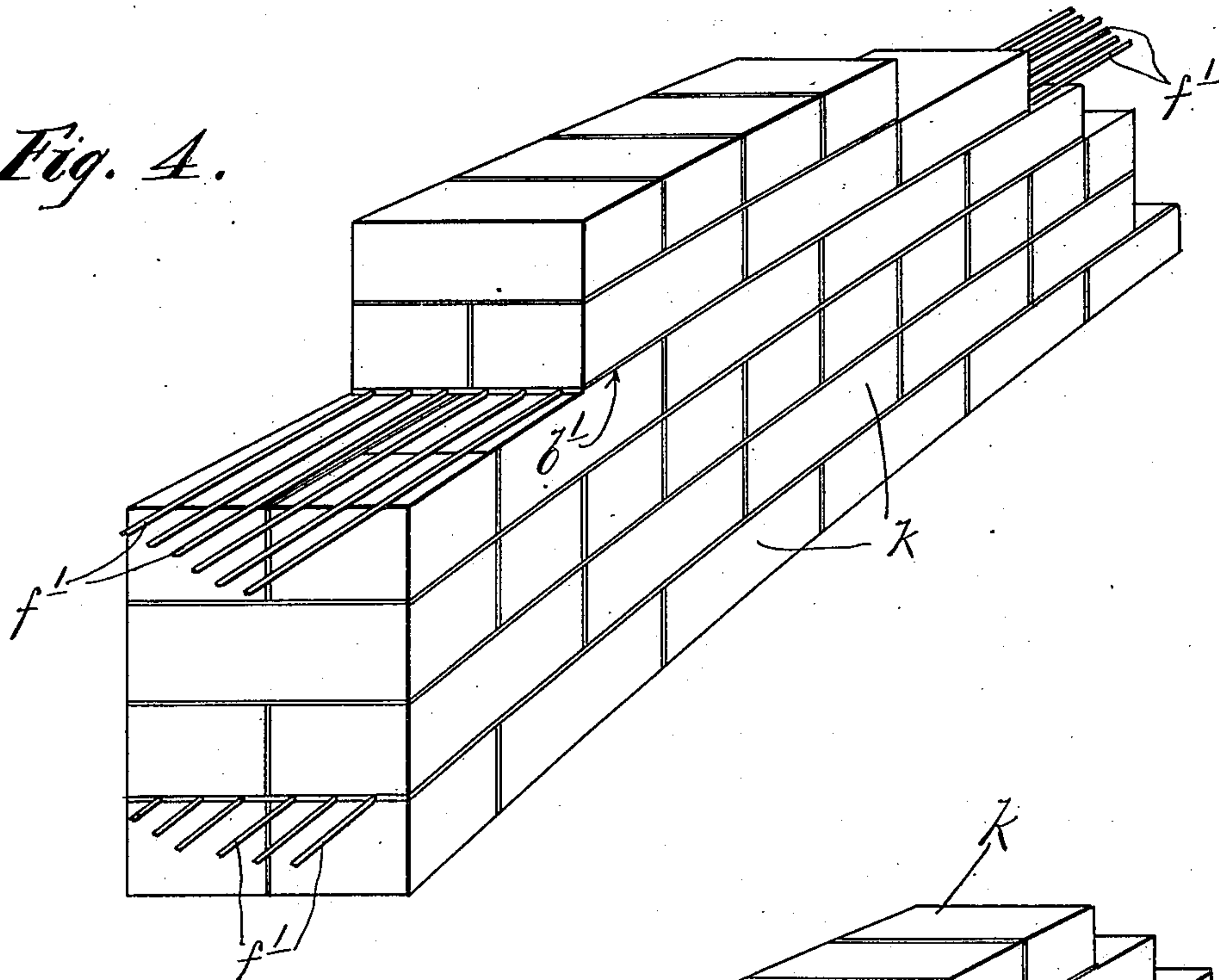
Patented Feb. 11, 1902.

F. R. McQUEEN.  
FIREPROOF GRAIN BIN.  
(Application filed July 25, 1901.)

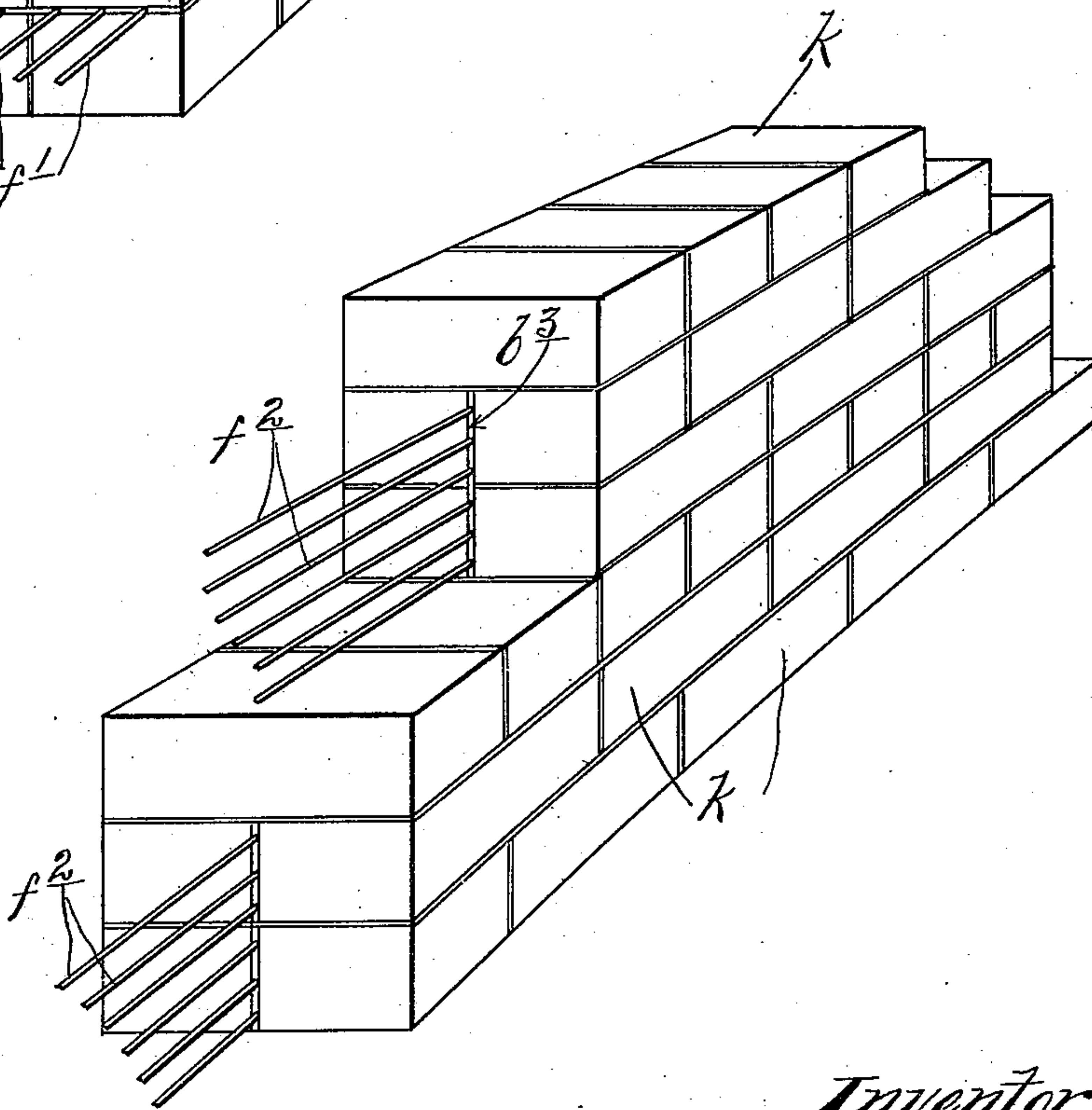
(No Model.)

3 Sheets—Sheet 3.

*Fig. 4.*



*Fig. 5.*



*Witnesses.*

*Robert Otto.*  
*Harry Filgore.*

*Inventor*  
*Finlay R. McQueen.*  
*By his Attorneys.*

*Williamson Merchant*



# UNITED STATES PATENT OFFICE.

FINLAY R. McQUEEN, OF SUPERIOR, WISCONSIN.

## FIREPROOF GRAIN-BIN.

SPECIFICATION forming part of Letters Patent No. 692,894, dated February 11, 1902.

Application filed July 25, 1901. Serial No. 69,634. (No model.)

*To all whom it may concern:*

Be it known that I, FINLAY R. McQUEEN, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented certain new and useful Improvements in Fireproof Grain-Bins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to improve the construction of that class of fireproof bins or similar structures which are built of tile-blocks, bricks, or other fireproof block material; and to this end my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

From a broad point of view my invention consists in winding wire between the tile-blocks, bricks, or other block material of a wall and embedding the same in the mortar or cement which is used to join the said blocks or bricks. My invention is, however, especially directed to the improvement of cylindrical bins wherein the walls are built up of hollow tile-blocks. In this application of my invention the binding or reinforcing wires are wound spirally and in horizontal planes at suitable intervals between the tile-blocks and are thus made to afford racks or skeleton supports which are adapted to support the cement or mortar while in plastic condition. After the mortar or cement becomes hardened or set, so as to rigidly unite the tile-blocks, the embedded wires serve to reinforce the walls and to adapt them to withstand the lateral strain due to the internal pressure of the contents of the bin.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view illustrating a horizontal section of a cylindrical grain-bin. Fig. 2 is a perspective view with some parts broken away, showing a portion of a wall built of the tile-blocks and embodying my invention. Fig. 3 is a diagram view in plan, illustrating the manner in which the binding-wires are

wound or interposed between the layers of tile-blocks, the thickness of the wall being greatly exaggerated; and Figs. 4 and 5 are perspective views showing portions of a bin-wall built of brick and also embodying my invention.

In Figs. 1 and 2 the character *a* indicates as an entirety the walls of a cylindrical bin. The character *a'* indicates hollow tile-blocks of ordinary construction, of which the walls of the bin are built. The successive layers of tile-blocks are lapped and their horizontal surfaces are united by layers of mortar or cement *b*. Hitherto it has been found necessary to use some such material as wire-cloth to support the cement or mortar while in plastic condition and to thereby prevent the same from falling into the cavities of the tile-blocks. As this wire-cloth serves only the temporary purpose above indicated, its item of cost is one with which it is desirable to dispense. In accordance with my invention I wind the reinforcing-wire *f*, properly spaced, in the form of a horizontally-disposed coil, over the faces of the upper layer of tile-blocks *a'*, as indicated in Figs. 2 and 3. For ordinary tile-blocks each coil of reinforcing-wire *f* is given about six convolutions. This I have found to be sufficient to support the body of mortar or cement *b* while in plastic condition. The coil may, however, be given a greater or less number of convolutions, if found expedient. Preferably the strands or convolutions of the coil *f* are properly spaced at suitable intervals by a transversely-woven wire-spacer *g*. However, in some instances temporary and removable spacers may be provided for holding the wire until the cement or mortar has been applied. When the cement or mortar is set, the coiled binding-wires *f* afford binding-bands which resist the lateral bulging strains put upon the bin-walls by the grain or other materials contained within the bin. Reinforcing-bands thus formed of wire are much stronger than metal bands of the same aggregate cross-section constructed in any other manner. It will thus be seen that the reinforcing-wires, disposed as above described, perform double functions, both of which functions are very important.



The constructions illustrated in Figs. 4 and 5, while within the broad scope of my invention, are not the full equivalents of the construction illustrated in Figs. 1 to 3, inclusive, for the reason that the binding-wires in these latter constructions perform but a single function—to wit, that of reinforcements or binding-bands. In both of the constructions illustrated in Figs. 4 and 5 the bin-walls are shown as built of bricks *k*. In the construction illustrated in Fig. 4 the binding-wires *f'* are coiled, as in the construction above described, and are embedded in the horizontal layers of mortar or cement *b'*, while in the construction illustrated in Fig. 5 the binding-wires *f''* are coiled vertically and embedded in vertically-extended layers of mortar *b''*.

From the foregoing description and statements made it will be understood that my invention is capable of considerable modification other than that herein set forth.

From one point of view my invention consists in winding reinforcing-wires spirally in the cement which unites the blocks of the wall, regardless of whether or not the blocks are hollow. From another point of view my invention consists in placing the reinforcing-wires, whether spirally wound or not, between the horizontal rows of hollow tile-blocks, whereby they are caused to serve as racks to support the cement while in plastic condition.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with the walls of a bin or similar structure built of fireproof blocks united by cement or mortar, of a binding-wire wound spirally and embedded in the ce-

ment which unites the blocks, substantially as described.

2. The combination with the walls of a bin or similar structure built of fireproof blocks united by cement or mortar, of reinforcing-wires wound spirally in horizontal planes and embedded in the cement which unites the said blocks, substantially as described.

3. The combination with the walls of a bin or similar structure, built of hollow tile-blocks, arranged in layers united by cement or mortar, of closely-spaced binding-wires laid between the layers of tile-blocks and embedded in the cement or mortar, which binding-wires overlie the openings in said tile-blocks and serve to support the cement or mortar while the same is in plastic condition, substantially as described.

4. The combination with the walls of a bin or similar structure, built of hollow tile-blocks united by horizontal layers of cement or mortar, of binding-wires coiled on horizontal planes and embedded in the cement which unites the horizontal surfaces of the tile-blocks, substantially as described.

5. The combination with the walls of a bin or similar structure, built of hollow tile-blocks *a'*, united at their horizontal surfaces by layers of cement or mortar *b*, of binding-wires *f* coiled in horizontal planes and embedded in the said layers of cement *b*, and spacing-wires *g* applied to the said wires *f*, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FINLAY R. McQUEEN.

Witnesses:

E. H. KELEHER,  
F. D. MERCHANT.