No. 861,175. PATENTED JULY 23, 1907.

H. R. HEINE.

CHIMNEY CONSTRUCTION.

APPLICATION FILED DEC. 16, 1905.

Fig. 1.

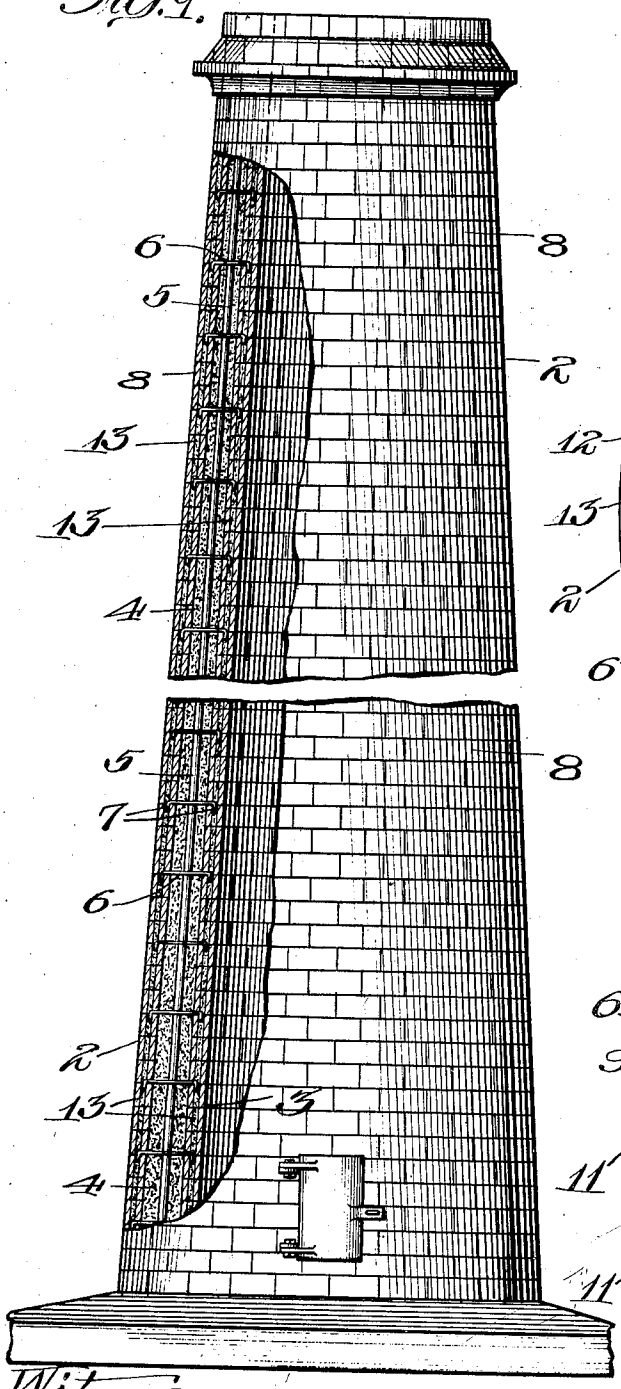



Fig. 2.

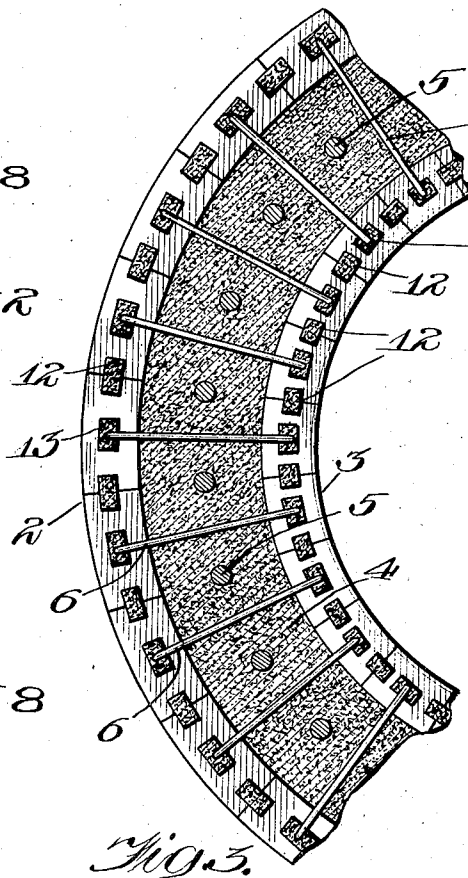
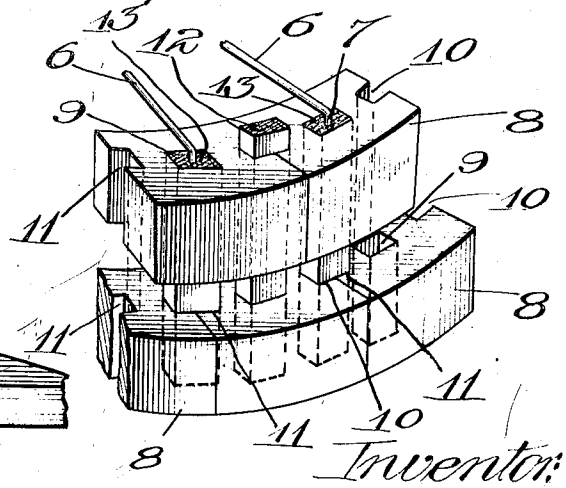



Fig. 3.




Witnesses:

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Inventor:

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# UNITED STATES PATENT OFFICE.

HEINRICH R. HEINE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE HEINE CHIMNEY COMPANY, A CORPORATION OF ILLINOIS.

## CHIMNEY CONSTRUCTION.

No. 861,175. Specification of Letters Patent. Patented July 23, 1907.

Application filed December 16, 1905. Serial No. 291,959.

*To all whom it may concern:*

Be it known that I, HEINRICH R. HEINE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chimney Construction, of which the following is a specification.

This invention relates to chimneys or smoke-stacks, and its object is to combine brick and concrete in the construction to the end of gaining the advantages of both materials without including their disadvantages when each material is used alone.

With the above-named objects in view my invention consists in the novel construction and arrangement hereinafter described in detail, illustrated in the drawing and incorporated in the claims.

Reference is had to the accompanying drawing, forming a part of this specification, in which

Figure 1 is an elevation of a smoke-stack, partly broken away, which embodies my invention. Fig. 2 is an enlarged horizontal section of a part of the stack. Fig. 3 is an enlarged perspective view of several of the bricks or blocks which form the facings of the stack-walls. This view represents parts of two courses of bricks slightly separated and with the mortar pins and tie-rods in position.

Referring in detail to the several views 2 represents what may be termed the outer facing or veneer of the circular wall of the stack as a whole, and 3 represents the inner facing or veneer. The body 4 of the stack is made of plastic material or concrete in which is embedded the usual vertical steel rods 5 which serve to stiffen or strengthen concrete chimneys or stacks. The inner and outer faces 2 and 3 are made of brick. In building the stack said inner and outer face are laid as separate concentric brick-walls with a space therebetween. After a convenient number of courses or layers of brick have been laid to form a mold-chamber for the concrete of suitable depth said chamber is filled with concrete. Another mold-chamber is then formed by continuing the laying of the structures 2 and 3 as in the first instance and again filling the second mold-chamber, and so on until the stack or chimney is completed. At suitable distances apart around the circle of the structure, as shown in Fig. 2, and vertically as shown in Fig. 1, for instance, tie-rods 6 are arranged to anchor the brick-walls 2 and 3 to each other. Each of these tie-rods is preferably a plain steel or iron rod bent at each end into a hook or catch 7, one of which hooks is embedded in the outer wall while the other hook is embedded in the inner wall, as clearly shown in Fig. 1.

Smoke-stacks, like other forms of tall structures, have their walls made thicker at the base than at the top, and where chimneys or smoke-stacks are constructed wholly out of brick the thickness of the wall is reduced upwardly by dropping a ring of bricks at intervals. If the thickness of the wall at the base is equal to, say, the width of six bricks and has a thickness equal to the width of one brick at the top, five steps or offsets will be formed in the wall between its base and top. At each of these offsets is a line of weakness where the forces of expansion tend to cause a crack. My construction obviates this difficulty by providing, for all practical purposes, a brick smoke-stack wherein the taper of the thickness is uniform, or free from sudden variations. The veneers, facings or brick-walls 2 and 3 are uniform in thickness throughout and in lieu of offsets or steps are inclined toward each other, as clearly shown in Fig. 1, gradually reducing the space between said facings from base toward the top. The inequality of thickness between base and top is taken care of in the cast of concrete 4, which, being formed in a plastic state, accommodates itself just as readily to one form of space as another.

By substituting the concrete 4 for brick I not only save the difference of cost of material between brick and concrete, but I also effect a saving in labor, and at the same time save all of the advantages of superior appearance of brick structures over concrete structures with the added advantage of a wall structure smooth both inside and outside, or, in other words, free from steps or offsets.

While I have shown the stack, as a whole, uniformly tapered, the base-portion may have parallel sides, as is customary without affecting the spirit of my invention.

In Figs. 2 and 3 are clearly shown novel details of construction for the walls, facings or veneers 2 and 3. Each of the bricks, or previously molded blocks, 8 is formed with a central vertical aperture or perforation 9 and end recesses 10 and 11. As shown in Fig. 3 the courses of these bricks or blocks are laid so that the recesses 9 register with the recesses 10 and 11. Said recesses are then filled with plastic material, such as concrete, mortar, or the like, which fillings produce keys or pins 12 and 13 that are common to and bind together the different superposed layers or courses. I have shown the tie-rods 6 engaged with the openings 9 or the pins 13 therein, as the most convenient method which occurs to me for placing said rods. The bent ends of the rods are simply placed loosely in the openings 9 before the latter are filled with plastic material.

It is to be observed that the structure as a whole, owing to the diversity in its material and construction, is calculated to withstand the usual tendencies which produce flaws or breaks. The facings or veneers 2 and 3 serve the filling or body 4 substantially in the same manner as wood veneers counteract the formation of

cracks in furniture. This would be true to a large extent even if the blocks 8 were made from concrete by reason of the fact that each of said blocks is an individual body and was previously formed under conditions necessarily different from those attendant upon the formation of the cast stack 4.

What I claim as new and desire to secure by Letters Patent is—

1. A smoke stack consisting of a pair of concentric, spaced-apart walls built up of brick or the like material, the bricks in said walls having vertical registering spaces filled with molded keys which support the bricks against lateral movement relative to each other, means for anchoring said concentric walls to each other, a filling between said walls made of plastic material, and means for stiffening said filling on lines parallel to said concentric walls.

2. A smoke stack consisting of a pair of concentric walls built up of bricks and like material having registering key-recesses, molded keys in said recesses, anchor rods having their ends embedded in said keys and key recesses and supporting said walls laterally relative to each other, a molded wall between said concentric walls, and vertical stiffening rods arranged at right angles to said anchor rods for supporting all of said walls.

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

HEINRICH R. HEINE.

Witnesses:
J. W. BECKSTROM,
E. HEDRICK.