

1,061,441.

J. S. BANKS.
REINFORCED BLOCK WALL.
APPLICATION FILED FEB. 29, 1912.

Patented May 13, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

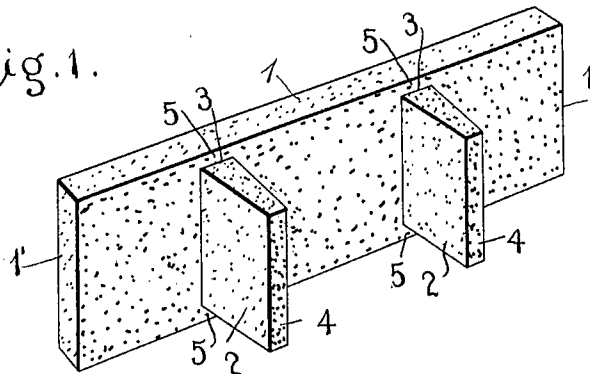


Fig. 2.

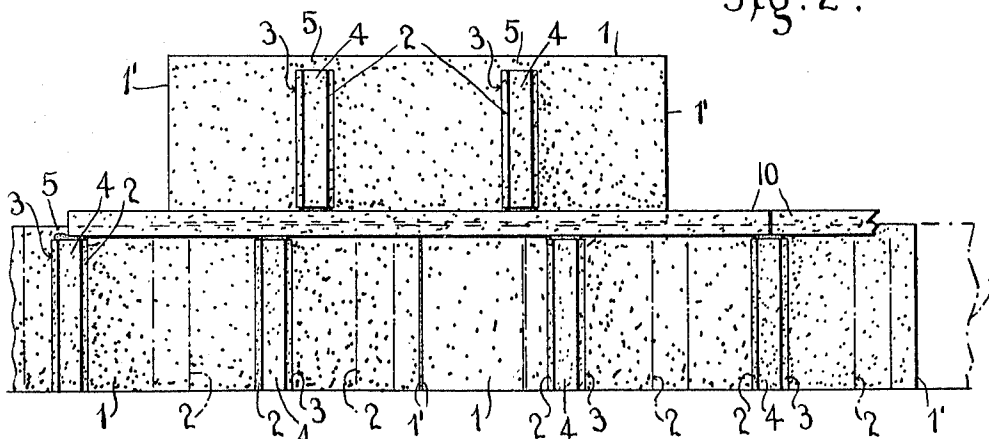


Fig. 3.

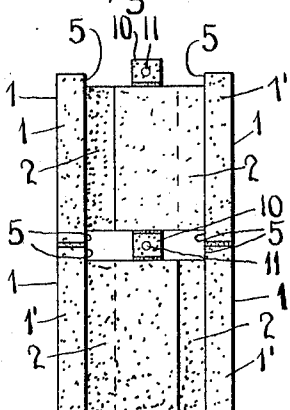
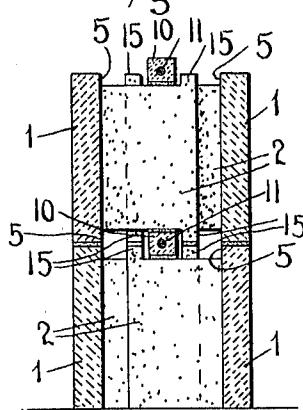


Fig. 5.



Inventor

J. S. Banks

Witnesses

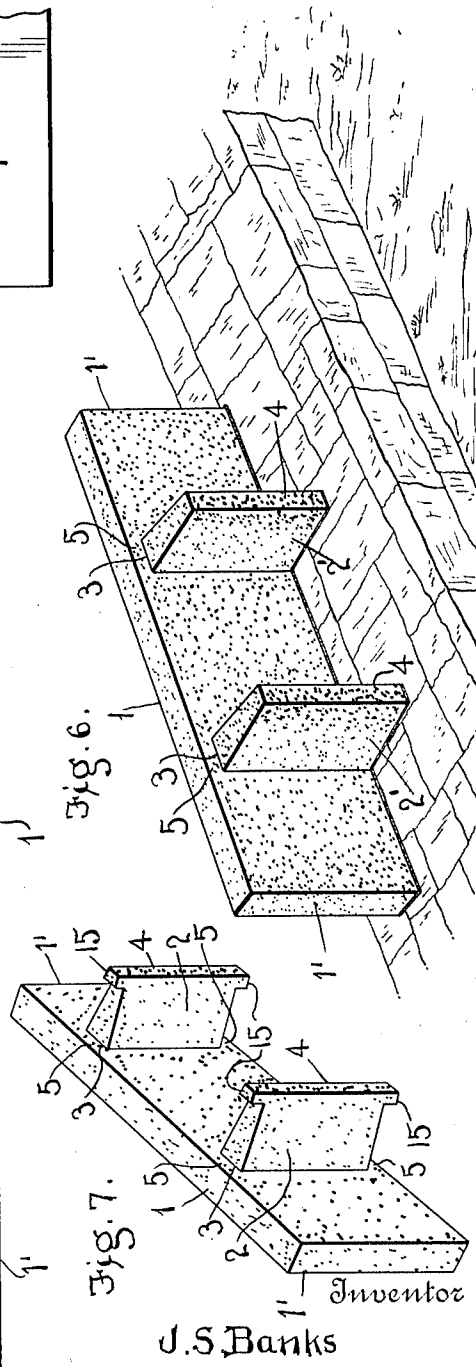
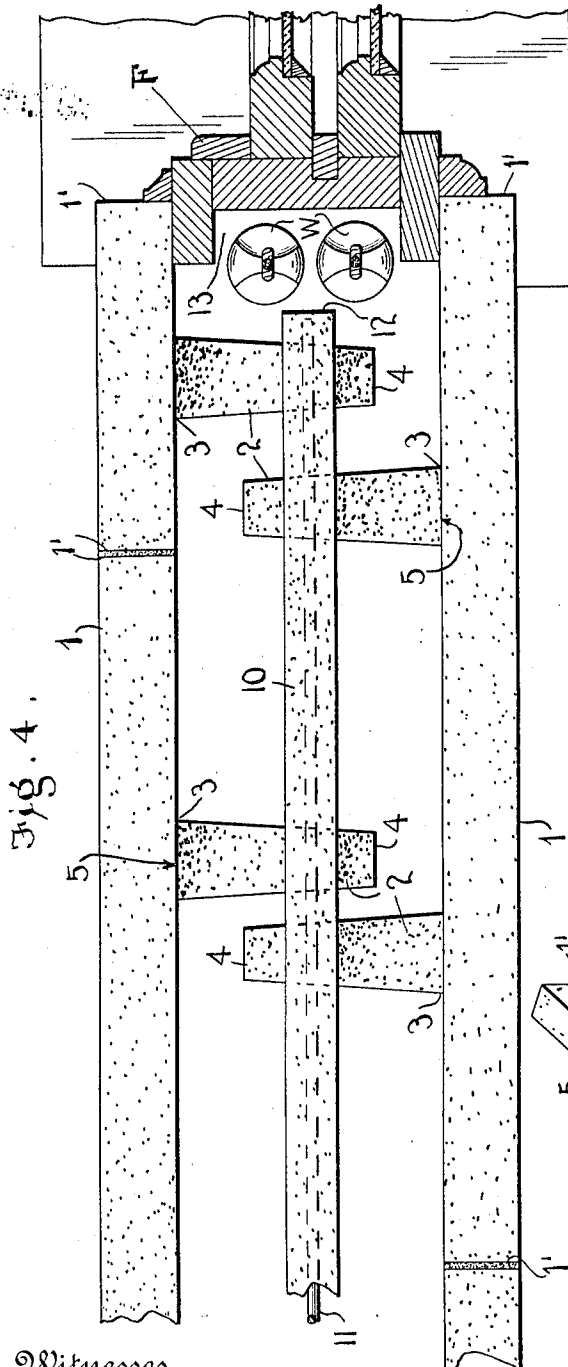
L. B. James
W. Collamer

by *H. B. Wilson & Co.*
Attorneys

1,061,441.

Patented May 13, 1913.

2 SHEETS-SHEET 2.



Witnesses
 L. B. James
 W. L. Collamer.

by *J. S. Banks*
 J. S. Banks
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN SCOTT BANKS, OF PORTSMOUTH, VIRGINIA.

REINFORCED BLOCK WALL.

1,061,441.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed February 29, 1912. Serial No. 680,644.

REISSUED

To all whom it may concern:

Be it known that I, JOHN SCOTT BANKS, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Reinforced Block Walls; and I do 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.

This invention relates to masonry and concrete structures, and more especially to block walls which are built in parallel thicknesses and reinforced; and the object of the same is to effect certain improvements in walls of this character and in the blocks of which they are made.

The following specification sets forth one embodiment of my invention and the manner in which it may be carried out, all as fully shown in the accompanying drawings wherein—

Figure 1 is a perspective detail of one of my improved blocks in its preferred form and proportions. Fig. 2 is an inside elevation of the outer thickness of a wall built of my improved blocks, the inner thickness thereof being omitted but the position of the fingers of the blocks in the inner thickness being indicated by dot and dash lines. Fig. 3 is an end elevation showing how such a wall is built up. Fig. 4 is a horizontal section through such a wall, indicating the manner in which it is constructed adjacent a door or window-frame. Fig. 5 is a vertical section showing a slight amplification of the idea, as will be explained below. Fig. 6 is a perspective detail of one of the blocks as constructed when it is intended to be used in the lowermost layer or row in a wall. Fig. 7 is a perspective detail of one of the blocks of which the wall shown in Fig. 5 is composed.

While it is my intention that the blocks composing the wall described below shall be made of plastic material such as concrete, I do not wish to limit myself in this respect. The reinforcing members hereinafter described are also by preference reinforced concrete bars, although here again I desire not to be limited in this particular.

The gist of the present invention lies in the construction of the elements which go to make up the wall, and in the manner in which they are arranged with relation to

each other to effect the functions and advantages set forth in the following specification.

Referring now to the drawings by reference numerals, 1 designates the body of each block which by preference measures twenty-four inches by eight inches, and will be about $1\frac{3}{4}$ inches in thickness, and the numeral 2 designates two fingers cast or formed therewith and projecting at right angles from one flat face thereof as seen, the fingers being about ten inches from each other and inset about seven inches from each end of the body as shown. All these measurements are susceptible of change, but I give them as my preferable dimensions because they work out successfully in a wall structure and are utilized in the illustration herewith. In length the fingers may be about of the proportions shown, and in shape they are rectangular in cross section and by preference thicker at the neck 3 where each finger joins the face of the body 1 and thinner at the outer extremity 4, although by preference they are about of the same height throughout their length. This dimension measures less than the upright dimension of the body 1, so that the latter has shoulders 5 above and below the neck 3 of each finger. I may here say that the construction shown in Fig. 6 is a special type or form of the block wherein the lowermost shoulder is omitted and the finger is given a greater vertical height so that it will come down flush with the lower edge of the body 1. As the builder will understand, blocks of this kind are for the lower row or tier of the wall and are intended to rest upon the foundation; and of course it is desirable that not only the lower edge of the body shall rest thereon but also the lower edges of its fingers so that the wall shall have great stability. By preference the fingers are about $4\frac{1}{2}$ inches in length, although it is quite possible to cast the block in sizes, or perhaps all of one size and with fingers of different lengths according as the builder may desire. However, let us assume that the standard length is about that shown in the drawings, which is sufficient for purposes of illustration and description. There being an outer thickness and an inner thickness of each wall, the third element thereof consists of a reinforced concrete bar 10, shown in Fig. 3 as of square cross section with a metal rod 11 throughout its length, although its exact details of construction

are unimportant in the present instance. It is essential, however, that the upright dimension of this reinforce bar shall be twice as great as the upright dimension of each shoulder 5, or in other words that it shall fill the space between the lower edges of one tier of fingers 2 and the upper edges of the tier beneath, as shown in this view.

In constructing a wall which is built of my improved block, the latter are laid like bricks and in rows with their ends 1' in break-joint relation, as the peculiar disposition of the fingers will permit, and by preference the rows in the opposite thickness are similarly disposed excepting that their ends 11 are opposite the centers of the blocks in the thickness first mentioned. This causes the fingers and the blocks of a row in the inner thickness to interlap with those of the blocks of a row in the outer thickness, the former projecting outward and the latter projecting inward; and if the wall is to be rather thin, the extremities 4 of the various fingers may contact with the inner faces of the bodies of the blocks in the outer thickness, and vice versa. If, however, the wall is to be thicker, the bodies of the blocks are set farther apart in the opposite rows so that the extremities of the fingers in one row will not make contact with the inner faces of the bodies of the blocks in the opposite row. If the wall is to be extremely thick, the extremities of the various fingers may barely pass each other, or it may be necessary to utilize blocks which are specially cast with fingers of extreme length. I consider it desirable in any case that the fingers do lap each other as best seen in Fig. 3. After the blocks in two opposite rows have been laid, the reinforcing element 10 is put in place as there shown, resting upon the upper edges of the alternately disposed fingers and standing about midway between the inner faces of the bodies of the two rows or thicknesses of blocks. Thereafter the next two rows of blocks are laid in the manner above described with respect to the disposition of their joints or ends, and the lower edges of their fingers in turn rest upon the reinforcing element 10 just laid; and finally another element 10 is laid upon their upper edges as shown. This is continued for the full height of the wall, and when it is completed a filling may be disposed therein if desired, or this filling may be inserted as the wall is being built. However, I have not illustrated this feature as it is well known in the art of wall construction.

Fig. 4 is illustrative of the use of my improved block when the wall is built up against the side of the frame F of a window or door. Of necessity, with the blocks breaking joint as above described, in each row the block of one thickness must be broken off so that a half-length block may

be employed; but the disposition of the fingers 2 should be continued as above described, although it is not absolutely necessary that those on the half-length blocks shall be spaced from the others the same distance that fingers on the full-length blocks throughout the wall are spaced. This view shows how the reinforcing element may be cut off at 12 so as to leave a space 13 just outside the frame F for the window weight W if desired; but of course if plastic is afterward poured into the hollow wall, provision must be made whereby it will not be permitted to fill this space. * * * I will not amplify in this description the manner of building a corner or an angle, as I do not consider it necessary to a full understanding of my invention, and moreover it is well known in the art.

Referring now to Figs. 5 and 7, which illustrate a slight amplification or elaboration of the idea above described, the numerals 15 designate lugs preferably cast integral with the outer ends of the fingers 2, those on the upper edges thereof rising and those on the lower edges thereof depending from the bodies of the fingers to such an extent that the upright dimension of each finger at its outer end will be the same as the upright dimension of the body 1 of the block from which this finger projects. Obviously when blocks of this type are employed in building a wall in the manner above described, the upper and lower faces of the lugs 15 come together as illustrated in this view, and form what might be called "hooks" engaging over the reinforce element 10 as therein shown. I have purposely illustrated a square reinforce which leaves considerable space to either side of it, but it is clear that the reinforce might be given a greater lateral dimension or the lugs made larger so that these elements will come in contact. This amplification of my invention is employed where the wall is extremely high between floor lines, where a plastic filling is to be poured in last, where the building is intended to carry machinery or otherwise be subject to vibration, or in any case where great strength is desired. The obvious purpose of the hooks is to prevent the spreading of the two thicknesses of which the wall is composed, and as each block in each row is hooked to a common longitudinal member as it is laid, the spreading tendency in the blocks in one row will be resisted by that of the blocks in the opposite row and the wall will be greatly strengthened. However, the construction is such that, if it be desired to build a wall somewhat thinner than shown in Fig. 5, the blocks in the two thicknesses may be pushed closer together than there illustrated and a wider reinforcing element 10 inserted as suggested above

and with its upright sides in direct contact with the hooks 15 of the two sets of fingers. Or if the hollow space between the thicknesses is to be filled, the square reinforce 10 shown in Fig. 5 might be employed and when the plastic filler is poured in it will set in the spaces between the hooks 15 and the reinforce 10, so that the walls subsequently will not spread. This idea also need not be further amplified. A structure might be erected having the two thicknesses of its walls thus "bonded" or tied together for the lowermost story or stories, and those above omitting the lugs 15 if desired, especially since the upper walls are usually not so thick and heavy. However, all these details may be left to the builder, and the manufacturer will employ his judgment as the demands of the trade may indicate.

I do not wish to limit myself to the precise structure hereinbefore set forth, and of course the sizes, proportions and materials are unimportant.

What is claimed as new is:

1. The herein described building block comprising a substantially right-angular body having greater height than thickness, and a plurality of fingers projecting integrally from one of its faces and also having greater height than thickness, the height of the fingers being less than that of the body so as to leave shoulders on the face of the latter above and below the fingers, for the purpose set forth, and lugs at the outer end of each finger respectively rising from its

upper edge and depending from its lower edge a distance equal to the upright dimension of said shoulders so that the outer end of the finger shall have an upright dimension equal to that of the body, all as and for the purpose set forth.

2. In a reinforced wall structure, the combination with two separated thicknesses of blocks laid in opposite rows, each block consisting of a flattened right angular body standing on edge, a series of integral upright fingers projecting from said body toward the blocks in the opposite row and lapping the fingers thereof, all fingers being also flattened, tapered laterally and of less upright dimension than said bodies so as to leave shoulders on the latter above and below the fingers, and lugs projecting both upward and downward from the fingers at their outer thinner ends and having the same upright dimensions as said shoulders; and for each pair of rows of blocks a reinforced concrete bar of rectangular cross section disposed between their bodies, resting on the upper edges of their fingers and having an upright dimension twice that of said shoulders, for the purpose set forth.

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

JOHN SCOTT BANKS.

Witnesses:

CHAS. K. WELTON,
GEORGE POWELL.