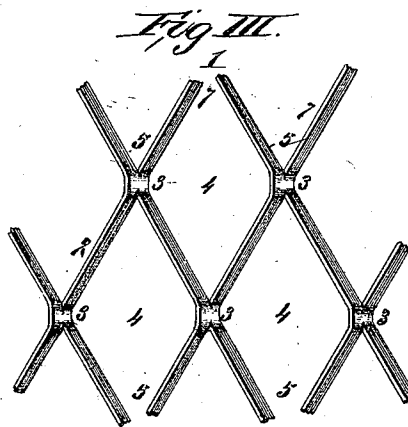
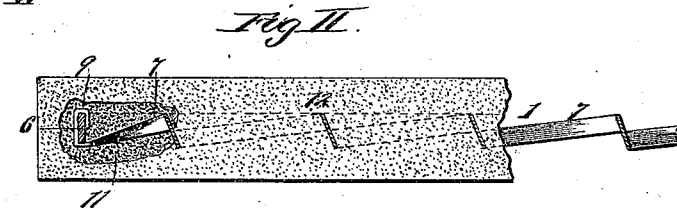
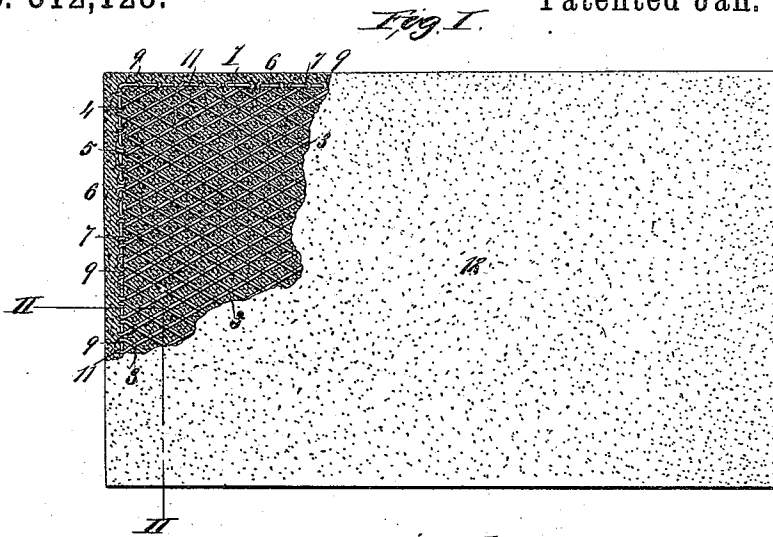


A. C. STORCK.

CONCRETE BLOCK WITH EXPANDED METAL REINFORCE CORE.

No. 512,128.

Patented Jan. 2, 1894.



Attest
Wm. H. A. S.
 George E. Bruce

Inventor:
 August C. Storck.

By *Knights Bros.*

F. H. S.

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Fig. IV.

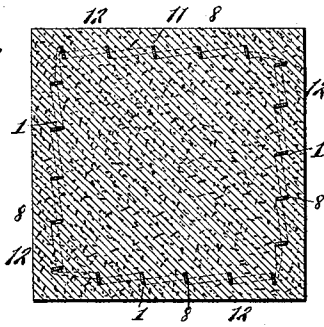


Fig. V.

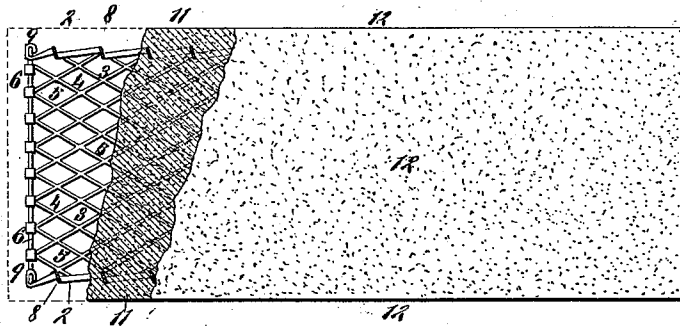


Fig. VI.

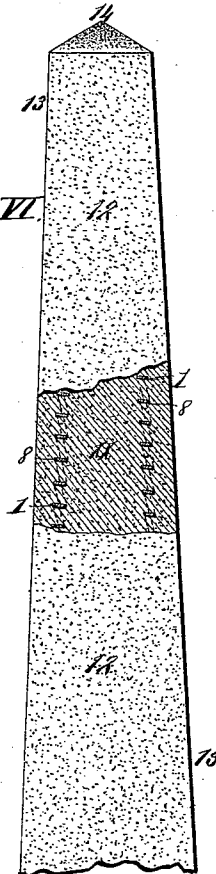
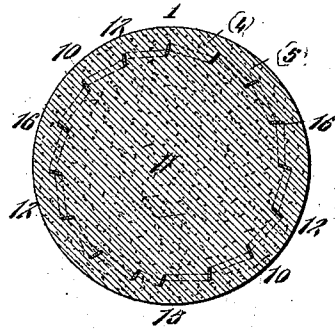


Fig. VII.



Attest:
Wm. H. A.
George E. Lane

Inventor
August C. Storck.

By *Knights Bros.*
Atty's

UNITED STATES PATENT OFFICE.

AUGUST C. STORCK, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
AUGUST C. ERFORT, OF SAME PLACE.

CONCRETE BLOCK WITH EXPANDED METAL REINFORCE-CORE.

SPECIFICATION forming part of Letters Patent No. 512,128, dated January 2, 1894.

Application filed June 15, 1892. Serial No. 436,866. (No model.)

To all whom it may concern:

Be it known that I, AUGUST C. STORCK, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Concrete Blocks with Expanded Metal Reinforce-Cores, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a concrete block constituted of crushed iron slag, crushed gravel, cement, and sand, with an expanded metal reinforce core, the said reinforce core, surrounded by and secured to a brace frame, which latter both braces and holds taut the expanded metal core plate, and together they are embedded within the concrete block in the course of molding; and the invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a top view of a concrete slab block, with part broken away to show the embedded, expanded metal reinforce core, and its surrounding brace frame. Fig. II is a vertical, detail section, taken on the angle line II—II, Fig. I, and shows an edge view of the slab-block, with part broken away to show a transverse section of the surrounding brace frame, and the clamp hold of the edge of the expanded metal reinforce core tightly gripping said brace frame; it also shows the peculiar brace lay of the expanded metal within its bed that constitutes it an especially stiff reinforce in conjunction with the surrounding brace frame for the block. Fig. III is a top, detail view of the expanded metal core plate, and shows its web expansion into angle brace lines. Fig. IV is a transverse section of either or both Figs. V and VI, and shows a square block or pedestal in contradistinction to the slab block shown in Figs. I and II, and also shows the four sided formation of the embedded, expanded metal reinforce in the position it occupies in heavy, square and cubical blocks. Fig. V is a top view of a block, which is square in cross section, with part of the fine surface coat broken away to show the coarser interior, with part of the latter broken away to show the expanded metal reinforce and a section of the square

brace frame that holds in position and keeps taut the expanded metal reinforce. Fig. VI is an elevation, with part broken away to show the expanded metal reinforce, and shows a concrete post or pedestal; and Fig. VII is a transverse section of a circular pillar in which the expanded metal reinforce is encircled around within a short distance of the periphery of the pillar, and the meeting ends being secured together, so as to exercise besides the angle brace of the expanded metal, the ring or arch brace effected by its circular form.

Referring to the drawings:—1 represents the expanded, metal reinforce core, which has been formed by the insertion of a series of slits 2 in an iron or other sheet metal plate, the said slits running with short intermissions 3 in longitudinal parallel lines across said plate, and expanded and molded so as to form diamond-shaped apertures 4, which apertures are surrounded by the diamond shaped multiform frames 5 with their unsevered connections. The outline bars of said frames are in consequence the width of the space between the parallel slits.

6 represents the square metal brace-frame, around the single sided, expanded metal reinforce core 7, which core is constituted of the aforesaid slitted, expanded sheet metal, as shown in Figs. I and II. The aforesaid metal brace-frame is also located at each end of the four sided box core 8, shown in Figs. IV, V and VI. The said four sided box cores are intended to be used in cubic and other heavy blocks, as shown in said last named Fig. VI, where, unlike the slab blocks shown in Figs. I and II, more than a single, flat core is required. The compound form of said four sided box reinforce cores makes it more convenient and effective to secure said square metal brace frame 6 around the ends of said box cores, see Fig. V, instead of around the sides and ends of the single side core as shown in Figs. I and II.

9 represents return clamp hooks, which are formed on the projecting edges of the expanded metal core, by turning said edges around said square metal brace frames, whether said frame be around the sides and edges of the single sided core shown in Figs.

I and II, or around the ends of the box cores shown in Figs. IV, V and VI. 10 represents the aforesaid expanded metal, reinforce core when it is bent around in a circular form to
 5 reinforce circular pillars, as shown in Fig. VII, in which it occupies a position embedded in the concrete a short distance within the periphery of the pillar.

11 represents the concrete that forms the interior of the block, which is constituted as follows:—coarse, crushed gravel, two-sixths, ($\frac{2}{3}$;) coarse, crushed iron slag, two-sixths ($\frac{2}{3}$;) clean sand, one-sixth, ($\frac{1}{6}$;) and cement (preferably Portland) one-sixth, ($\frac{1}{6}$), to which sufficient water is added to cause the amalgamation of the concreted mass, after its thorough
 15 mixture.

12 represents the exterior facing of the block, or the parts thereof that are exposed to view; the concrete for which exterior facing parts is constituted as follows:—fine crushed lime-stone one-fourth, ($\frac{1}{4}$;) fine, crushed iron slag one fourth, ($\frac{1}{4}$;) clean sand, one-fourth, ($\frac{1}{4}$;) and cement, (preferably Portland) one-fourth, ($\frac{1}{4}$;) to which sufficient water is added to cause the amalgamation of the concreted mass after its thorough mixture.

In the molding of the block, the parts that are intended for the face and visible sides and ends of said block are first laid against the inside surface of the mold by means of a trowel or other convenient tool, with a layer of the fine exterior cement 12. The thickness of said layer varies in accordance with the wear and tear from friction to which it is to be exposed; thus for the top surface or tread of door steps and for pavements, &c., the said fine concrete layer should be considerably thicker than for other building blocks, posts, pillars, &c. The thickness of the fine surface layer may vary from one-third of an inch to two inches, the latter only in extreme cases such as the top of much frequented door steps, where the foot wear is severe. In every case, in accordance with the particular parts of the blocks that are exposed to view, such parts alone are intended to receive the above described fine surface coat. After the spreading of the layer of said fine surface coat, a portion of the coarse concrete is inserted, sufficient if the mold is for a slab-block, (see Figs. I and II) to bring the filling to the right level for the central laying of the reinforce core 7, the hook edges 9 of which
 55 core are clamped around the square metal brace frame, 6, and are centrally placed on the concrete within the mold. The remainder of the coarse concrete 11 is then filled in, so as to completely embed said reinforce core 7 with its brace inclosing frame 6. If what is then the top of the block within the mold is intended to be eventually exposed to view, a surface coat of the fine concrete 12 is then spread on the top of the coarse concrete, and
 65 the lid of the mold is placed thereon, and said

mold with its contents is submitted to the pressure of the press.

The mold and press themselves need not be shown as they are of usual construction.

When the block to be molded, unlike in the slab form, as shown in Figs. I and II, is on the contrary of a cubic or thick, heavy form, as shown in Figs. IV, V and VI; then the expanded metal reinforce core is made of sufficiently wide plate, and the expanded metal plate is bent in angles, to form a four sided box tube; in which case the square metal brace frames 6, are secured by the clamp hooks 9, around the respective ends of said reinforce box frame, and not around each side of said box frame for the adjoining sides of said reinforce frame brace each other and are held to their coadjutory brace position by said square metal brace frames at the ends of said reinforce square box tubes.

In Fig. VI is shown a post or square pillar 13, of a slightly conical form, in which the sides of the expanded metal reinforce boxing are alike reduced in diameter toward the top to accord with the like reduction toward the top in the post itself, the said post having a surmounting apex 14, the inclined sides of which shed the moisture that descends thereon. The said post may be of an octagon or other form.

In Fig. VII is shown the horizontal, transverse section of one of my circular concrete pillars 15, in which the expanded metal reinforce core 10 is placed in a circle 16 embedded within the concrete at a suitable distance within the periphery of the pillar. The meeting ends of said circular reinforce 16 are secured together, and said reinforce thus constitutes an arch or continuous ring brace, to stiffen the pillar.

In all of the three positions in which said expanded reinforce core is placed, it both stiffens the block to enable it to bear any common strain without breaking or cracking and also if even under extreme adverse conditions, the block should either break or crack, the expanded metal brace core will still hold it together.

I claim as my invention—

1. A concrete block having embedded therein a binder consisting of a brace frame, and a slashed metal expanded frame having return clamp hooks on its edges whereby it is secured to the brace-frame; substantially as described.

2. A concrete block, consisting of crushed limestone, crushed slag, crushed gravel, sand and cement with water as an amalgamator, and having embedded therein a binder, consisting of a brace slashed frame; substantially as described.

AUGUST C. STORCK.

In presence of—
 BENJN. A. KNIGHT,
 SAML. KNIGHT.