

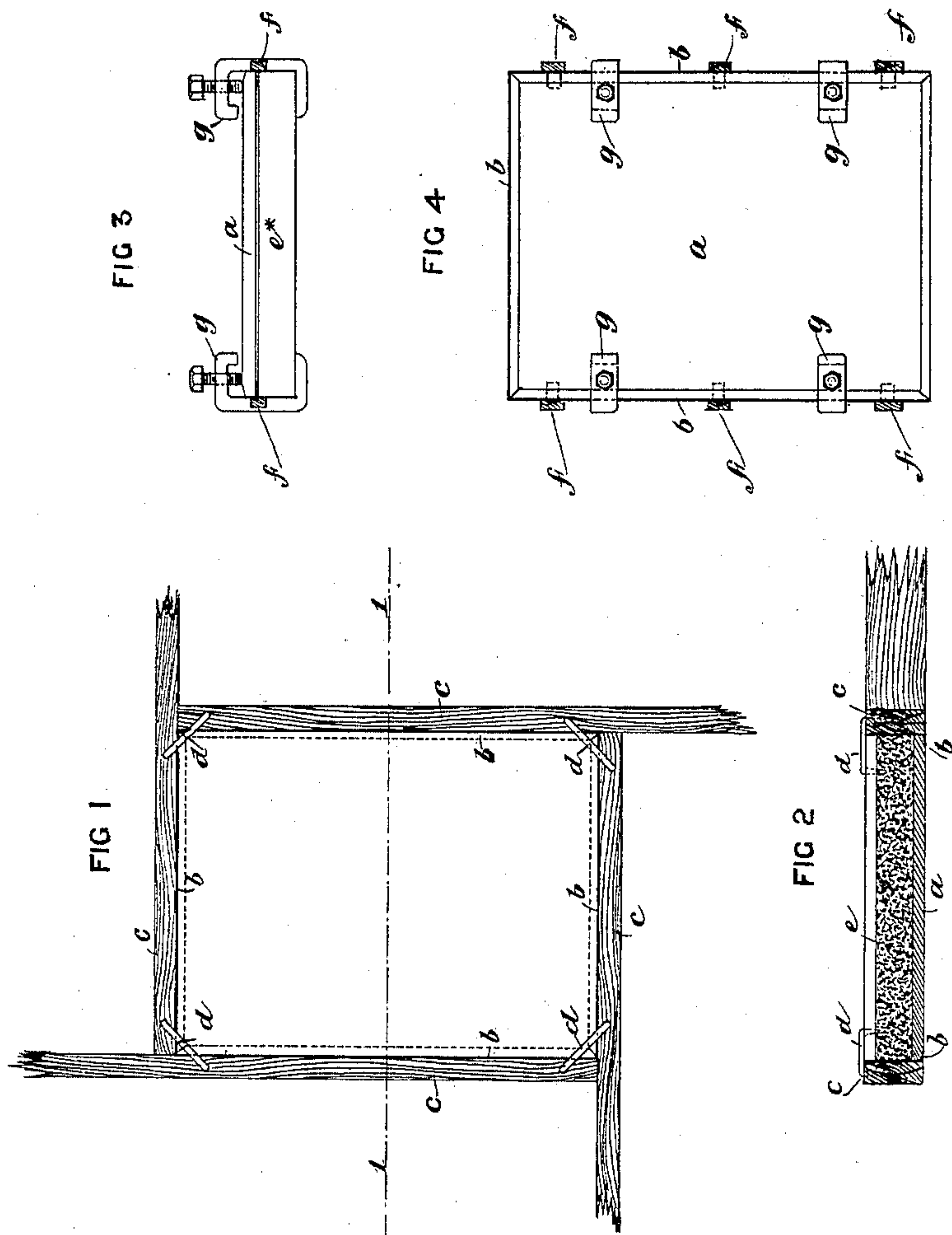
(No Model.)

T. R. JOHNSTON.

BACKING FOR STONES FOR LITHOGRAPHIC PURPOSES.

No. 433,349.

Patented July 29, 1890.



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UNITED STATES PATENT OFFICE.

THOMAS RUDDIMAN JOHNSTON, OF LONDON, ENGLAND.

BACKING FOR STONES FOR LITHOGRAPHIC PURPOSES.

SPECIFICATION forming part of Letters Patent No. 433,349, dated July 29, 1890.

Application filed April 10, 1889. Serial No. 306,644. (No model.)

To all whom it may concern:

Be it known that I, THOMAS RUDDIMAN JOHNSTON, map publisher, a subject of the Queen of Great Britain, residing at 26 Charterhouse Square, in the county of Middlesex, England, have invented certain new and useful Improvements Connected with Stones for Lithographic Purposes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Of late years the general use of great numbers of the larger sizes of steam-printing machines and other causes have led to a great scarcity in the better quality of suitable lithographic stones, and as the price of these is considerably higher in proportion than that of smaller sizes it has been suggested that the stones might be cut into comparatively thin slabs and backed in some way with a cheaper material. It has also been proposed to strengthen lithographic stones with a backing of artificial stone composed of ground granite, sand, or like material, and Portland, Roman, or other like cement; but in practice this backing, by reason of its hard and unyielding character, caused the lithographic slabs to become unlevel, and they have broken when printed from, or without having been printed from they have been found to be cracked from some peculiar action of the cement used. In other cases the stones and backing came apart in use. It has also been proposed to cement backings to the stones by means of sulphur; but this, like plaster-of-paris, becomes entirely too refractory or brittle, and being of this unyielding nature it frequently cracks under the pressure necessarily brought to bear on the stone.

Now according to my invention I avoid the use of cements of the character hereinbefore referred to for binding the ground stone, sand, &c., together, and I employ in lieu thereof asphalt, bitumen, pitch, or other like slightly-elastic adhesive matters or cements, or combinations of the same, which will readily melt by heat at a comparatively low temperature without the addition of water. I mix these materials with chips of stone, ground stone, sand, gravel, or other suitable solid material heretofore employed as a backing to the litho-

graphic stone, or as a cement for securing the lithographic stone to a natural or artificial stone backing.

The great advantage in substituting asphalt, bitumen, pitch, or other like matters or cements for the materials heretofore employed is that the backing, when made of the former and cemented to the slab by a like substance or cement, forms a slightly elastic or yielding base or backing for the slab, and will take up the inequalities of the strain that may be caused by inequalities in the cement or in the backing proper, and thus avoid the breakage of the slab when subjected to pressure in printing from it.

I will describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a plan and Fig. 2 a cross-section representing the means I adopt for backing a slab of lithographic stone with artificial stone; and Fig. 3 is an end view and Fig. 4 is a plan representing the means I adopt for cementing a slab of lithographic stone to a slab of other natural or artificial stone.

I carry my invention into effect somewhat as follows: I take a slab of lithographic stone and heat it in any convenient manner to about the melting-point of the cement used—say, as an example, Seyssel asphalt. The asphalt having been melted with a small quantity of pitch or mineral tar and allowed to boil for four or five hours to remove the volatile oils, I then paint the back of the slab of stone *a* with this melted asphalt. To the edges of the face of the stone *a*, I then paste bands *b*, of paper, and having laid the slab face downward I fold these upward, joining them together, so that they, with the back of the stone *a*, will form a shallow trough, and I support the paper *b* at each side with a strip of wood *c*, which strips may be long enough to suit various sizes of stones, in which case they are arranged as represented at Fig. 1, and they are preferably fixed together by staple-formed connecting-irons *d*; or I form a trough on the back of the stone in any other convenient manner. I then pour a small quantity of the melted asphalt into the trough, dropping at once into it the chips of stone, ground stone, sand, gravel, or other material, which has been previously heated. More asphalt is run in and more stone or other

like material added until the desired thickness is attained. The surface of the compound forming the backing is then pressed and flattened, after which it is left to cool, by
 5 which means a solid durable backing is firmly attached to the slab of lithographic stone *a*, which backing is not liable to twist or warp in setting, nor to become accidentally detached from the slab of lithographic stone *a*.
 10 The stone or other like material may, if desired, be previously mixed with the asphalt.

To join a slab of lithographic stone *a* to a slab of other natural or artificial stone *e**, I heat both of these until they are warmer than
 15 the melting-point of the asphalt or other cementing material used. I then place at suitable distances small pieces of wood or other material *f* on the backing stone, of a thickness to correspond to the intended thickness
 20 of the layer of asphalt or other cementing material used to connect the slab of lithographic stone *a* and the backing stone *e** together. The slab of lithographic stone *a* and the backing *e**, I now clamp firmly to
 25 gether by means of screw-clamps *g*, or by other suitable means, and having pasted paper *b* around or otherwise closed three sides of the space between the two stones to prevent the escape of the asphalt or other like
 30 cementing material, I turn the stones up on edge and pour the melted asphalt or other like cementing material between them.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—
 35 ent is—

1. A lithographic stone having a backing composed of slightly-elastic material cemented thereto by means of a slightly elastic cement, substantially as set forth.
- 40 2. A backing for lithographic stone, consisting of either natural or artificial stone connected to the slab of lithographic stone by

asphalt, bitumen, pitch, or other adhesive slightly-elastic material capable of melting at comparatively low temperatures, substantially as herein described. 45

3. A backing for lithographic stone, consisting of asphalt, bitumen, pitch, or other adhesive slightly-elastic material capable of melting at comparatively low temperatures, 50 or compounds of the same, mixed with chips of stone, ground stone, sand, gravel, or other material and connected to the lithographic stone by such like cements or materials, substantially as herein described. 55

4. A cement for combining materials to form a backing to slabs of lithographic stone, and to connect the same or other backing thereto, composed of slightly-elastic adhesive material capable of being readily melted by 60 heat at a comparatively low temperature without the addition of water, substantially as herein described, and for the purpose stated.

5. A stone for lithographic purposes, consisting of a slab of lithographic stone, and a backing cemented thereto by a slightly-elastic adhesive material capable of being readily melted by heat at a comparatively low temperature without the addition of water, substantially as herein described, and for the 70 purpose stated.

6. A lithographic stone provided with a backing consisting of asphalt, bitumen, or pitch and some comminuted solid substance 75 incorporated therewith cemented to said stone by means of a slightly-elastic cement, such as asphalt, bitumen, or pitch, substantially as set forth.

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