

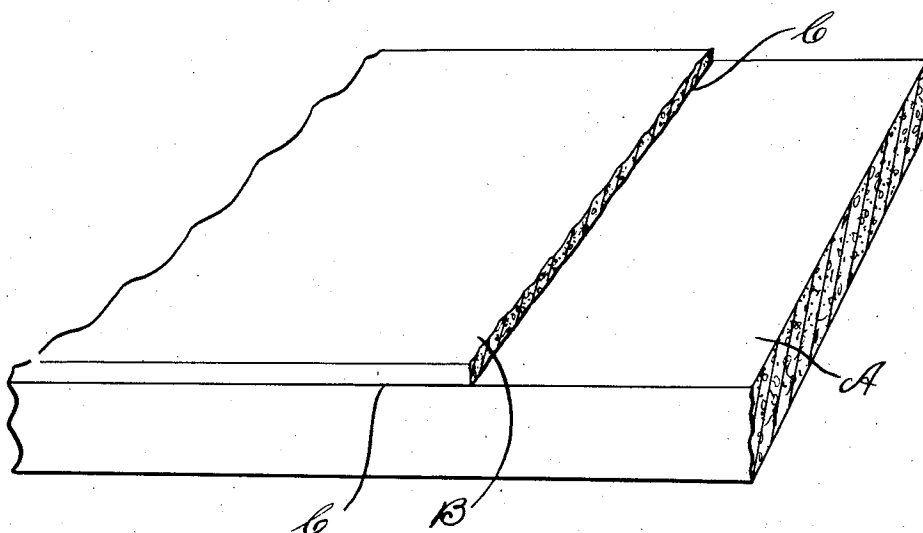
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PROCESS OF BONDING NEW CONCRETE FORMATIONS TO OLD CONCRETE FORMATIONS

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PROCESS OF BONDING NEW CONCRETE FORMATIONS TO OLD CONCRETE FORMATIONS.

Application filed February 20, 1922. Serial No. 538,089.

To all whom it may concern:

Be it known that I, ROBERT C. STUBBS, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Processes of Bonding New Concrete Formations to Old Concrete Formations, of which the following is a specification.

My invention relates to paving and more particularly to a process of bonding a coat of new concrete to a paving of old concrete; and the object is to effect a great saving in the cost of paving by providing a way of saving the old concrete instead of destroying it. I have worked until I am able to bond successfully a layer of new concrete to the old concrete road and to restore its former strength at a small cost and thus to save the great cost of building a new road.

Reference is had to the accompanying drawing which forms a part of this application for illustrating the point where the bonding takes place.

In carrying out the bonding of new concrete to old concrete, I use a process similar to the process described in the patent granted to me on April 13, 1909, No. 918,388. A section A of old concrete and a section of new concrete B are shown. The bonding is effected along the line C or on the surface of the old concrete A and between the adjoining surfaces of the sections A and B.

In operation, the new coat of concrete is laid in the usual manner. The sand, cement, and gravel or stone are mixed in the usual manner. The concrete is spread on the old paving to the required depth or thickness. The difficulty heretofore encountered in attempts at bonding a new coating of paving to an old paving was that a film of air or water formed upon the surface of the old concrete when the new layer was placed thereon, which film prevented the bonding material from making absolute contact with the old surface uniformly enough to bond effectively the two layers together. Operating daily with the two forces vibration and pressure which are the effective agents in the compacting of concrete by the method shown in the Patent No. 918,388, above noted, I discovered that these forces could be successfully made to drive away the film of air or water from the surface of an old concrete formation and force the bonding

material of the new layer of concrete to enter the pores of the old surface after the air and water film had been driven away, thus securing a bond whereby the specimens would break at other places than at the point of union after both layers had been completely seasoned.

In addition to the films of water and air that heretofore prevented the bonding of the new to the old concrete, the shrinkage normally in a concrete mass while the mass is hardening was sufficient to cause the new layer of concrete to draw slightly away from the old surface even at places where a partial or even very secure bond had been obtained in a small way. I have successfully overcome this drawing away of the new layer from the old by means of the forces of vibration and pressure which drive out the film of air and water from between the two layers of concrete. The new layer of concrete is so compacted as to eliminate the shrinkage altogether commercially, whereby the bond between the new and the old concrete effected by this method is permitted to remain intact while the new layer hardens without shrinkage because of the compact relation of the solid particles of the composition. This process is no longer an experiment and the process is demonstrated to be eminently satisfactory under service conditions.

After the new concrete layer B is spread on the old slab A of concrete, vibrations and pressure are applied to the surface of the concrete B by means of such machine and apparatus as shown in the patent granted to me on July 5, 1921, No. 1,383,581. This apparatus permits the air and surplus water to escape and vibrations of the vibrating machine are transmitted to the concrete. Unnecessary dirt or dust and trash should be brushed from the old concrete before applying the new concrete.

What I claim is:—

1. The herein described process of eliminating shrinkage from a layer of new concrete when applied to the surface of old concrete which consists in applying pressure and vibrations to the surface of the new layer for driving material from the new layer down into the pores of the old concrete to form a bond of the new and old concrete.

2. The herein described process of forc-

ing films of air and water from adjacent surfaces of new and old concrete formations and for forcing bonding material from the new concrete to establish bond with the particles of the old concrete which consists in applying pressure-exerting means to the surface of the new concrete for periods of time and applying vibrations to the pressure-exerting means for transmitting vibrations through the new concrete into the old concrete. 10

In testimony whereof, I set my hand, this 13 day of February, 1922.

ROBERT C. STUBBS.