

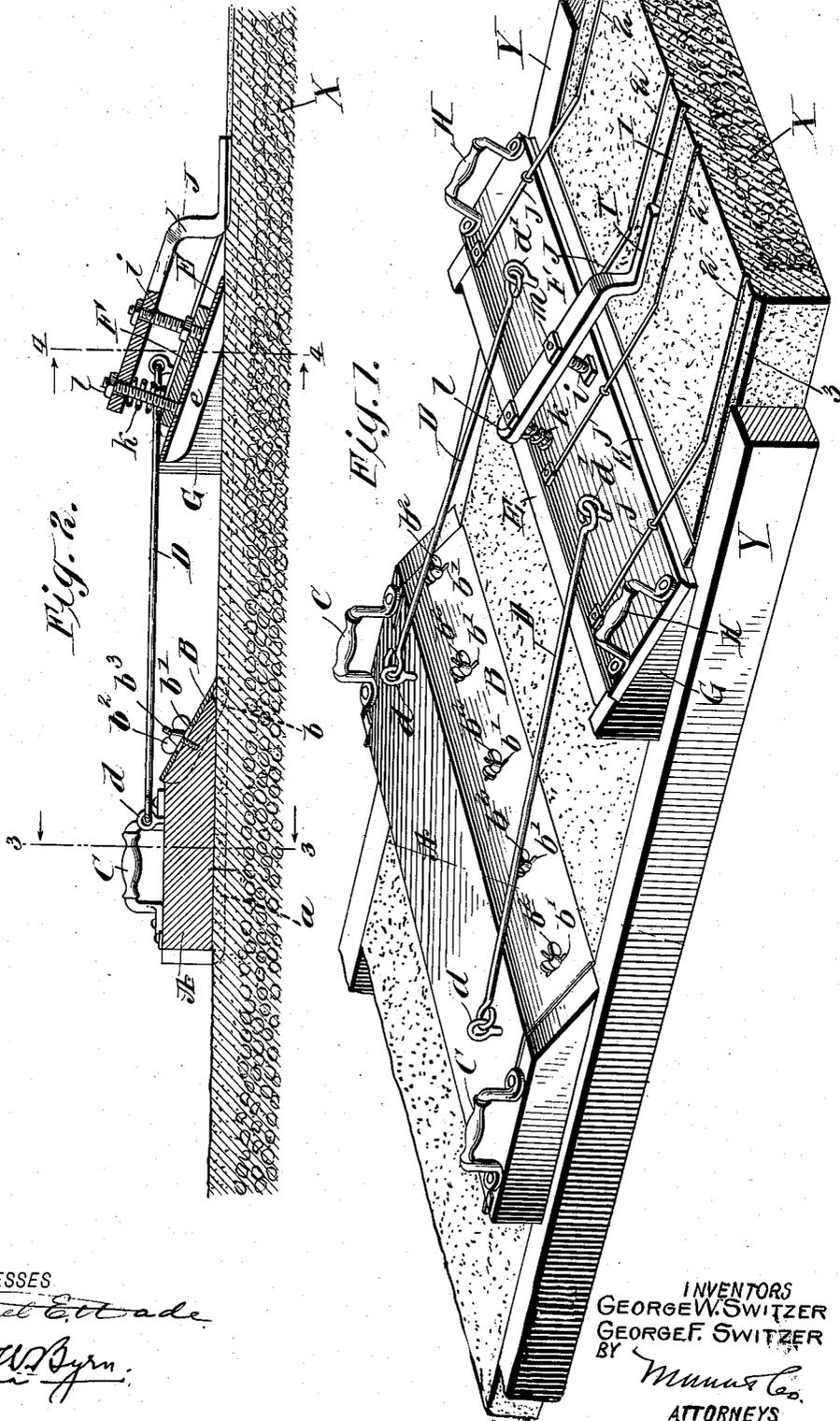
No. 867,852.

PATENTED OCT. 8, 1907.

G. W. & G. F. SWITZER.  
DEVICE FOR LAYING CONCRETE PAVEMENTS.

APPLICATION FILED FEB. 28, 1907.

2 SHEETS—SHEET 1.



WITNESSES  
*Samuel E. Wade*  
*Edw. W. Byrn*

INVENTORS  
GEORGE W. SWITZER  
GEORGE F. SWITZER  
BY *Munn & Co.*  
ATTORNEYS

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Fig. 3.

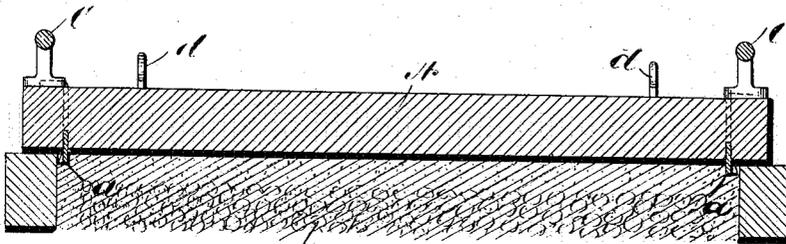


Fig. 4.

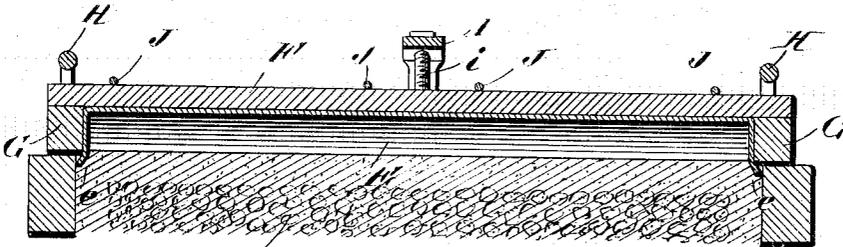
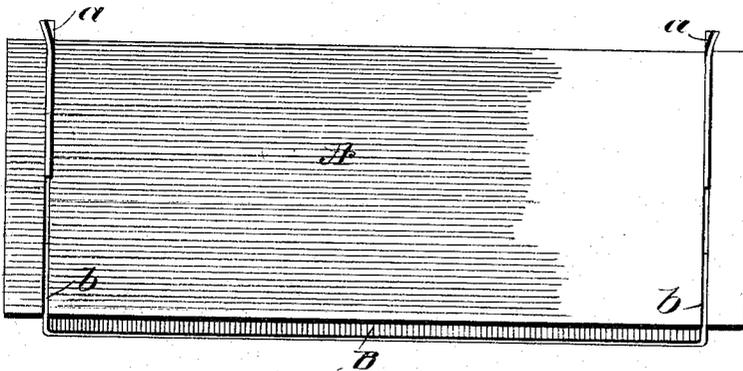


Fig. 5.



WITNESSES

*Samuel C. Wade*  
*Edw. W. Dym*

INVENTORS  
GEORGE W. SWITZER  
GEORGE F. SWITZER  
BY *Wm. & Co.*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

GEORGE W. SWITZER AND GEORGE F. SWITZER, OF SALISBURY, NORTH CAROLINA,  
ASSIGNORS OF ONE-THIRD TO HENRY G. CAMPBELL, OF SALISBURY, NORTH CAROLINA.

## DEVICE FOR LAYING CONCRETE PAVEMENTS.

No. 867,852.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed February 23, 1907. Serial No. 369,717.

To all whom it may concern:

Be it known that we, GEORGE W. SWITZER and GEORGE F. SWITZER, both citizens of the United States, residing at Salisbury, in the county of Rowan and State of North Carolina, have invented a new and useful Improvement in Devices for Laying Concrete Pavements, of which the following is a specification.

Our invention is in the nature of a novel device for laying concrete pavements.

In the ordinary method of laying concrete pavements a base of broken stone, or gravel, sand and cement, is first laid within suitable marginal mold bars and rammed and a top dressing of mortar composed of a rich mixture of sand and cement is laid over the same to form the smooth face. This top dressing is first leveled up roughly with what is known as a "float" and, after being allowed to harden some, is then troweled to a smooth face. Both the float and trowel are hand tools and the work of finishing is so slow and laborious that it frequently happens that the concrete mixers will get along in advance of the finishers, thus involving either a loss of time, or the too great hardening of the cement in advance of the finishers.

Our invention is designed to provide a device for more rapidly floating and troweling the surface to a finish and also at the same time laying it off into panels with margin lines and beveled edges, such as are usually employed and which take a great deal of time and careful work.

Our invention consists in the novel construction and arrangement of the device which we will now proceed to describe with reference to the drawings, in which

Figure 1 is a perspective view of a stretch of concrete pavement in process of being laid by our device. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a vertical section taken longitudinally through the float on line 3—3 of Fig. 2 and transversely through the pavement. Fig. 4 is a vertical section taken longitudinally through the finishing device on line 4—4 of Fig. 2 and transversely to the pavement and Fig. 5 is an inverted plan of the float.

In the drawing, Fig. 1, X represents the concrete pavement, and Y Y the marginal mold bars forming the mold or pattern between which the concrete pavement is to be laid and which bars Y are removed after the work is done. The lower four or five inches of the pavement are usually of broken stone, or gravel, mixed with sand and cement, and the top face and edges are of sifted sand and cement, of rich quality, applied in the form of mortar and upon which our device is designed to make the finish. This finish consists of a smooth and true face and the dividing creases for separating it into panels with margin or border lines for the

panels and beveled edges for the sides. Our machine makes only the longitudinal members of these paneling creases; that is to say, referring to Fig. 1, it forms the middle dividing crease 1 which divides the pavement into two series of panels and it forms the margin or border lines 2, 2, and the beveled side edges 3. The transverse creases and lines which divide the stretches of pavement into the blocks or panels are afterward made by hand. After the top dressing of cement mortar has been applied to the base and roughly leveled to the marginal mold bars Y, our machine is applied and is simply allowed to rest of its own weight on the pavement and is dragged over the same.

The device is made in two separable parts. The first part A is the wooden float which is a straight heavy bar somewhat longer than width of the pavement to be laid, but not long enough to extend beyond the mold bars Y, so as to avoid coming in contact with any pegs that may be driven outside the mold bars to hold them in place.

The float has a true, flat plane on its lower side, about ten or twelve inches broad, and has at its opposite ends stout handles C C by which it is dragged along. Near each end of the float on the lower face and arranged transversely are cutting fins *a a*, see Fig. 3, which are a distance apart equal to the width of the pavement to be formed and which preliminarily cut away the mortar at the edges to form the bevel edges 3 for the pavement and serve also to guide the float as it is dragged along. The rear or trailing edge of the float is beveled on its upper surface to an acute angle and on this is laid a metal smoothing plate B which is perfectly straight along its lower edge and which gives the first troweling effect on the mortar. This plate has downturned flanges *b b* at its ends which run in the grooves formed by the cutting fins *a* and these flanges *b* are slightly spread apart at the lower edges to cause them to give a bevel face smoothing effect to the edges of the pavement defining the margin of the same. The smoothing plate B is of less length than the bar A and stops short of its ends and is adjustable to or from the pavement to a position below the bar A to cause its edge to press more or less upon the plastic mortar and for this purpose the plate is formed with transverse slots *b'* through which screw threaded studs *b<sup>s</sup>*, Fig. 2, project which studs are secured in the wooden float and are provided with thumb nuts *b<sup>s</sup>* to fix the adjustment of the plate.

The ends of the float bar A rest upon the straight top edges of the mold bars Y and prevent too great a pressure on the mortar and the smoothing plate B forms a smooth flat surface to the mortar. It will be understood, however, that the handles C, C, are required in order to apply the necessary downward pressure which

is transmitted by the lower edge of the plate B below bar A to the plastic mortar in order to get a proper troweling effect.

In the top of the float A are secured the eye bolts *d* to which are loosely connected two drag bars D D, which, at their rear ends, are loosely coupled to eye bolts *d'* secured in the finishing device which is dragged behind the float.

The finishing device consists of a cross bar F to whose lower side is attached a smooth and true trowel plate E extending the full width of the pavement and having downturned flanges *e e* at the ends, see Fig. 4, which hug, define and give the final smoothing effect to the beveled edges 3, while the straight trowel edge gives the final smoothing to the surface of the mortar to form the face. This smoothing trowel plate is connected to triangular end blocks G G which ride upon the mold bars Y Y and hold up the trowel plate while the end flanges *e e* guide it against displacement and prevent the triangular support G from slipping off the mold bars, which would mar the surface.

Centrally on the finishing tool is mounted the dividing tool or panel creaser I. This is a bent metal bar having a plow-foot V-shaped in cross section, which plows into and creases the soft mortar along the middle line to form the dividing crease 1. In narrow pavements there is but one of these dividing creasers, but where the pavement is wider, there may be two or more according to the number of panels which it is wished to divide the face into. To make a deeper or shallower crease, the plow end of the creaser is adjustable up and down with an elastic pressure, and for this purpose the creaser is mounted upon a fulcrum stud *z* by means of a nut *m* and the upper end rests upon a coil spring *k* wound about a stud having screw nut *l* on top of the end of the creaser. By turning up the nut the spring is compressed and the lower end of the creaser raised from the face of the pavement.

On the finishing device, and trailing to the rear, are flexible marker rods J J which at their lower ends extend below the trowel edge and press into and mark the soft face of the mortar to form the longitudinal border or margin lines 2, 2 for the panels.

All of the above named finishing operations are done at one pass of the finisher, and in fact both the floating, troweling and finishing are all done at one pass of the machine, but if desired the drag bars D D may be disconnected and the floating done at one time and the finishing at another. This allows a lapse of time between floating and finishing in which the cement mortar may be allowed to set up to a more desirable stiff-

ness for receiving the final face. For this independent use of the finishing device it is also provided with handles H, H.

#### We claim

1. A device for laying concrete pavements, consisting of a straight bar having a broad flat base, a narrower upper surface and a beveled rear edge with an adjustable trowel affixed to said edge and also having handles at its opposite ends and downwardly projecting transverse fins on the base side of its opposite ends arranged to define the marginal edges of the pavement and form guides.

2. A device for laying concrete pavements, consisting of a straight bar having handles at its opposite ends and downwardly projecting transverse fins on the lower side of its opposite ends arranged to define the marginal edges of the pavement and an adjustable straight metal trowel plate attached to the bar at one edge and capable of being extended below the bar to contact with the pavement to apply the necessary compacting and smoothing pressure on the plastic material.

3. A device for laying concrete pavements, consisting of a straight bar having handles at its opposite ends and downwardly projecting transverse fins on the lower side of its opposite ends and a metal smoothing plate adjustably attached to the bar at one edge and extensible below the bar, and having at the ends down-turned flanges for shaping the side edges of the pavement.

4. A device for laying concrete pavements, consisting of a straight bar having handles at its opposite ends and downwardly projecting transverse fins at the lower side of its opposite ends, and a metal smoothing plate arranged along the edge of the bar and means for adjusting said plate to or from the pavement, said plate being of less length than the bar and stopping short of each end of the bar.

5. A device for laying concrete pavements, consisting of a straight flat-bottom bar forming a float and provided with handles at its ends, a second bar with an inclined metal edge having down-turned ends forming a trowel extending below the bar and separable coupling devices for connecting the two together for operation at one pass over the pavement.

6. A device for laying concrete pavements, consisting of a sheet metal trowel plate, guide blocks at the ends for holding it at an acute angle, handles for manipulating the same, a dividing creaser with plow-shoe at its lower end, and a plurality of marker rods, both attached to the finishing trowel and extending at their trailing ends to a point below the trowel edge.

7. A device for laying concrete pavements, consisting of a sheet metal trowel plate, guide blocks at the ends for holding it at an acute angle, handles for manipulating the same, a dividing creaser attached to the trowel having a plow foot at its lower end and an adjustable and spring seated connection at its upper end.

GEORGE W. SWITZER.  
GEORGE F. SWITZER.

Witnesses:

T. J. MAUPIN,  
MARY L. PORTER.

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