

Jan. 2, 1923.

1,440,606.

J. A. JOHNSTON.  
STRIKE BOARD FOR CONCRETE ROAD CONSTRUCTION.  
FILED MAR. 1, 1921.

3 SHEETS—SHEET 1.

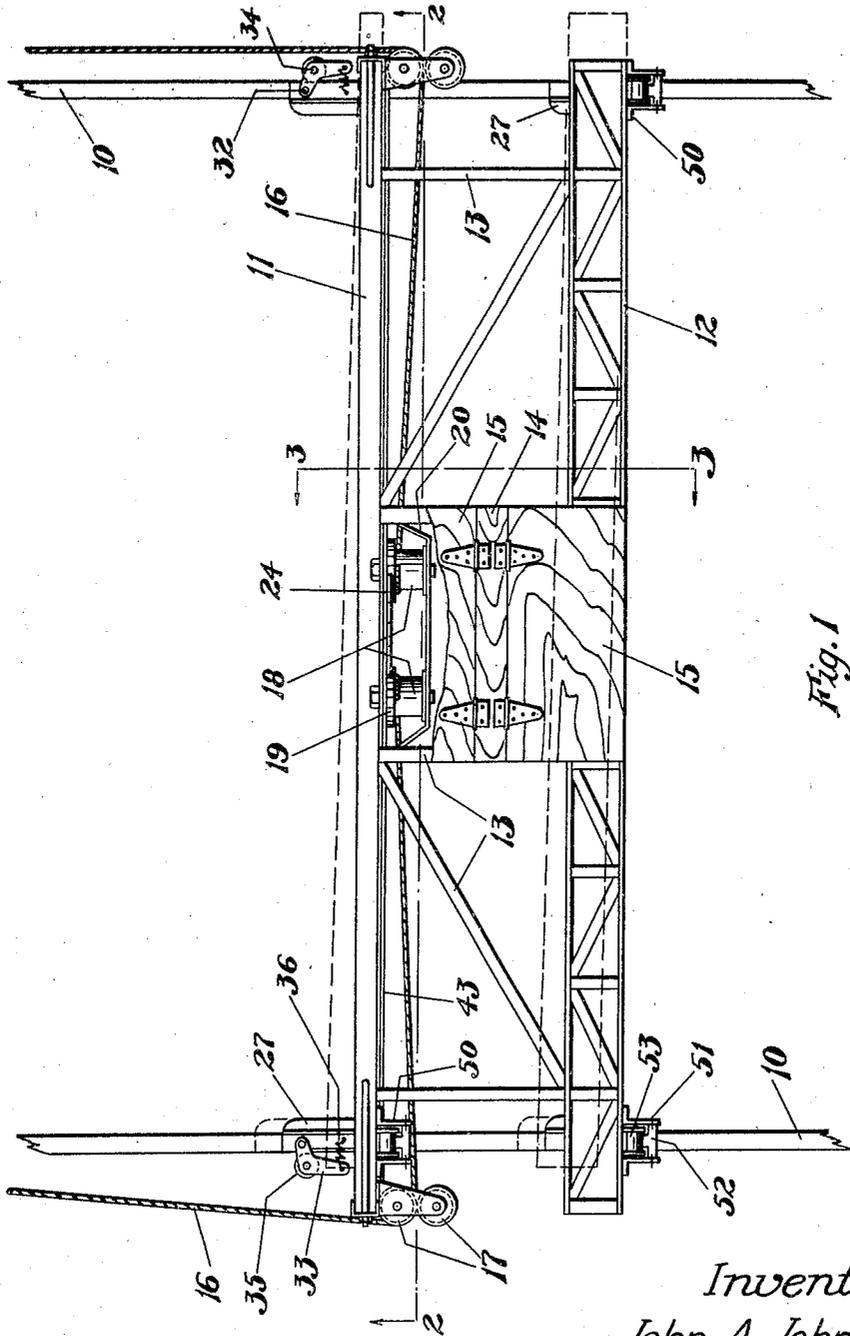


Fig. 1

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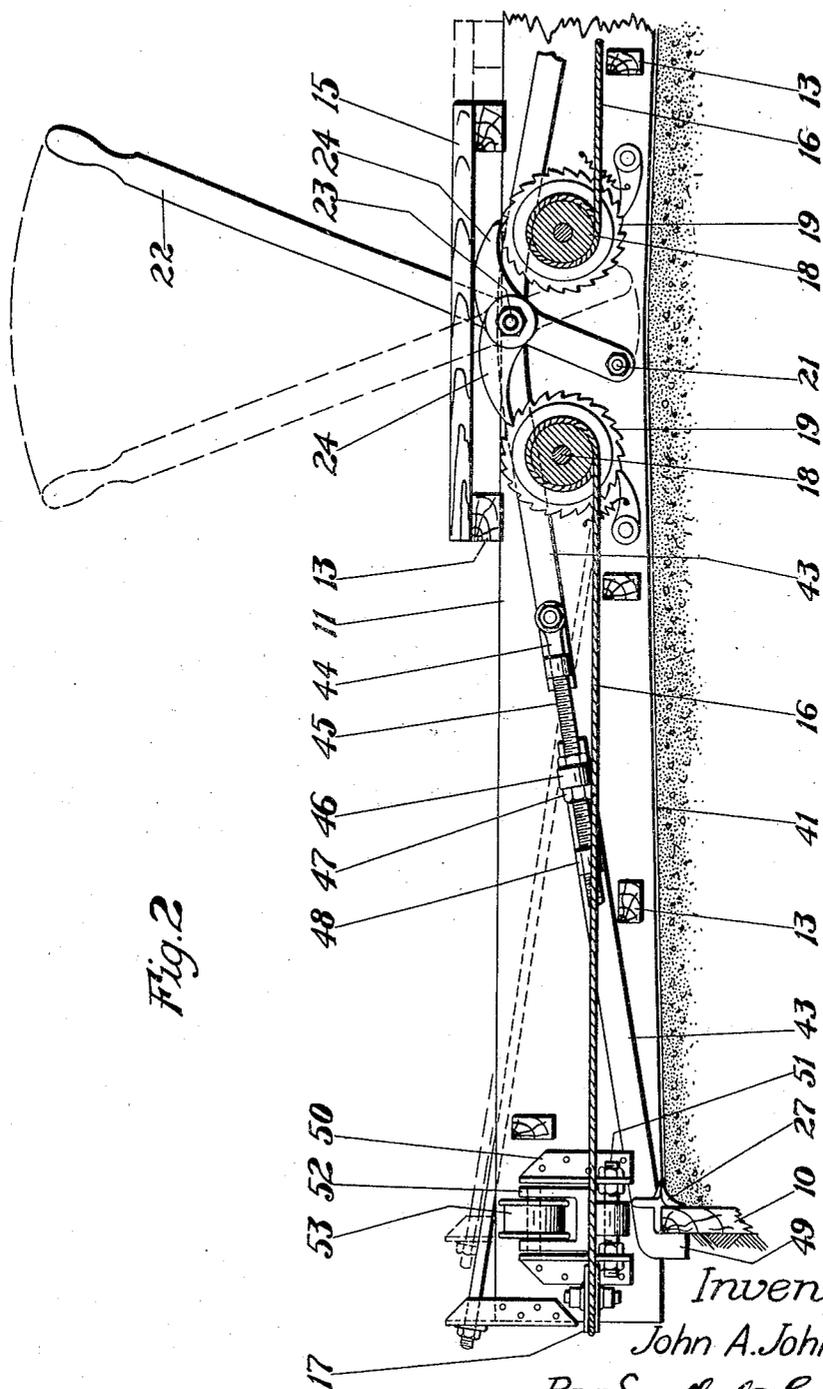


Fig. 2

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# UNITED STATES PATENT OFFICE.

JOHN A. JOHNSTON, OF SPRINGFIELD, MASSACHUSETTS.

STRIKE BOARD FOR CONCRETE ROAD CONSTRUCTION.

Application filed March 1, 1921. Serial No. 448,754.

*To all whom it may concern:*

Be it known that I, JOHN A. JOHNSTON, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Strike Board for Concrete Road Construction, of which the following is a specification.

This invention relates to a device for striking off the top of a concrete road-bed to bring its upper surface into proper form.

The principal objects of the invention are to provide means whereby such a strike-board, supported on longitudinal forms, can be operated by one man in a practicable way; to provide such a device with means by which the operator can move it along the forms without the expenditure of much power; to provide means whereby the alternate oscillations of a single lever will hitch the strike-board along first at one end and then at the other; to provide a structure for these purposes having a platform on which the operator stands and which moves along with the strike-board, taking the operator with it and having suitable supporting means for the platform; and to provide means for rounding the edges of the concrete road-bed and other features of construction as will appear.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a plan of a complete apparatus constructed in accordance with this invention;

Fig. 2 is a sectional view of the greater portion of the same on the line 2-2 of Fig. 1, showing the strike-board itself in rear elevation and showing two positions of the operating lever;

Fig. 3 is a sectional view on an enlarged scale on line 3-3 of Fig. 1, and

Fig. 4 is a front elevation of one end of the device on enlarged scale illustrating the radius piece.

As stated, this invention is designed to provide for operating a strike-board forward by a step-by-step motion in such a manner that the operation can be performed by hand and by one man. A platform is provided for the operator to stand upon, which platform moves along with the strike-board. The road bed is provided with two longitudinal forms 10 along the opposite sides between which the body of concrete is spread by any desired means. The upper edges of

these forms are made level or at least are located in the same plane, and they support the strike-board 11 which rests upon them. It also projects over their sides at least at one end.

This strike-board is concave on the bottom to provide the desired shape of the top of the road-bed, and it stands in vertical position. Spaced from it at the rear there is a follower or smoother 12 also extending across the road-bed and supported on the forms. These two parts are connected with each other by rods and struts 13 so that they constitute a single rigid structure supported on the forms. Carried on two of these rods 13 is a central horizontal board 14 to which are hinged two members 15, each adapted to rest on certain of the rods 13 and constitute with the piece 14 a horizontal operator's platform rigid with the structure 11-12 and constituting a part of it.

The device is moved along the road-way by connecting two cables 16 with stationary anchors driven into the ground at a distance ahead and located alongside the forms 10. These two cables pass over sheaves 17 at the ends of the strike-board 11 and pass inwardly to a pair of drums 18. Each of these drums is provided with a ratchet wheel 19 fixed to it. The drums are mounted in bearings, the front one of which is carried by the strike-board 11 and the rear one by a frame 20 secured thereto. These ratchet wheels have their teeth oppositely located.

Pivoted to a stud 21 on the strike board near the bottom and at its center is an operating lever 22. This has pivoted to it at 23 two pawls 24, one adapted to operate each ratchet wheel. The motion of the lever 22, from the position shown in full lines in Fig. 2 to that shown in dotted lines, results virtually in swinging the lever about the stud 23 as a pivot. This stud is fixed in central position by the struts 43 on which it is mounted. The pivot stud 21 by which the lever 22 is connected to the strike-board moves to the right when the lever is swung to the left as is indicated in dotted lines. This brings the whole strike-board to the right and with it the drum 18 and ratchet wheels 19. One pawl 24 slides over its ratchet teeth but the other one holds the top of its wheel 19 against motion. Therefore the cable on the left hand drum winds up and the left end of the strike-board moves forward. In other words, the strike-board

11 on which the pivot 21 is mounted moves to the right and its right hand end will then project out beyond the right-hand form 10. The forward end of the left cable 16 being positively anchored to the ground, drawing the end of the cable over the sheave 17 results in forcing the left-hand end of the strike-board to swing about the right hand end as a pivot. This brings the parts into the dotted line position shown in Fig. 1.

The operation having been described in full, I will describe some of the accessory parts which co-operate with the strike-board to help it to perform its function of shaping the top of the road-way.

In the first place it will be observed that on the front of the strike board and follower at each end, resting over the form is a radius piece 27. This, in each case, extends forwardly and is provided with an inwardly projecting plate or projection 28 sharpened off at its inner surface to provide a cutting edge for separating the concrete and pressing it down. It is also provided with a downwardly extending projection 29 connected with the edge 28 by a quarter circle curve preferably, to round the edge of the concrete as the radius piece is pushed forward by the strike-board. This member also has an upwardly extending plate 30 to prevent surplus concrete from falling over the forms.

On an outwardly extending projection 31 resting on the top of the form and constituting a guide for the radius piece I have provided a stud 32 on which is pivoted a lever 33. This lever carries a vertical stud 34 on which is suspended below a guard roll 35. This guard roll rests against the outer surface of the form tightly to keep the radius piece in position against the inner surface thereof at all times. The end of this lever is connected by a spring 36 with the projection 31 to yieldingly hold the roll in position.

On the strike board and extending throughout its length in front is shown a shaping blade or former 40. It is shown as of L-shape in cross section to provide a vertical portion adapted to be secured to the front of the strike-board and is also provided with a rearwardly extending, nearly horizontal, portion 41 which descends gradually from the front to the rear to constitute a shaping or leveling means. This also, on account of its gradually sloping shape backward, presses the concrete down. It has a sharp forward edge which cuts through the loose concrete in front, piles it up, and saves considerable waste. By projecting into concrete mass it serves to help to hold the strike-board down. It is shaped a little from the bottom of the strike-board and provided with vertical slots on the upwardly extending portion by which it is adjustably

secured to the strike-board by bolts passing through them. In this way it can be adjusted vertically to any necessary degree. This serves obviously as a molding or shaping bottom of the strike-board. At the bottom of the follower is a plate 42 bearing on the concrete and further shaping it.

For the purpose of securely holding the parts in position, the stud 23 is connected to two anchor bars 43. Each of these is formed of two parts so that the length can be adjusted. A metal piece or forging 44 is secured to one of the parts and is provided with a screw 45 fixed thereto. A projection 46 on the other part has an opening for this screw, and nuts 47 are provided to properly adjust the two parts. A strap 48, of metal, projects over the part on which the projection 46 is located. At the end, each of these anchor bars is turned down at 49 and projects over the form 10 to prevent the stud 23 from moving out or in.

I have also shown the strike-board and the follower as provided with a couple of supports 50 on which is a pivot stud 51. On this stud is pivoted a frame 52 carrying a roller 53. This roller normally is swung up in inoperative position as shown, but whenever desired it can be moved down into a position to project below the bottom of the strike-board and rest on the top of the form so as to permit the apparatus to be rolled along the forms whenever desired.

The operation of the device has been set forth above. It is to be observed that the operator stands on the platform and moves himself along by means of a lever, the whole platform, strike-board or templet, and follower moving with a step-by-step motion first at one end and then at the other. It will also be noted that the operating mechanism is entirely detachable and may be used with any number of different strike-boards and followers.

By the use of such a one-man leveling and shaping device the top of the road-bed can be shaped off accurately at comparatively small expense and left in condition for hardening without any other treatment as far as the shape of the concrete itself is concerned.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, a pivot stud mounted independently of said strike-board, an operating lever mounted on said pivot

stud, said lever being pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, and means whereby when the lever is swung on its pivot the cable will be taken up part way and the strike-board advanced.

2. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, the lower surface of which is formed to the desired shape of the crown of the road-bed, a pivot stud mounted independently of said strike-board, means for preventing the pivot stud from moving sidewise, an operating lever mounted on said pivot stud, the short arm of said lever being pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, and means whereby when the lever is swung on its pivot the strike-board will move endwise and the cable will be taken up part way and the strike-board advanced.

3. In a device for shaping the top of a road-bed, the combination with a strike-board or templet shaped on the bottom to the desired top surface of the road-bed, of an operating lever and means connected with said operating lever for simultaneously moving one end of the strike-board forward and moving the strike-board bodily in a direction toward the opposite end.

4. In a device for shaping the top of a road-bed, the combination with a strike-board or templet shaped to the top surface of the road-bed, of an operating lever, and means connected with said operating lever for moving one end of the strike-board forward and moving the strike-board bodily in a direction toward the opposite end when said lever is swung in one direction, and moving the strike-board bodily back longitudinally and advancing the opposite end when the lever is moved in the opposite direction.

5. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, the lower surface of which is formed to the desired shape of the crown of the road-bed, a pivot stud mounted independently of said strike-board on a constant axis, an operating lever mounted on said pivot stud, and pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, a drum carried by the strike-board on which drum the end of the cable is wound, and means carried by said lever for intermittently rotating said drum as the lever is oscillated, whereby the cable will be taken up part way and the strike-board advanced.

6. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, the lower surface of which is formed to the desired shape of the crown of the road-bed, a pivot stud mounted inde-

pendently of said strike-board, means for preventing the pivot stud from moving sidewise, an operating lever mounted on said pivot stud and pivotally connected with the strike-board, a pair of cables anchored to the ground forward of the strike-board, a pair of drums mounted on the strike-board, said cables being wound on said drums at their ends, a pair of ratchet wheels each connected with one of said drums, a pair of pawls connected with said lever, one adapted to operate each ratchet wheel, whereby when the lever is moved in one direction it will move the ratchet wheels bodily and operate one ratchet wheel and take up one cable, and will operate the other when moved in the opposite direction.

7. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, a pivot stud mounted independently of said strike-board, an operating lever mounted on said pivot stud and pivotally connected with the strike-board, a pair of cables anchored to the ground forward of the strike-board, a pair of drums mounted on the strike-board to each of which one of said cables is connected to be wound thereon, a pair of ratchet wheels each connected with one of said drums and located on opposite sides of the lever, a pair of pawls connected with said lever, one adapted to operate each ratchet wheel, whereby when the lever is moved in one direction one ratchet wheel will be turned and the other will be turned when the lever is moved in the opposite direction, whereby the opposite ends of the strike-board will be advanced alternately as the lever is swung back and forth, and means connected with the lever for moving the strike-board longitudinally with respect to itself back and forth as the lever is oscillated.

8. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, the lower surface of which is formed to the desired shape of the crown of the road-bed, a pivot stud, an operating lever mounted on said pivot stud, the short arm of said lever being pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, means whereby when the lever is swung on its pivot the cable will be taken up part-way and the strike-board advanced, a pair of anchor bars to both of which the pivot is connected, and a pair of forms located on opposite sides of the roadway and supporting the strike-board, said anchor bars having ends projecting into contact with said forms to prevent transverse motion of the anchor bars and pivot stud.

9. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, a plate at the bottom of said strike-board spaced therefrom and providing its shaped surface, said plate

being vertically adjustable on the strike-board and having a gradually descending bottom surface for pressing the concrete firmly into shape and formed to the desired shape of the crown of the road-bed, a pivot stud mounted independently of said strike-board, an operating lever connected with said pivot stud, one arm of said lever being pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, and means whereby when the lever is swung on its pivot the cable will be taken up part way and the strike-board advanced.

10. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a follower spaced from said strike-board but secured to it, a platform supported by the strike-board constituting means for supporting the operator, and means adjacent to said platform for moving the entire structure along said forms.

11. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a follower connected with said strike-board and spaced from it but secured to it and resting on the forms, a platform supported by the strike-board constituting means for supporting the operator and comprising a central piece parallel with the strike-board and follower, and two pivoted sections connected with it and adapted to rest in its plane, and means adjacent to said platform for moving the entire structure along said forms.

12. In a device for shaping the top surface of a road-bed, the combination of a strike-board or templet, the lower surface of which is formed to the desired shape of the crown of the road-bed, a radius piece carried forward of the strike-board at each end and having a downwardly extending portion on its active surface to form an edge on the concrete, a pivot stud, an operating lever mounted on said pivot stud, one arm of said lever being pivotally connected with the strike-board, a cable anchored to the ground forward of the strike-board, and means whereby when the lever is swung on its pivot the cable will be taken up part way and one end of the strike-board advanced.

13. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or

other plastic material, a templet or strike-board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a follower rigidly connected with said strike-board and spaced from it, a platform supported by the follower and strike-board constituting means for supporting the operator, means adjacent to said platform for moving the entire structure along said forms, a pair of radius pieces located on the front of the strike-board, and each having a horizontal portion resting on one of the forms and provided with a rounded section for rounding the edge of the concrete, and means for holding these radius pieces firmly against the forms.

14. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms near its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a follower parallel with said strike-board and spaced from it but secured to it, a platform supported by the strike-board, means adjacent to said platform for moving the entire structure along said forms, a pair of radius pieces located on the front of the strike-board and each having a horizontal portion resting on one of the forms and provided with a section for shaping the edge of the concrete, a lever pivoted thereon, a roller on the lever for engaging the outer surface of the form, and yielding means for forcing the lever into a position to keep the roller in firm contact with said outer surface of the form.

15. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a follower connected with said strike-board, a platform supported by the strike-board, means adjacent to said platform for moving the entire structure along said forms, and a set of rollers on the strike-board, and follower movable upwardly into inoperative position and also movable downwardly to constitute roller supports for the entire structure and permit it to be moved back and forth along the forms.

16. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a pair of radius pieces located on the front of the strike-board and each having a hori-

zontal portion resting on one of the forms and provided with a section for shaping the edge of the concrete, a lever pivoted thereon, a roller on the lever for engaging the outer surface of the form, and yielding means for forcing the lever into a position to keep the roller in firm contact with said outer surface of the form.

17. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike board resting on said forms at its ends and shaped on its lower surface to control the shape of the top surface of the road-bed, a pair of radius pieces located on the front of the strike-board and each having a horizontal portion resting on one of the forms and provided with a section for shaping the edge of the concrete, and means for holding these radius pieces firmly against the form.

18. In a device of the character described, the combination of a pair of forms located along the sides of a body of concrete or other plastic material, a templet or strike-board resting on said forms at its ends and having a bottom roadway-shaping member vertically adjustable thereon and provided with means for leveling the concrete, a lever mounted to move as a whole with the strike board and capable of oscillation thereon, cables extending forwardly from the strike board and anchored at a point in advance of it and means mounted to move with the strike board and operatively connected with said lever for moving the struc-

ture along said forms by an intermittent motion.

19. In a device of the character described, the combination of a strike-board or templet, a pair of forms on which it rests, a lever and means operated by the lever for hitching it along on the forms by advancing first one end and then the other.

20. In a device of the character described, the combination of a strike-board or templet, a pair of forms on which it rests, means for hitching it along on the forms by advancing one end, and simultaneously moving the strike-board longitudinally.

21. The combination of a templet or strike-board shaped on its lower surface to control the shape of the top surface of the road-bed, a pair of radius pieces located on the front of the strike-board and each having a horizontal portion provided with a section for shaping the edge of the concrete.

22. In a road smoothing device, the combination with a strike-board, of a former movable therewith and having a horizontal sharp forward edge, projecting forwardly from the bottom of the strike board to form a horizontal front shelf extending beyond the strike board adapted to cut into the upper part of the concrete mass and help hold the strike-board down by the weight of concrete accumulating thereon and sloping down behind on its bottom surface for shaping the surface of concrete cut through by said edge.

In testimony whereof I have hereunto affixed my signature.

JOHN A. JOHNSTON.