

Dec. 6, 1938.

H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 1

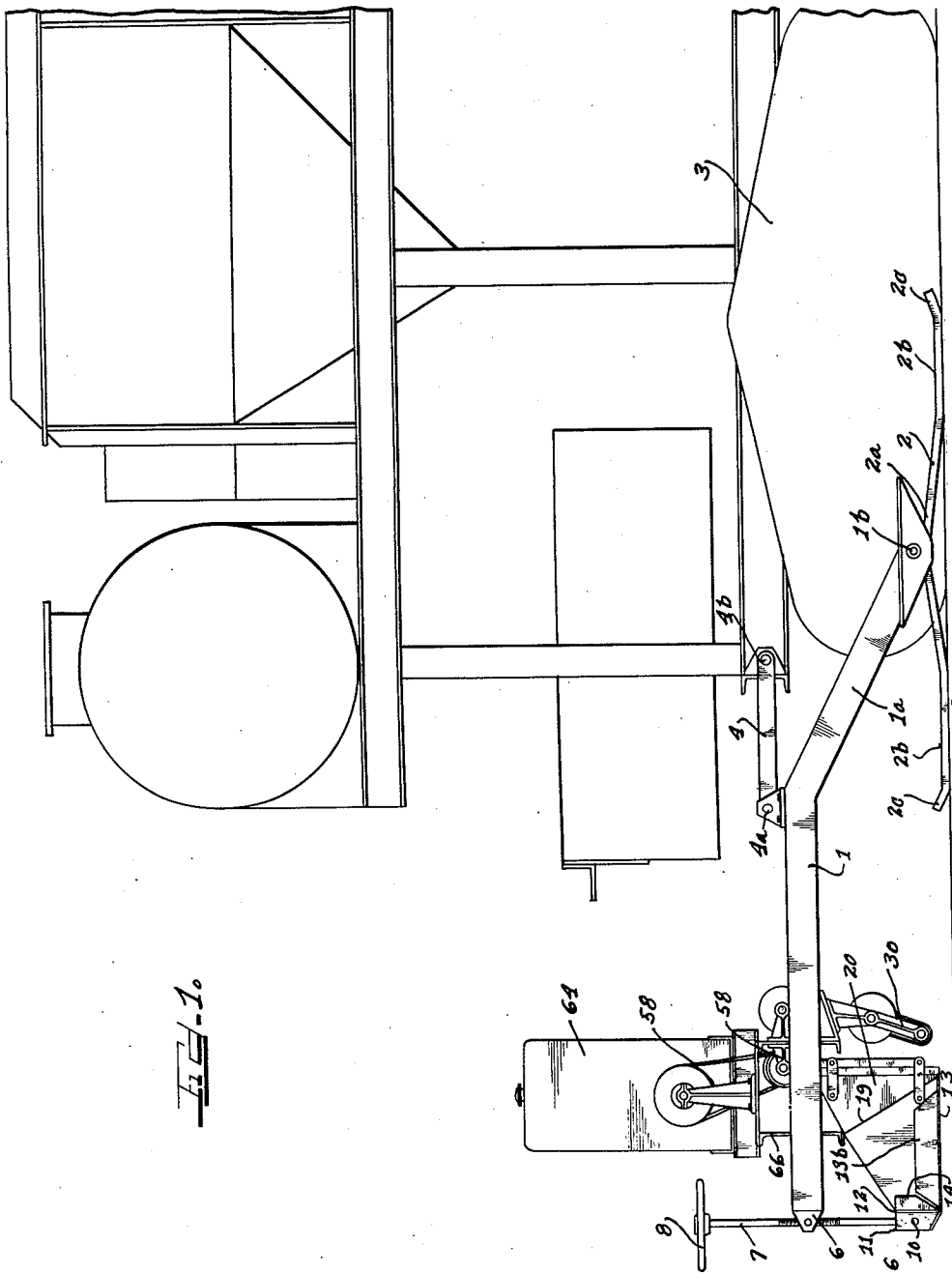


Fig. 1.

INVENTOR
Harry H. Barber.

BY Charles M. Miles ATTY.

Dec. 6, 1938.

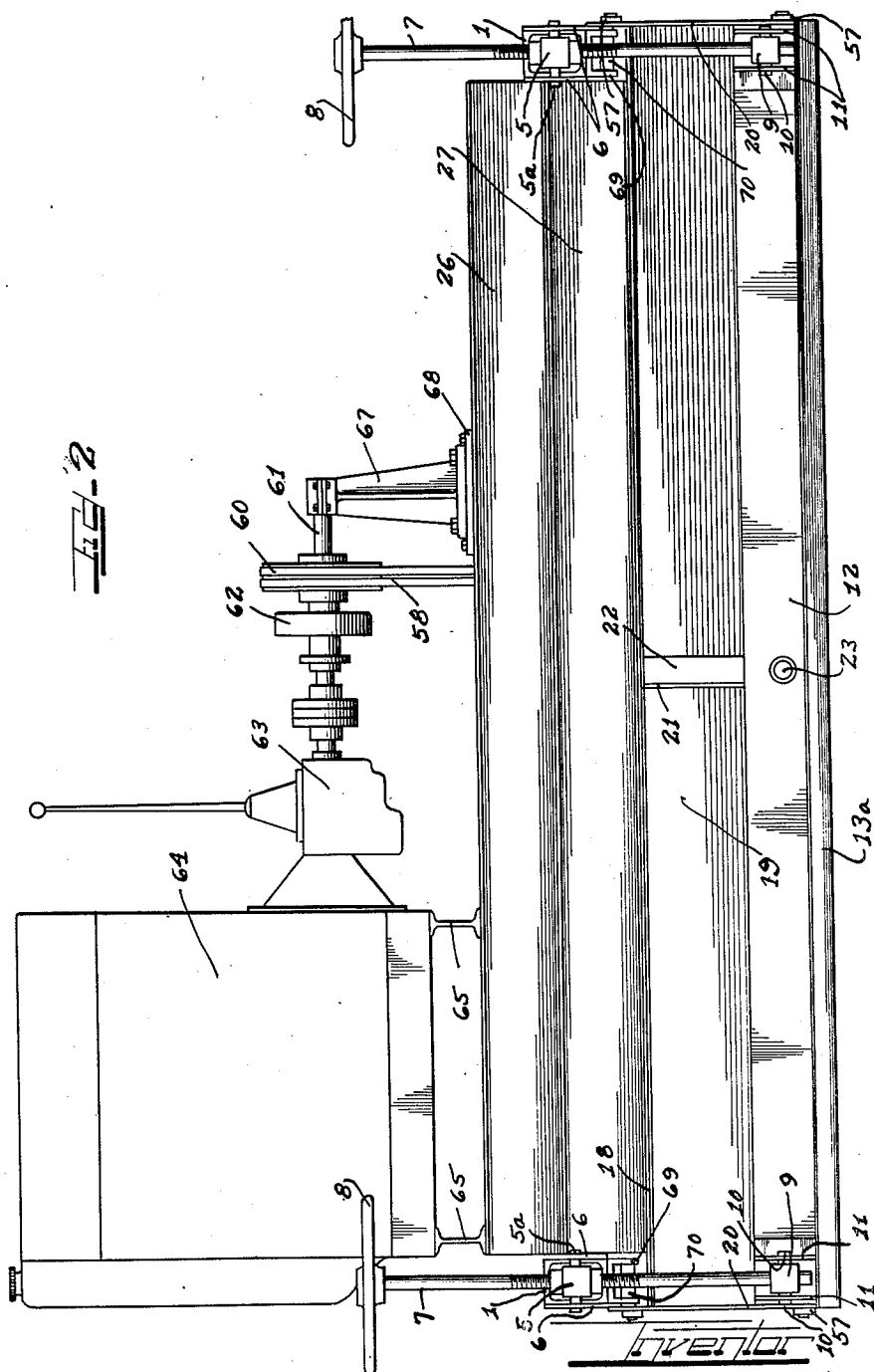
H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 2



Harry H. Barber.

Charles C. Mills Att'y.

Dec. 6, 1938.

H. H. BARBER

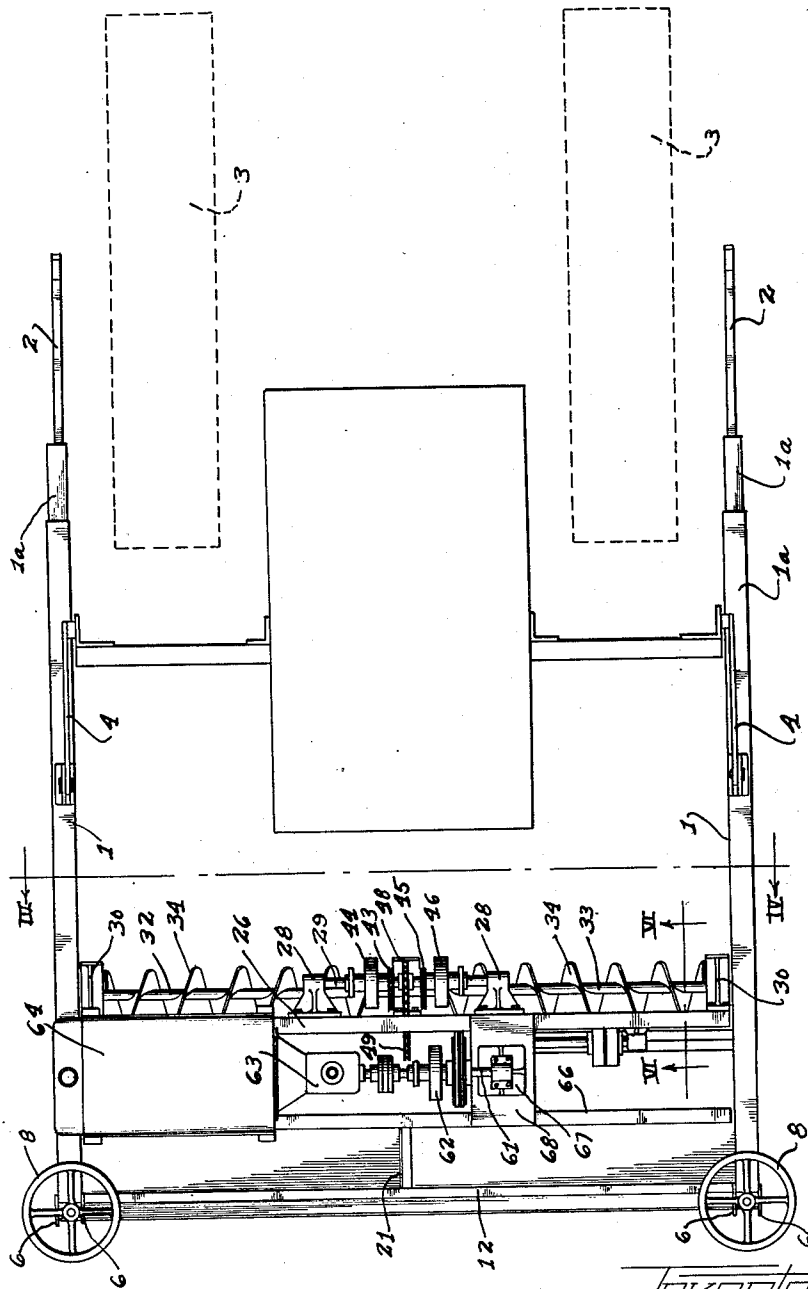
2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 3

Fig. 3.



INVENTOR
Harry H. Barber.

BY Charles H. Sills ATTORNEY

Dec. 6, 1938.

H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 4

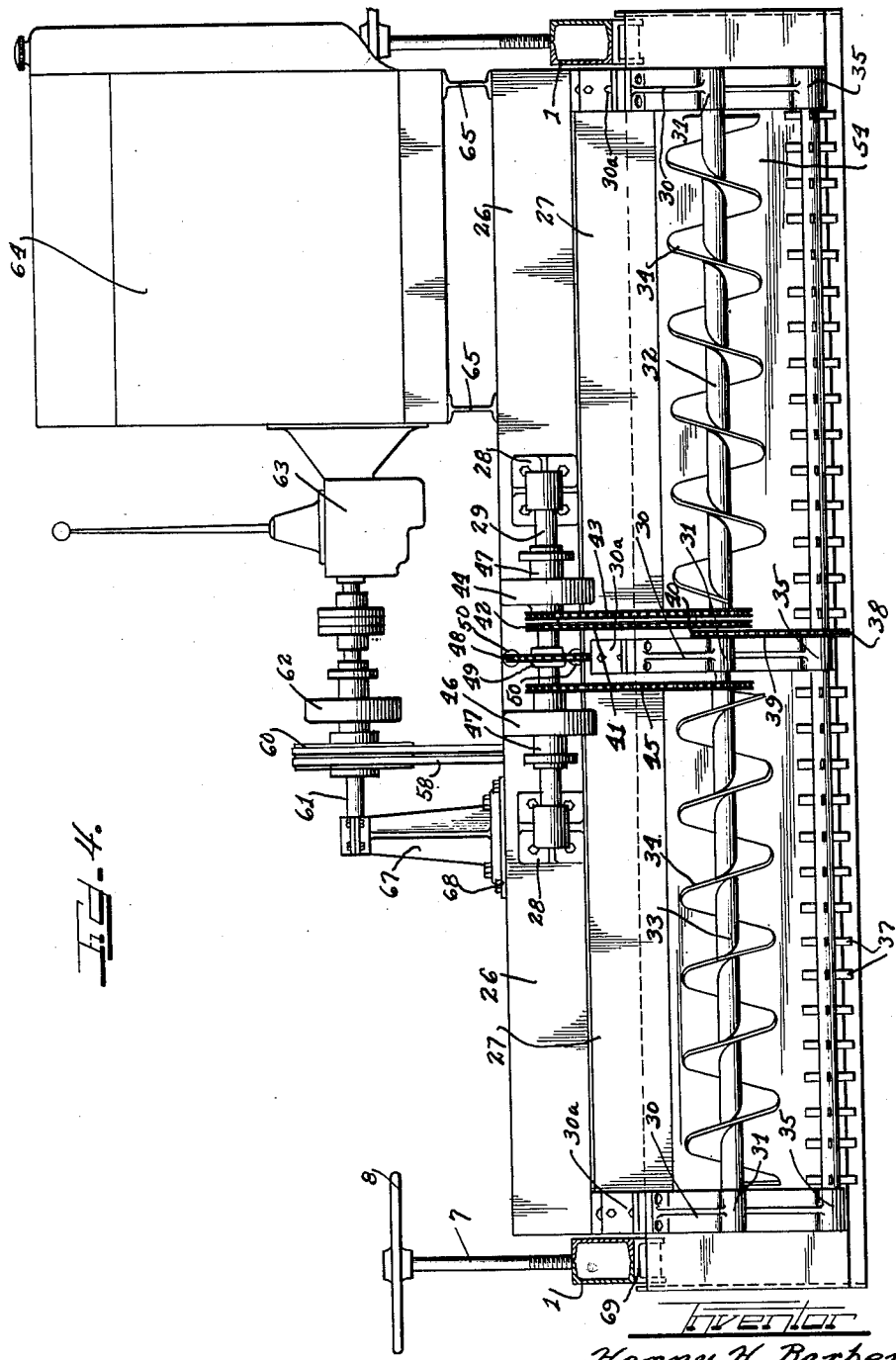


Fig. 4.

Harry H. Barber.

Charles H. Hill ATTORNEY

Dec. 6, 1938.

H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 5

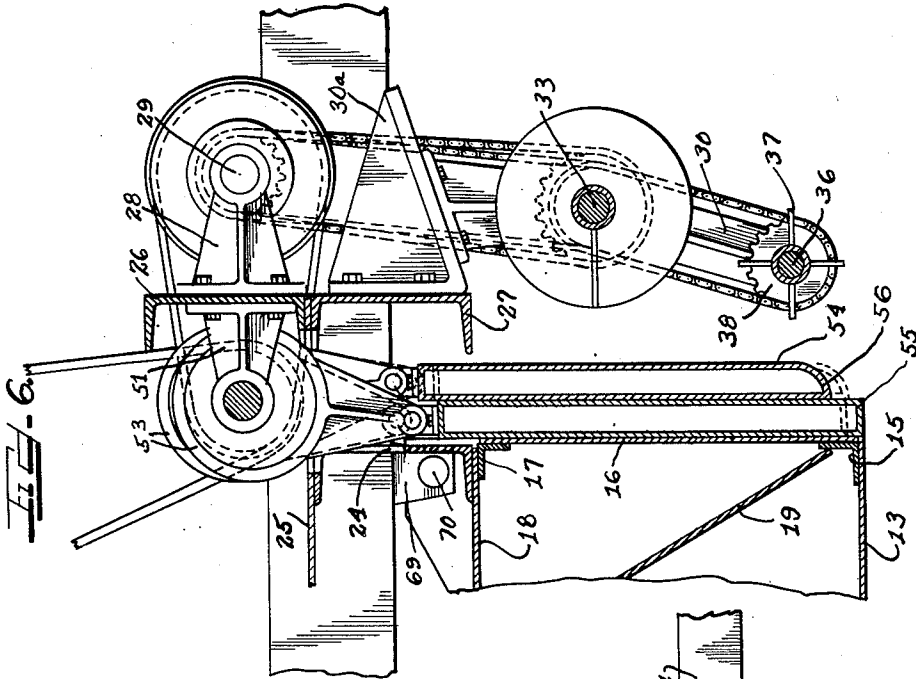


Fig. 6.

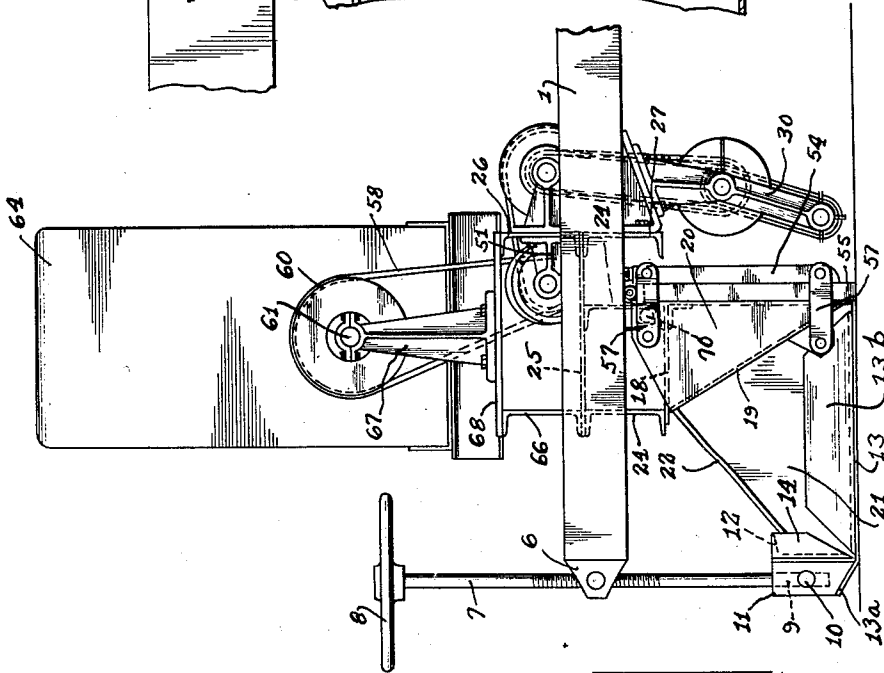


Fig. 5.

Inventor
Harry H. Barber

Charles H. Mills Attys.

Dec. 6, 1938.

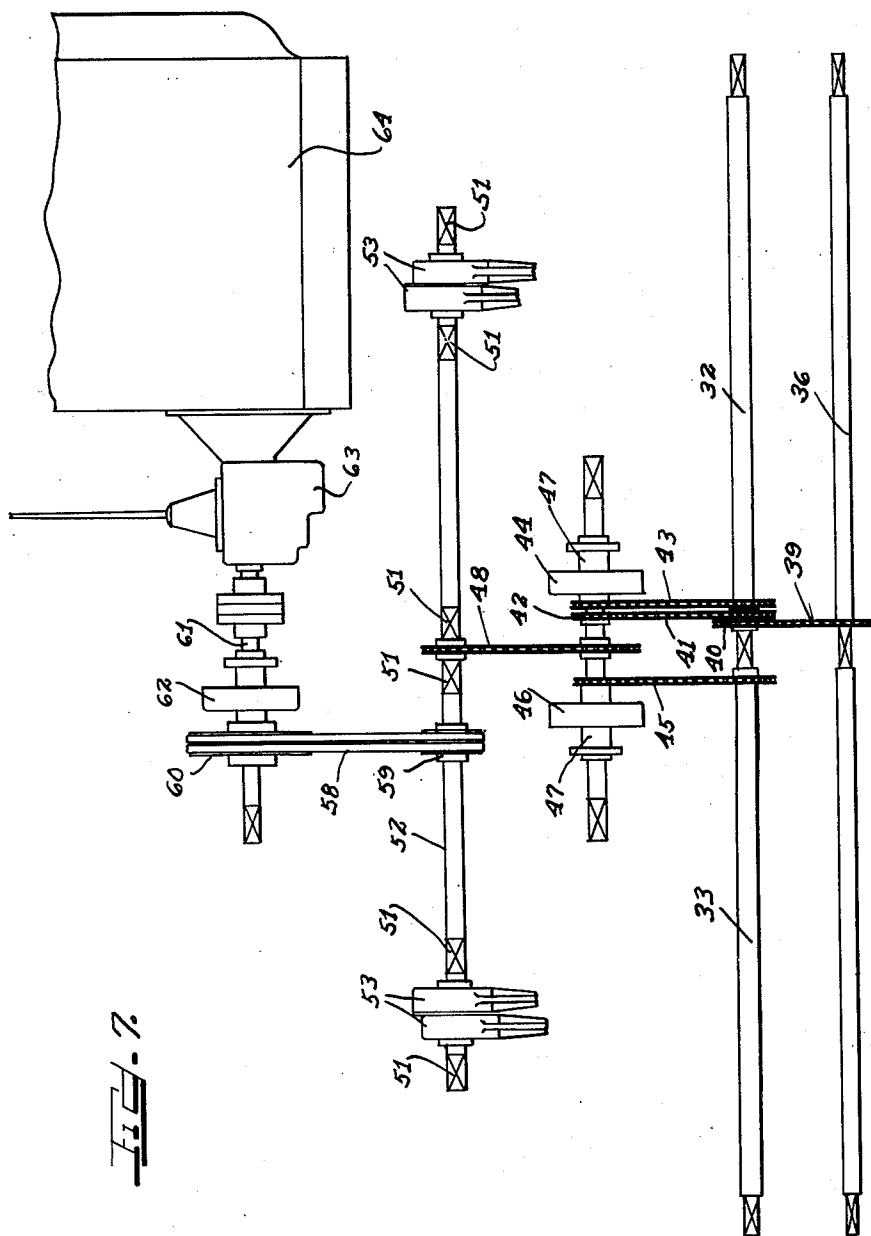
H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 6



INVENTOR

Harry H. Barber.

BY Charles Conkling ATTY.

Dec. 6, 1938.

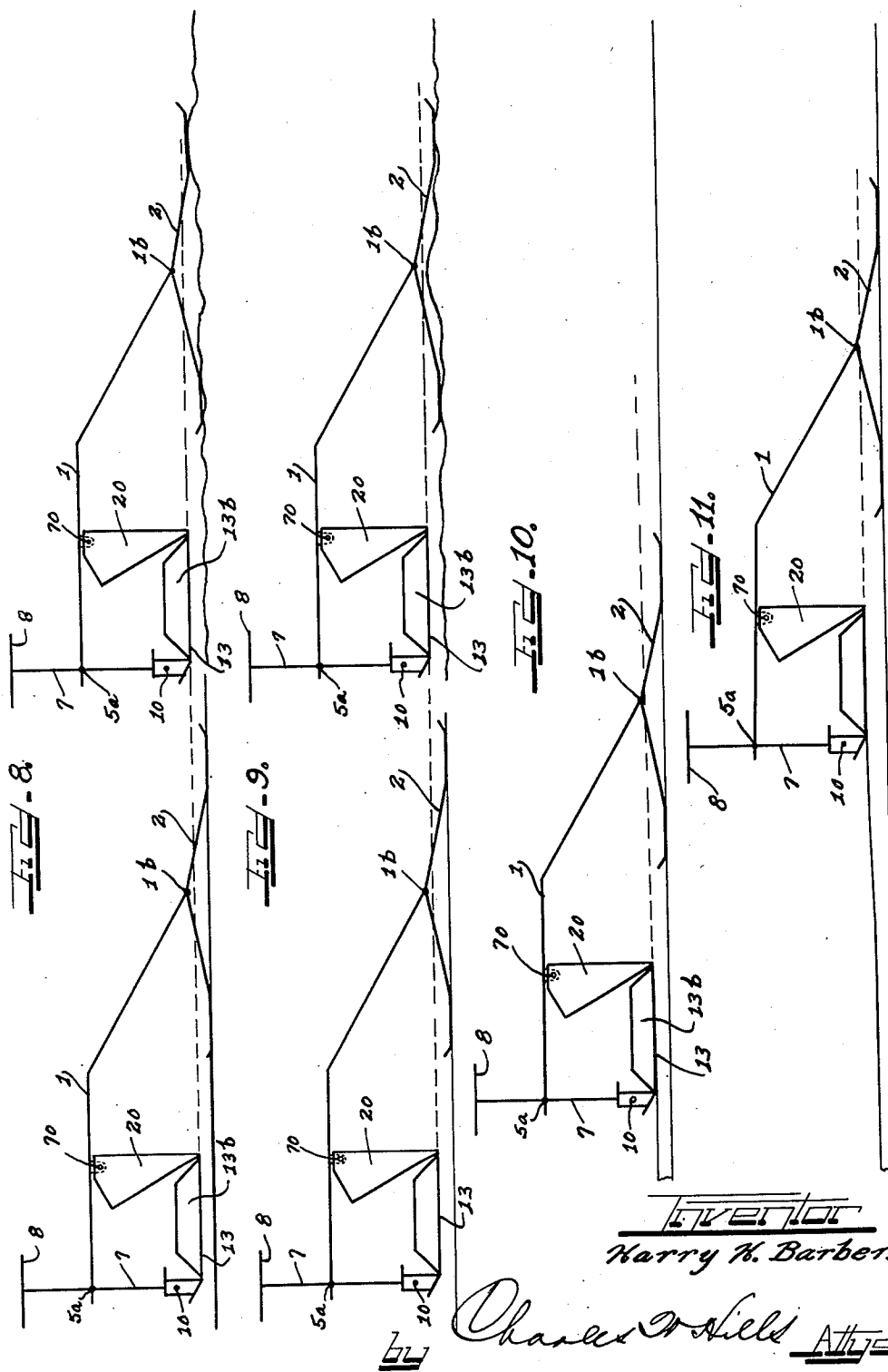
H. H. BARBER

2,138,828

MACHINE FOR AND PROCESS OF LAYING ROADS

Filed April 10, 1936

7 Sheets-Sheet 7



Inventor
Harry H. Barber

Charles W. Hill *Att'y.*

UNITED STATES PATENT OFFICE

2,138,828

MACHINE FOR AND PROCESS OF LAYING
ROADS

Harry H. Barber, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill., a corporation of Illinois

Application April 10, 1936, Serial No. 73,666

27 Claims. (Cl. 94—45)

This invention relates to a road finishing machine adapted for tralling relation with another unit and concerns itself primarily with a structure involving a smoothing screed which supports and carries the major portion of the weight of the finishing machine, in combination with means for adjusting said screed for gradually varying the thickness of the pavement laid or the contour thereof, and in which machine are provided means for materially lessening the effect of an uneven roadway upon the road making elements.

There are several notable advantages that arise from this invention. In the first place, the effect of an uneven roadway is materially reduced upon the action of the road making elements, thus producing a smoother and more even pavement. In the second place, the varying of the thickness of the pavement is gradually effected, thus avoiding sudden rises or depressions in the pavement. Then the screed, which constitutes a load sustaining member is sufficiently weighted to materially assist in compacting the pavement and smoothing the same.

An object of this invention, therefore, is to provide an improved machine for and process of laying and finishing roads.

With these and other advantages that will become apparent as the description proceeds, this invention comprises the novel structure and combinations of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a side elevational view of a road finishing machine involving this invention and shown attached in tralling relation to a power and mixing or tractor unit, a fragmentary portion of which is shown in elevation.

Figure 2 is a rear end elevational view of the machine.

Figure 3 is a top plan view of the finishing machine with parts of the power and mixing units diagrammatically shown.

Figure 4 is an enlarged sectional view taken upon the line IV—IV of Figure 3.

Figure 5 is an enlarged side elevational view of the road finishing machine involving this invention with parts broken away.

Figure 6 is an enlarged fragmentary sectional view taken upon the line VI—VI of Figure 3.

Figure 7 is a diagrammatic plan view of the

operating mechanism of the road finishing machine.

Figures 8 and 9 are diagrammatic views illustrating the slight disturbance caused when the machine travels over an uneven road bed.

Figures 10 and 11 are diagrammatic views illustrating the action of the finishing machine when the thickness of the pavement is varied.

It is believed that my novel process of laying and finishing roads will be fully understood from the description of an apparatus capable of practicing this process.

In the illustrated embodiment of this invention, the road finishing machine is shown as including a pair of box-like side bars 1 which slope downwardly at their forward portions as indicated at 1a (Figure 1). To the lower end of each bar 1 there is pivoted a shoe 2 by a pivot 1b, and which shoe is adapted to slide over the roadway adjacent the sides of the crawlers 3 that support and carry the mixing or power unit.

It will be noted that the shoe 2 has an upwardly extending portion 2a at the pivot point of the bars 1. This upwardly extending portion is preferably formed by two upwardly converging portions extending from the flat portions 2b that engage the surface of the road. Thus, each shoe has two spaced areas engaging the road. The ends of each shoe slope upwardly as indicated at 2c to clear the surface of the roadway. The forward turned up ends 2c will also prevent the shoes from digging into the earth. The bars 1 are shown as pivotally connected to the frame of the tractor unit by links 4 connected by pivots 4a to said bars and by pivots 4b to the tractor frame.

At the rear ends of the bars 1 are pivotally mounted blocks 5 best shown in Figure 2. The bars 1 are preferably provided with triangular metal tail pieces 6 which may be welded thereto for pivotally supporting the pivot blocks 5 which are provided with side trunnions 5a pivoted in the tail pieces 6. Screw rods 7 each having a hand wheel 8 at its upper end are threaded through the pivot blocks 5. The lower ends of the screw rods 7 are rotatably anchored in pivot blocks 9 which are provided with trunnions 10 pivoted in spaced angle plates 11 welded or secured to the back of a transverse channel bar 12 which in turn is welded or secured to a metal screed 13. Thus the rear ends of the bars 1 are supported upon the screed which passes over the laid and tamped pavement and smoothes the same.

The rear end of the metal screed is turned

upwardly as indicated at 13a and the side edges are bevelled and turned up as indicated at 13b (Figures 1 and 5). Angle plates 14 may be welded to the channel 12 adjacent the rear ends of the turned up side portions to prevent an excess amount of dirt from creeping upon the screed at the bevels of the turned up sides 13b. Upon the forward end of the screed 13, there is welded a transverse angle bar 15 (Figure 6). A vertical plate 16 is welded to the upstanding flange of the angle bar 15, and upon the upper margin of the plate 16 there is welded an angle bar 17 which forms a support for a horizontal plate 18 which is welded or secured to the angle bar 17. A diagonal transverse plate 19 is welded at its lower end to the angle bar 15 and at its upper end it is welded to the rear margin of the horizontal plate 18. Triangular side plates 20 are welded to the ends of the plates 16, 18 and 19. About the medial portion of the screed, there is welded a plate 21 which is substantially triangular in shape. The front edge of this plate 21 fits against the plate 19 and is welded thereto. The top edge of the plate 21 has a plate 22 (Figure 2) welded thereto. A pivot pin 23 pivots the channel member 12 to the plate 22. The bottom edge of the plate 21 is spaced a fraction of an inch above the screed plate 13.

A pair of transversely extending channel bars 24 are welded in spaced relation to the top of the plate 18. A plate 25 is welded to the top of the channel bars 24 and extends forwardly thereof. A transverse channel bar 26 is welded to the top of the forward margin of the plate 25, and a second transverse channel bar 27 is welded to the bottom of the extended portion of the plate 25 in alignment with the channel bar 26. It might be mentioned that the plate 25 is provided with suitable openings for the tamper pitmans which will later be referred to. Likewise the channel 26 is provided with a suitable opening for an operating belt, as will later more fully appear.

Upon the back of the channel 26 are secured a pair of bearing brackets 28 (Figure 4) that support a shaft 29. Upon the back of the channel 27 are three brackets 30a supporting hangers 30 that have bearings 31 intermediate their ends for supporting the shafts 32 and 33 of a pair of aligned material spreading elements adapted to be independently driven. The spreading elements are in the form of spirals 34 on said shafts. The hangers 30 are provided with bearings 35 at their lower ends that support an agitating shaft 36 having agitating elements 37 thereon which are in the form of pins.

A sprocket wheel 38 is secured upon the shaft 36 adjacent the central bearing 35, and a sprocket chain 39 is trained over this sprocket and also over one set of teeth of a double sprocket 40 loosely mounted upon the shaft 32. A sprocket chain 41 is trained over the other set of teeth of said double sprocket 40 and over a sprocket wheel 42 secured upon the shaft 29. The agitating shaft is hence continuously operated.

The shaft 32 is connected by sprocket gearing 43 to a clutch member 44 loosely mounted upon the shaft 29, and the shaft 33 is connected by sprocket gearing 45 to a clutch member 46 loosely mounted upon the shaft 29. The clutch members 44 and 46 may be connected to the shaft 29 by cooperating clutch elements 47 slidably splined upon the shaft 29. As these clutches may be of any standard construction, they are not specifically illustrated. The construction, however, makes it possible to stop the rotation of one of the spreading elements at any time in order to

control the spreading of the material. The shaft 29 is adapted to be constantly driven by a sprocket chain 48 which is trained over a sprocket wheel 49. The two reaches of the sprocket chain 48 pass through the apertures 50 in the web of the channel 26.

To the front face of the channel 26 are secured a pair of bearing brackets 51 that are directed rearwardly with respect to the machine and support a shaft 52, best shown in Figure 7. A pair of eccentric straps 53 are suitably mounted upon eccentrics secured to the shaft 52 adjacent each end thereof. One strap of each pair is connected to a tamper 54 while the other strap of each pair is connected to a tamper 55. While two tampers are shown, it is contemplated that only one may be used. In such an event, the tamper 55 may be omitted and the tamper 54 positioned in its place. The eccentrics are arranged to alternately elevate and lower the tampers. The tampers 54 and 55 are shown as hollow metal members that extend the width of the roadway to be paved. The forward tamper 54 has a downward curved bottom 56 to progressively tamp the pavement while the tamper 55 has a square bottom. The ends of the tamper 54 are connected to the screed by parallel links 57. The rear tamper 55 is located between the front wall 16 of the screed and the tamper 54. This construction will guide the tampers in vertical planes and confine the same in such planes.

The shaft 52 is driven by a belt 58 which is trained over a pulley 59 thereon and over a driving pulley 60 secured upon a shaft 61 by any suitable clutch mechanism 62 (Figure 7). The shaft 61 extends into a gear changing housing 63 of any conventional construction and the gears in this housing are connected to a source of power, such as a combustion engine 64, which is supported upon I-beams 65 resting upon the channel 26, and a channel member 66 supported upon the plate 18 in parallel relation to the channel 26. The channel 66 may be welded to the plate 18. The end of the shaft 61 remote from the engine is journaled in a suitable upright bearing part 67 supported upon a ball plate 68 welded to the tops of the channels 26 and 66, as shown in Figure 3. The side plates 20 of the screed are pivotally connected with channel blocks 69 (Figure 2) welded to the bottom of the bars 1. Pivot pins 70 pivotally connect the plates 20 with the channel blocks 69 whereby the screed can pivot on the pins 70 during adjustment thereof. The bars 1, screws 7 and screed 13, however, normally form a rigid quadrilateral to which the major portion of the weight of the engine and other parts of the machine is transmitted. The remaining portion of the weight is transmitted through the arms 1 to the shoes which should be sufficiently weighted or should sustain such a part of the load as to keep their proper operative relation with the ground during operation or adjustments of the screed. As the arms 1 are relatively long, only a small portion of the weight will be transmitted to the shoes, as is obvious.

In the diagrammatic views shown in Figures 8 to 11, the same reference characters have been applied to the parts as were applied to those parts heretofore described. In referring to these figures, it will be noted that the screed can swing upon the pivots 70 due to the pivots 5a and 10 on the screw rods 7, when the screws are operated. At other times, the parts form a rigid structure, as previously pointed out.

In the left hand view of Figure 8, the finishing

machine is shown as travelling over a smooth and one side, the screed warping sufficiently for such a purpose, until the adjusted side of the screed rights itself in a manner heretofore set forth.

In the operation of the road finisher, the pavement material is designed to be deposited upon the road bed in advance of the spiral spreader either by a truck or by a mixing and power unit. The spiral spreaders will suitably spread the material over the width of the roadbed to be paved. As the spiral spreaders can be independently controlled, it is possible to regulate the spreading of this material. The material acted upon by the spreading element is next agitated or raked by the rotary agitator formed by the shaft 36 and pins 37. The agitated material is then progressively tamped by the tamper 54 while the rear tamper completes the tamping and tends to level the pavement which is then smoothed by the screed.

In the left hand view of Figure 9, the machine is shown as passing over an even or smooth roadway while in the right hand view the machine is shown as passing over an uneven roadway with a hump directly under the pivot 1b which is at the apex of the converging portions of the shoe and not affected by such hump. The advantage of having the pivot point 1b elevated will hence be appreciated, for if the shoe struck the bump at the pivot point 1b in passing thereover, there would be a material elevation of the bar 1.

The screed 13 may be adjusted to increase or decrease the thickness of the pavement in the following manner. When it is desired to increase the thickness of the pavement, the screw rods 7 are simultaneously operated by turning the hand wheels 8 for forcing the rear end of the screed downwardly. This operation may cause the rear ends of the bars 1 to rise in the event the rear end of the screed is upon a solid bottom. This operation will increase the distance between the pivots 5a and 10 and cause the screed to slightly swing forward upon the pivots 70 for elevating the front end or nose thereof together with the tampers for receiving a thicker layer of pavement.

In Figure 10, the rear end of the screed is shown as tilted downwardly with the forward end tilted upwardly to the same degree to allow a thicker layer of material to pass under the screed. As the screed now advances, it will gradually move to a higher elevation, as shown in Figures 10 and 11, until the screed again assumes a horizontal position; the bars 1 will of course adjust themselves to the righting movement of the screed. In the present instance, the rear ends of the bars 1 will assume a higher elevation, as shown in Figure 11.

When it is desired to decrease the thickness of the pavement, the screws 7 will be simultaneously operated to elevate the rear end of the screed. This will decrease the distance between the pivot points 5a and 10 and cause the screed to slightly swing rearwardly upon the pivots 70 with the result that the nose of the screed will be directed downwardly at a slight angle with the result that a thinner layer of pavement will pass under the tampers and screed. Then, as the machine advances, the screed will gradually right itself until it again assumes a horizontal position. The screed can always right itself to horizontal position after an adjustment thereof, since the bars 1 are free to assume any angle to bring the screed into horizontal position. It will be evident that the adjustment of the screed could also be effected by an adjustment of the arms 1 at the pivot points 1b. It will be appreciated that a very small adjustment of the screws 7 will effect a much larger adjustment of the screed due to the length of the arms 1.

The screed can also be adjusted to vary the crown of the pavement. This can be accomplished by merely adjusting one of the screws 7 for increasing or decreasing the pavement upon

It is characteristic of this invention that an uneven roadway does not materially affect the road making elements; that the thickness of the pavement is gradually varied whereby bumps or the like are avoided that would result in instances where the pavement is quickly varied. It will be appreciated that these novel results are obtained through a novel finishing machine, in which the weight of the screed is solely supported upon the pavement and supports the major portion of the weight of the rest of the finishing unit.

While it may be broadly old to adjust a screed to vary the thickness of the pavement, it is thought to be radically novel to have a screed act as the main load sustaining member in combination with means for adjusting the same for varying the thickness of the pavement or the contour thereof.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than is necessitated by the prior art.

I claim as my invention:

1. In a road finishing machine, a screed constituting the load sustaining member of said machine and adapted to rest upon the pavement, arms pivoted to said screed, shoes adapted for travelling upon the road pivoted to said arms, and means for adjusting said arms relative to said screed.

2. In a road finishing machine, a screed adapted to ride on the laid pavement, material tamping means in front of and carried by said screed, rotary material spreading elements, and a rotary material agitator below said spreading elements and in advance of said tamping means.

3. In a road finishing machine, a screed, and a substantially vertical tamper in front of said screed having a downwardly sloping lower end for progressively tamping the material, said sloping lower end being curved downwardly and rearwardly toward said screed so as to lead progressively the material toward said screed as the material is being tamped.

4. In a road finishing machine, a power unit, a screed, arms having intermediate points pivotally connected to said screed, shoes pivotally connected to the forward ends of said arms for travelling upon the roadway, adjustable elements connecting the rear ends of said arms and screed, and links connecting said arms and power unit.

5. In a machine of the class described, a screed comprising a bottom plate and side plates, arms

having intermediate points pivoted to said side plates, screw elements pivotally mounted in the rear ends of said arms and connected to said bottom plate, and shoes pivotally connected to the forward ends of said arms for travelling upon the roadway.

6. In a road making machine, a screed comprising a bottom plate and side plates, road making elements carried by said screed, a source of power on said screed for operating said elements, arms pivoted at intermediate points to said side plates, shoes pivoted to the forward ends of said arms for travelling upon the roadway and adjustable elements between said arms and bottom plate.

7. In a road finishing machine, a screed having a bottom plate and side plates, arms having intermediate points pivoted to said side plates, means pivoted to the forward ends of said arms for travelling upon the roadway and adjustable elements between said bottom plate and arms for the purpose set forth.

8. In a road finishing machine, a screed comprising a bottom plate and upstanding parts, a pair of arms in spaced parallel relation pivoted at intermediate points to said upstanding parts, means pivotally connected to the forward ends of said arms for travelling upon the roadway and adjustable elements between said arms and bottom plate.

9. A road finishing machine comprising a screed consisting of a bottom plate and standards connected thereto, bars pivoted intermediate their ends to said standard, shoes pivoted to the forward ends of said bars, means between the rear ends of said bars and the rear edge of said bottom plate for raising or lowering the rear portion of said plate relative to the front portion thereof for varying the thickness of the pavement being laid, said bottom plate being adapted to gradually right itself to horizontal position as said screed advances.

10. A road finishing machine comprising a screed having a bottom plate and standards rising therefrom, longitudinally extending bars pivoted intermediate their ends to said standards, shoes pivoted to the forward ends of said bars for travelling upon the road, a motor mounted upon said screed, road making implements carried by said screed and operatively connected to said motor, and means between the rear ends of said bars and bottom plate for tilting said bottom plate in the direction of travel.

11. A road finishing machine comprising a screed having a bottom plate adapted to be supported upon the pavement, longitudinally extending arms pivoted intermediate their ends upon the screed, shoes pivoted to the forward ends of said arms and adapted for travelling upon the road in advance of said screed, adjustable rods pivoted to the rear ends of said arms and connected to said bottom plate and effective for tilting said bottom plate in the direction of travel for varying the thickness of the pavement, said arms causing said bottom plate to right itself to assume a horizontal plane as the screed advances.

12. In a pavement finishing machine, a screed adapted to be supported upon the pavement, road making elements supported by said screed, a motor on said screed connected to said elements for operating the same, and means having support upon the roadway and connected to said screed for tilting the screed in the direction of travel for varying the thickness of the pavement, said screed righting itself in advancing.

13. A road finishing machine comprising a screed adapted to be supported upon the roadway, road making elements supported by said screed, a motor on said screed operatively connected to said elements, and means for tilting said screed in the direction of travel comprising members pivoted intermediate their ends to said screed and supported upon the road in advance of the screed and having adjustable connections with the screed rearward of said pivotal connections.

14. A road finishing machine comprising a screed having a bottom plate extending transversely of the roadway and supported thereon, standards rising from the side edges of said bottom plate, bars pivoted intermediate their ends to said standards and having means supported upon the roadway in advance of said screed, and adjustable means between the rear ends of said bars and bottom plate for tilting said bottom plate in the direction of travel.

15. In a road paving machine, a screed comprising a bottom plate, standards rising from said bottom plate, arms pivoted to said standards and extending beyond said bottom plate in the direction of the roadway, means on the free ends of said arms for travelling upon the roadway and adjustable elements pivotally connecting said arms and bottom plate for tilting said screed for varying the thickness of the pavement.

16. In a road paving machine, a screed comprising a bottom plate adapted to be supported upon the pavement, standards rising from said bottom plate, arms pivoted to said standards and extending beyond said bottom plate in the direction of the roadway, means upon the free ends of said arms for travelling upon the roadway and adjustable elements pivotally connecting said arms and bottom plate, the adjustment of one element causing said bottom plate to warp, said bottom plate automatically righting itself as the screed advances for varying the thickness of the pavement transverse of the road.

17. In a road paving machine, a screed comprising a bottom plate adapted to be supported directly upon the pavement, standards rising from said plate, arms pivoted intermediate their ends to said standards, adjustable elements pivotally connecting said arms and bottom plate, the free ends of said arms extending beyond said bottom plate and having means adapted for travelling upon the roadway, a tamper extending transversely of the road adjacent the front edge of said screed, said tamper having a downwardly sloping portion upon its front lower edge and means for operating said tamper.

18. In a road finishing machine, a screed adapted to ride on the pavement, a tamper supported upon said screed, and operating means for said tamper carried by said screed.

19. In a road building machine, a screed adapted to ride upon the pavement and being of substantial width for supporting a substantial portion of the weight of the machine upon the surface of the finished road, a tamper adjacent the front edge of the screed and supported thereby, means between the tamper and the screed for causing relative vertical movement between the tamper and the screed, and means for controlling the thickness of the finished pavement by adjusting the portion of the area of the screed which makes contact with the tamped portion of the pavement being constructed.

20. In a road building machine, a screed member adapted to be supported directly on the freshly laid pavement having a substantially vertical

front plate and a bottom plate adjustable relative to the horizontal to cooperate with the road materials to adjust the thickness of the pavement, and tamping means supported directly on said front plate for tamping road material to a predetermined level on the road-bed.

21. In a road building machine, means for tamping road material to a predetermined level on the roadbed, and means for controlling said level including a screed movable lengthwise of the road and located to the rear of the tamping means and supported directly on the top of the freshly tamped and previously laid road and adjustable means for changing the angular relation of said screed to the level of the laid pavement to readjust thereafter the thickness of the pavement being tamped, said adjustable means including a leverage means pivotally connected to the screed and extending forwardly of the tamping means for embracing the unpaved roadway and arranged and constructed to effect a return of the screed to a horizontal position upon adjustment and forward movement of the screed.

22. In a road building machine, means for tamping road material to a predetermined level on the road-bed, and means for controlling said level including a screed movable lengthwise of the road and located to the rear of the tamping means and supported directly on the top of the tamped and previously laid road and adjustable means for changing the angular relation of said screed to the level of the laid pavement to readjust thereafter the thickness of the pavement being tamped, said screed having substantially a right-angular cross-sectional shape, the horizontal leg of which is supported directly on the laid pavement and the vertical leg of which supports said tamping means.

23. In a road building machine, means for tamping road material to a predetermined level on the road-bed, and means for controlling said level including a screed movable lengthwise of the road and located to the rear of the tamping means and supported directly on the top of the tamped and previously laid road and adjustable means for changing the angular relation of said screed to the level of the laid pavement to readjust thereafter the thickness of the pavement being tamped, said screed having substantially a right-angular cross-sectional shape, the horizontal leg of which is supported directly on the laid pavement and the vertical leg of which supports said tamping

means, said adjustable means being connected to said horizontal leg for warping the same when it is desired to effect a change in the depth or level of the road to be thereafter laid.

24. The process of laying a road which consists in dumping material on the road-bed, distributing the material transversely of the road to be laid, tamping the material to the desired level and height, varying the height and level of the material being tamped by adjusting the tamping action in response to a pressure applied directly to the forward portion of the just previously laid pavement and effecting a normalizing of the adjusted new level by a pressure applied to the roadway in advance of the material being distributed on the roadway.

25. The process of laying a road which consists in dumping material on the road-bed, distributing the material transversely of the road to be laid, tamping the material to the desired level and height, and controlling the height and level of the pavement being laid by a differential action set up in response to pressure applied directly to the smooth surface of the laid road to the rear of the material being tamped and pressure applied to the surface of the unfinished roadway in advance of the material being laid.

26. The process of laying a road which consists in dumping material on the road-bed, distributing the material transversely of the road to be laid, tamping the material to the desired level and height, varying the height and level of the material being tamped by adjusting the tamping action in response to a pressure applied directly to the forward portion of the just previously laid pavement, and utilizing the progressive forward tamping action on the material to assist in bringing the level of the material to be tamped to the desired adjustment.

27. In a road building machine including apparatus for leveling and tamping material on the roadbed, a shoe connected to said apparatus for sliding and traveling contact with the roadbed in advance of the material being tamped, said shoe having an elevated intermediate portion pivotally connected to said apparatus and which elevated portion is formed to accommodate raised irregularities in the roadbed, said shoe being movable in response to irregularities in the surface of the roadbed to effect a control and adjustment of said apparatus.

HARRY H. BARBER.