Dec. 12, 1933. W. S. EDGE 1,939,341

ROAD FINISHING MACHINE

Filed July 21, 1928 2 Sheets-Sheet 1

Fig. 1.

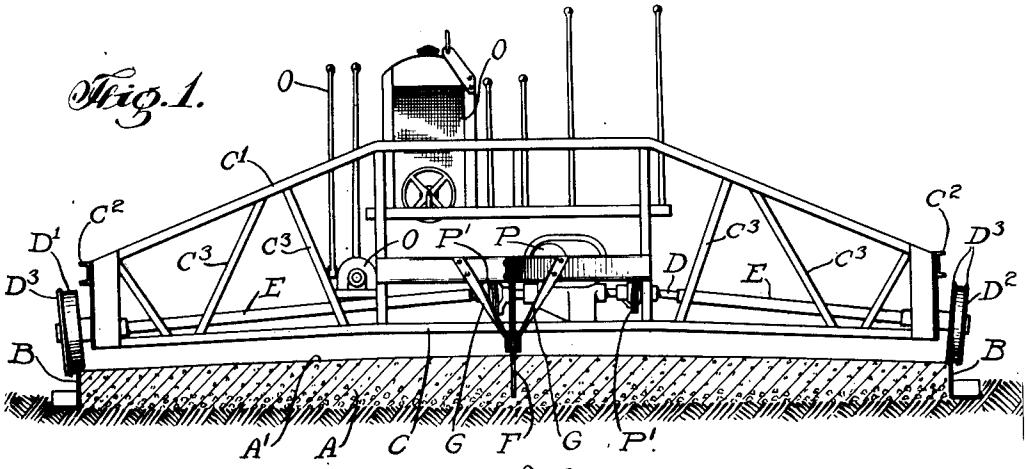


Fig. 2.

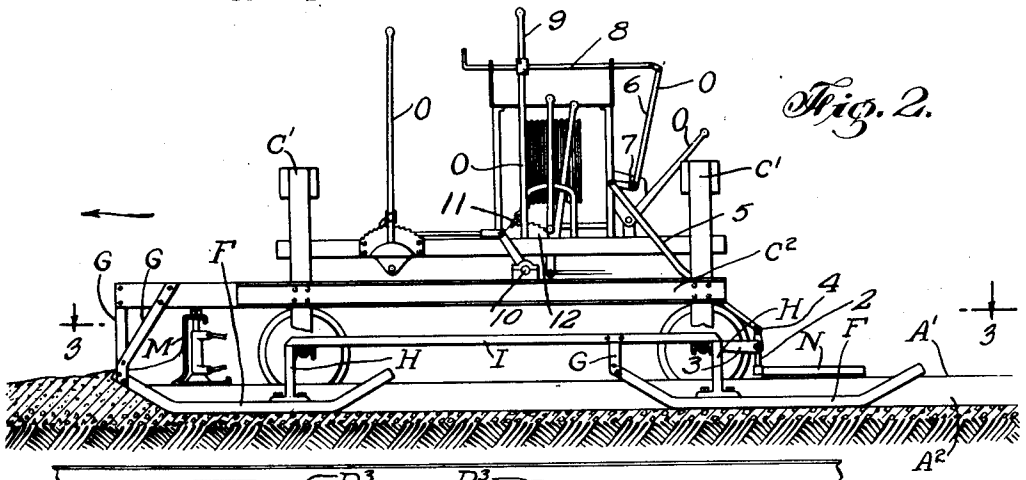
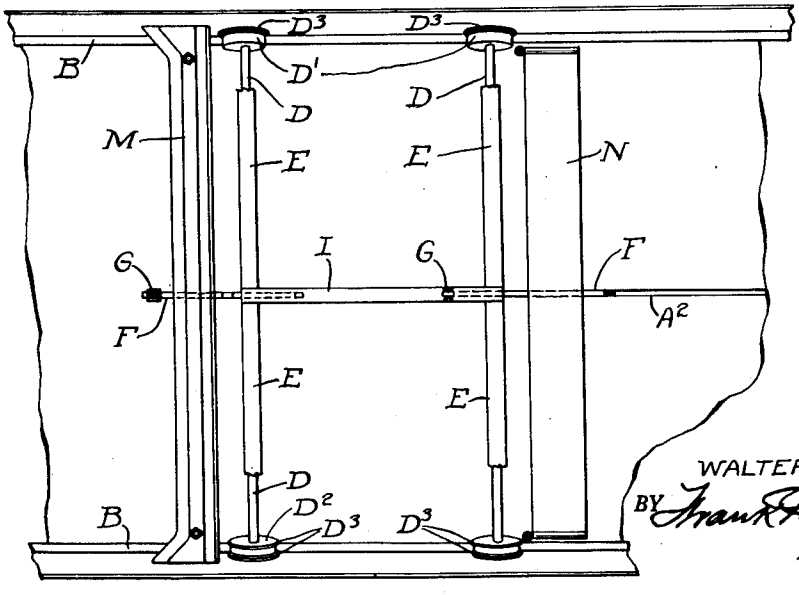


Fig. 3.



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Filed July 21, 1928 2 Sheets-Sheet 2

Fig. 4.

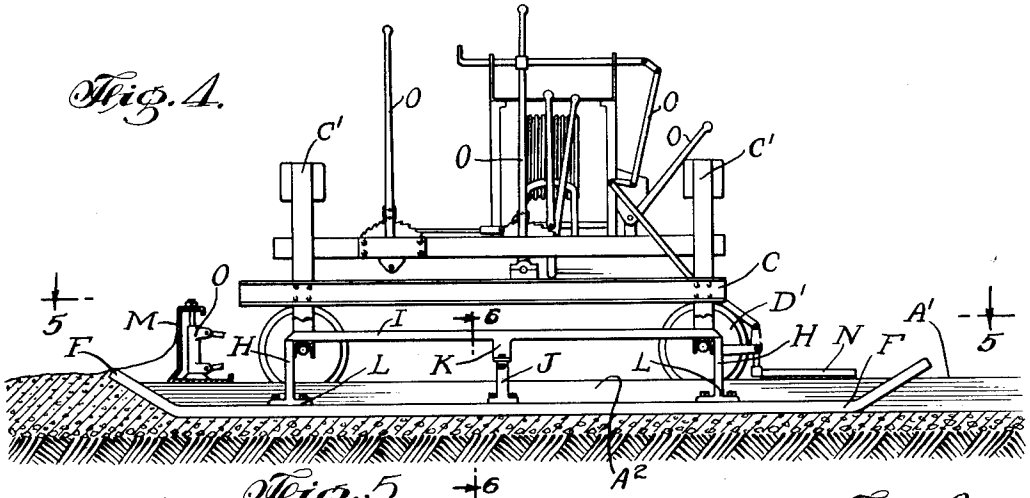


Fig. 5.

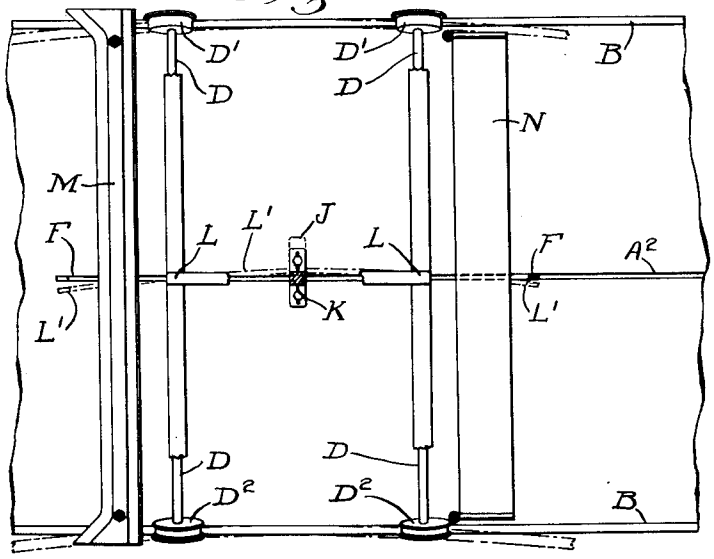
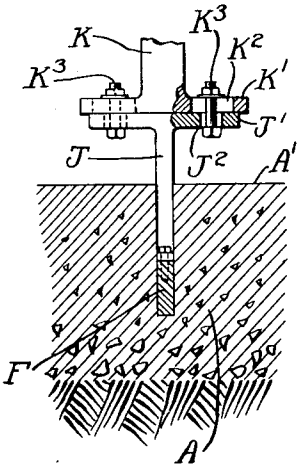


Fig. 6.



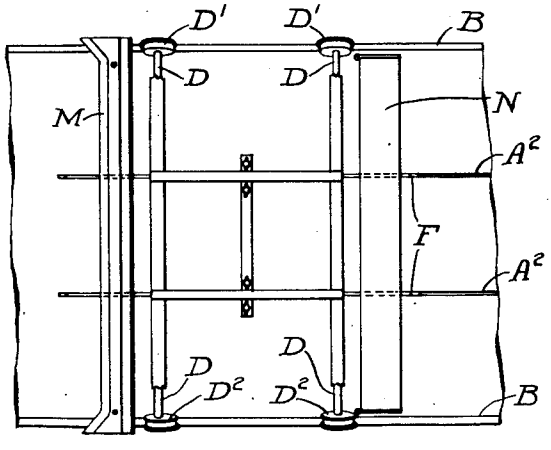


Fig. 7.

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Patented Dec. 12, 1933 1,939,341

UNITED STATES PATENT OFFICE

1,939,341

ROAD FINISHING MACHINE

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Application July 21, 1928. Serial No. 294,422

4 Claims. (Cl. 94—51)

My invention relates to road finishing machines.

The object of my invention is to provide a machine of simple and practical construction adapted to form a slot or a plurality of slots in a concrete road under construction, in order to provide a weakened plane on the longitudinal centre line of the road, or on lines parallel therewith, in the finished road.

The novel features of construction will be hereinafter described and set forth in the claims.

The means heretofore used by me to form a central slot in the concrete in the process of finishing a road, comprises means for supporting a solid steel plate, usually about 48 feet long, on the centre line of the road by chairs, or other means, and then pull this plate forward as the concrete was laid, by a wire cable attached to the concrete mixer.

The slot formed by the advancing plate is afterward filled by sections of precast asphalt, to form a joint with the concrete; or a removable form may be inserted in the slot when formed, and removed after the concrete has set, and the slot filled with hot tar or other suitable material.

Finishing machines operate backward and forward behind the concrete mixer, travelling on the road forms which also serve as rails. In such machines the drag plate must pass under the finishing machine and extend some distance back of it so that, as the machine moves backward and forward, it will not pass over an open slot left by the sliding plate.

This is why it has been necessary to employ a plate 48 feet or more in length. It has also been necessary to support this plate at exactly the right height, and some difficulty has been encountered in keeping the line of the joint straight.

One of the objects of my invention is to overcome these difficulties, which is attained by the use of the present construction.

Referring to the drawings which form a part of this specification:

Fig. 1 is a front elevational view of a road finishing machine illustrating my invention.

Fig. 2 is a side elevational view.

Fig. 3 is a plan view of the cutting plate construction and the supporting means therefor, taken on line 3—3 of Figure 2.

Fig. 4 is a side elevational view of a construction embodying my invention, in which a single cutting plate is used instead of two plates supported in longitudinal alignment, as illustrated in Figure 2.

Fig. 5 is a plan view taken on line 5—5 of Figure 4, of the cutting plate and supporting means therefor, as illustrated in Figure 4.

Fig. 6 is a detail sectional view, taken on line 6—6 of Figure 4, illustrating the means used for supporting the cutting plate in adjustable relation to the frame and supporting members carried thereby.

Fig. 7 is an illustrational plan view disclosing two cutting plates carried by the frame of the machine, to form two parallel slots in a roadway, one at each side of the median line of the roadway, instead of a single slot on the median line.

A indicates a concrete road under construction, and A′ the top or surface of the roadway.

A^2 indicates a slot formed in the concrete by the cutting plate of the machine.

B—B respectively, indicate side forms used in building the road, and also serve as rails for carrying and guiding the machine over the roadway.

C indicates the frame of the machine, which is preferably built of light angle iron construction to form a bridge which spans the roadway as shown, and is carried on axles D—D respectively, which are mounted on wheels D′—D′ and D^2—D^2 respectively, the wheels D^2 having flanges D^3 spaced from each other a distance equal to the width of the top of the rail of the road form on which they travel, to prevent lateral and pivotal movement relative thereto, whereas the wheels D′ are provided with a flange at the outer side of the wheels only.

The frame C, is supported by and mounted on tubular or U shaped members E—E—E—E respectively, which serve as bearings for the axles D which extend therethru.

In the present construction illustrated in Figures 1, 2, and 4, the frame C, is formed with two arch members C^2—and truss members C^3— bolted or riveted together and fastened to the tubes E, to from a frame for the vehicle, and adapted to carry the slot forming plates F, in alignment with each other, as illustrated in Figures 2 and 3, or a single plate, as illustrated in Figure 4.

The cutting plates are rectangular in cross section as shown in Figure 6, and are bent upwardly at an angle at each end as shown in Figures 2 and 4, the upper ends extending above the surface of the roadway as illustrated.

In the constructions illustrated in Figures 1, 2 and 3, the front end of each cutting plate is held to the frame C, by braces G, and brackets H,

connect the lower portions of the plates with a longitudinally extending member I, of the frame C.

In making the device as illustrated in Figures 4 and 5, in which a single plate is used, I have illustrated means whereby the plate, which is flexible, may be bent in a curved form to conform to the curvature of a roadway where the curvature is rather sharp. This is accomplished by forcing the carrying member J, laterally relative to the supporting member K, carried by the frame, while holding the cutting plate against lateral movement at the points L—L, thus causing the plate to curve as illustrated in dotted lines L' in Figure 5.

The cutting plate is held at a fixed height relative to the surface of the roadway.

M indicates a screed plate of the usual construction, which is carried by the frame C, and is located behind the forward end of the cutting plate F, adjacent thereto.

N indicates a belt float of the usual type, which is located in advance of the rear end of the cutting plate, as illustrated. These devices are connected with and operated by mechanism comprising various levers, cables, drums and ratchet elements O—O, etc., which are mounted on or carried by the frame of the machine in the usual manner known to this art. The finishing belt N is supported by depending arms 2 and bars 3, each of which bars is connected at its outer end to one of the arms 2, and at its inner end has pivotal connection with the frame of the machine. A cross bar 4 is connected to the upper ends of the arms 2, and a link 5 is connected at its lower end to the cross bar 4. The upper end of the link 5 is pivotally connected to one arm of a bell crank 6, the bell crank being mounted on a fixed pivot 7. The upper end of the bell crank 6 has link connection with a pull rod 8 to which is connected a hand lever 9. The hand lever is pivotally mounted at 10 to the frame of the machine, and carries a pawl 11 which cooperates with a ratchet 12. It will be seen that when the lever 9 is swung to the right, the belt N will be raised, and it can be maintained in such raised position by the pawl 11. By this arrangement, the belt can be supported at a suitable height for engagement with the surface of the concrete, or can be held entirely out of contact with the concrete. P indicates a motor which drives the axles D—D respectively thru universal joints P'—P' respectively, to propel the vehicle on the rails B. By this means the machine is rendered independent of the mixing machine to propel the vehicle and cutting plate.

In Figure 6, I have shown a specific construction by means of which the cutting plate F, may be offset relative to the supporting means K. As shown, this construction provides two abutting flanges K' and J', each having slots K^2 and J^2 respectively, formed therein and thru which bolts K^3 extend and hold the members K and J in their adjusted position.

Referring to Figure 7, this construction illustrates means by which a plurality of slots may be simultaneously formed in constructing a roadway, and is valuable in building roads of exceptionable width.

The cutting plates used in the construction shown in Figure 7, are positioned to form slots parallel to each other and are of advantage where very wide roads or pavements are being constructed, as time is saved by their use.

By using two cutting plates spaced apart and held in longitudinal alignment with each other, as illustrated in Figure 2, I am able to dispense with means for bending and holding the plate in curved form, which is necessary where a long single plate is used. By using the construction above described I am able to reduce the length of the cutting plate to one half of that formerly used by me, thus reducing the weight and cost, and also can dispense with many parts formerly used to adjust and hold the long type of plates used.

In operating the machine to finish a roadway, assuming that a mixing machine has previously laid an uneven bed of concrete over the roadway between the side forms in the usual manner: the finishing machine is set in position spanning the roadway, and is propelled by its motor, or by other means, if desired, back and forth over the roadway, the plate or plates F, plowing into and forming a slot of the desired depth and width in the concrete, while the screed and float belt smooth the surface of the roadway in the usual manner.

The double flanged wheels run on one side rail and guide the vehicle and cutting plate in a true course, and prevent swivelling or lateral movement relative to the guide rail on which these wheels run.

As the slot is formed, a travelling bridge follows the finishing machine, and the slot is filled by inserting sections of precast bituminous material, or removable forms may be inserted which are removed after the concrete has set, and the slot is then filled with the bituminous material.

The great advantage of the present machine over my former practice, is that the cutting plate is carried by the finishing machine and is made very short in length relative to that of the plate formerly used, and therefore a curved slot may be easily formed in curved sections of the roadway without impairing the shape of the slot.

The plate F, is preferably set with its top, where it passes under the screed and belt, just slightly below the surface of the concrete, and the vertical depth of the plate in the concrete will vary with the penetration desired, from two or three inches to the full depth of the pavement.

While I have shown a frame construction having arches and trusses, etc. for supporting and carrying the cutting plate, I do not wish to be limited to this form, but may use any frame adapted to support and carry the cutting plate or plates in a proper position to function as required for the purpose set forth.

Having thus described my invention I claim as new:

1. Apparatus for forming slots in concrete roadways, comprising a frame mounted for travelling movement to and fro, a cutting plate connected to the front end of the frame, and a cutting plate connected to the rear end of said frame, in longitudinal alinement with the first-named plate, the said plates being spaced apart and each of short length relative to the length of the frame.

2. A grooving device for plastic material comprising a frame, a finishing device for the surface of the material adjacent to each end of the frame and a cutting device carried by the frame in position to form a slot in the material at points between the said finishing devices through to and fro movement of the frame.

3. A grooving device for plastic material, com-

prising a frame, a finishing device for the surface of the material, carried by the frame, and a cutting device carried by the frame and arranged to cut a slot in the material through to and fro movement of the frame.

4. A grooving device for plastic material, comprising a frame, a finishing device for the surface of the material, carried by the frame, a cutting device carried by the frame and arranged to cut a slot in the material through to-and-fro movement of the frame, and means for raising and lowering said finishing device.

WALTER S. EDGE.