April 29, 1941. H. E. WIESE 2,240,108

ROAD-BUILDING MACHINE

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Fig. 1.

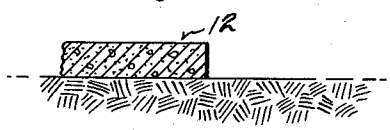


Fig. 2.

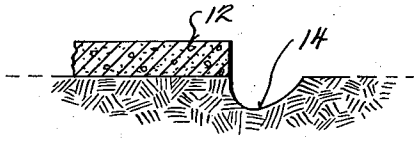


Fig. 3.

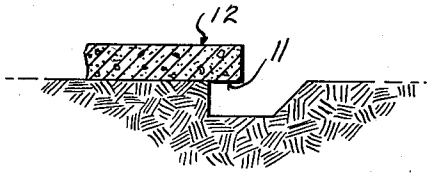


Fig. 4.

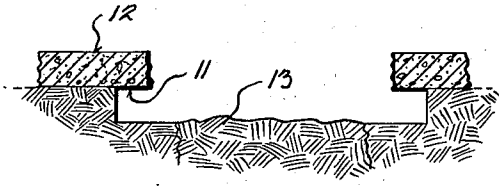


Fig. 10.

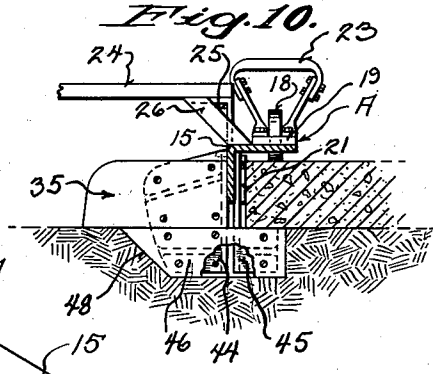
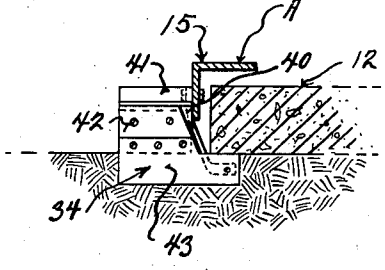


Fig. 5.

Fig. 9.



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Fig. 6.

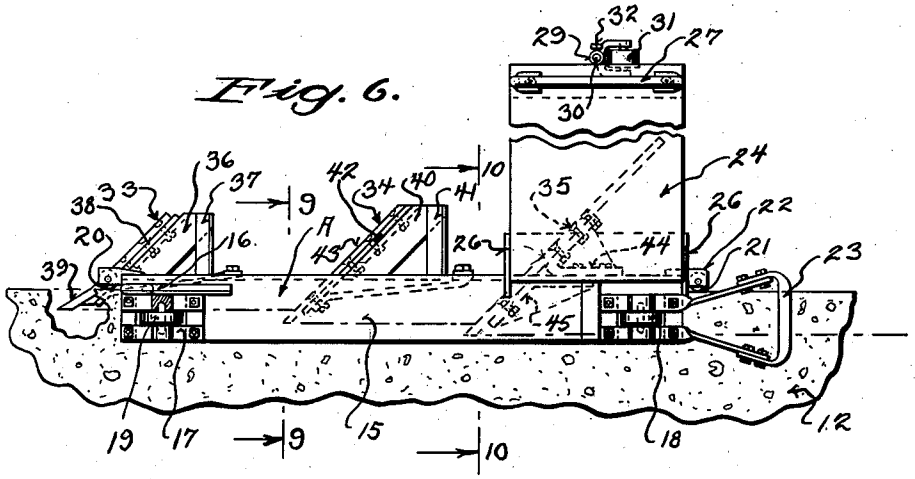


Fig. 7.

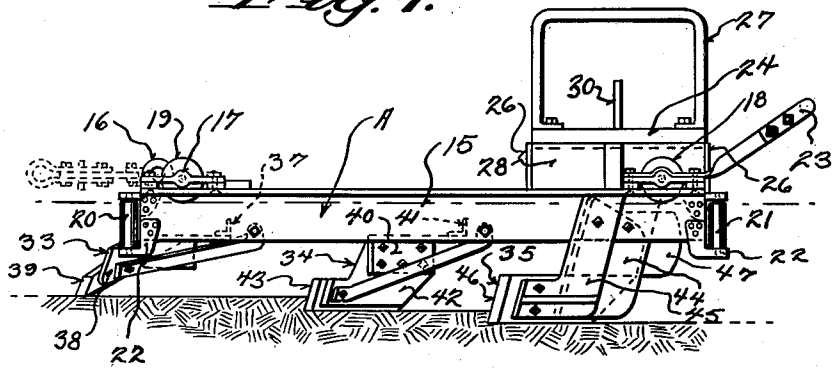
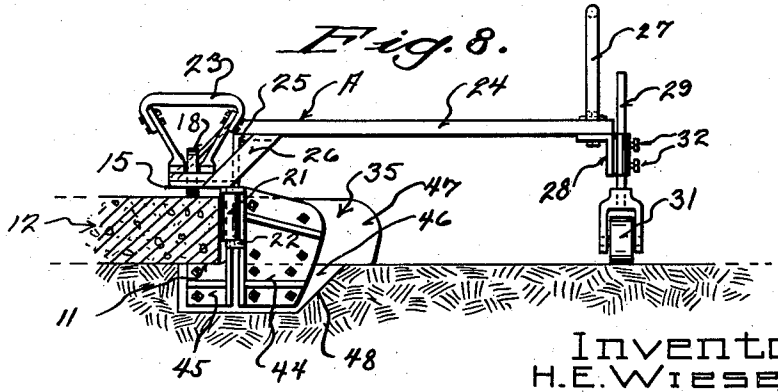


Fig. 8.



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UNITED STATES PATENT OFFICE

2,240,108

ROAD-BUILDING MACHINE

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Application March 15, 1940, Serial No. 324,112

6 Claims. (Cl. 37—108)

This invention appertains to excavating, and more particularly to road-building machinery.

One of the primary objects of my invention is to provide means for preparing a roadbed or the like, whereby to insure the proper interlocking of a newly laid strip of concrete with a previously laid highway or street, so that buckling or spreading of the new strip relative to the old will be prevented.

Another salient object of my invention is to provide a plow or similar appliance which will effectively undercut a concrete road or street to a predetermined uniform depth and shape, and thereby bring about the desired bond between a previously laid highway or street and a new concrete strip or addition.

A further important object of my invention is to provide an undercutting machine embodying a supporting frame or beam with a plurality of stepped plows thereon for bringing about the gradual and the desired cut or excavation without undue strain on the various parts of the machine or on the pulling equipment.

A still further object of my invention is to provide novelly arranged guide members on the beam or frame for engaging the edge and top face of the concrete highway or pavement, whereby to facilitate the travel of the undercutting machine thereon, and to bring about the accurate guiding of the machine during the cutting or excavating process along straightaways, curves, and the like.

A still further important object of my invention is to provide a novel undercutting machine of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable price.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a fragmentary, transverse, sectional view illustrating the edge of a highway after a shoulder along the same has been scraped away by a piece of road-building equipment.

Figure 2 is a similar view showing a gutter alongside the edge of the concrete highway after the soft shoulder has been scraped away by a suitable type of road-building machine.

Figure 3 is a view similar to Figures 1 and 2, but showing the edge of the highway with the undercut made with my novel machine.

Figure 4 is a fragmentary, transverse, sectional view through a pavement, street, or roadway after the forming of a trench therein, the opposite edges of the pavement, roadway, or the like being undercut by my machine preparatory to the laying of a new strip of concrete.

Figure 5 is a perspective view of the machine itself.

Figure 6 is a top plan view of my improved machine, showing the same in use along the edge of a highway for bringing about the desired undercutting of the laid concrete and the formation and structure of the undercut to receive the bonding concrete.

Figure 7 is a side elevational view of my machine.

Figure 8 is a rear elevational view of the machine.

Figure 9 is a detail, transverse, sectional view through the machine, taken on the line 9—9 of Figure 6, looking in the direction of the arrows, and showing the intermediate plow.

Figure 10 is a sectional view similar to Figure 9, but taken on the line 10—10 of Figure 6, looking in the direction of the arrows and showing the rearmost plow.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my novel appliance, and the same includes a rigid frame, which preferably takes the form of a longitudinally extending beam 15. This beam is of an angle shape in cross section and can be made from any preferred material, such as iron or steel. The extreme forward end of the beam has rigidly secured thereto an eye 16 to facilitate the connection thereof to the desired pulling equipment, such as a truck, tractor, or the like.

The top flange of the beam 15 has formed therein adjacent its front and rear ends longitudinally extending slots through which extend the front and rear supporting and guide wheels 17 and 18. These wheels can be mounted on suitable shafts carried by bearings 19 bolted or otherwise secured to the upper face of the beam. The front and rear ends of the side flange of the beam carry vertically disposed front and rear guide rollers 20 and 21, and these rollers can be mounted in suitable bearings 22. Rigidly secured to the rear end of the beam is the upwardly and rearwardly extending manipulating and guide handle 23, and this guide handle can be secured to the beam by the use of the same bolts employed for securing the bearing in place for the

rear wheel 18. The handle 23 is employed for facilitating the initial placing of the machine in position and to pull back the machine, when necessary, during the making of the cut or excavation.

Extending laterally from one side face of the beam 15 is a raised platform 24. This platform 24 can be rigidly bolted to an angle bracket 25 welded or otherwise connected to the beam 15. The bracket 25 can be braced by straps 26, if desired. The outer end of the platform 24 carries a hand railing 27 and a depending supporting bracket 28. Formed on or secured to the bracket 28 is a guide sleeve 29 for the post 30 of a caster wheel 31. The sleeve 29 carries set screws 32, so that the wheel can be set at desired elevations. The platform 24 forms a seat for a workman and provides a convenient means for receiving weights where a particularly hard material is being cut or excavated, so that the machine will be held down.

Arranged at spaced points along the beam 15 are a front plow 33, an intermediate plow 34, and a rear plow 35. These plows are arranged in stepped relation to one another, so as to bring about the gradual forming of the undercut.

The front plow 33 includes an angle-shaped supporting bracket 36, which is welded or otherwise secured to the front end of the beam, and the angle bracket can be braced by a short length of angle-iron 37. Bolted or otherwise fastened to the bracket 36 is the plow share 38 formed from steel, and the plow point is angled forwardly and inwardly under the plow beam. The share can carry a hard steel cutting blade 39. The front plow brings about the cutting of the excavation to a predetermined depth and the undercutting of a pavement for a predetermined distance.

The intermediate plow 34 also includes an angle bracket 40, which is welded or otherwise secured to the beam 15, and the bracket 40 is braced by a short length of angle-iron 41. A supporting plate 42 is secured to the angle bracket, and this plate has bolted thereto the plow share 43. The plow share 43 extends inwardly and downwardly a greater distance than the front plow, so as to bring about the undercutting process to a greater distance and a deeper distance. This is shown in Figure 9.

The rear plow structure 35 includes supporting brackets 44 and 45, which can be cast or moulded into the desired shape, and these brackets are welded or otherwise rigidly secured to the rear end of the beam 15. Rigidly bolted to the brackets 44 and 45 is the plow share 46 and the mouldboard 47. The plow share 46 extends inwardly and downwardly a greater distance than both the front plow 33 and the intermediate plow 34, and constitutes the finishing plow for making the undercut the correct distance and configuration. This is shown in Figure 10 of the drawings.

It is to be noted that the outer edge of the plow share 46 is inclined, as at 48, so that the edge of the excavation will have the desired slope, which may be preferred by road builders. Obviously, the angle of the slope can be changed by using plow shares having their outer ends of different angles or shapes. The mouldboard 47 is so shaped as to throw the dirt to the side of the roadway, so that the dirt will not pile up in back of my device.

In preparing a highway for widening, the shoulder along the highway is first cleared away by a suitable scraper or other conventional appliance (not shown), and after the highway is prepared, as illustrated in Figure 1, a trench or gutter 14 is made along the edge of the highway by a shovel plow or any other preferred type of excavating machine (not shown). The treating of the highway, as shown in Figures 1 and 2, is according to conventional road-building methods and forms no part of my present invention.

After the gutter 14 has been made, the roadway for a short distance (the length of the machine A) is cleared away by hand implements, after which the machine or appliance A is backed up and placed against the edge of the concrete highway, with the wheels 17 and 18 resting on the top of the highway, and the front and rear guide rollers resting against the edge of the highway. The caster wheel 31 can now be adjusted to the correct height, and the appliance is now ready for use.

By connecting the appliance to a tractor, truck, or the like, the same can be forcibly drawn along the edge of the roadway, and the rollers 20 and 21 and the wheels 17 and 18 will effectively guide the appliance along the edge of the highway. The front plow 33 will make a relatively small cut, and the intermediate plow will make a greater cut, and the rear plow will then make the final excavation and undercut the correct size and shape. By having the plows 33, 34, and 35 arranged in stepped relation, the desired size or shape of the undercut of the excavation can be quickly and easily made without undue strain on the various parts of my appliance and on the drawing or pulling equipment.

While my appliance A is particularly useful in widening highways, the same is also adapted for preparing a street or pavement for receiving a new strip of concrete when a trench has been dug in the pavement or street for any purpose. In Figure 4, I have shown a filled-in trench or ditch 13, and the concrete pavement 12 on each side has been undercut, as at 11, by my machine.

From the foregoing description it can be seen that I have provided an exceptionally simple appliance, which is of a strong and rugged character, and which will effectively accomplish its desired purpose.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. An appliance for preparing the edge of concrete highway preparatory to receiving an additional strip of concrete comprising, a longitudinally extending beam, an operating handle at the rear end of the beam, a hitch device secured to the front end of the beam, and a plurality of laterally stepped plows secured to the beam along the length of the same and projecting under and beyond one side of the beam.

2. An appliance for preparing the edge of concrete highway preparatory to receiving an additional strip of concrete comprising, a longitudinally extending beam, an operating handle at the rear end of the beam, a hitch device secured to the front end of the beam, a plurality of laterally stepped plows secured to the beam along the length of the same and projecting under and beyond one side of the beam, and supporting and guide wheels carried by the top of the beam.

3. An appliance for preparing the edge of concrete highway preparatory to receiving an additional strip of concrete comprising, a longitudinally extending beam, an operating handle at the rear end of the beam, a hitch device secured to the front end of the beam, a plurality of laterally stepped plows secured to the beam along

the length of the same and projecting under and beyond one side of the beam, and supporting and guide wheels carried by the top of the beam and by the side of the beam.

4. An undercutting machine for the edges of concrete highways and the like comprising, an elongated beam of an L-shape in cross section including a top horizontal flange for lying over the upper face of the roadway, and a depending vertical flange for lying alongside the outer marginal edge of the highway, supporting wheels carried by the horizontal flange adjacent the opposite ends thereof for riding over the upper face of the highway, guide rollers carried by the vertical flange adjacent its opposite ends for engaging the marginal edge of the highway, and a plurality of plows rigidly connected along the length of the beam, each of the plows extending a greater distance inwardly and downwardly than the adjacent front plow.

5. An undercutting machine for treating the edges of concrete highways and the like comprising, an elongated longitudinally extending beam, guide wheels and rollers carried by the beam for engaging the top and outer side face of the edge of a concrete roadway, a plurality of spaced plows secured along the length of the beam, and a manipulating handle carried by the rear end of the beam, a platform secured to and extending laterally from the beam.

6. An undercutting machine for treating the edges of concrete highways and the like comprising, an elongated longitudinally extending beam, guide wheels and rollers carried by the beam for engaging the top and outer side face of the edge of a concrete roadway, a plurality of spaced plows secured along the length of the beam, a manipulating handle carried by the rear end of the beam, a platform secured to and extending laterally from the beam, and an adjustable roller carried by the outer end of the platform.

HARRY E. WIESE.