

Dec. 27, 1960

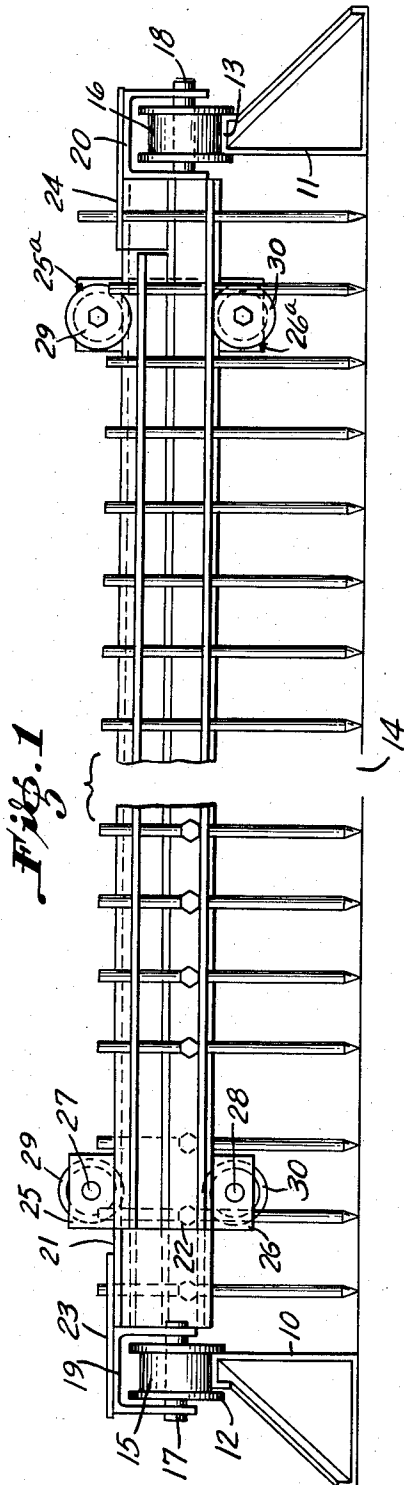
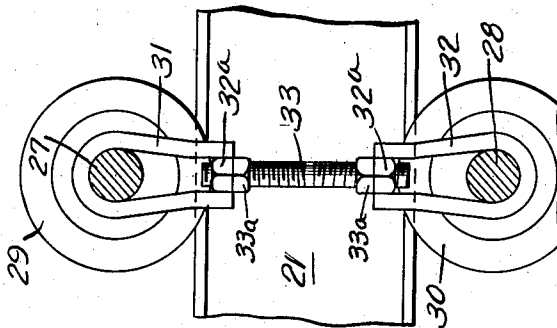
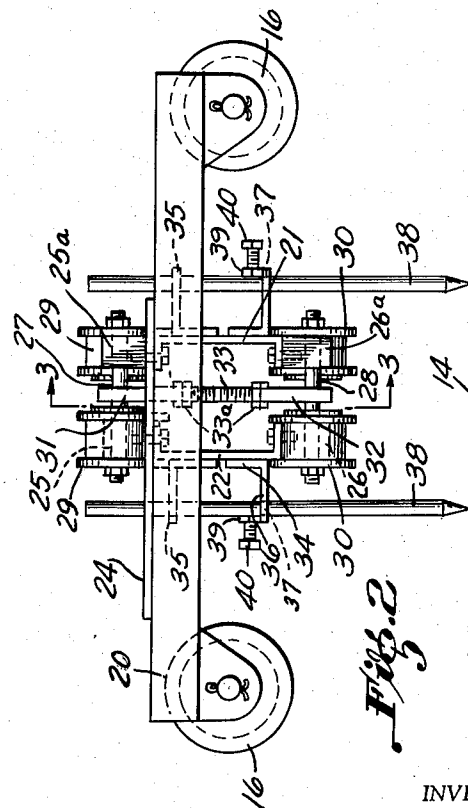
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2,965,987

SELF WIDENING SUBGRADE PLANERS AND TESTERS

Filed Jan. 8, 1957

3 Sheets-Sheet 1



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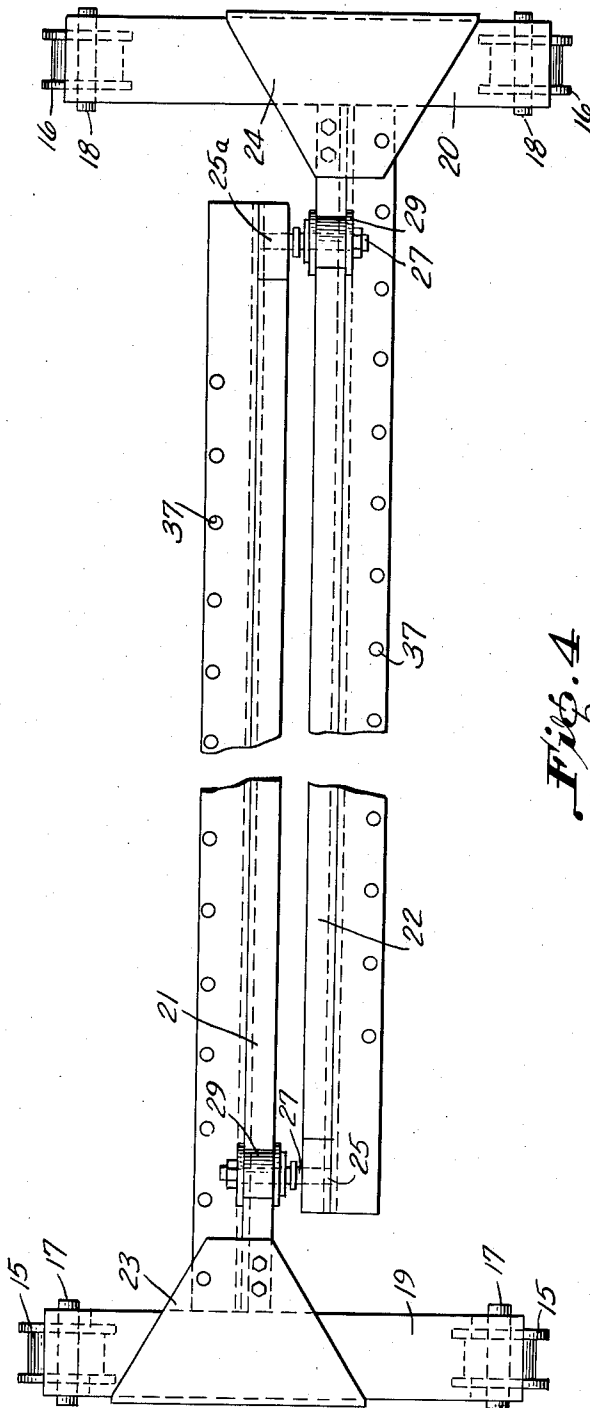


Fig. 4

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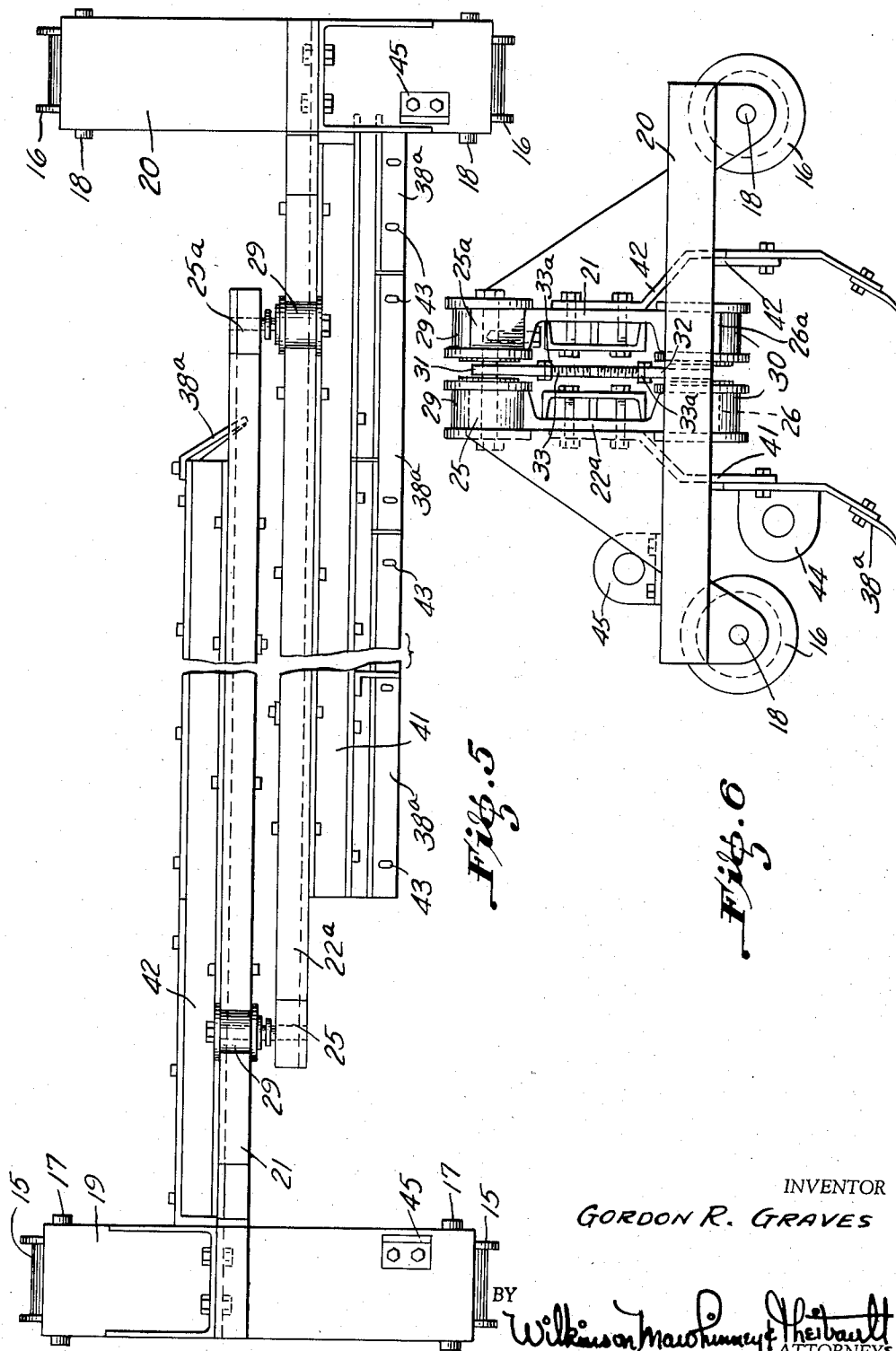


Fig. 5

Fig. 6

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SELF WIDENING SUBGRADE PLANERS AND TESTERS

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Filed Jan. 8, 1957, Ser. No. 633,042

4 Claims. (Cl. 37—108)

The present invention relates to self widening subgrade planers and testers and has for an object to provide a device which may be used with road forms set at varying widths to strike off a subgrade and to test a previously stricken subgrade to determine whether further planing is required in order to meet specifications.

Another object of the present invention is to provide a device of the character described which is rugged in construction and which is self supporting while self widening.

A still further object of the present invention is to provide a device of the character described in which a minimum of frictional resistance is employed to permit the widening or lengthening of the two beam members carrying either the subgrade planer or the subgrade tester when compelled to widen when the wheels of the unit follow the top flanges of a road form through varying widths of pattern.

A still further object of the present invention is to provide a device of the character described having a minimum of parts but of substantial weight in order to impose the striking force necessary to remove the earth when the subgrade planer unit is applied to the beam construction.

A further object of the present invention is to provide a top and bottom roller assembly in which the rollers are carried by one beam upon and beneath the other beam and in which construction a tie member is provided whereby the two beams may not be slid out of operating engagement either transversely or longitudinally.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views:

Figure 1 is a front elevational view of a self widening subgrade tester constructed in accordance with the present invention with parts broken away.

Figure 2 is a side elevational view taken from the right hand end of Figure 1 with the road form removed.

Figure 3 is a vertical section taken on the line 3—3 in Figure 2 at an enlarged scale with parts broken away and parts shown in section.

Figure 4 is a top plan view of a self widening subgrade tester constructed in accordance with the present invention.

Figure 5 is a top plan view of a self widening subgrade planer constructed in accordance with the present invention.

Figure 6 is a side elevational view of the form of invention shown in Figure 5 taken from the right hand end of Figure 5.

Referring more particularly to the drawings and for the moment to the form of invention illustrated in Figures 1 through 4 inclusive, 10 and 11 designate a pair of horizontally spaced apart road forms having top guide

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rails 12 and 13 respectively. A subgrade 14 is to be defined between the two lines of upstanding road forms 10 and 11. The top guide rails 12 and 13 receive and support flanged wheels 15 and 16 which are rotatably journaled on axles 17 and 18 in wheel carriages 19 and 20.

Extending inwardly toward the center line of the subgrade are two beams which, in the form of the invention illustrated, are of channel construction and are designated as 21 and 22. These beams 21 and 22 are tied to the wheel carriages 19 and 20 by plates 23 and 24 which are bolted or otherwise secured thereto.

The beam 22 is provided proximate its free end with a pair of upstanding flanges 25 and 26 which support and anchor axles or spindles 27, 28 for receiving and rotatably journaling rollers 29 and 30. While the flanges 25 and 26 act as a stop or abutment to restrain movement of the rollers 29 and 30 in one direction a roller tie means is provided at the other end and consists of a pair of yoke members 31, 32 which are joined or tensioned by a threaded shaft 33, as best seen in Figure 3. This construction thereby assures against the two beams becoming dislocated or disengaged since the identical construction is carried by the beam member 21 proximate its free end.

Each beam 21, 22 carries an implement support member 34 having a top flange 35 and a bottom flange 36. The two flanges 35 and 36 have openings 37 therethrough to receive subgrade test stakes 38. In the form of the invention shown in Figures 1 through 4 inclusive, the bottom flange 36 has a plurality of upstanding lugs 39 receiving threaded bolts 40 for locking the stakes 38 in place in accordance with the predetermined cross section of the grade. The bolt 40 pushing the stake 38 against the openings 37 will maintain the desired subgrade cross section to be tested.

The beam 21 is provided with an identical test stake retaining construction to that described above.

The self widening roller assembly of the beam 21 is identical to that of beam 22, having upstanding flanges 25^a, 26^a for anchoring one end of spindles 27, 28 over which pass and rotate the rollers 29 and 30.

Referring to Figure 3, each yoke member 31 and 32 and has a threaded base member 32^a for threadedly receiving the shaft 33 against which lock nuts 33^a bear.

In operation the lines of forms 10 and 11 are staked and the subgrade is planed or cut. When it is desired to determine whether the subgrade cross section is accurate the tester is employed. The device is placed upon the road forms with the wheels 15, 16 riding upon the top flanges 12 and 13 of the road forms 10 and 11. The bolts 40 are loosened and the test stakes are set in accordance with the cross section specification to which the subgrade has been cut and the unit is pulled by a tractor or other machine over the subgrade, the rollers 29, 30 permitting the unit to widen and contract as dictated by the flanges of the wheels following the road form top flanges. If scribe marks appear in the subgrade then an additional cut of the grade over the area of the scribe may be required.

Referring to Figures 5 and 6 a construction of wheel carriage and beams are shown in which the same reference numerals appear. The difference in this structure is that the unit is a subgrade planer and is employed to cut or plane a subgrade after the forms have been staked. Stand offs 41 are carried by beam 22^a while stand offs 41, 42 are subgrade strike off plates or blades 38^a. The blades 38^a consist of a plurality of transverse sections having slots 43 therein to permit the blades 38^a to be arranged for a crown cross section if desired.

Tow lugs 44 are mounted on the leading faces of the blades and tow lugs 45 are upstruck from the wheel car-

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riages 19 and 20 to permit attachment of a tow cable (not shown) to a tractor for pulling the device along the road forms and causing the blades 38^a to shave off the dirt or earth above the desired grade. This unit being constructed like the unit shown in Figures 1 through 4 is also self widening.

The devices of the present invention are employed to greatest advantage upon road construction where varying widths of subgrade are employed such as when approaching an intersection, a clover leaf or other highway construction where a 12 foot wide subgrade is flared into a 15 foot wide subgrade and then back to a 12 foot width. Heretofore this was a time consuming matter which retarded the progress of construction while inserts were added or taken from the beam members to span the width of the grade between road forms. The devices of the instant invention are instantaneous and automatic self compensating for varying widths of road subgrade as indicated by the lines of staked forms. No steering mechanism is required.

Although I have disclosed herein the best form of the invention known to me at this time, I reserve the right to all such modifications and changes as may come within the scope of the following claims.

What I claim is:

1. For use with horizontally spaced apart staked road forms, a self widening subgrade device comprising a pair of beam members the sum of the lengths of which exceeds the widest horizontal space between road forms with which the device is used, said beams being placed one in front of the other in overlapping relationship and free at all times to have relative longitudinal movement, wheeled carriages secured to the form end of said beam members adapted to ride upon the top flange of the road form, roller tie means mounted proximate the free end of each beam member to slidably support the other beam member to permit said relative sliding movement at all times between the beams as compelled by the carriages following the top flanges of the road forms incident to varying widths between road forms, and subgrade earth working means carried by each beam member, said roller tie means comprising flanges upstanding and depending from said beam, a shaft extending substantially hori-

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zontally from said flanges, flanged rollers rotatably journaled on said shafts and adapted to ride upon and support the beam which they embrace, and adjustable tensioning means between an upper and lower shaft to maintain the rollers in contact with the beams and to retain said rollers on said shaft.

2. For use with horizontally spaced apart staked road forms, a self widening subgrade device comprising a pair of beam members the sum of the lengths of which exceeds the widest horizontal space between road forms with which the device is used, said beams being placed one in front of the other in overlapping relationship, wheeled carriages on the form end of said beam members adapted to ride upon the top flange of the road form, means mounted proximate the free end of each beam member to slidably support the other beam member to permit automatic relative sliding movement at all times between the beams as compelled by the carriages following the top flanges of the road forms incident to varying widths between road forms, each said means comprising a pair of double flanged wheel assembly engaging said other beam member, and means engaging said wheel assembly for retaining said wheels in engagement with said other beam member.

3. A self widening subgrade device as claimed in claim 1 wherein said earth working means comprises a support secured to the leading face of one beam and the trailing face of the other and having a plurality of retaining devices thereon, and subgrade strike off blades carried by said supports and retained in position by said retaining devices.

4. A self widening subgrade device as claimed in claim 3 wherein the subgrade strike off blades of both said beam members are coextensive with the beam whereby to cut a predetermined subgrade cross section for all widths of subgrade within the physical limits of the device.

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