July 24, 1928. 1,678,113

C. A. GUSTAFSON

ROAD MAINTENANCE MACHINE

Filed May 31, 1927 2 Sheets-Sheet 1

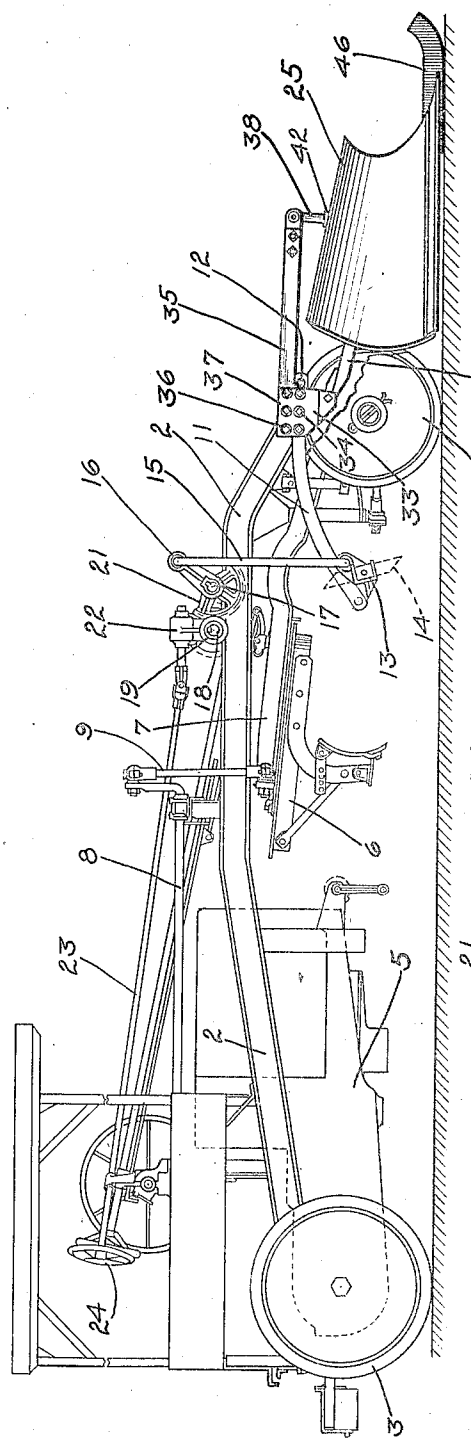


FIG. 1

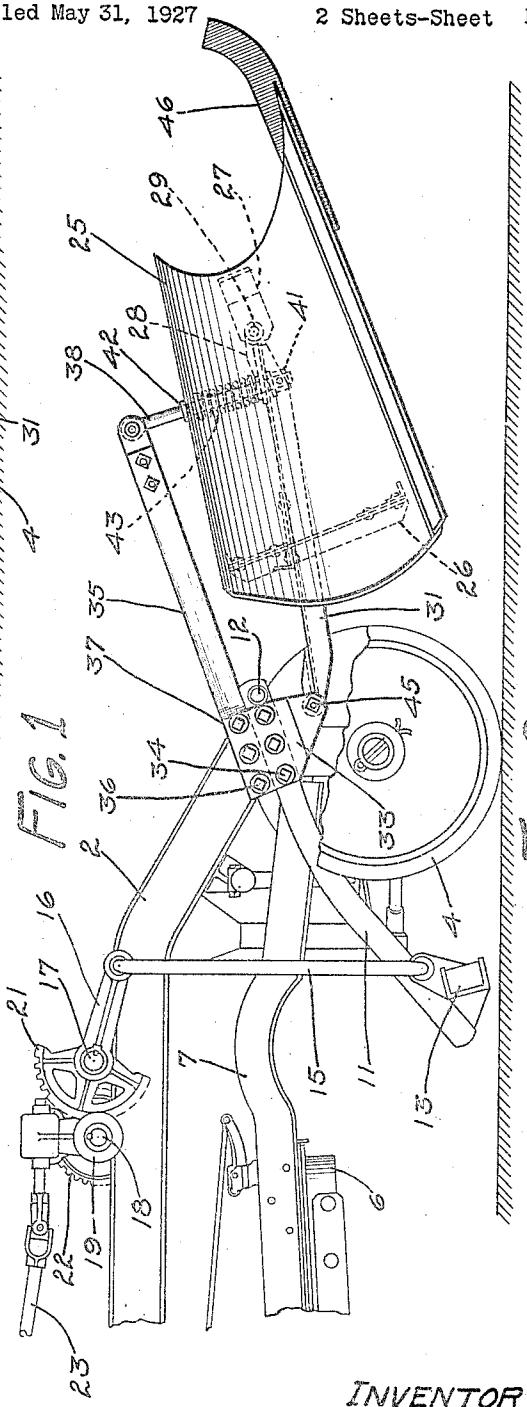


FIG. 2

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ROAD MAINTENANCE MACHINE

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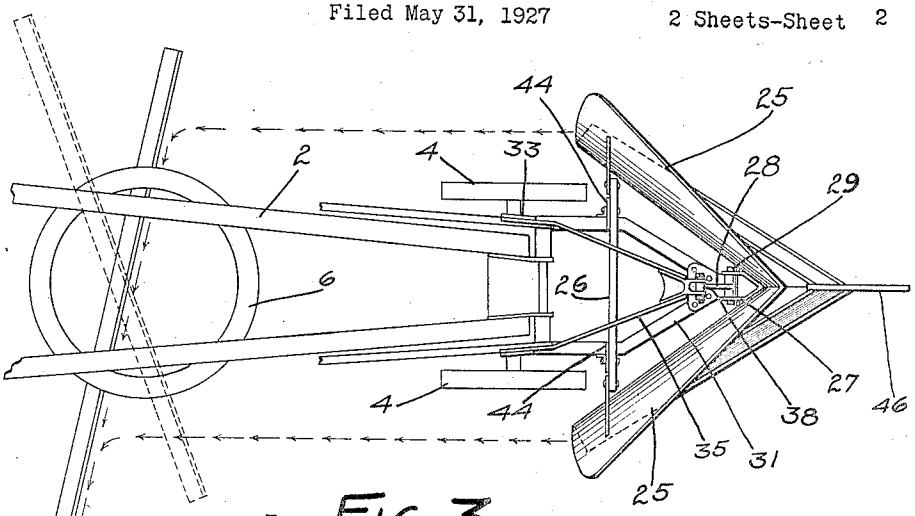


FIG. 3

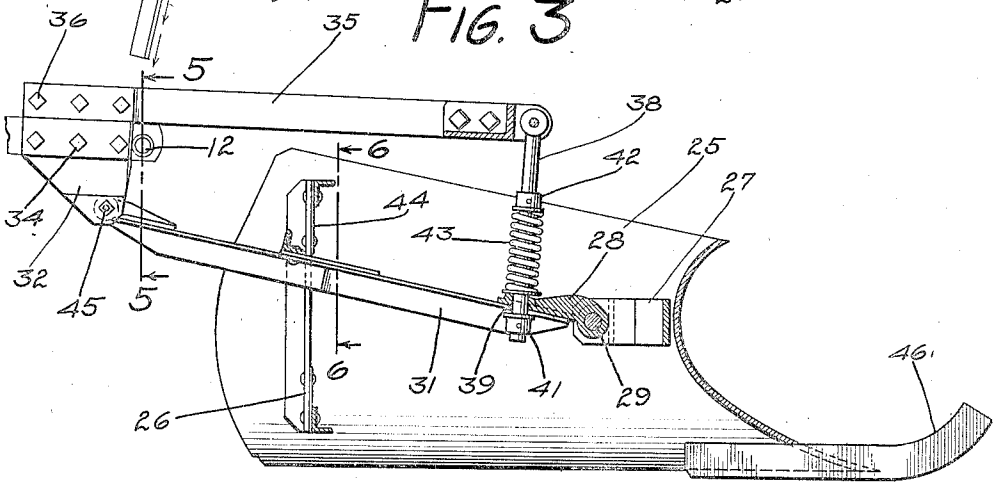


FIG. 4

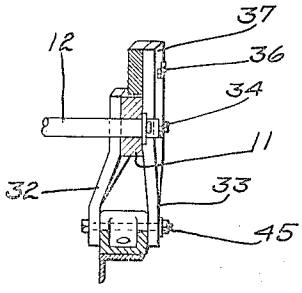


FIG. 5

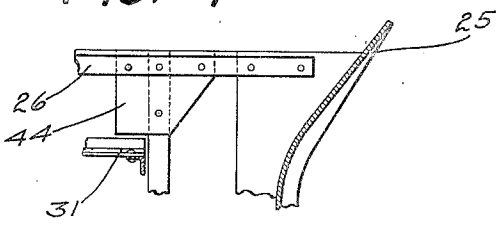


FIG. 6

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UNITED STATES PATENT OFFICE.

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ROAD-MAINTENANCE MACHINE.

Application filed May 31, 1927. Serial No. 195,434.

This invention relates to new and useful improvements in road maintenance machines, and more particularly to a snow plow attachment for such a machine which may be readily and quickly attached to the forward end thereof in a minimum amount of time, and without the use of special tools.

A further object of the invention is to provide in combination with a road maintenance machine having a scarifier pivotally connected to the forward end thereof, a snow plow attachment having means for securing it to the scarifier frame whereby the usual operating mechanism of the scarifier may be utilized to vertically adjust the position of the snow plow with respect to the ground.

A further object of the invention is to provide a road maintenance machine having a scarifier pivotally connected with the forward end thereof, and further having a scraper blade supporting frame movably mounted beneath the main frame of the machine, and the scarifier draw bars having means for detachably securing thereto a V-shaped snow plow attachment, the scraper blade being comparatively long and off-set to one side of the longitudinal center line of the main frame and adapted to pick up the delivery of snow from both sides of the V-shaped snow plow and deliver it to one side of the machine.

A further object is to provide a road finishing machine, having a V-shaped snow plow attachment detachably secured to the forward end of the scarifier draw bars, and operable simultaneously therewith, and, further having a comparatively long scraper blade arranged at an angle back of the snow plow and adapted to receive the delivery of snow from the snow plow and deliver it to one side of the machine.

A further object is to provide a snow plow attachment for road maintenance machines having means for detachably securing it to the forward end of such a machine and operable by the usual mechanism provided thereon and said attachment being provided with means for yieldably and forciby holding the snow plow in contact with the road surface.

The particular object of the invention, therefore, is to provide an improved snow plow attachment, particularly adapted for use in connection with road finishing machines, of ordinary construction, and of the type having a scarifier at the forward end thereof.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the accompanying drawings forming part of this specification;

Figure 1 is a view in side elevation, showing a conventional type of road finishing machine with the improved attachment secured to the forward end thereof;

Figure 2 is an enlarged detailed view showing the manner of securing the attachment to the scarifier draw bars and further showing the plow in an elevated position;

Figure 3 is a diagrammatic plan view indicating by arrows the delivery of snow from the V-shaped snow plow to the scraper blade arranged beneath the main frame;

Figure 4 is an enlarged detailed vertical sectional view of the attachment showing the general construction thereof, and also the means for yieldably and forcibly holding the plow in contact with the ground surface;

Figure 5 is a detailed sectional view on the line 5—5 of Figure 4; and

Figure 6 is a detailed sectional view on the line 6—6 of Figure 4, showing the means for supporting the rear end of the snow plow when raised to a non-operative position.

In the selected embodiment of the invention here shown, for purposes of disclosure, there is illustrated a road maintenance machine, of ordinary construction, comprising a main frame 2, mounted upon suitable wheels 3 and 4. The machine here shown, is of the power driven type, and is operable by means of an engine 5, mounted adjacent the rear end thereof as shown in Figure 1. The usual scraper blade supporting frame or circle 6 is shown connected to the draft bars 7, pivotally connected to the forward end of the machine in the usual manner. The cir-

cular frame 6 is operable by means of crank shafts 8, having rods 9 connecting them with the frame as shown.

Scarifier draw bars 11 are also pivotally connected to the forward end of the frame by means of a pivot 12 shown in Figures 1 and 2. A block or holder 13 is secured to the rear end portion of the draw bars 11, having means for detachably receiving the usual scarifier teeth 14, shown in dotted lines in Figure 1. The draw bars 11 are vertically movable by means of connecting rods 15, each having one end connected therewith and having their upper ends pivotally connected to crank arms 16, secured to a cross shaft 17, having a geared connection with a shaft 18 by means of pinions 19 and gear segments 21, secured respectively to the shafts 18 and 17. The shaft 18 is operable by means of a worm and gear drive 22, through an operating rod or shaft 23 having a hand wheel 24 provided at the rear end thereof for the convenience of the operator in operating the worm and gear drive 22 to raise and lower the draw bars 11.

An important feature of this invention resides in the provision of a snow plow attachment adapted to be detachably secured to the forward end of the road maintenance machine whereby the latter may be used in the winter time for clearing roads and highways of snow, thus adapating the machine for all year use. This attachment comprises a V-shaped snow plow having mold boards 25 suitably connected together at their forward edges or ends and having their rear end portions spaced apart by means of a cross frame 26, shown in Figures 3 and 4. A forked bracket 27 is secured to the forward end of the attachment and is adapted to receive a bracket 28, pivotally connected thereto by means of a pin 29. This bracket is secured to the forward end of a thrust frame 31 having its rear end portions pivotally connected to depending plates 32 and 33, secured to the forward ends of the bars 11, as shown, particularly in Figures 4 and 5. The plates 32 and 33 are fixedly secured to the bars 11 by such means as bolts 34.

A V-shaped extension 35 is rigidly secured to the forward end of the bars 11 by means of bolts 36 securing it to the upwardly extending portions 37 of the plates 33. (See Figure 5.) A rod 38 is pivotally connected to the forward end of the extension 35 and has its lower end portion slidably received in an aperture 39 provided in the bracket 28. A stop collar 41 is secured to the lower end of the rod 38 and a similar collar 42 is secured to the upper portion thereof, between which and the bracket 28 a coiled spring 43 is mounted, which constantly tends to urge the thrust frame 31 and therefore the snow plow downwardly into engagement with the ground surface.

Stop plates 44 are secured to the upper portion of the cross frame 26 and are arranged to engage the thrust frame 31 to limit the oscillatory movement of the snow plow upon the pivot pin 29. Thus when the plow is raised to the position shown in Figure 2, the rear end of the plow will be supported upon the thrust frame 26. By the employment of the compression spring 43, the plow may be yieldably and forcibly held in contact with the ground surface by the oscillatory movement of the scarifier draw bars when operated in the usual manner by the hand wheel 24. When desired, the attachment may be quickly detached from the road machine by simply removing the bolts 36 and the pins 45, pivotally connecting the thrust frame to the plates 32 and 33. A nose shoe or runner 46 is also provided on the nose of the plow to guide it over railroad tracks, cross-walks, and the like.

I claim as my invention:

1. The combination with a road grader having a scarifier frame adjustably connected with the forward end thereof, of a snow plow having means for detachably securing it to said scarifier frame.

2. The combination with a road maintenance machine, having a scarifier pivotally connected with the forward end thereof, of a a snow plow having means for detachably connecting it to said scarifier.

3. The combination with a road maintenance machine, having a scarifier pivotally connected with the forward end thereof, of a snow plow having means for detachably connecting it to said scarifier and being operable therewith, whereby said snow plow may be raised and lowered by the scarifier operating mechanism.

4. The combination with a road maintenance machine, comprising a scarifier having a pivotal connection with the forward end thereof and adapted to be raised and lowered, and further having a scraper blade movably mounted therebeneath and adapted to be adjusted to different angles, of a snow plow attachment adapted to be detachably and fixedly secured to the scarifier adapted for simultaneous movement therewith.

5. The combination with a road maintenance machine, comprising a scarifier having draw bars pivotally connected with the forward end of said machine and having a raising and lowering means, and further having a scraper blade movably mounted beneath the machine frame and adapted to be adjusted to different angles, of a snow plow attachment comprising a thrust frame and means forming an extension of said scarifier draw bars, said thrust frame and said extension having means for detachably and fixedly securing them to said bars whereby the plow may be operated simultaneously therewith.

6. The combination with a road maintenance machine, having a scarifier pivotally connected with the forward end thereof, and further having means for vertically raising and lowering said scarifier, of a snow plow attachment having means for detachably securing it to the forward end of the scarifier, whereby the plow may be vertically adjusted by the usual scarifier operating mechanism.

7. The combination with a road maintenance machine, having a scarifier pivotally connected with the forward end thereof, and means for vertically raising and lowering said scarifier, of a snow plow attachment having means for detachably securing it to the forward end of the scarifier, whereby the plow may be vertically adjusted by means of the usual scarifier operating mechanism, and means for yieldably holding said snow plow in contact with the ground surface.

8. An attachment for a road-working machine, comprising in combination, a V-shaped snow plow, an up-turned runner or shoe secured to the nose thereof, a scarifier, a thrust frame having means for pivotally connecting it with said scarifier, an extension of said scarifier having a yieldably movable connection with the snow plow and means secured to said snow plow and engageable with said thrust frame to limit the oscillatory movement of the plow with respect to said thrust frame when the plow is raised from the ground.

9. A road maintenance machine comprising pivotally supported draw bars having a scarifier at one end, an extension removably mounted upon said bars and projecting forwardly therefrom, and a snow plow having a yieldable connection with said extension.

10. A road maintenance machine comprising pivotally mounted bars provided at one end with a scarifier, an extension detachably secured to said bars and forwardly extending therefrom, a snow plow having a yieldable connection with said extension, and a thrust frame pivotally and detachably connected at one end to said bars and having its other pivotally connected to said snow plow.

11. A road maintenance machine including scarifier draw bars having a pivotal connection therewith, a scarifier block secured to one end of said bars, an extension detachably secured to the other end of said bars and forwardly extending therefrom, a snow plow having a yieldable connection with said extension, and a thrust frame pivotally and detachably connected at one end to said bars and having its other end pivotally connected to said snow plow.

12. A road maintenance machine comprising in combination, scarifier draw bars having one end pivotally connected thereto, depending plates secured to the forward ends of said bars, a snow plow, a thrust frame pivotally connecting said snow plow to said plates, an extension secured at one end to said plates, a lifting rod having one end pivotally connected with the outer end of said extension and having its other end movably engaged with said thrust frame, and a spring member coiled about said rod and engaging said thrust frame and adapted to yieldably hold said plow against the road surface.

In witness whereof, I have hereunto set my hand this 25th day of May, 1927.

CARL A. GUSTAFSON.