Feb. 12, 1929. 1,701,746

D. B. COOK

SNOWPLOW

Filed June 4, 1926 3 Sheets-Sheet 1

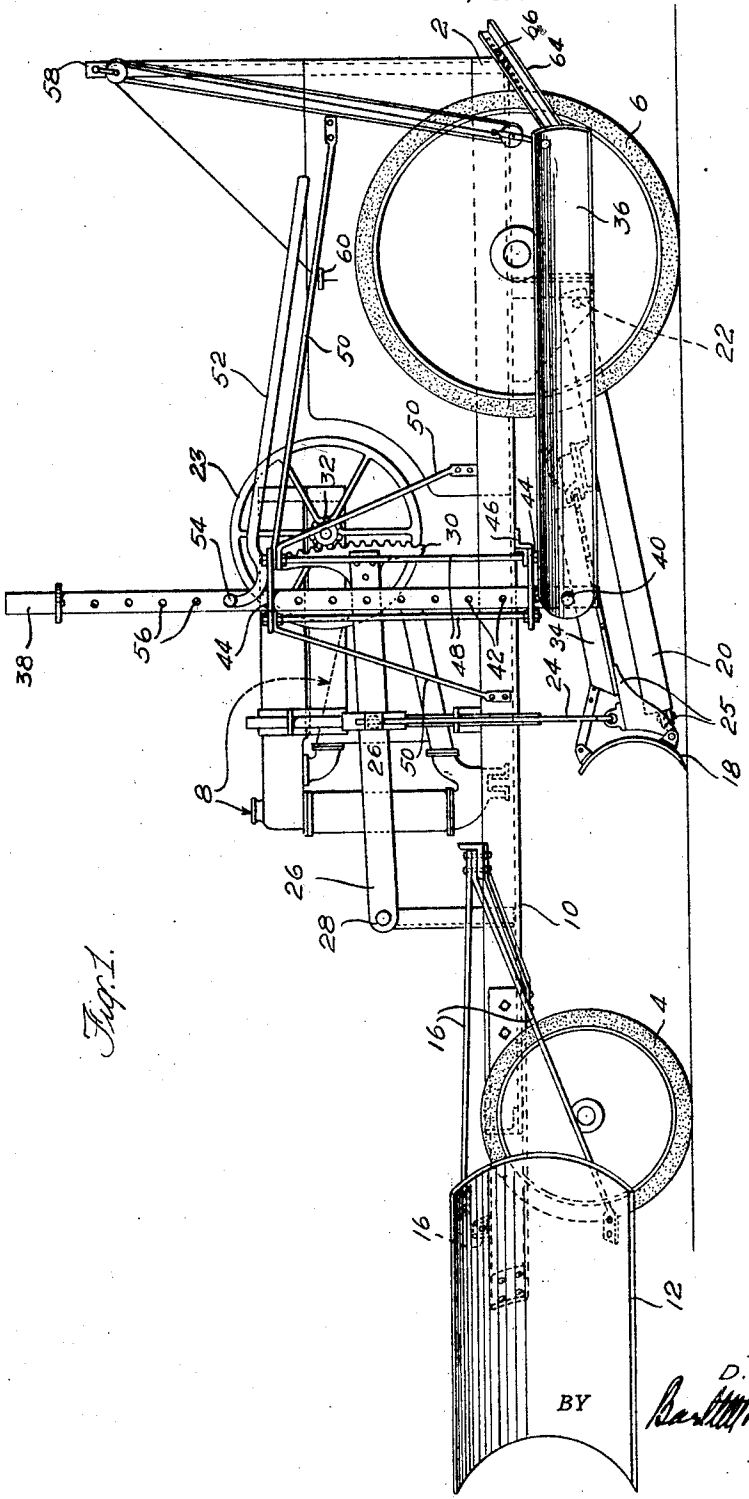


Fig. 1.

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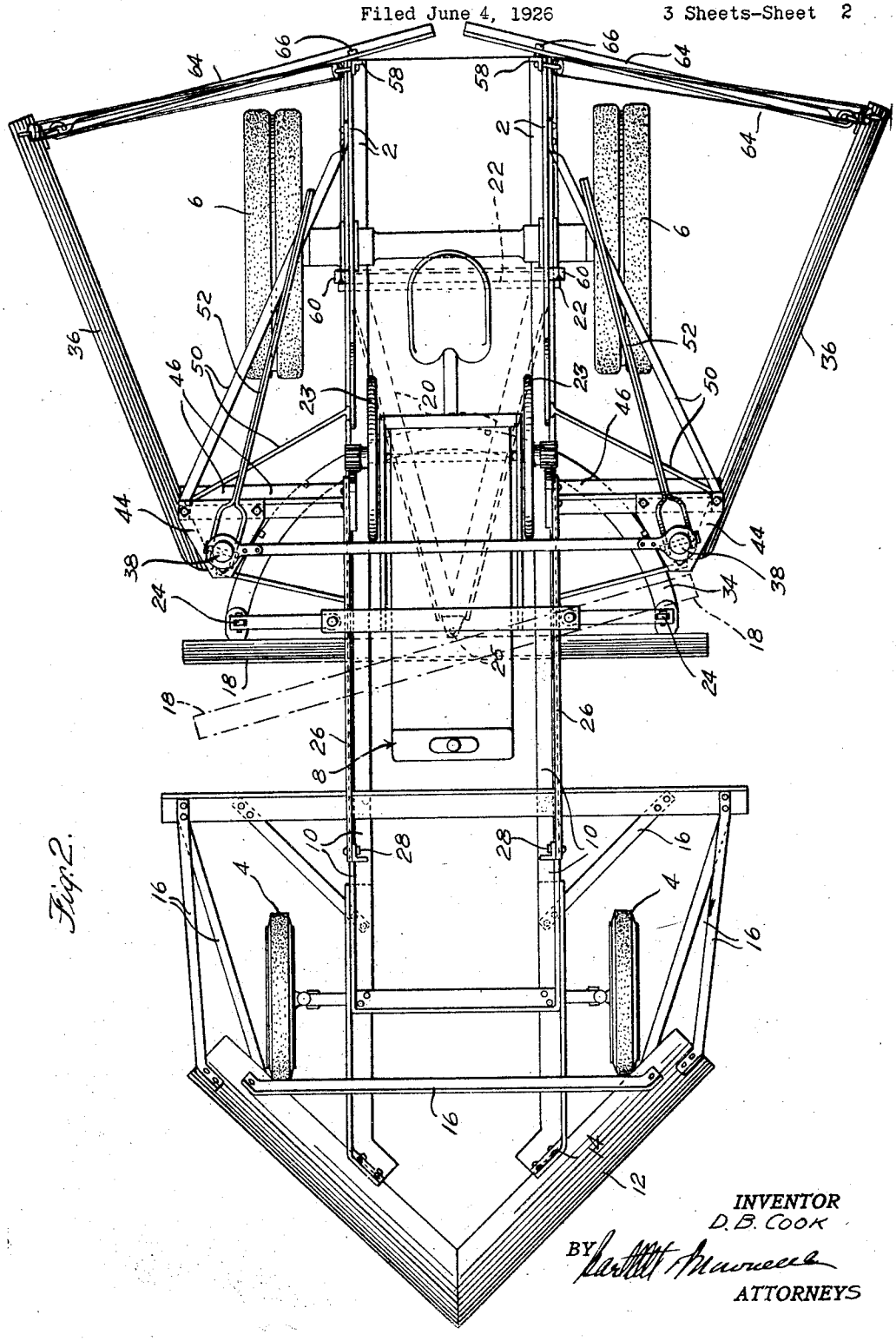


Fig. 2.

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SNOWPLOW

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Fig. 5.

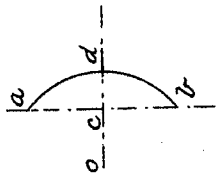


Fig. 3.

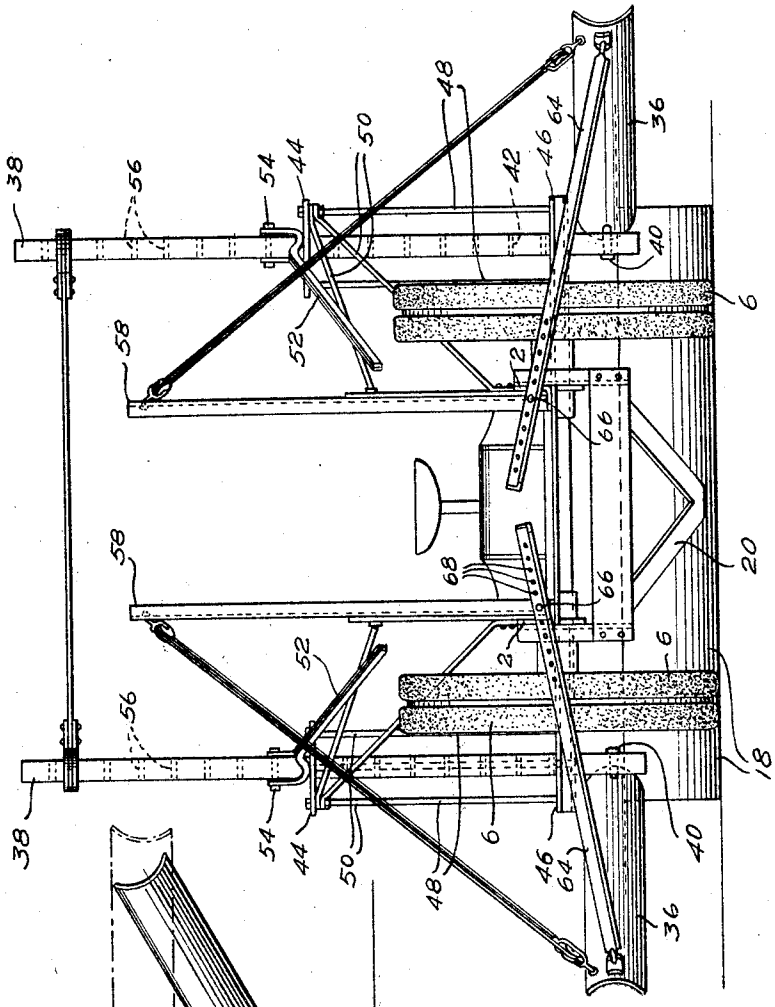
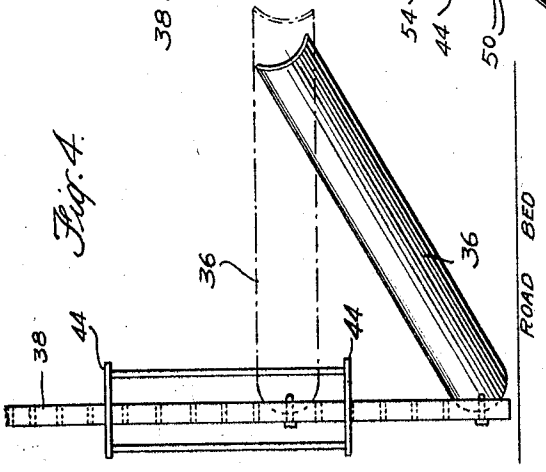


Fig. 4.



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Patented Feb. 12, 1929. 1,701,746

UNITED STATES PATENT OFFICE.

DAVID B. COOK, OF FRANKFORT, NEW YORK, ASSIGNOR TO ACME ROAD MACHINERY COMPANY, OF FRANKFORT, NEW YORK, A CORPORATION OF NEW YORK.

SNOWPLOW.

Application filed June 4, 1926. Serial No. 113,681.

My invention relates to snow plows, and has special reference to snow plows which are particularly adapted for use on roads in removing heavy or deep snow.

One of the objects of the invention is to provide a snow plow of this character which is simple in construction and efficient in operation, and which is capable of removing deep snow from a road in a clean and thorough manner, and with the use of a minimum amount of power.

Another object of the invention is to provide a snow plow of this character which has a wide range of adjustments to meet different conditions.

Another object of the invention is to provide a novel and improved snow plow blade.

The several features of the invention, whereby the above mentioned and other objects may be attained, will be clearly understood from the following description and accompanying drawings, in which:

Figure 1 is a side elevation, partly diagrammatical, of a snow plow embodying the features of the invention in their preferred form;

Figs. 2 and 3 are top plan and rear end views, respectively, of the same;

Fig. 4 is a diagrammatical view illustrating the range of adjustments of one of the side wings or blades of the plow; and

Fig. 5 is a diagrammatical view illustrating the curvature of the blades of the plow.

The snow plow illustrated in the drawings is provided with a plow body 2, front wheels 4, rear wheels 6, and a suitable power plant 8 for driving the plow. The plow body 2 is provided with longitudinal side beams 10 which are extended a distance beyond the front wheels 4. A V-shaped plow blade or point 12 is secured at 14 on the forward ends of the extended beams 10, and is further secured by means of suitable bars or braces 16 so as to provide a rigid support therefor.

The illustrated construction is further provided with a plow blade 18 which is longitudinally straight and extends transversely beneath the vehicle body substantially midway between the front and rear wheels. This plow blade 18 is suitably mounted upon the forward end of a swinging frame 20 which is pivotally mounted at its rear end at 22 on the plow body. The blade 18 may be adjusted toward and from the ground through suitable connections with hand operated wheels 23 adapted to be operated from the driver's seat, the two hand wheels being connected with opposite end portions of the blade. As shown, the connection between each end of the blade and a hand wheel comprises a rod or link 24 which has its lower end pivotally connected with a bracket 25 connected with the blade, and its upper end pivotally connected with a swinging arm 26 which is pivotally mounted at 28 on the vehicle body. A gear segment 30 is formed on the free end of the arm 26 and is engaged by a pinion 32 carried by the shaft upon which the hand operated wheel 23 is mounted. The brackets 25, above referred to, are pivotally connected at their lower ends with the outer ends of the blade 18, and their upper ends are secured on the ends of an adjusting segment 34, mounted on the swinging frame 20. This segment 34 is adapted to be adjusted circumferentially to vary the angular position of the blade, and vary the direction in which the snow is delivered from the blade.

The plow blade or point 12 has its lower edge spaced a distance from the ground so that it will act to remove merely the upper portion of the snow. The transverse plow blade 18 is adapted to be adjusted substantially to the ground, and has its upper edge extended a distance above the plane of the lower edge of the plow point 12, and thus will act to remove the remaining portion of the snow substantially to the ground.

By the arrangement of the blades 12 and 18, whereby the upper portion of the snow is removed by the blade 12 and the remaining or lower portion thereof is removed by the blade 18, it will be apparent that there is little danger of the plow becoming blocked in going through heavy or deep snow, there being no opportunity for an excessive accumulation of snow in front of either blade as each blade can act only on a certain amount of snow. It will also be apparent, by arranging the blade 18 substantially mid-way between the front and rear wheels of the plow, that it may be adjusted to clear the snow closer to the ground, particularly on rough or uneven roads, than is possible with a blade that is located in front of the front wheels.

The snow plow illustrated in the drawings is further provided with wings or blades 36 which extend generally longitudinally of the sides of the plow body, and are mounted so as

to permit them to be raised or lowered bodily, to be adjusted at any desired angle to the horizontal, and to be swung to move their rear ends toward and from the plow body. As shown, each of the blades has its forward end connected with the lower portion of an upright post 38, the forward end of the blade being spaced a distance back of the transverse blade 18 and a distance inwardly from the outer end thereof. The front end of each blade is connected with its post by means of a bolt 40 which extends loosely through an aperture in the blade and through one of a series of apertures 42 in the post, this loose connection between the blade and the post permitting the blade to be adjusted angularly as desired. Each post 38 is mounted to slide vertically in apertures in bearing plates 44 which are arranged one above the other and spaced a considerable distance apart. The lower bearing plate 44 is secured to an angle iron 46 projecting from the plow body. The upper bearing plate 44 is secured on the upper ends of bolts or rods 48 having their lower ends secured to the lower bearing plate 44, and is further supported by means of suitable brace rods 50.

The forward end of each of the blades 36 is adapted to be held at any desired distance from the ground by attaching the bolt 40, upon which it is mounted, in the proper aperture 42 in the lower portion of the post 38 either above or below the lower bearing plate 44.

The forward ends of the blades 36 are adapted to be raised and lowered during the operation of the plow and from the driver's seat by means of levers 52. Each of these levers 52 is provided with a bifurcated end which is adapted to straddle the associated post 38 and is pivotally mounted upon a bolt or pin 54, which is adapted to be inserted through any one of a series of apertures 56 in the post. The bifurcated end of each lever 52 is curved in an arc and bears upon the upper associated bearing plate 44 so that by turning the lever on its pivot pin 54 it may act to raise and lower the associated post 38, and thus raise and lower the forward end of the wing or side blade that is connected with the post. The levers 52 may be either held in position by the hands of the operator or by any suitable securing device.

The rear end of each of the wings or blades 36 is supported and adapted to be raised and lowered to swing it about the securing bolt 40, by means of a suitable block and fall connecting the rear end of the blade with the upper end of a post 58 secured on the rear end of the plow body, the rope or chain of the block and fall being snubbed over a clip 60 secured on the plow body.

The side wings or blades 36 are adapted to be held in any desired angular position with relation to the sides of the plow body by means of rods 64, each of which has one end connected through a suitable universal joint with the rear end of one of the blades and its other end secured to the plow body by means of a bolt 66 which extends through one of a series of spaced holes 68 in the rod, depending upon the position in which the rear end of the side wing is held.

The purpose of these side wings 36 or blades is to throw the row of snow, which is delivered by the plow blades 12 and 18, upwardly and outwardly so that the snow will not fall back into the road and will not form an abrupt embankment at the side of the road. When the side blade is thus being used, it assumes a position such as that shown in full lines in Fig. 4. Also, in case of very heavy or deep snow, it is desirable in some cases to operate the plow again to throw back the top of the inclined embankment first formed by the side blade, and this may be accomplished by adjusting the side blade to the horizontal position shown by broken lines in Fig. 4.

In snow plows as heretofore constructed, the blades are so formed that in their use the snow is merely shoved and crowded to one side. I have found, however, that by increasing the curvature of the blades a point is finally reached where the snow, instead of thus packing and crowding in front of the blades, is caused to roll over and over somewhat like the hay in a side delivering power hay rake. This rolling motion not only keeps the snow moving rapidly to one side and away from the machine but also keeps is broken up so that it does not pack in front of the blade. I have found in actual trial that the curvature of the blades, in order to accomplish this result, should be in an arc having the length of its chord substantially three and one-half (3½) times the length of the line bisecting the chord and arc. In Fig. 5 the arc is indicated by the line *a*—*b* struck from a centre *o*, the line *a*—*c*—*b* indicates the chord of the arc, and *c*—*d* the line bisecting the chord and arc. The blade should be arranged so that the chord of the arc is substantially vertical. With the blade thus constructed and arranged, the snow slides freely up the blade until it passes substantially the center line thereof, whereupon it tends to fall forwardly with the result that, due to the inclination of the blade, it takes the above described rolling motion as it passes to the outer end of the blade and away from the machine. When the blades are constructed and arranged in this manner, less power is required to drive the plow and more uniform results are secured.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A snow plow having, in combination, a

plow body, front and rear wheels, a plow point mounted on the body in front of the front wheels and having its lower edge spaced a distance above the ground so as to remove the upper portion of the snow, and a blade arranged beneath the vehicle body between the front and rear wheels and adjustable toward and from the ground for removing the lower portion of the snow.

2. The snow plow having, in combination, a plow body, front and rear wheels, a plow point mounted on the body in front of the front wheels and having its lower edge spaced a distance above the ground so as to remove the upper portion of the snow, a blade arranged beneath the plow body between the front and rear wheels and adjustable toward and from the ground for removing the lower portion of the snow, and side blades mounted on the plow body with their inner or forward ends arranged back of the last mentioned blade.

3. A snow plow having, in combination, a plow body, a plow blade mounted on the body in front of the body having its lower edge spaced a distance above the ground so as to remove the upper portion of the snow, and a blade arranged beneath the central portion of the plow body and adjustable toward and from the ground for removing the lower portion of the snow.

In testimony whereof, I have signed my name to this specification this 2nd day of June, 1926.

DAVID B. COOK.