

Dec. 30, 1930.

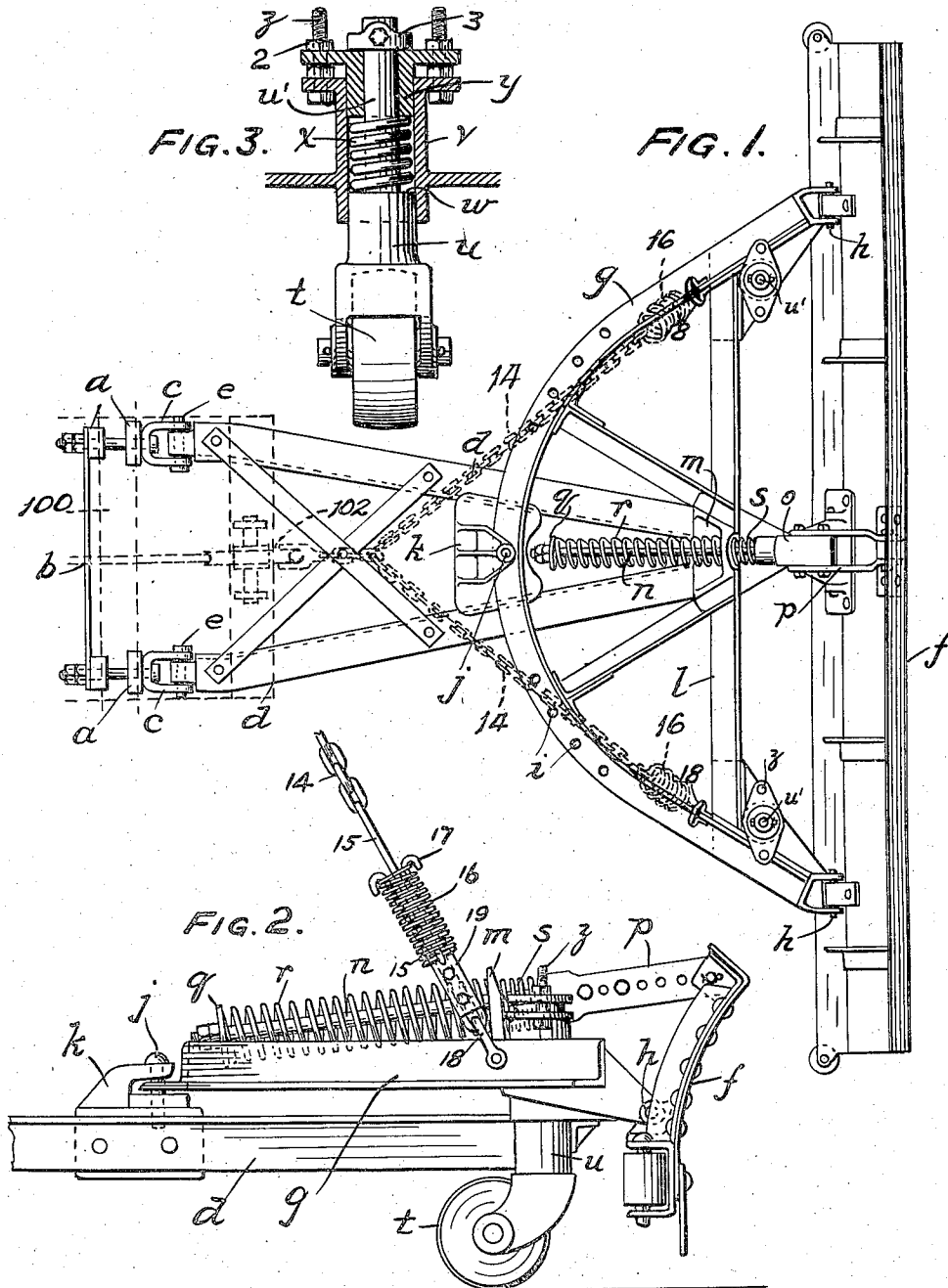
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1,786,974

SNOWFLOW

Filed July 16, 1926

2 Sheets-Sheet 1



WITNESS:

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2 Sheets-Sheet 2

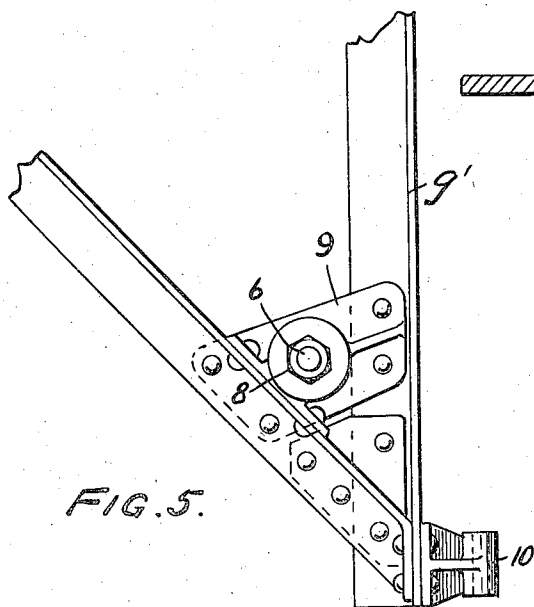


FIG. 5.

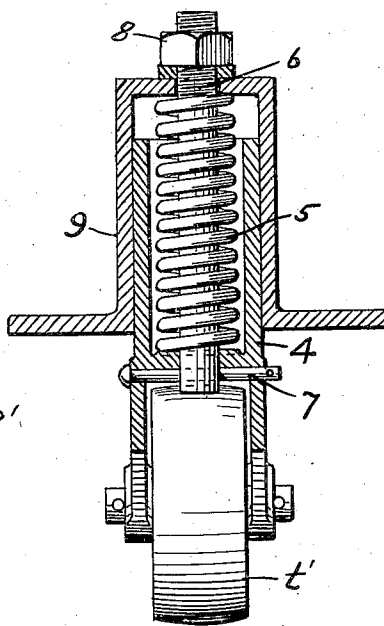


FIG. 6.

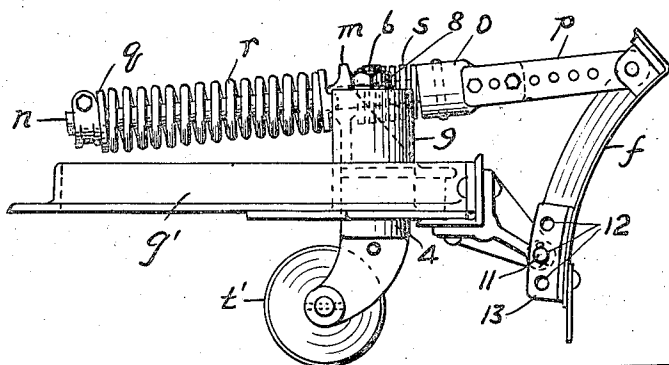


FIG. 4.

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UNITED STATES PATENT OFFICE

GEORGE C. ABBE, OF KENNETT SQUARE, PENNSYLVANIA, ASSIGNOR TO AMERICAN ROAD MACHINERY COMPANY, INC., OF KENNETT SQUARE, PENNSYLVANIA, A CORPORATION OF DELAWARE

SNOWPLOW

Application filed July 16, 1926. Serial No. 122,753.

My invention relates to improvement in snow plows and is more particularly applicable to plows of the blade type adapted to be secured to and propelled by a motor truck.

Plows of the type to which my invention pertains are usually secured to a truck through the medium of a frame pivoted on a transverse axis to a bracket secured to the axle of the truck. The blade or plow proper is pivotally secured on a transverse axis to a semiring, which is in turn carried by the frame. The blade is held in working position on its transverse axis by means of a heavy spring, which permits it to tilt and pass over obstructions, which may be encountered, and also acts to return it to working position against a fixed stop, the position of which may be adjusted. In such plows the frame which supports the semiring is adapted to be raised, about its pivoted connection with the truck, in order to lift the plow clear of the road and for this purpose, a hoisting device connected with the semiring adjacent its opposite ends is provided.

Snow plows of the type and construction indicated, have been found of the greatest value for freeing highways of snow, since they may be readily connected and disconnect from any ordinary truck and hence do not require any special apparatus for their propulsion and because they may be operated at relatively high speed thus enabling a relatively great distance to be plowed in a minimum of time. However, such plows have been found to be open to a number of objections which result chiefly from the exigencies of the service to which the plows are subjected.

For example, when the blade strikes an obstruction, it is permitted to tilt against the action of a heavy spring, which when the obstruction is cleared forces the blade back into working position against a fixed stop. In order that the blade may be efficient, the spring used is very heavy and substantial damage to the plow frequently occurs from the spring's sharp action in returning the blade to working position.

Further, the lifting device and connections are so arranged that the connections are nec-

essarily slack when the plow is in operation, and the connections afford no support to the plow, in operation. If the road surface be uneven the plow will be heavily jarred, since the rollers will tend to bump over the surface rather than follow it, and when it is sought to raise the plow, substantial time is consumed in taking out the slack in the connections.

Further, while in the present plows means are provided for spacing the lower edge of the blade from the road surface, such means are inefficient since they have no capacity for adjustment enabling adjustment of the plow, or for compensating for wear.

Now it is an object of my invention to provide a plow which will have the requisite capacity to tilt and at the same time will be provided with a stop which will avoid damage to the plow on the return to working position of the blade.

A further object of my invention is to provide connections between a hoisting device and the plow which will not only permit of the plow being raised more rapidly, but which will prevent to a substantial extent, jarring of the plow on uneven road surfaces.

A still further object of my invention is to provide improved means for spacing the lower edge of the blade from the road surface, which may be readily adjusted to effect a desired spacing of the blade or to compensate for wear.

Having now indicated, in a general way, the nature and purpose of my invention, I will proceed to a detailed description thereof with reference to the accompanying drawings in which there has been illustrated a preferred embodiment and in which:

Fig. 1, is a snow plow embodying my invention.

Fig. 2, is a side view of the major portion of the plow shown in Fig. 1.

Fig. 3, is a view, partly in section, of a detail of construction.

Fig. 4, is a view showing a detail of construction, a modification of the subject of Fig. 3.

Fig. 5, is a plan view of a portion of the subject of Fig. 4.

Fig. 6, is a view partly in section, a modification of the subject of Fig. 3.

Referring more particularly to Figures 1-3, *a*, *a* indicate brackets adapted to be clamped to the front axle 100 of a motor truck, the brackets are connected by a bar *b* and carry clevises *c*. The ends of an A frame *d* are pivotally secured to the clevises *c* by means of transversely extending pins *e*.

The blade *f* is attached to the forward end of the A frame in the usual manner, by means of a block and vertical and horizontal pivot pins, not shown, so as to be swingable on both a vertical and a horizontal axis.

A semiring *g* is secured at its ends to blade *f* by means of horizontally extending pins *h*, in alignment with the horizontal pin affording connection between the A frame and blade. The semiring is provided with holes *i* adapted for the passage of a pin *j* extending through a bracket *k* mounted in the A frame, which overlies the ring. As is apparent, the blade may be adjusted at an angle and the pins *j* passing through the bracket *k* and through one of the holes *i*, in the semiring, serves to hold the blade in adjusted position.

Extending across the semiring between its ends is a bar *l* which serves to brace the semiring and also to support a bracket *m* through which extends a rod *n*, the forward end of which is secured to a block *o* in turn secured to a bracket *p* pivotally secured to the blade midway its ends and near its upper edge, by means of a horizontally extending pin.

The rear end of rod *n* is threaded for the reception of a nut, which with a washer *q* serves to confine a heavy coil spring *r* on the rod behind the bracket *m*. A lighter coil spring *s* positioned on the shaft in front of bracket *m* is confined between the bracket and the block *o* to which the forward end of the rod *n* is secured.

From the above description, it will be observed that the blade is retained in a working position about its horizontal axis by means of the action of springs *r* and *s* acting respectively between the bracket *m* on rod *n* which is connected to the blade. The spring *r* is so adjusted as to maintain the blade in the desired position against the action of spring *s* and, at the same time, permit the blade to tilt against the action of spring *r* on striking an obstruction.

The blade on striking an obstruction tilts and passes over the obstruction. The tilting compresses the spring *r*, which when the obstruction is passed, forces the blade back to working position, which as will be observed in accordance with my invention, is governed by the spring *s* which acts as a buffer to stop the blade yieldingly. The spring *s* also may permit the blade in returning to working position to tilt forward slightly and then act to return it, so that all jar and shock is

removed from the blade and its supporting structure.

Beneath the ends of the semiring and acting to support the forward end of the A frame are castors or rollers *t* each mounted in the lower end of a stem *u* which extends into the lower end of a casing *v*, secured to the semiring. The upper portion *u'* of the stem *u* is reduced in size, forming a shoulder *w* and extends through the casing. Within the casing and encircling the portion *u'* of the stem *u* is a coil spring *x* which is confined between shoulder *w* and abutment *y* extending into the upper end of the casing and secured thereto by bolts *z* and nuts 2. The portion *u'* of the stem passes through the abutment and is provided at its upper end with a stop 3, all as shown in detail in Figure 3.

As will now be observed, the rollers *t* act to support the forward end of the frame and the semiring and also to space the lower edge of the blade from the road surface. The rollers *t* may be adjusted to effect a desired spacing of the blade from the road surface by varying the degree of penetration of the abutment *y* into the casing *v* which may be readily accomplished by an adjustment of the nuts on the bolts *z*.

In Figures 4-6 I have illustrated a modification of means for supporting the A frame and spacing the plow from the road surface. The castors or rollers *t'* are each mounted in the lower end of a stem 4 which projects into a casing 5 and the upper end of which is made hollow for the reception of a coil spring 9 which is confined between the stem and the upper end of the casing, as shown in Figure 6. A spring guide 6 is secured to the stem by a pin 7 and extends through the top of the casing. A nut 8 threaded on the upper end of the guide 6 outside of the casing and engaging the top thereof, acts as a stop and enables adjustment of the stress of spring 9. The casing 5 is secured to the semiring *g'* through a fitting 9. Brackets 10 are secured to the ends of the semiring and are provided at the forward ends with holes for the passage of pins 11 which are adapted also to pass through any one of a series of holes 12, arranged one above the other, in brackets 13 secured to the blade *f*, thus affording a connection between the semiring and the blade.

As will now be obvious, the desired spacing of the blade from the ground may be obtained by passing the pins 11 through one or another of the holes 12 in brackets 13.

Referring now to Figure 2, the plow in accordance with my invention, is provided with a conventional hoisting device 102 to enable the forward end of the A frame to be lifted about its pivotal connection with the truck in order to raise the blade. The hoisting device acts on a chain which is connected to a second chain 14, each of the ends of which are

provided with a double hook 15 adapted to engage the lower end of a coil spring 16. A second similar double hook 17 is passed through an eye 18, secured to the semiring adjacent its ends, and engaged with the upper end of spring 16. The spring 16 is maintained under stress by means of a clamp 19 adjustably engaged with the stem of hook 17 and forming a stop for the lower end of the spring. The clamp confines the spring between itself and the hook 15.

As will now be obvious, the hoisting device is connected to the semiring through a spring under initial stress, thus when the plow is to be hoisted no time is lost in compressing the spring and while the plow is in operation, the chains to the hoisting device are kept taut without affecting the position of the plow through jarring, since the springs 16 will absorb any jar.

When in the claims hereto appended I refer to a motor truck, I intend to include a tractor or other suitable source of power.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:—

1. In a snow plow, a frame, means for pivotally connecting the frame to a vehicle, a blade pivotally supported from the frame on a transverse axis, a pair of springs carried by the blade, abutments therefor carried by the blade, a common abutment for said springs carried by the frame between the abutments carried by the blade, said springs being arranged in opposition and adapted respectively to swing the blade on its axis and yieldingly resist swinging of the blade.

2. A snow plow arranged to be pivotally attached to a vehicle having a frame, a blade pivotally connected to the frame on a transverse axis intermediate the upper and lower edges of the blade, a rod pivotally connected to the upper portion of the blade, a spring abutment on the frame through which the rod extends, an abutment on the rod on each side of the abutment on the frame, and a spring on the rod between each abutment on the rod and the abutment on the frame.

3. A snow plow structure comprising a support, a plow assembly pivotally secured to the support, means carried by the support for lifting the plow assembly, and a spring connected between said means and said plow assembly, said spring being normally under an initial stress about equal to the component of the weight of the plow assembly to be lifted.

4. A snow plow structure comprising a support, a plow assembly pivotally secured to the support, means carried by the support for lifting the plow assembly, a spring connected between said means and said plow assembly, said spring being normally under an initial stress about equal to the component of the weight of the plow assembly to be lifted, and

means for adjusting the initial stress of the spring.

5. A snow plow structure comprising a support, a plow assembly pivotally secured to the support, means carried by the support for lifting the plow assembly, and a spring connected between said means and said plow assembly, said spring being normally under an initial compression about equal to the component of the weight of the plow assembly acting thereon to compress the same.

6. A snow plow structure comprising a support, a plow assembly pivotally secured to the support, means carried by the support for lifting the plow assembly, a spring connected between said means and said plow assembly, said spring being normally under an initial compression about equal to the component of the weight of the plow assembly acting thereon to compress the same, and means for adjusting the initial compression of the spring.

7. A snow plow structure including a supporting frame, a blade pivotally supported from the frame on a transverse axis, a pair of opposed springs carried by the blade, abutments therefor carried by the blade, and means located between the abutments and carried by the frame for fixing the positions of the adjacent ends of the springs, said springs being arranged respectively to swing the blade on its axis and yieldingly resist swinging of the blade.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, Pennsylvania, on this 1st day of July, 1926.

GEORGE C. ABBE.