April 9, 1929. G. C. ABBE 1,708,042

SNOWPLOW

Filed July 16, 1926 4 Sheets-Sheet 1

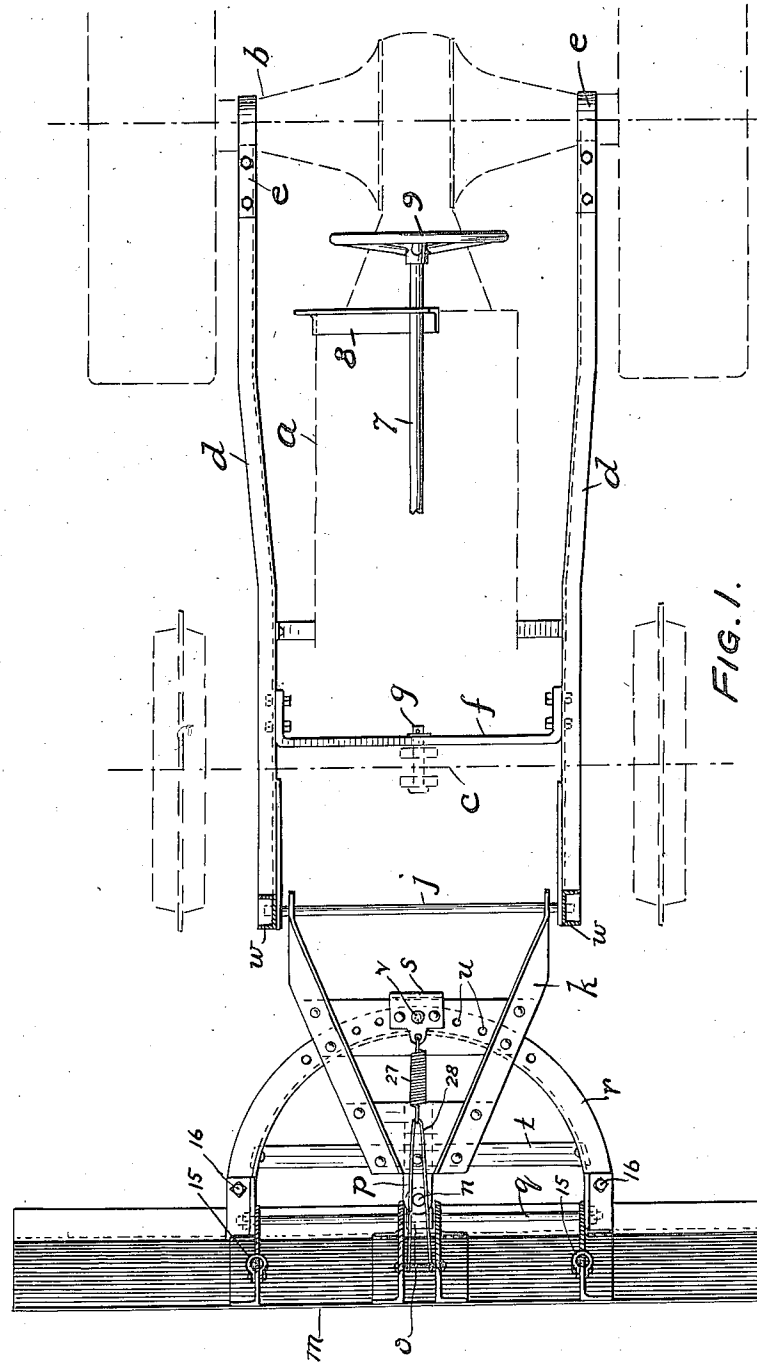


FIG. 1.

WITNESS:

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SNOWPLOW

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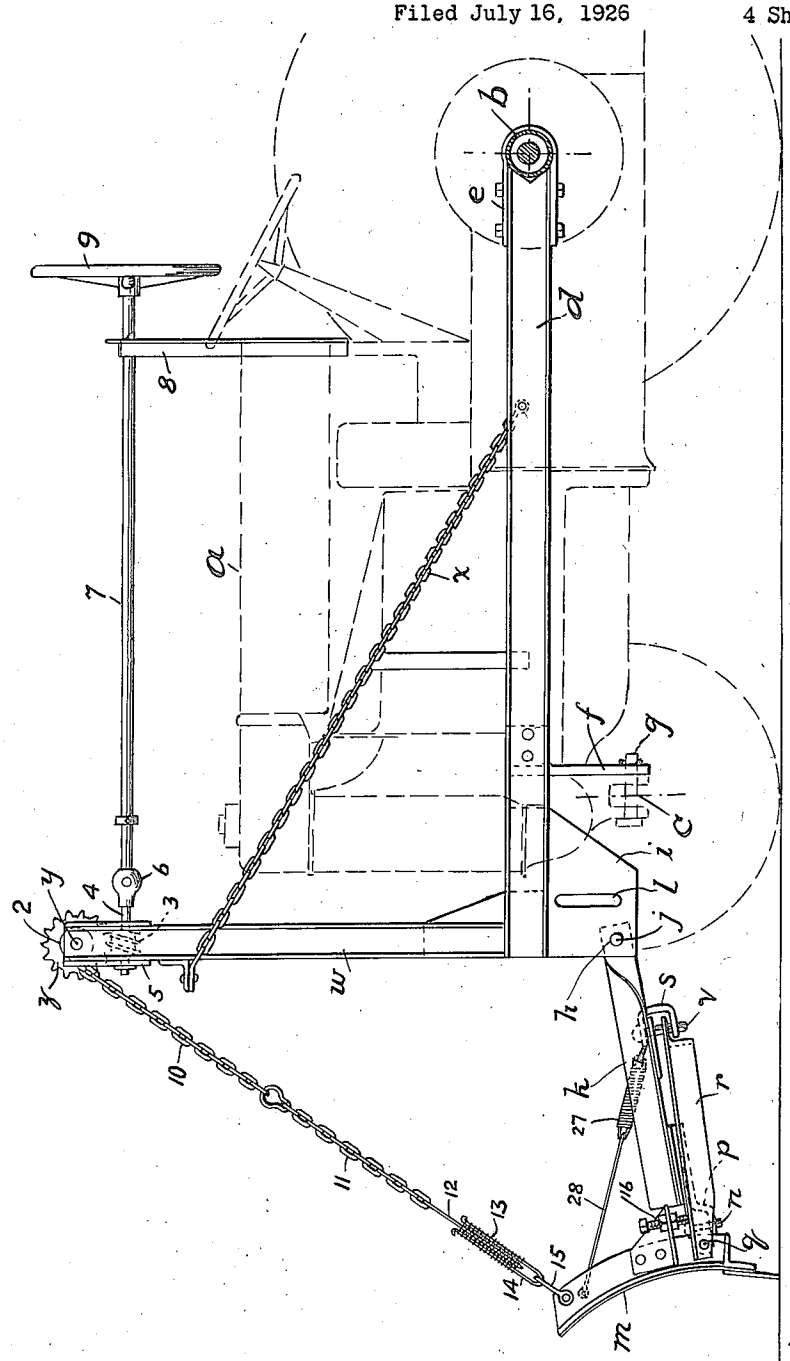


FIG. 2.

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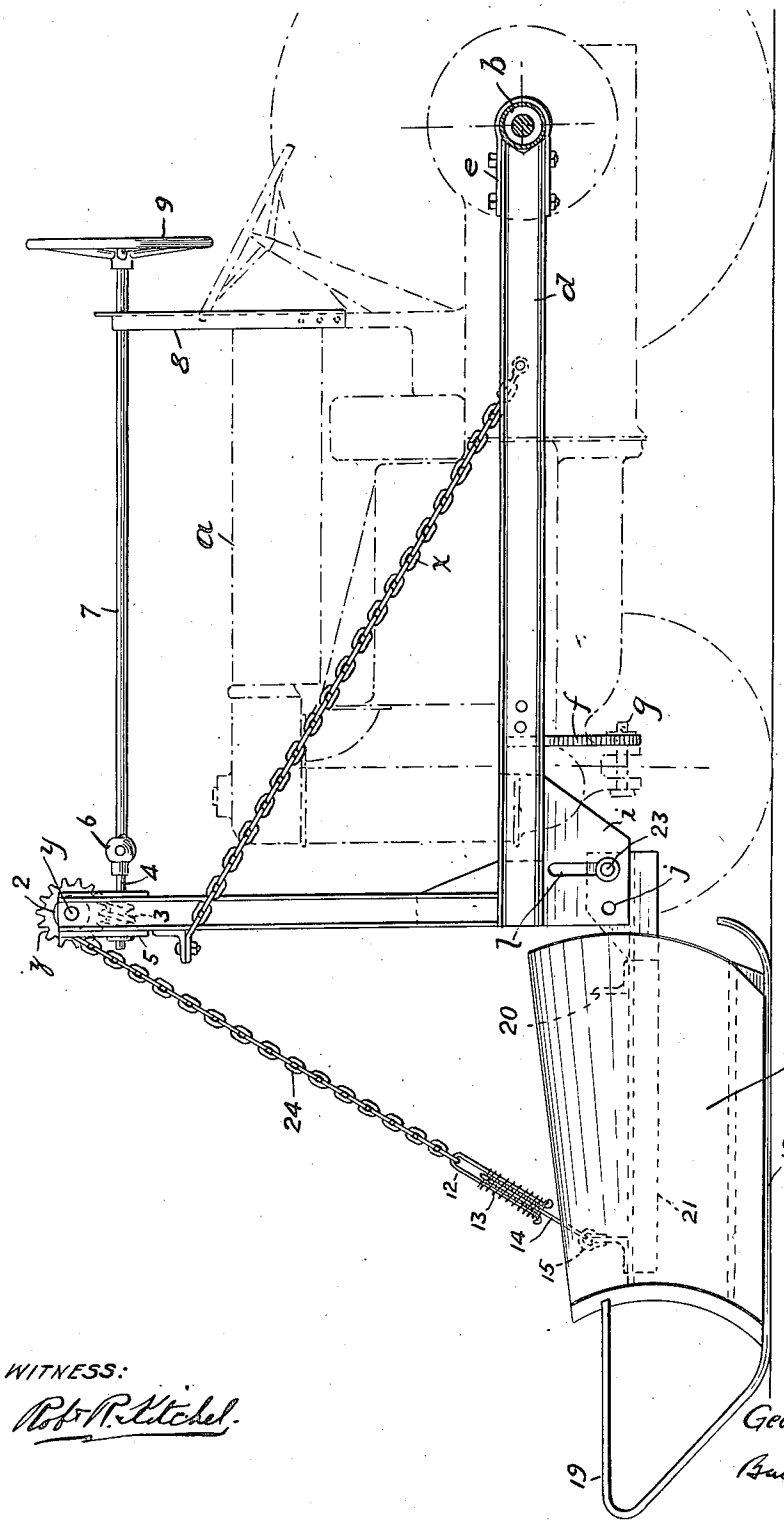


FIG. 3.

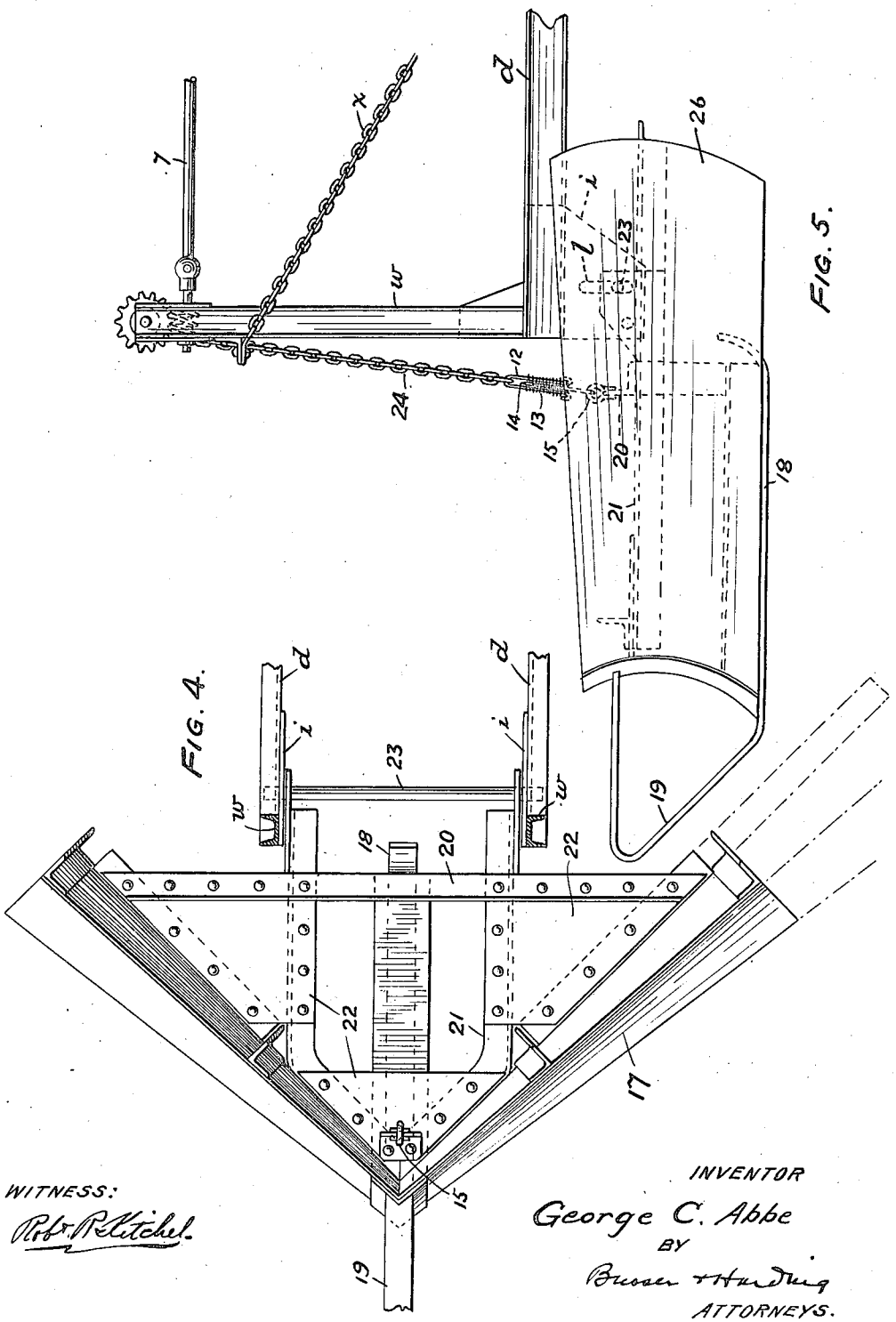
WITNESS:
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'SNOWPLOW

Filed July 16, 1926 4 Sheets-Sheet 4



Patented Apr. 9, 1929. 1,708,042

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. 122,754.

My invention relates to snow plows and more particularly to snow plows of both the blade and V type adaptable for attachment to tractors and the like.

Snow plows of the general type to which my invention pertains, have been known heretofore and have been found highly advantageous for use in connection with the cleaning of city streets and maintaining highways open, such plows being primarily advantageous because of their ready adaptability to a tractor or motor truck, which when not in use in connection with a plow may be devoted to other uses.

Heretofore plows of this character have been of substantial size due to the nature of their design, and as a result have been primarily adaptable only for work on a large scale. Thus, such plows are not adaptable, for example, to side walk cleaning, the cleaning of private driveways and farm roads nor to the finishing up of street cleaning work, such as cleaning up street intersections, etc.

Now it is the object of my invention to provide a snow plow of the character indicated, which will be of novel design and construction and which will lend itself to production in small sizes for attachment to light tractors. Further objects of my invention are to provide a snow plow of great simplicity and which may be inexpensively produced and at the same time will be highly efficient in operation.

My invention also includes novel and highly efficient means for attaching the plow to a tractor, which will lend itself readily to attachment and removal of the plow, afford an efficient connecting medium and, at the same time, in no way interfere with normal utilization of the tractor when the plow is removed.

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 is illustrated a preferred embodiment and in which:

Fig. 1, is a plan view of a snow plow with parts omitted for clearness and means for attaching it to a tractor, embodying my invention, in association with a tractor indicated diagrammatically.

Fig. 2, is a side elevation of the subject of Fig. 1.

Fig. 3, is a side elevation of a snow plow embodying a modification of my invention shown, in association with a tractor shown diagrammatically.

Fig. 4, is a plan view of a portion of the plow shown in Fig. 3.

Fig. 5, is a side elevation of a plow showing a modification of the plow shown in Fig. 3.

Referring to the drawings and more particularly to Figures 1 and 2, *a* indicates a tractor, the rear axle housing of which is indicated at *b* and the front axle at *c*.

Along the sides of the tractor are positioned channel bars *d*, the rear ends of which are secured to the rear axle housing by means of straps *e* extending around the axle housing and secured to the bars *d* by means of bolts.

The bars *d* are connected adjacent their forward ends by a cross member *f* extending downwardly toward the center where it embraces the pivot pin *g* of the front axle, which pin may be lengthened for the purpose. The cross member *f* serves to brace and support the forward ends of the bars *d*.

The forward ends of the bars *d*, which with cross member *f* form a frame, extend ahead of the tractor and support depending plates *i*, having apertures *h* for the reception of the ends of a rod *j*, on which is pivotally supported the ends of an A frame *k*. The plates *i* are also provided with vertically extending slots *l*, the purpose of which will hereinafter appear. The A frame *k* is connected at its forward end to a blade *m* through the medium of a vertical pivot pin *n*, which passes through a bracket *p* extending from the frame and a block *o* pivotally mounted on a transversely extending rod *q* secured to the blade below its longitudinal axis. A semiring *r* is mounted beneath the A frame and supported therefrom in a bracket *s*. The semiring is braced between its ends by a member *t* and its ends are pivotally mounted on rod *q*. The semiring and blade

are rotatable with reference to the A frame, or the pivot pin *n*, in order to enable the positioning of the blade at an angle to the longitudinal axis of the tractor. In order to retain the blade in the desired position, the semiring is provided with a series of holes *u*, through any one of which may be passed a pin *v*, which also passes through suitable holes in bracket *s*. The pin *v* thus acts to secure the semiring to the bracket and prevent rotation of the ring relative to the frame.

Extending upwardly from the ends of bars *d* are a pair of supports *w* suitably braced by means of chains *x*, connected to the supports and to the bars *d*. The upper ends of the supports *w* act to support a shaft *y* upon which is mounted a worm wheel *z* and a winding drum 2. A worm 3 on a shaft 4, supported by cross members 5 secured to supports *w*, operatively engages the worm wheel *z*. The shaft 4 is connected through a universal joint 6, with a shaft 7 supported by a bracket 8 and on which is a hand wheel 9, located conveniently for operation by the tractor operator.

A chain 10 is attached to the drum 2 and is connected to a chain 11, intermediate its ends, the ends being connected respectively to the stems of double hooks 12, which engage one end of springs 13, the other ends of which are engaged by double hooks 14, the stems of which are engaged by eyes 15 secured to the blade.

It will be noted that the A frame *k* is pivotally supported from the channel bars *d* secured to the tractor, while the blade is connected to the A frame on a transverse and vertical pivot and on a transverse pivot to the semiring, the semiring and blade being rotatable together relative to the A frame and the blade being tiltable relative to the frame and the semiring.

The A frame and blade are adapted to be lifted and lowered by rotation of hand wheel 9, which results in rotation of drum 2 causing chain 10 to be wound in or unwound.

As has been observed, the blade is pivotally connected to the semiring and A frame and it will be noted that it is yieldingly retained in working position by means of springs 13, which when the blade is lowered, are compressed by the weight of the blade and frame and tend to move the upper part of the blade back and the lower or working edge forward. The position of the blade is fixed by adjustable stops 16, carried by the blade and bearing against the semiring. Thus it will be noted that the working edge of the blade may move backward against the action of springs 13 on striking an obstruction. The requisite tension on springs 13 is obtained by adjusting chain 10 so that the blade and A frame hang on springs 13. As an auxiliary to springs 13 there may be provided a spring 27 one end of which is connected to the bracket *s* while the other end is connected through a rod or chain 28 with the blade between its ends and adjacent its upper edge.

Referring now more particularly to Figures 3 and 4, the plow 17 is of the V type and is provided with a centrally positioned runner, 18 which is extended upwardly, forwardly and backwardly to form a nose guard 19.

The plow is transversely braced by means of a cross member 20 and secured to an A frame 21, by means of gusset plates 22. The rear ends of the A frame 21 are pivotally supported by a rod 23, the ends of which extend through and rest at the bottom of slots *l* in plates *i* which depend from the forward ends of bars *d*. A chain 24 attached to drum 2 is connected to a double hook 12 which engages one end of a spring 13, the other end of which is engaged by a double hook 14 engaged with an eye 15 secured to the plow adjacent its front end.

In connection with the construction illustrated in Figure 3, it will be noted that the plow is provided with a nose guard which will act to lift the plow over obstructions or to enable the plow to be pushed over curbings without necessity for raising the plow by means of the hand wheel 9. Further it will be noted that the pivoted connection between the A frame and bars *d* carried by the tractor, namely rod 23, is carried in vertical slots *l* in plates *i*, thus the rear of the plow and frame are free to be lifted vertically in passing over obstructions or mounting or descending from, curbings.

Referring now to Figure 5, the plow 26 is similar to, and mounted in the same member as the plow 17, except that the plow 26 has longer sides and that the eye 15 to which the chain 24 is attached, through the medium of hooks 12 and 14 and spring 13, is secured to the cross member 20 near rear ends of the A frame. Thus when the plow is raised by winding in chain 24 the rear of the A frame and plow are lifted first, the rod 23 raising in the slots *l*, in plates *i*, until it abuts against the upper ends of the slots, when subsequent winding in of chain 24 causes the A frame and plow to be lifted about the rod 23 as a pivot.

The provision for raising the rear of the plow initially enables the use of a larger plow, the rear ends of which, but for the vertical displacement of the rod 23 before the plow and frame are lifted about it as a pivot, would engage with and drag on the ground.

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

1. A plow frame adapted to be connected to a tractor comprising a pair of channel shaped side bars, whose ends are arranged to abut the rear axle housing of the tractor, straps detachably connected to the flanges of the side bars and adapted to extend around the housing of the rear axle, a cross-bar con-

nected to the side bars, means for connecting the cross-bar to the front axle pivot pin of the tractor, means for connecting a plow to the front end of the plow frame, and plates on the side bars having vertical slots for the reception of the plow connections.

2. A plow frame adapted to be connected to a tractor comprising a pair of side bars adapted to be detachably secured to the rear axle housing of the tractor, means for securing the side bars at the front of the tractor, and plates on the side bars having vertical slots for the reception of the plow connections.

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

GEORGE C. ABBE.