Feb. 8, 1927. 1,617,111

G. HERONIMUS

SNOW ELEVATOR AND REMOVER

Filed May 21, 1925 3 Sheets-Sheet 1

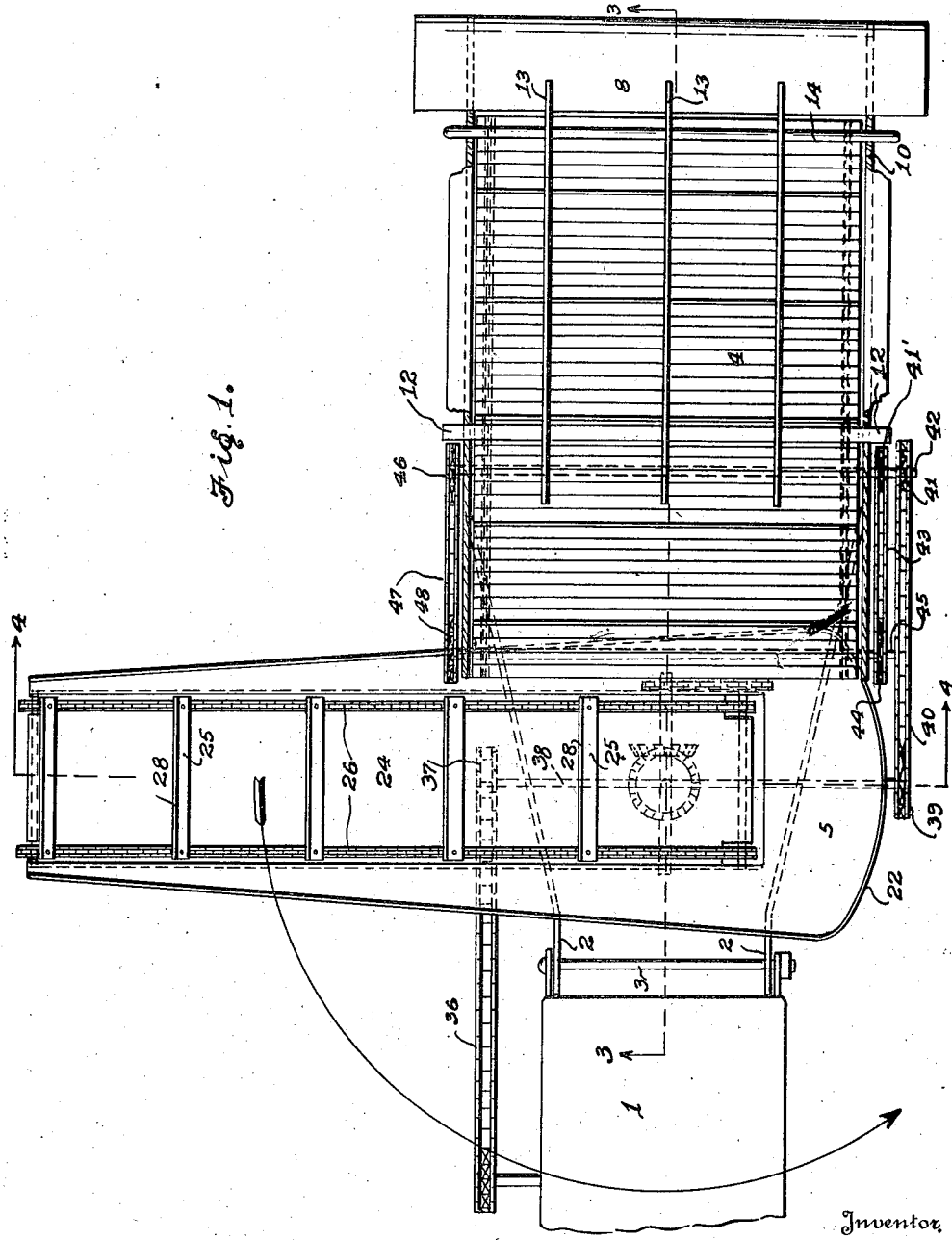


Fig. 1.

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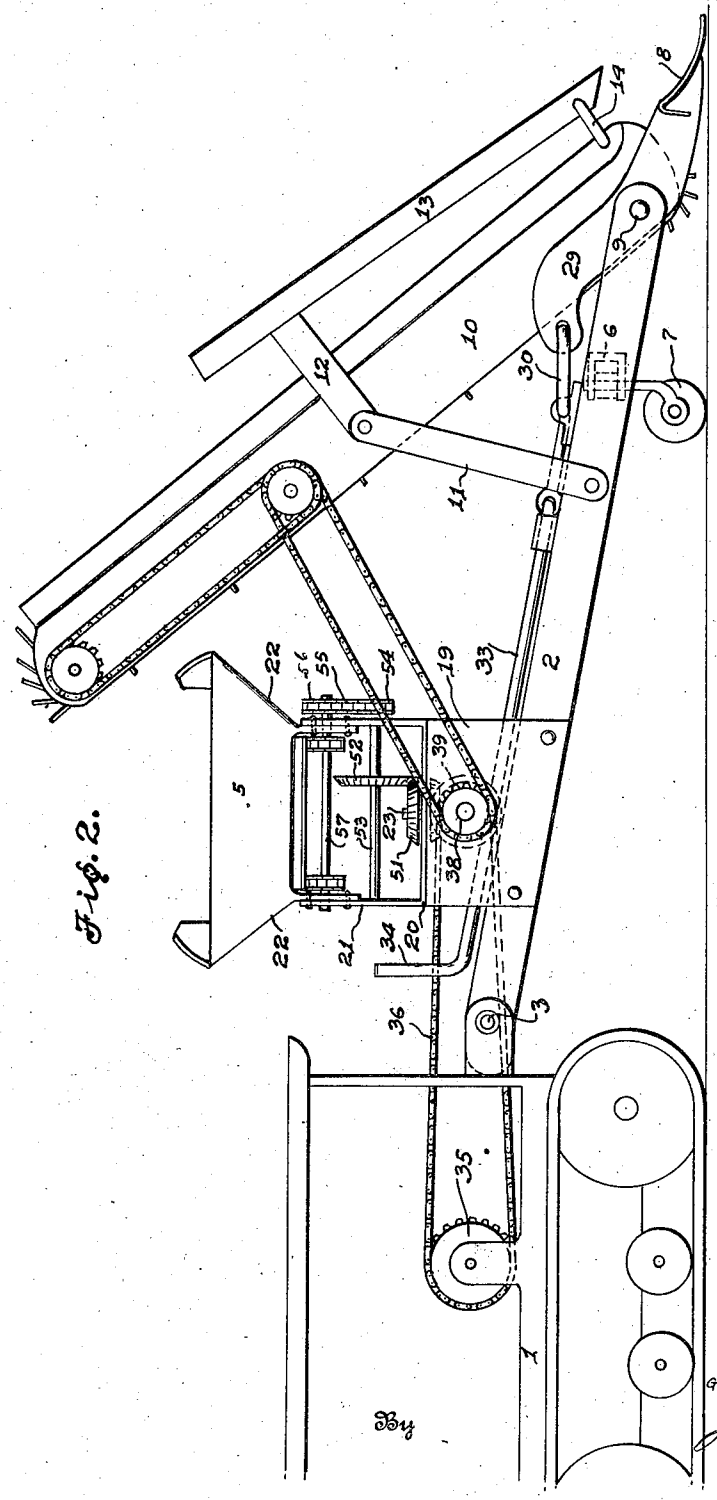


Fig. 2.

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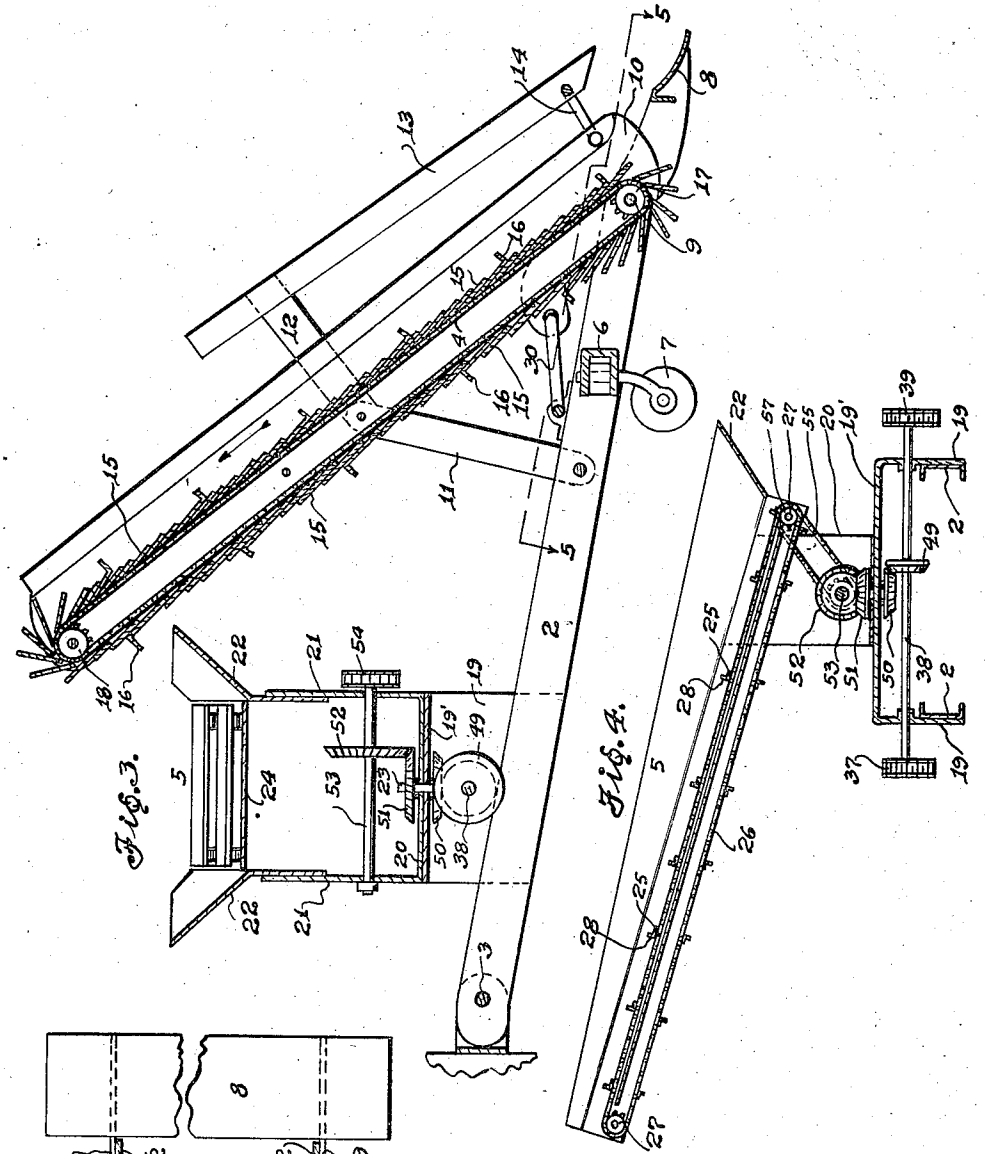


Fig. 3.

Fig. 4.

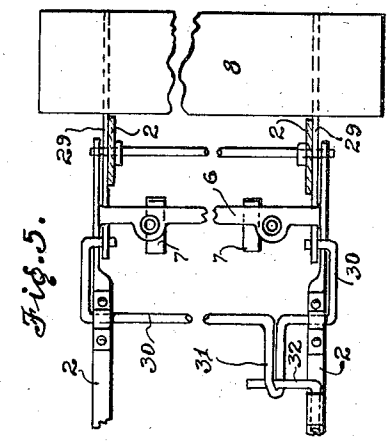


Fig. 5.

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UNITED STATES PATENT OFFICE.

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SNOW ELEVATOR AND REMOVER.

Application filed May 21, 1925. Serial No. 31,869.

This invention relates to a snow remover, comprising an elevator and conveyer adapted to be suitably attached to the front of a tractor of sufficient size and power to properly take care of the snow conditions that may exist in the locality in which it is used, the tractor being preferably of the caterpillar type.

The prime object of the invention is to provide simple, durable, strong and efficient means for the removal of snow from public highways, and from streets in cities by elevating the snow and conveying it into vehicles of any kind for removing it from the streets and roads, or for conveying and dumping the snow at either side of the clearing.

Further objects of the invention are to provide means connected with a tractor and operated thereby, comprising an elevator provided with a series of cutting knives and disposed in front of and above the elevator for cutting deep drifts of snow which may be frozen and thereby prevent the banking of the snow upon the elevator, a carrier or conveyer of any desirable length, pivotally arranged so that it can be swung to deliver the snow at either side of the tractor and clearing made by the elevator, and means driven by the tractor and connected with the elevator and carrier or conveyer for efficiently operating the same.

The foregoing and such other objects as may appear from the ensuing description are accomplished by the combination, arrangement, construction and location of the several parts hereinafter more fully described, illustrated in the accompanying drawings and particularly set forth in the claims appended hereto, it being understood that slight changes in the precise form, proportions and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification it will be seen that:

Figure 1 is a plan partly in section of the improved means embodying my invention.

Fig. 2 is a side elevation of the same.

Fig. 3 is a longitudinal section, taken in the plane of the dotted lines 3—3, Fig. 1, looking in the direction of the arrows.

Fig. 4 is a sectional view, taken in the plane of the dotted lines 4—4, Fig. 1, looking in the direction of the arrows, and

Fig. 5 is a detail plan view of the forward end of the steel beams and their connections, taken in the plane of the dotted lines 5—5, Fig. 3, looking in the direction of the arrows with the elevator removed therefrom and the steel blade broken away.

In the embodiment of my invention as illustrated it will be seen that the numeral 1 designates the tractor of the caterpillar type, to the front end of which is pivotally secured a pair of steel beams 2, by a suitable transversely disposed rod or bolt 3, said steel beams serving as the main support for the snow elevator 4, and the carrier or conveyer 5, which are firmly and securely connected therewith. Said steel beams are connected near their front end by a steel cross-beam 6, and to the said bar is suitably attached a plurality of roller supports 7, which being carried by the pivotally secured steel beams permit the elevator and carrier to readily travel over the uneven surface of the streets or roads to be cleaned.

At a suitable distance in front of the roller supports 7 is attached a steel blade 8, preferably from six to eight feet in length and about fifteen inches wide, which is adjustably arranged, by the means hereinafter described, so that its front edge may be raised or lowered as conditinos may require.

The lowermost end portion of the elevator 4 is secured to front end portion of the steel beams 2 by a transversely arranged bolt or shaft 9, which is passed through each side frame 10 of the elevator, and intermediate of the length of said elevator, at each side thereof, is a steel support 11, each support being rigidly secured at its upper end to the side frame 10 and at its lower end to the steel beam, whereby the elevator is firmly attached to said steel beams and fixedly secured thereto. To the outer face of each side frame 10 is rigidly secured a steel bar 12 extending a suitable distance above, beyond and across said side frames, and to the upper face of said bar is rigidly and securely attached the upper end portion of a series of cutting knives 13, the lower end portion of each cutting knife being rigidly secured by a metal rod 14, which is passed

through each of the knives, and welded or soldered thereto, and is then passed through each side frame 10 and securely riveted thereto, said knives being disposed a suitable distance in front of and above the elevator, and serving to cut through deep drifts of snow which may be frozen, and thereby prevent the banking of the snow upon the elevator.

It will be perceived that the elevator proper is composed of a plurality of suitable chains, such as shown by dotted lines at each side thereof in Fig. 1, and to said chains is suitably secured a series of slats 15 of any desirable material, preferably metal, said slots being arranged to slightly overlap each other, and at suitable intervals, the outer end of one of the slots is provided with a right angle extension 16 serving to grasp the snow and convey it upwardly to the extreme upper end thereof, from whence it is dumped into the carrier or conveyer 5 as will be readily understood, the said elevator travelling over a suitable roller 17 at its lower end, and a driven roller 18 at its upper end.

Firmly and rigidly secured to the outer face of each of the steel beams 2 is a steel plate 19 formed with an upright extension at each side thereof, and extending transversely entirely across the said beams, constituting a platform 19′ for the support of the carrier or conveyer 5, which is pivotally secured to said platform, and seated upon the upper surface of said platform is a substantially U-shaped steel member 20, formed with an upright 21 at each side thereof, each of the uprights being fixedly secured to the outer face of the carrier frame 22, the carrier or conveyer proper consisting of the frame 22, which is preferably about three and one half feet wide at its lowermost end, about five feet at the top thereof and about fourteen feet in length, for the purpose of depositing the snow into vehicles, or well to the side of the clearing made by the elevator, or into ditches at either side, since the said carrier is pivotally secured to said platform 19′ by the shaft 23, so that it can be readily swung on its pivot in the direction of the arrow Fig. 1, in order that the snow may be delivered on either side of the tractor and clearing made by the elevator. The carrier is furnished with a solid bottom 24 of any suitable material, and the snow is moved therein and over the solid bottom by means of a belt composed of slats 25 secured to a plurality of chains 26, passing over the rollers 27, at each end thereof, until the snow is conveyed to its delivery end, each of said slats being provided with an integral right angle extension 28, serving to grasp the snow and move it along to the dumping end of the carrier.

Near each end of the steel blade 8 is fixedly secured thereto a rearwardly extended member 29, which is pivotally secured to the bolt or shaft 9, the rear end of each member 29 being formed with an opening therethrough for the reception of one end of a rod 30 carried by the steel beams 2, said rod being formed with an extended bent or looped portion 31 adapted to receive a lateral extension 32 formed at the front end of a rod 33 carried by one of the steel beams 2, which extends rearwardly and terminates within reach of the operator with an upright extension 34, which when moved to the right or left, will impart an upward and downward movement, respectively, to the steel blade 8, through the medium of its connections with said rod 33, as will be readily apparent.

As shown in the drawings, the power driving means comprises a sprocket gear 35 connected with suitable power generated by the tractor, to which is connected a sprocket chain 36 leading to a sprocket gear 37 rigidly secured to one end of the shaft 38, which is secured to the steel platform 19′, while to the other end of said shaft is fixedly secured another sprocket gear 39 to which is connected a sprocket chain 40, which leads to and connects with the sprocket gear 41 secured to one end of a shaft 42 passing through the side frame 10 of the elevator, and connected with and leading from another sprocket gear 41′ secured to the said shaft 42, in a sprocket chain 43 which connects with the sprocket gear 44 secured to one end of the shaft 45, and at the opposite side of the elevator, a sprocket gear 46 is fixedly secured to the other end of shaft 42, to which is connected a sprocket chain 47 which connects with the sprocket wheel 48 rigidly secured to the other end of the shaft 45, whereby the desired power is imparted to the elevator 4. While the power driven shaft 38 imparts the necessary driving power to the elevator through the medium of said sprocket gears and sprocket chains, said shaft 38 also imparts the required power for operating the carrier or conveyer, by means of the bevel gear 49 fixedly secured to the shaft 38, said bevel gear 49 meshing with a bevel gear 50 rigidly secured to the lower end of shaft 23, and at the upper end of the shaft 23 is fixedly secured a bevel gear 51 which is adapted to mesh with the bevel gear 52, fixedly secured intermediate the shaft 53 carried by the member 20, and to one end of shaft 53 is rigidly secured a sprocket gear 54 to which is connected a sprocket chain 55 which leads to and connects with a sprocket gear 56 fixedly secured to one end of the shaft 57 carried at one end of the carrier and which imparts travelling movement to the carrier or conveyer belt passing over the rollers 27, as will be readily shown.

It will be seen that the lower solid portion

of the U-shaped steel member 20, which member is adapted to support the carrier or conveyer 5, is pivotally seated upon the steel platform 19', hence the said carrier may be easily rotated to the right or left at either side of the elevator, so that the snow may be delivered at either side of the clearing made by the elevator as may best serve the snow conditions as they may exist in the locality in which this snow removing means is utilized.

While I have shown sprockets and a sprocket chain connected to the tractor for imparting the necessary power to the main driving shaft 38 for operating the elevator and carrier, it will be understood that any suitable means may be employed in connection with the tractor for imparting the required driving power to the said shaft 38, from which shaft all of the operating means connected with the elevator and carrier derive their motive power.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. A snow remover of the character described, comprising a tractor, a plurality of forwardly extended steel beams pivotally connected to the front end of the tractor, an elevator fixedly mounted upon said beams, a transversely disposed steel platform rigidly secured to the beams, a carrier pivotally seated upon said platform, and means fitted within the platform and extending at each side thereof operated by the tractor for imparting power to both the elevator and carrier.

2. A snow remover of the character described, comprising a tractor, a plurality of forwardly extended steel beams pivotally connected to the front end of the tractor, an elevator mounted upon said beams, a transversely disposed steel platform fixedly secured to the beams, a U-shaped member seated upon the upper surface of the platform, a carrier mounted upon said U-shaped member, and means fitted within the platform and projecting from each side of said platform operated by the tractor for simultaneously imparting power to both the elevator and carrier.

3. A snow remover of the character described, comprising a tractor, a plurality of forwardly extended steel beams transversely pivoted to the front end of the tractor and extending to the front end portion of the snow remover, an elevator fixedly mounted upon said beams near their front ends, a series of snow cutting knives rigidly secured to the elevator in front of and above said elevator, a transversely positioned steel platform fixedly secured to the beams at the rear end of the elevator, a carrier pivotally and rotatably seated upon the platform disposed transversely with relation to the elevator, and means mounted upon the platform and operated by the tractor for imparting operating power to both the elevator and carrier.

4. A snow remover of the character described, comprising a tractor, a pair of forwardly extended steel beams transversely pivoted to the front end of the tractor and extending to the front end of the snow remover, an elevator fixedly mounted upon said beams, a series of longitudinally disposed snow cutting knives fixedly secured to the elevator and disposed above and in front of said elevator, a transversely disposed steel platform fixedly mounted on the beams near the rear end thereof, a U-shaped steel member pivotally mounted upon the platform, a carrier transversely mounted upon said member, and a transversely disposed driving shaft mounted through said platform and operated by the tractor for imparting operating power to both the elevator and carrier.

5. A snow remover of the character described, comprising a tractor, a pair of forwardly extended steel beams pivotally connected to the front end of the tractor and terminating at the front end of the snow remover, an elevator fixedly mounted upon said beams at the front ends thereof, a plurality of longitudinally positioned knives rigidly secured to the elevator above and in front of the elevator, a transversely disposed steel blade pivotally secured to said beams at the front of the elevator, a transversely positioned steel platform fixedly mounted upon the beams near their front ends, a transversely disposed pivoted carrier seated upon the platform adapted to be rotated to either side of the elevator, and a driving shaft transversely mounted through said platform and operated by the tractor for imparting operating power to both the elevator and carrier.

6. A snow remover of the character described, comprising a tractor, a plurality of forwardly extended steel beams connected to the front end of the tractor, an elevator mounted upon said beams, a transversely disposed steel platform secured direct to the beams, a transversely disposed U-shaped metallic member pivotally seated upon the platform, a carrier mounted upon the U-shaped member, a transverse driving shaft fitted within the platform and extending at each side thereof operated by the tractor for imparting operating power to both the elevator and carrier.

7. A snow remover of the character described, comprising a tractor, a plurality of forwardly extended steel beams transversely pivoted to the front end of the tractor and terminating at the front end of the snow remover, an elevator fixedly secured upon the beams at their front ends, a steel blade pivotally secured to the beams at the front

end of the elevator, means connected to and carried by said beams for imparting an up and down movement to the blade, a steel platform transversely disposed and fixedly mounted upon the beams at their rear end portions, a carrier transversely positioned with relation to the elevator and pivotally seated upon said platform at the rear of said elevator, and means fitted to the platform and operated by the tractor for imparting operating power to both the elevator and carrier.

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