W. J. COOKE.

SNOW SWEEPER.

APPLICATION FILED JULY 25, 1908.

942,888.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 1.

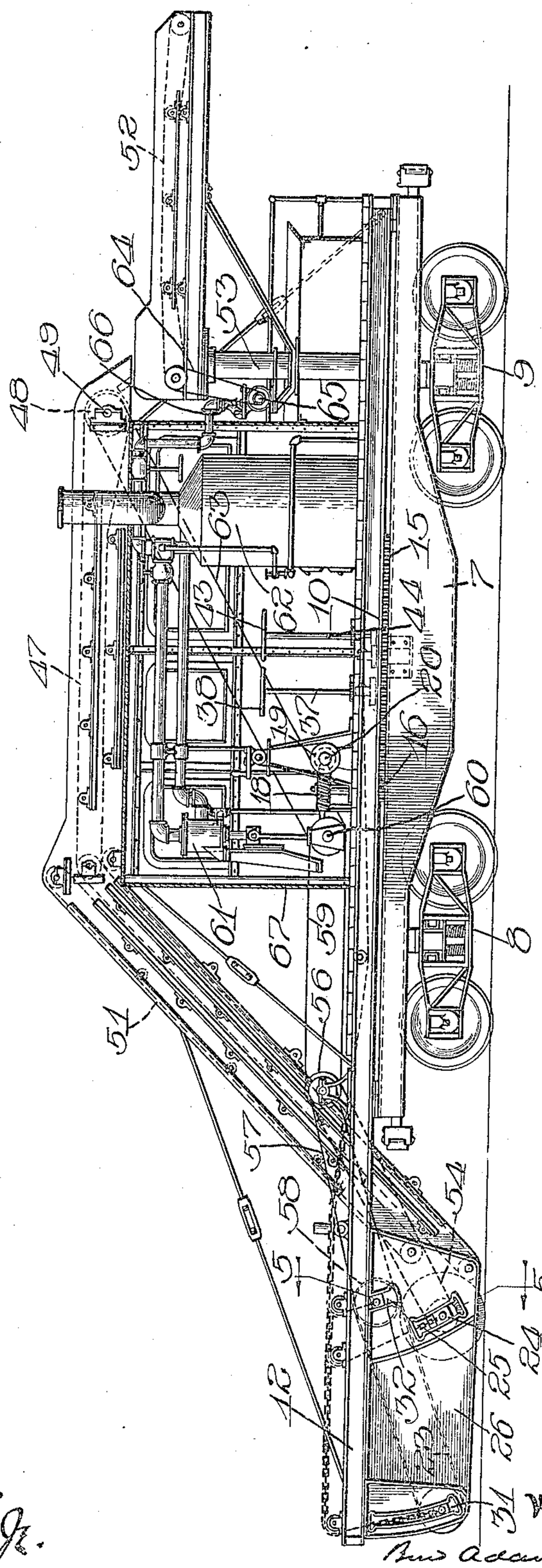

Fig. 1.

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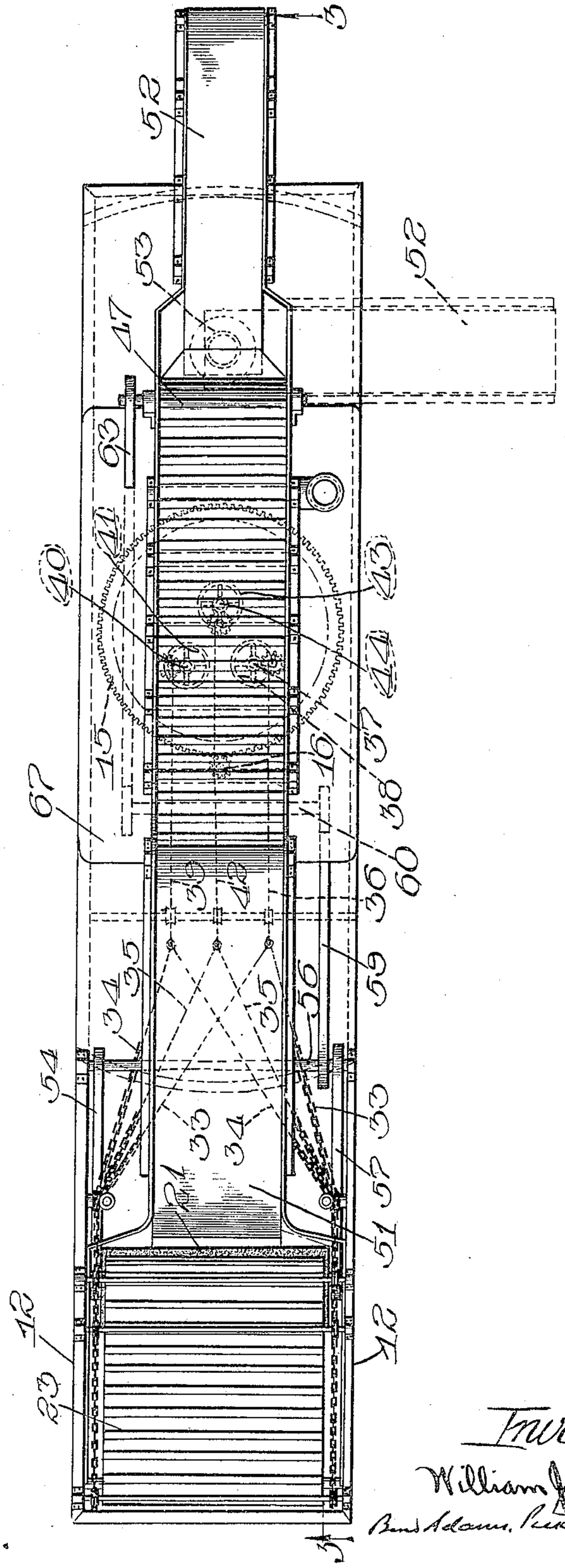

Fig. 2.

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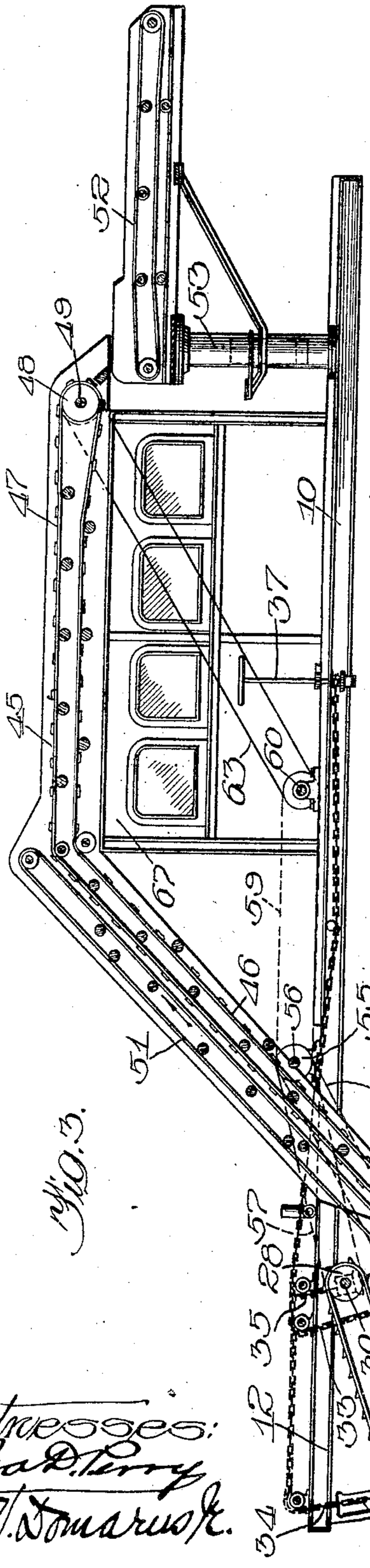

Fig. 3.

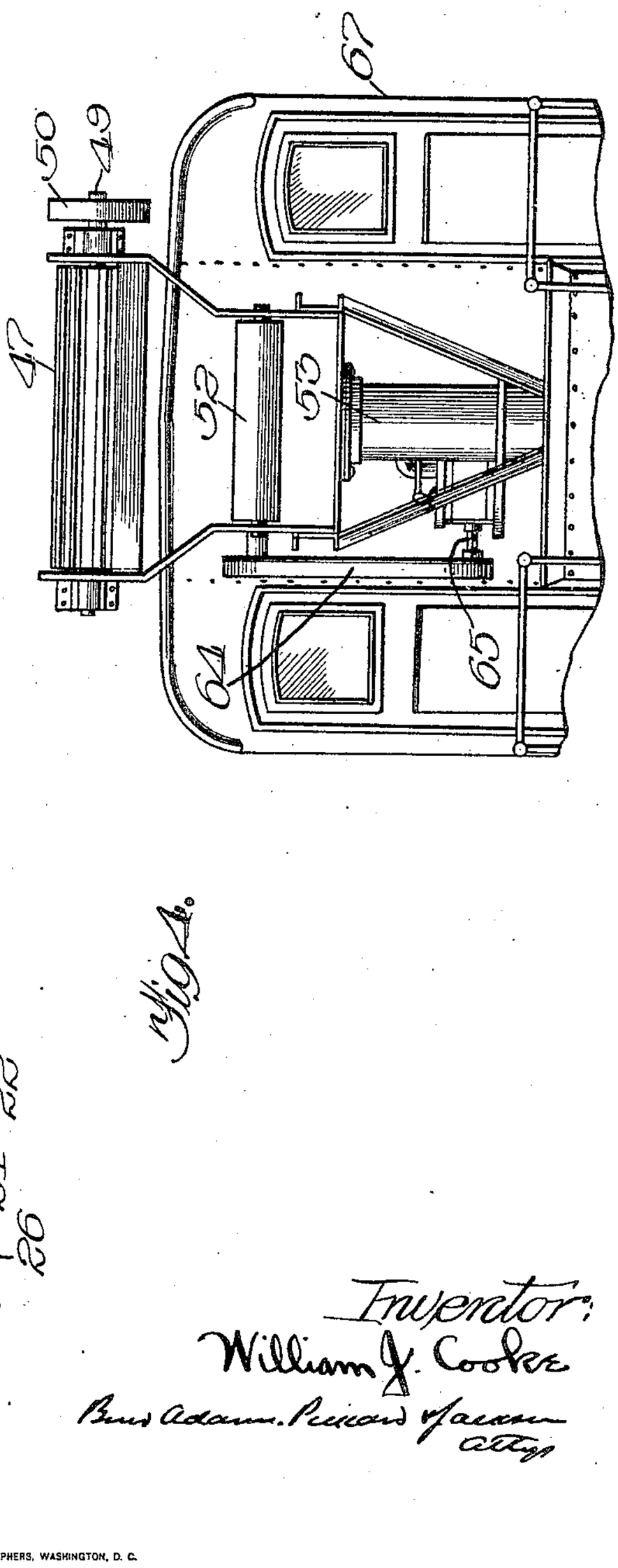

Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 5.

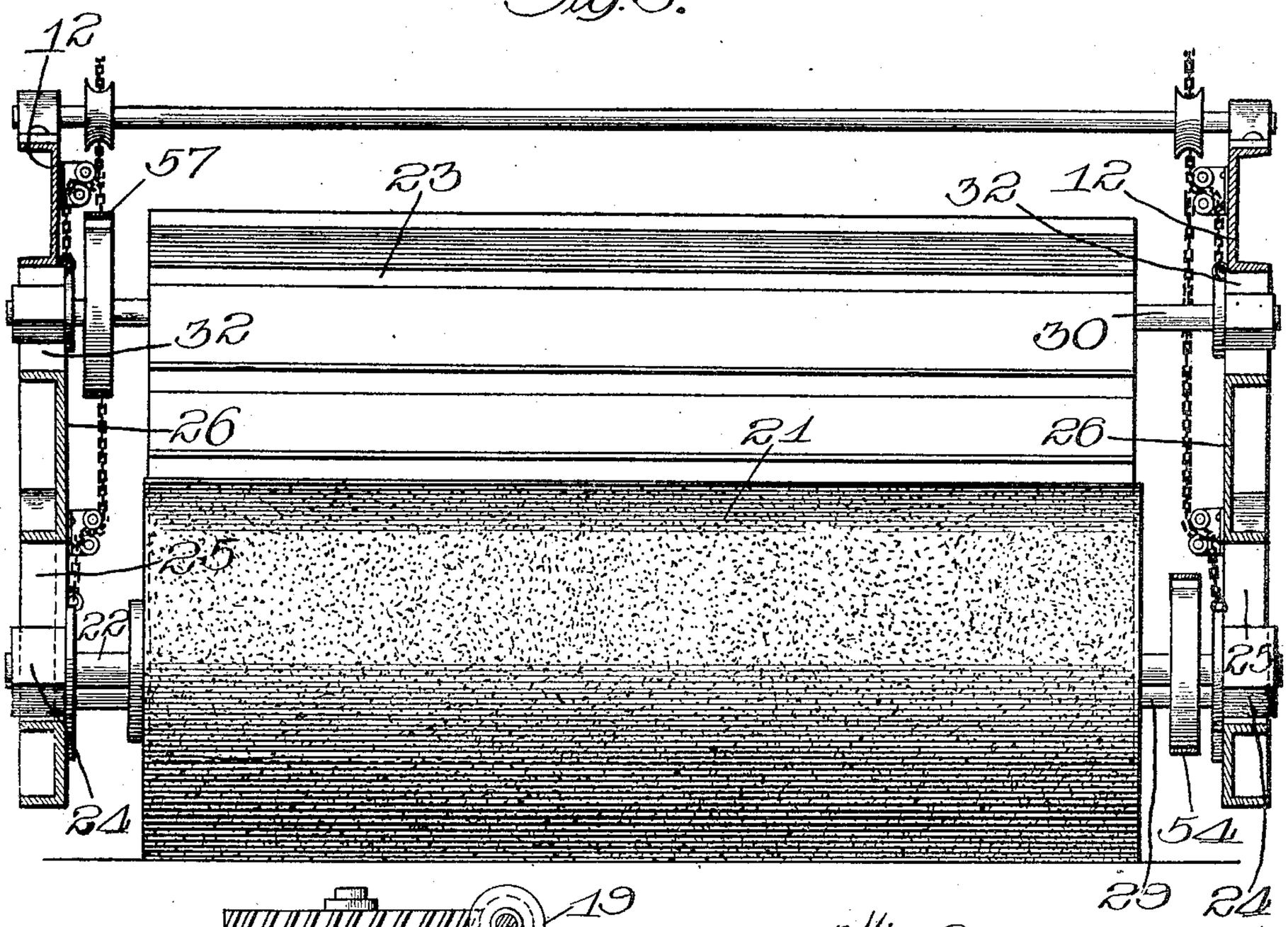
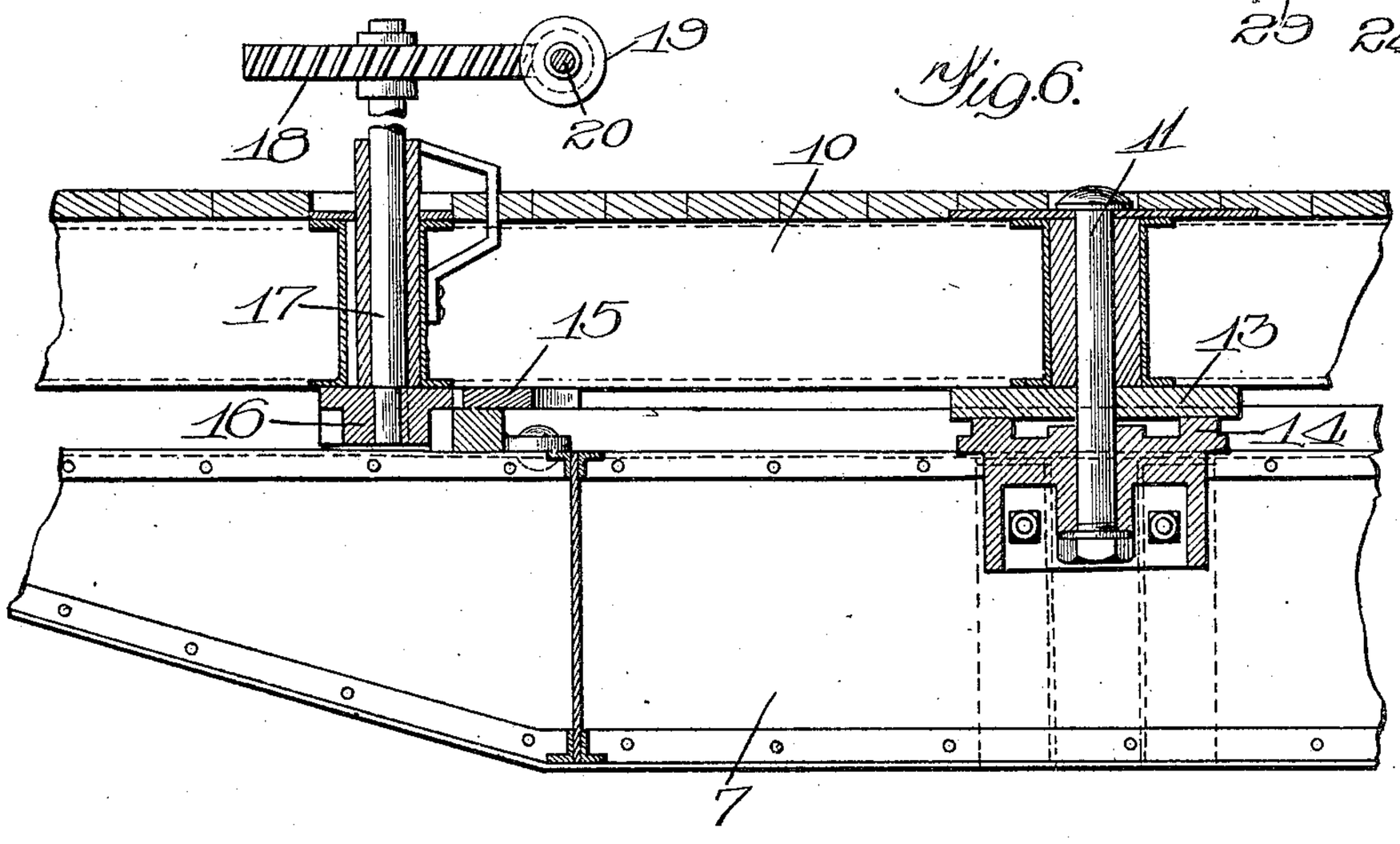


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM J. COOKE, OF OAK PARK, ILLINOIS, ASSIGNOR TO McGUIRE-CUMMINGS MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SNOW-SWEEPER.

942,888. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed July 25, 1908. Serial No. 445,318.

To all whom it may concern:

Be it known that I, WILLIAM J. COOKE, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Snow-Sweepers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to sweepers, and has for its object to provide a new and improved snow sweeper for railway use, although my invention, generically considered, is not restricted to such use but may be used for any purpose for which it is adapted. I accomplish this object by the means illustrated in the drawings and hereinafter specifically described.

That which I believe to be new will be pointed out in the claims.

In the accompanying drawings:—Figure 1 is a side view of my improved sweeper; Fig. 2 is a plan view thereof; Fig. 3 is a longitudinal section one line 3—3 of Fig. 2; Fig. 4 is a partial rear view; Fig. 5 is an enlarged detail, being a cross section on line 5—5 of Fig. 1; and Fig. 6 is an enlarged detail, being a partial vertical sectional view of the central portion of the swinging platform and car-body, illustrating the manner in which the platform is mounted and the mechanism for swinging the same.

Generally speaking, my improved sweeper comprises a car-body or frame on which is mounted a swinging platform arranged to turn about a vertical axis which is placed substantially centrally of the car-body but nearer one end than the other of the platform, so that one end of the platform projects for a considerable distance beyond the end of the car, while the other end of the platform practically coincides with the end of the car. Suitable power-operated mechanism is provided for swinging the platform, so that the projecting end may be swung laterally to follow the track or to permit of operating the sweeper at one side or the other thereof. The projecting end of the platform is equipped with mechanism for taking up and compressing the snow and delivering it to a conveyer which ultimately discharges it at the other end of the platform or car into flat cars or other cars placed to receive it. All the snow sweeping and conveying mechanism is operated from a power-plant mounted on the platform and preferably inclosed in a suitable housing, and in the best embodiment of the invention a single power-plant serves to operate all the different parts of the machine, including the mechanism for swinging the platform.

Referring now to the drawings for a detailed description of the embodiment of my invention therein illustrated, 7 indicates the car-body or frame which is mounted on trucks 8—9 in the usual way.

10 indicates the swinging platform, which, as best shown in Figs. 1 and 6, is mounted on a vertical pivot 11 placed centrally of the car, said pivot being, however, nearer one end of the platform than the other, so that one end portion 12 of the platform projects beyond the end of the car, as shown in Fig. 1. The platform and car-body are provided with bearing plates 13—14, respectively, around the pivot 11, as shown in Fig. 6, to provide a more extended bearing for the platform.

15 indicates an annular rack secured to the frame of the car concentrically with the pivot 11, and 16 indicates a pinion which meshes with said rack, as shown in Figs. 1 and 6. The pinion 16 is mounted at the lower end of a vertical shaft 17 suitably journaled in the platform 10 and provided at its upper end with suitable driving mechanism such as a worm-wheel 18, driven by a worm 19 mounted on a shaft 20. The latter shaft is driven by power, as will be hereinafter described.

The sweeping mechanism proper, as best shown in Figs. 1 and 3, comprises a broom 21 mounted on a shaft or axle 22 extending transversely at right-angles with the platform 10, and a conveyer 23 which coöperates with said broom to carry the snow upward and backward to the conveyer mechanism. As shown in said figures, the axle of the broom 22 is mounted in bearing blocks 24 which slide in segmental slots 25 provided in side-plates 26, one of which is secured at each side of the projecting por-

tion 12 of the platform, as is best shown in Fig. 1. This permits the broom to be moved up and down to a greater or less extent. The conveyer 23 is carried by pulleys 27—28, mounted on shafts 29—30, also carried by the side-plates 26. Said shafts are similarly mounted in segmental slots 31—32, respectively, so as to be capable of a certain amount of vertical adjustment, the forward slots 31 being much longer than the slots 32 so that the forward end of the conveyer may be raised or lowered to a considerable extent. As is best shown in Fig. 3, the rear end of the conveyer 23 projects over the broom 21 and the broom is caused to rotate in the direction indicated by the arrow in Fig. 3, so that it sweeps the snow up against the conveyer, the lower portion of which moves backward, as also indicated by the arrow in Fig. 3. The result is that the snow, thrown up against the conveyer by the broom, is carried back between the broom and the conveyer and discharged at the rear thereof upon an elevating apparatus or conveyer hereinafter described.

For the purpose of vertically adjusting the broom and the ends of the conveyer 23, chains 33—34—35, respectively, are provided. The chains 33 which are connected to the ends of the broom shaft are brought together and connected with a chain 36 which connects with a hand-wheel shaft 37 arranged near the center of the car, said shaft being provided with a hand-wheel 38, as shown in Fig. 1. In like manner, the chains 34, which connect with the ends of the shaft 29 at the front end of the conveyer 23, are brought together and connected with a chain 39 which is connected with the shaft 40 of a hand-wheel 41. Similarly, the chains 35, which are connected with the shaft 30 at the rear of the conveyer 23, are brought together and connected with a chain 42 which is operated by a hand-wheel 43 and shaft 44. The arrangement is such that by rotating the several hand-wheels the broom and conveyer shafts may be adjusted. Suitable pulleys are provided for guiding the several chains. The arrangement of the hand-wheels and chains is well shown in Fig. 2, and is also illustrated in Figs. 1 and 3.

45 indicates an endless conveyer which runs over suitable guide pulleys so arranged that the forward portion of the conveyer is inclined downward and extends to a point near the broom 21, terminating back of the broom, as shown in Fig. 3, the inclined portion of said conveyer being indicated by 46. The rear portion of the conveyer, as shown at 47, is practically horizontal. At its rear end, said conveyer runs around a pulley 48 mounted on a shaft 49, which also carries a drive pulley 50, as shown in Fig. 4. Suitable guide pulleys are provided at intervals to support the conveyer as it travels.

51 indicates an inclined idler conveyer arranged over the inclined portion 46 of the conveyer 45, as is best shown in Fig. 3. It will be noted that the lower end of the conveyer 51 does not extend down quite as far as the conveyer 45, and the upper end of said conveyer 51 extends beyond the inclined portion of the conveyer 45. The conveyer 51 is placed adjacent to the conveyer 45 and the adjacent surfaces of the said conveyers move in the same direction, said conveyers traveling in the direction indicated by the arrow in Fig. 3. They coöperate to compress between them the snow deposited on the lower end of the conveyer 45, and to carry the same up over the inclined portion 46 of the conveyer 45 to the horizontal portion thereof, where it is carried back to the rear of the machine and there deposited upon another conveyer 52 carried by a rotary support 53 mounted at the rear of the platform 10, as best shown in Fig. 3. The conveyer 52 is designed to carry the compressed snow back and deposit it in a car attached to the sweeper-car, or to deposit it at one side of the road, if desired.

The broom 21 is driven by a belt 54 from a pulley 55 mounted on the shaft 56, as best shown in Fig. 3, and in like manner the conveyer 23 is driven by a belt 57 moving on a pulley mounted upon the shaft 56 and around a pulley 58 mounted on the conveyer shaft 30, as shown in Figs. 1, 2 and 3. The shaft 56 is driven by a belt 59 from a main drive shaft 60, shown in Fig. 3, the latter being driven by an engine or other motor 61, as shown in Fig. 1. In the drawings, I have shown the engine 61 as being a steam engine, being driven by steam from the boiler 62 mounted on the platform 10, but any other suitable motor may be used. The conveyer 45 is driven from the same shaft 60 by a belt 63, as shown in Fig. 3.

The conveyer 51 is not driven from the engine but movement is imparted to it from the conveyer 45 by the snow compressed between the adjacent surfaces of said conveyers. The conveyer 52, carried by the rotary support 53, is driven by a belt 64 driven in turn by the shaft 65 which is operated from any suitable motor, preferably operated by steam from the boiler 62 supplied by the flexible connection 66. Any other suitable motor, however, may be used for the purpose. The worm 19 which rotates the platform 10 is also driven from the engine 61.

It will be understood that suitable fast and loose pulleys, or other suitable mechanism for stopping and starting the apparatus are provided, but such parts are not shown in detail, as, separately considered, they form no part of my present invention.

A suitable housing 67 is provided for inclosing the boiler, engines and adjacent parts, as shown in Figs. 1 and 3.

From the foregoing description, it will be seen that the sweeping mechanism by which the snow is taken up from the ground may be moved into position to take the snow either from the track or from the ground at either side thereof, or, by swinging the platform entirely around, they may be reversed to operate in the reverse direction. In like manner, the snow may be discharged at either side or directly at the rear of the sweeper-car. The snow taken up by the sweeping mechanism is not only elevated for discharge but is compressed so that when delivered it occupies much less space than it would normally and a much greater quantity of it can be loaded on a car than if it were loose.

So far as I am aware, these features are broadly new, and consequently the claims hereinafter made are to be construed accordingly, my invention being restricted to the details of the construction shown and described only in so far as they are particularly claimed.

While my improved machine is designed principally for sweeping snow, it is also adapted in many respects to sweeping other materials, and I wish it to be understood, therefore, that the machine hereinafter claimed may be employed for any purpose to which it is adapted, and the claims are to be constructed accordingly.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A snow sweeper comprising a carriage, a platform mounted thereon and extending beyond said carriage, sweeping means comprising a rotary broom and a conveyer carried by the extended portion of said platform, and means mounted on the platform for actuating said sweeping means.

2. A snow sweeper comprising a carriage, a platform mounted thereon and extending beyond said carriage, sweeping means comprising a rotary broom and a conveyer carried by the extended portion of said platform, means mounted on the platform for actuating said sweeping means, a conveyer carried by the platform for receiving snow from the sweeping means and conveying it away therefrom, and means for operating said conveyer.

3. A snow sweeper comprising a carriage, a swinging platform mounted thereon and extending beyond said carriage, sweeping means comprising a rotary broom and a conveyer carried by the extended portion of said platform, and means mounted on the platform for actuating said sweeping means.

4. A snow sweeper comprising a carriage, a swinging platform mounted thereon and extending beyond said carriage, sweeping means comprising a rotary broom and a conveyer carried by the extended portion of said platform, means mounted on the platform for actuating said sweeping means, a conveyer carried by the platform for receiving snow from the sweeping means and conveying it away therefrom, and means for operating said conveyer.

5. A snow sweeper comprising a carriage, moving sweeping means carried thereby, and means coöperating with said sweeping means for receiving and compressing the snow.

6. A snow sweeper comprising a carriage, a swinging platform mounted thereon, sweeping means comprising a rotary broom and a conveyer carried by said platform, and means for receiving the snow from said sweeping means and compressing the same.

7. A snow sweeper comprising a carriage, a swinging platform mounted thereon, sweeping means comprising a rotary broom and a conveyer carried by said platform, means for receiving the snow from said sweeping means and compressing the same, and means carried by said platform for operating said compressing means.

8. A snow sweeper comprising a carriage, moving sweeping means carried thereby, means coöperating with said sweeping means for receiving and compressing the snow, and a conveyer for discharging the compressed snow.

9. A snow sweeper comprising a carriage, a swinging platform mounted thereon, sweeping means comprising a rotary broom and a conveyer carried by said platform, means for receiving the snow from said sweeping means and compressing the same, and a conveyer for discharging the compressed snow.

10. A snow sweeper comprising a carriage, a swinging platform mounted thereon, sweeping means comprising a rotary broom and a conveyer carried by said platform, means for receiving the snow from said sweeping means and compressing the same, means carried by said platform for operating said compressing means, and a conveyer for discharging the compressed snow.

11. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, a broom arranged under said conveyer and adapted to throw the snow against the under side thereof, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, and means for driving the latter conveyer.

12. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, a broom arranged

under said conveyer and coöperating therewith, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, means for driving the latter conveyer, and an idler conveyer coöperating with said last-mentioned conveyer to compress and elevate the snow.

13. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, a broom arranged under said conveyer and adapted to throw the snow against the under side thereof, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, means for driving the latter conveyer, and adjustable means for discharging the snow.

14. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, a broom arranged under said conveyer and adapted to throw the snow against the under side thereof, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, means for driving the latter conveyer, an idler conveyer coöperating with said last-mentioned conveyer to compress and elevate the snow, and adjustable means for discharging the compressed snow.

15. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, means for vertically adjusting said conveyer, a broom arranged under said conveyer and adapted to throw the snow against the under side thereof, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, and means for driving the latter conveyer.

16. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, a broom arranged under said conveyer and adapted to throw the snow against the under side thereof, means for vertically adjusting the broom, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, and means for driving the latter conveyer.

17. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of the platform extending beyond the carriage, a conveyer carried by the projecting end of said platform, means for vertically adjusting said conveyer, a broom arranged under said conveyer and coöperating therewith, means for vertically adjusting the broom, a conveyer adapted to receive the snow from said first-mentioned conveyer and broom, and means for driving the latter conveyer.

18. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of said platform projecting beyond the carriage, a broom mounted in said extended portion of the platform and arranged transversely thereof, an inclined conveyer also carried by said extended portion of the platform and projecting over said broom, a second inclined conveyer extending down back of said broom and adjacent thereto to receive the snow carried up by said broom and said first-mentioned conveyer and means for rotating said broom to throw the snow toward said first-mentioned conveyer.

19. A snow sweeper comprising a carriage, a swinging platform mounted thereon, one end of said platform projecting beyond the carriage, a broom mounted in said extended portion of the platform and arranged transversely thereof, an inclined conveyer also carried by said extended portion of the platform and projecting over said broom, a second inclined conveyer extending down back of said broom and adjacent thereto to receive the snow carried up by said broom and said first-mentioned conveyer, means for rotating said broom to throw the snow toward said first-mentioned conveyer and means coöperating with said second conveyer for compressing the snow.

20. A snow-sweeper, comprising a carriage, coacting belts carried thereby for receiving and compressing the snow, means for driving one of said belts, and means for directing the snow between said belts.

21. A snow-sweeper, comprising a carriage, coacting belts carried thereby for receiving and compressing the snow, means for driving one of said belts, means for directing the snow between said belts, comprising sweeping mechanism arranged adjacent to one of said belts, and means for operating said sweeping mechanism.

22. A snow-sweeper, comprising a carriage, coacting belts carried thereby for receiving and compressing the snow, means for driving one of said belts, a broom, and a conveyer coöperating therewith for directing the snow between said coacting belts.

23. A sweeper, comprising a carriage, a movable platform mounted thereon, sweeping means comprising coacting conveyer and brush mechanism carried by said platform, and means for actuating said sweeping means.

24. A sweeper, comprising a carriage, a movable platform mounted thereon, sweeping means comprising coacting conveyer and brush mechanism carried by said platform, means for actuating said sweeping means,

and means for vertically adjusting the forward end of said conveyer.

25. A sweeper, comprising a carriage, a movable platform mounted thereon, sweeping means comprising coacting conveyer and brush mechanism carried by said platform, means for actuating said sweeping means, means for vertically adjusting the forward end of said conveyer, and means for vertically adjusting said broom.

26. A sweeper, comprising a carriage, a laterally-movable platform carried thereby, sweeping means carried by said platform, and traveling conveyer mechanism for receiving and compressing the materials taken up by said sweeping means.

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