Mar. 27, 1923. 1,449,733.

A. J. CLAUSEN.

CHARGING DEVICE.

FILED SEPT. 3, 1921. 2 SHEETS—SHEET 1.

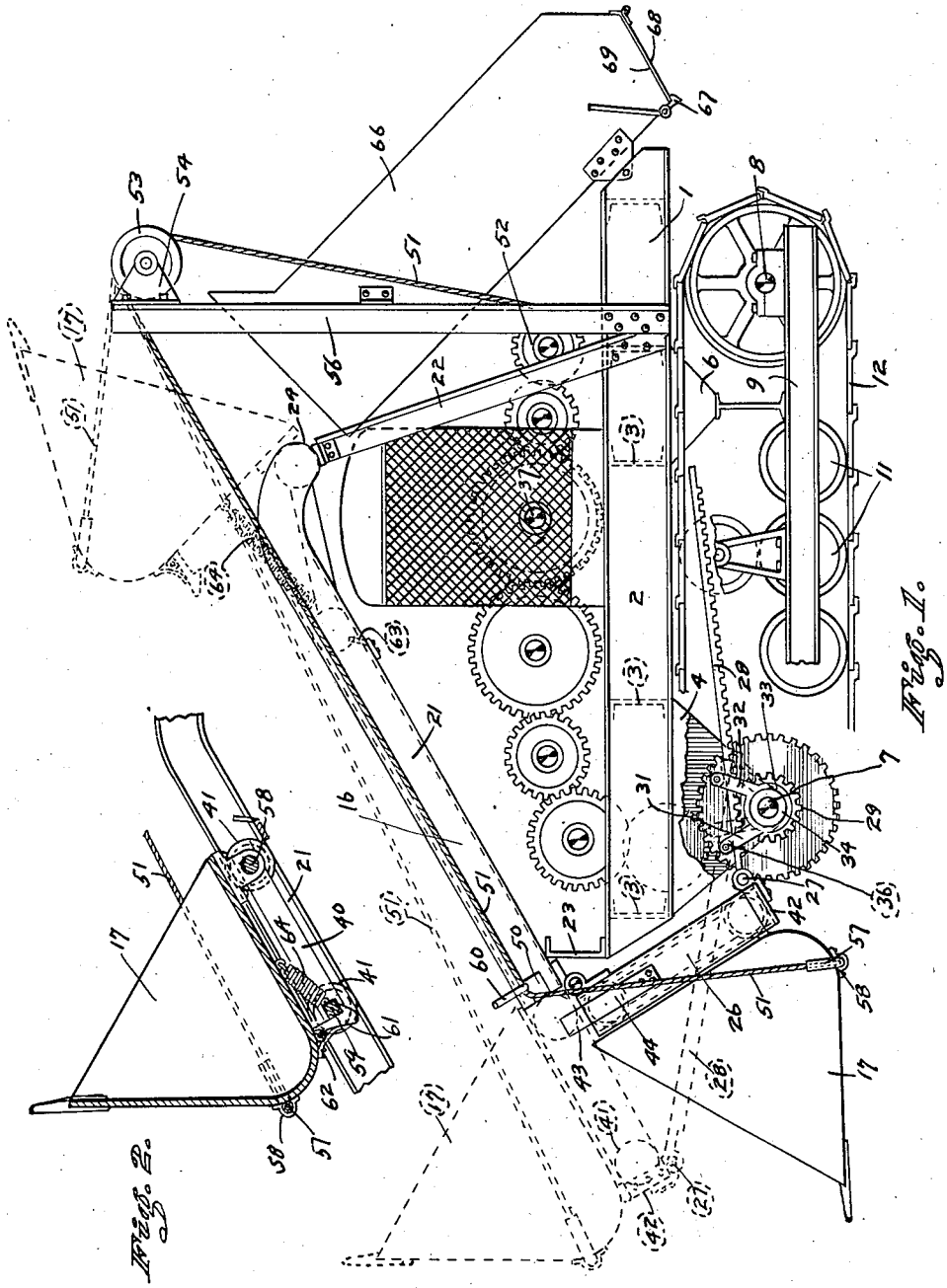


Fig. 1.

Fig. 2.

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Fig. 3.

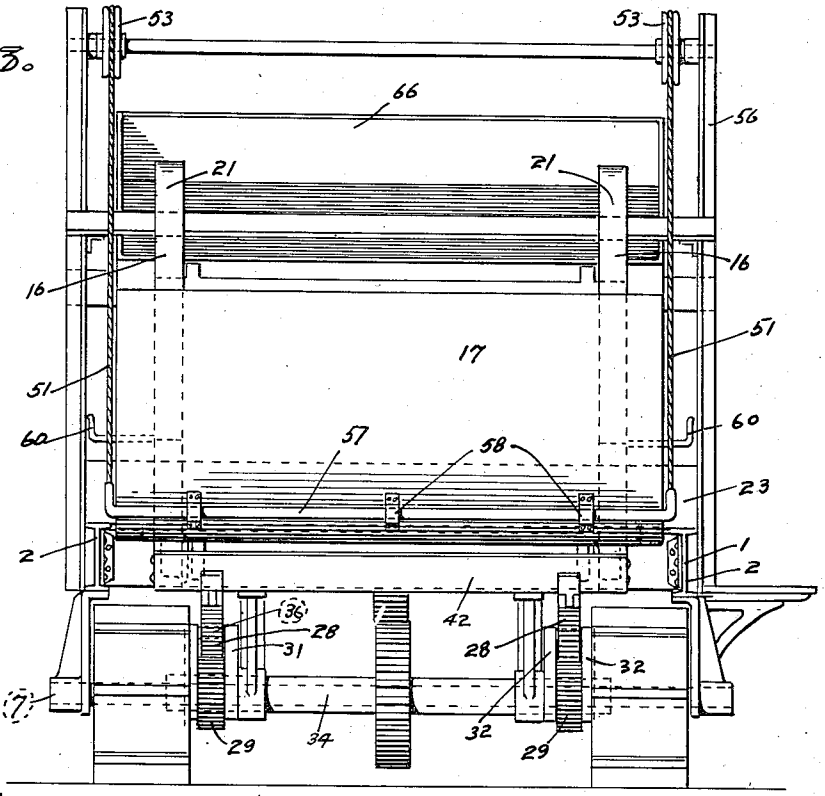


Fig. 5.

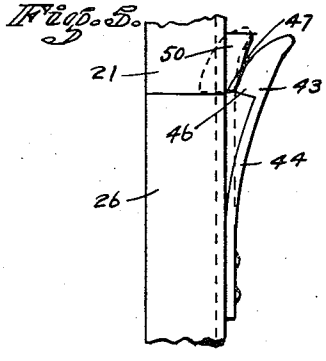
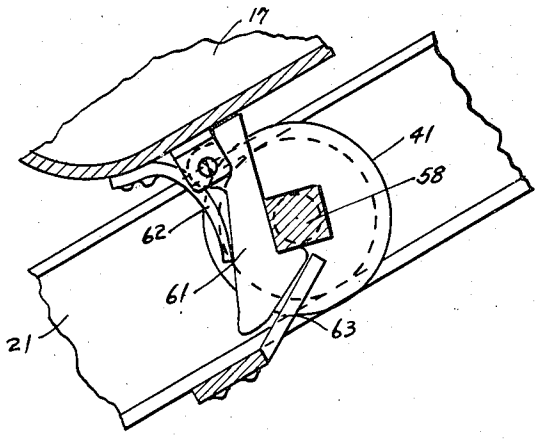


Fig. 4.



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Patented Mar. 27, 1923. 1,449,733

UNITED STATES PATENT OFFICE.

ANDREW JAMES CLAUSEN, OF SAN FRANCISCO, CALIFORNIA.

CHARGING DEVICE.

Application filed September 3, 1921. Serial No. 498,216.

To all whom it may concern:

Be it known that I, ANDREW JAMES CLAUSEN, a citizen of the United States, and resident of San Francisco, county of San Francisco and State of California, have invented a new and useful Charging Device, of which the following is a specification.

The present invention relates to improvements in charging devices for road pavers and is designed as a convenient means for picking up a load of loose material, as gravel or sand, lifting it to a desired height, carrying it to the paver or mixing machine and dumping it into the same. This work is at the present time usually done by means of wheel barrows and ordinarily requires a large crew of men for shovelling the material into the wheel barrows and wheeling it to the paver. It is occasionally done by means of trucks, but this is a very expensive procedure since it requires a large number of trucks to keep the paver in activity and causes waste of valuable time, since, unless exceptionally well organized, either the trucks have to waste time waiting for the paver to get ready for them and the paver wastes time waiting for the trucks, apart from the difficulties encountered in handling a number of trucks on frequently narrow and improvised roadbeds.

In my device, I provide a means which allows the trucks to dump the material at any place within convenient distance of the paver at any time they are ready to do so, from where my charger picks it up and throws it into the paver whenever the latter is ready to receive it.

The preferred form of my invention is shown in the accompanying drawing in which Figure 1 represents a side view of my device, different positions of the scoop being indicated in dotted lines, Figure 2 a longitudinal cross-section through the scoop showing the same while travelling, Figure 3 an end-view of my device, Figure 4 an enlarged detail view showing the particular features of a tripping device for the scoop, and Figure 5 an enlarged detail top plan view of a spring for limiting the motion of the scoop in certain positions.

Referring to the drawings in detail, it will be seen that my device is supported on the frame 1 comprising longitudinal frame members 2 consisting preferably of channel irons and cross members 3. To carry this frame I preferably use an under-carriage of the tracklaying type as shown in a fragmentary manner in the drawing, in which the frame is supported, by means of the brackets 4 and 6, on the shafts 7 and 8, which on their part, rest on the channel irons 9 supported on the wheels 11 rolling on the endless track 12.

My device comprises as its principal parts an inclined track 16, means for supporting the same, a scoop 17 adapted to run on the track, means for imparting motion to the scoop, and a hopper for receiving the contents of the scoop.

In detail the track 16 consists of two parallel rails 21, preferably channel irons, with their flanges pointing toward each other so that the lower flanges serve as the support for the scoop which travels on the track. This track is supported on the main frame 1 so as to occupy a slanting position, as shown in the drawing, the forward end resting on the relatively long struts 22, while rearwardly the track is supported on the channel iron 23 standing on edge on the frame. The front end of the track is curved downwardly, as shown at 24, while a rear portion 26 of the track is hingedly connected to the main portion, so as to depend downwardly from the same if not acted on by other agencies. The lower end of this track is pivotally connected, by means of the hinge 27 to the rack 28, the downwardly extending teeth of which engage the cog-wheel 29 and are held in firm engagement with the same by means of two arms 31 and 32 arranged in V-shape on a ring 33 loosely mounted on the sleeve 34 secured on the shaft 7. Each arm, as shown in Figure 3, comprises two parallel members between the outer ends of which a roller 36 is supported and the two arms are spaced and arranged in such a manner that the rollers remain in constant frictional contact with the back of the rack, no matter what position the rack assumes. It will thus be seen that the hinged portion of the track can be swung into alinement with the main track by means of the rack and cog wheel arrangement and can be pulled back in a similar manner by reversing the motion of the cog wheel. The latter is driven, by any suitable transmission, from the crank shaft 37. In the drawing the transmission is shown as consisting of a plurality of cogwheels interposed be-

tween the crank shaft and the gear 29, suitable provision being made, in any conventional manner, to allow of a reversal of the rotary motion of the latter gear.

It will be seen that the hinged portion of the track, in being brought into alinement with the main track, makes a sweeping motion, of which the scoop 17 supported on the track, partakes, so that when the device is placed in operative proximity to a pile of gravel or sand, the scoop will sweep through the same and pick up a load. The scoop is V-shaped in longitudinal cross-section, and one of the sides defining the V rests on the carriage 40 which is provided with four wheels 41, two on each side, which have a flanged rim and are adapted to fit into the channels of the track. While the hinged portion of the track is disalined with the main portion, the wheels of the carriage are locked to the hinged portion on all sides, the two flanges of the channel preventing the wheels from jumping out of the track transversely of the same, while a rear cross member 42 and a spring 43 secured to the front prevent any longitudinal motion. The spring referred to is shown in detail in Figure 5 and comprises a metal leaf spring 44 secured to the side of the track having a tooth 46 normally engaging and projecting over the front end of the channel forming the track so as to bar the wheels from forward motion. When the hinged track alines itself with the main track, a slanting portion 47 of the spring comes in frictional contact with a projection 50 on the outer edge of the main track channel and is pushed outwardly, as shown in Figure 5 in full lines, so as to clear the track.

After the tracks have been alined the scoop is pulled upward on the inclined track by means of the cable 51, the two ends of which are secured to a drum 52 and which is led over pulleys 53 secured in brackets 54 extending from uprights 56 to and around the scoop. To prevent wear from friction as much as possible as well as to furnish a firm hold for the cable, I permanently secure a tube 57 to the rear portion of the scoop by means of the clamp 58, the tube being bent around the edges of the scoop and the cable being carried through the tube. The tube is secured, of course, in the proper place so as to make the line of draft coincide, under normal conditions, with the line of resistance. A pair of pins 60 secured to the track support the cable while the lower portion of the track is suspended.

As the scoop approaches the end of the track, the front wheels roll into the downwardly curved portion of the track so that at the end of the trip the carriage for the bucket is disposed less slanting than during its upward travel.

As will be seen from Figures 2 and 4, the scoop 17 is not rigidly secured to the axles 58 and 59 of the carriage 40, but is pivotally supported on the front axle 58 and is secured to the rear axle 59, which is partly of square cross-section, by means of hooks 61, which are held in their axle engaging position by springs 62. Immediately before reaching its uppermost position these hooks strike stops 63 and are thereby released from their engagement with the axle so that the scoop is released from the rear axle and at liberty to pivot on the front axle, which it is forced to do by the continuing pull of the cable. A spring 64 still connects a more central portion of the scoop with the rear axle and draws the scoop back to the rear axle as soon as the cable ceases to pull, and the scoop then returns to its original position, pulling the cable along with it. A hopper 66 is provided in the front portion of the device and is adapted to receive the contents of a plurality of scoops; it is proportioned to hold a desired quantity of material, preferably sufficient to charge the paver in one operation. The material contained in the hopper can be released and emptied into the paver by tripping a dog 67, which releases the front plate 68 closing the opening 69 in the hopper, when the weight of the material forces the plate outward.

To operate the device the driver backs up to the gravel or sand pile and when coming within operative proximity, throws on the clutch controlling the cog wheel 29, whereupon the latter will actuate the rack and thereby swing the scoop through the material, at the same time alining the hinged portion of the channel with the main portion. The cable, which has been idle so far is now set in motion by starting the drum 52 which pulls the scoop and carriage upward until the latter reaches the end of the track, when the stop 63 releases the hook 59 and allows the scoop to swing forward on the front axle and to dump its load into the hopper 66. The cable then ceases pulling and the spring 64 pulls the scoop back to the carriage, and the latter rolls down the track by its own weight, pulling the cable along with it. This process is repeated until a desired quantity of material has been collected in the hopper. The whole device is then moved forward until the hopper is positioned over the paver scoop, when the load is dropped into the same by the release of the dog 67.

I claim:

1. In a charging device of the character described, a carriage having a front axle and a rear axle, a scoop secured pivotally to the front axle and locked to the rear axle, an inclined track for the carriage, means engaging the scoop for causing the carriage to ascend the track, and means for arresting the

travel of the carriage and simultaneously releasing the scoop from the rear axle, whereby the scoop is caused to swing forwardly on the front axle.

2. In a charging device of the character described, a carriage having a front axle and a rear axle, a scoop secured pivotally to the front axle and yieldingly to the rear axle, an inclined track for the carriage, means engaging the scoop for causing the carriage to ascend the track, and means for arresting the travel of the carriage and simultaneously releasing the scoop from the rear axle, whereby the scoop is caused to swing forwardly on the front axle, and automatic means for reengaging the scoop with the rear axle.

3. In a charging device of the character described, an inclined track having a lower portion pivotally connected to the main portion, and means associated with the lower portion for swinging the same on its pivot to produce a scooping action, said means comprising a rack pivotally engaging the lower track portion for pushing the same forward, a cogwheel for actuating the rack, and means for holding the rack in engagement with the cogwheel.

ANDREW JAMES CLAUSEN.