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I. WARNER

2,544,202

CONCRETE TRANSPORTING BODY

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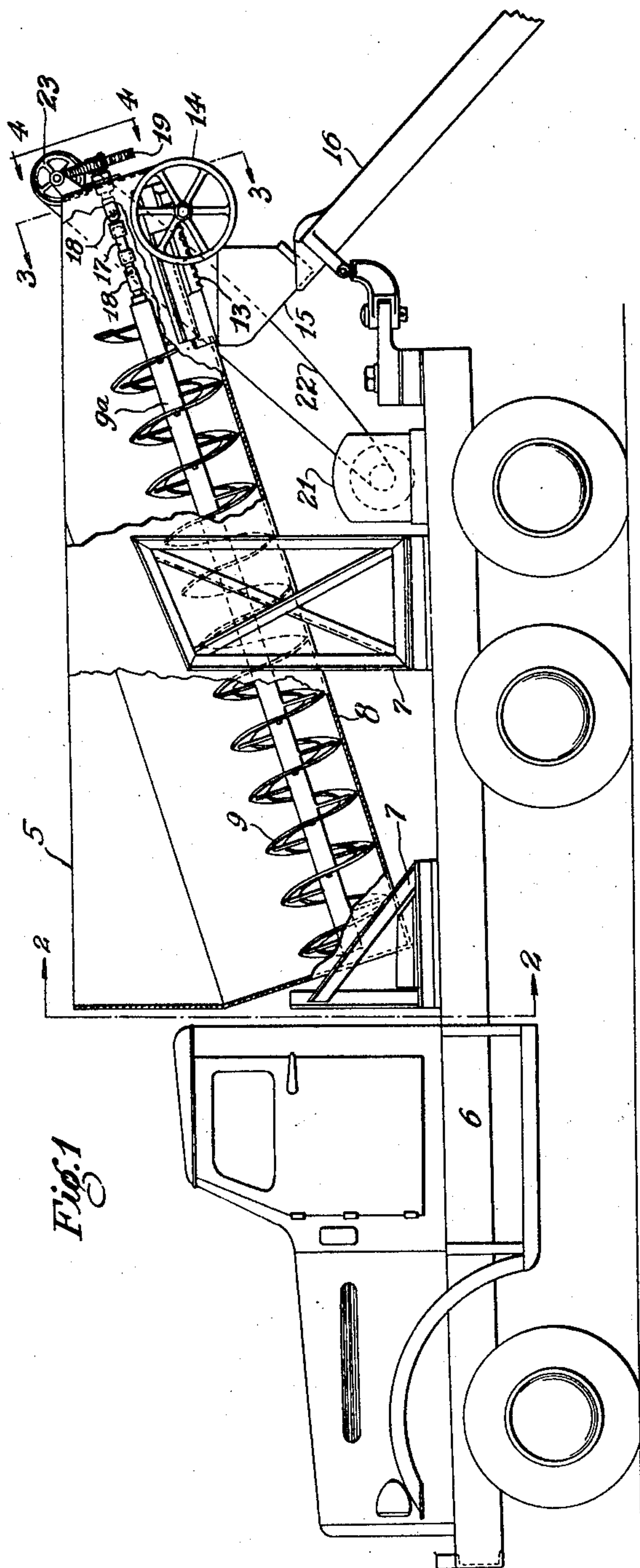


Fig. 1

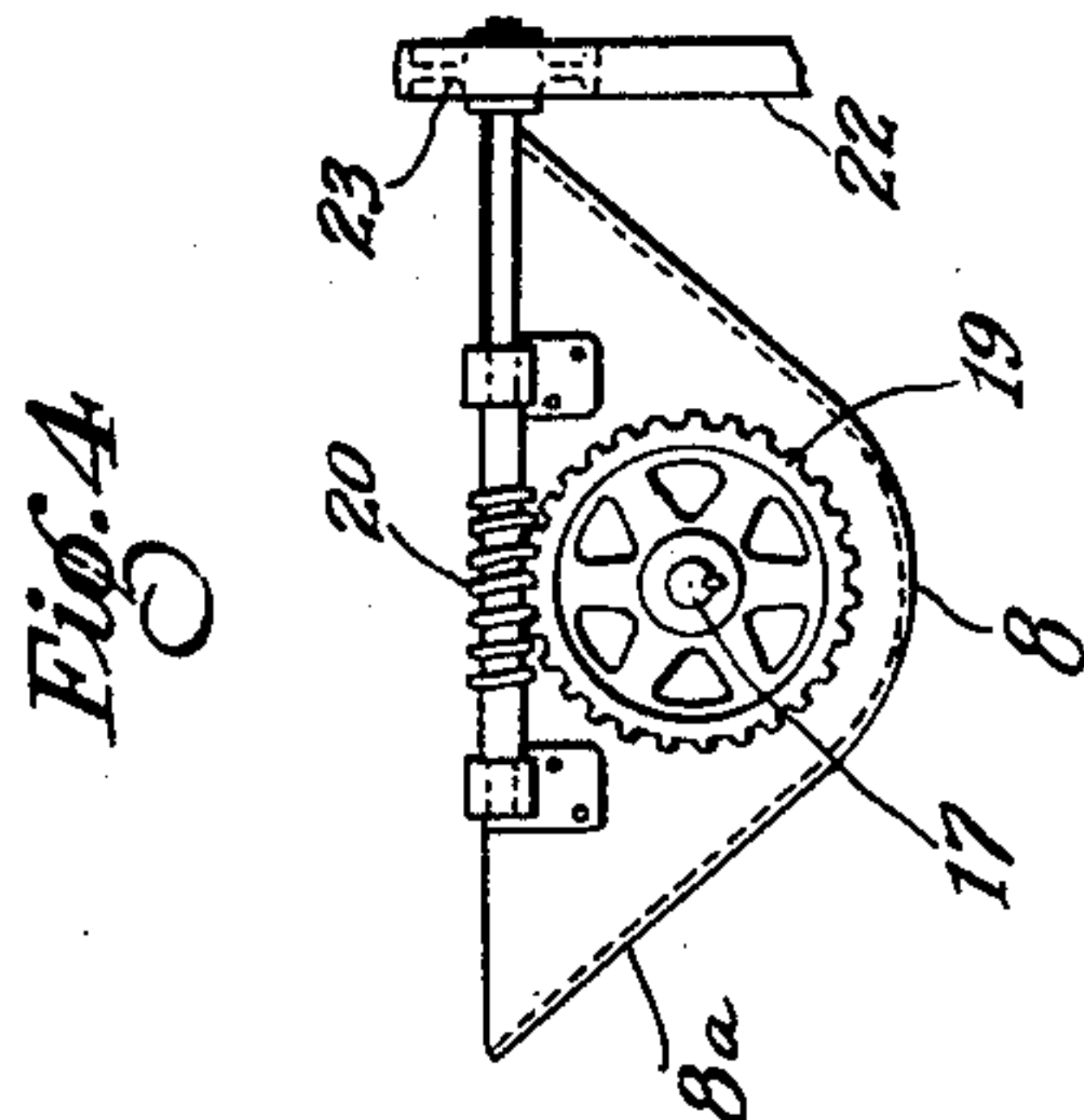


Fig. 4

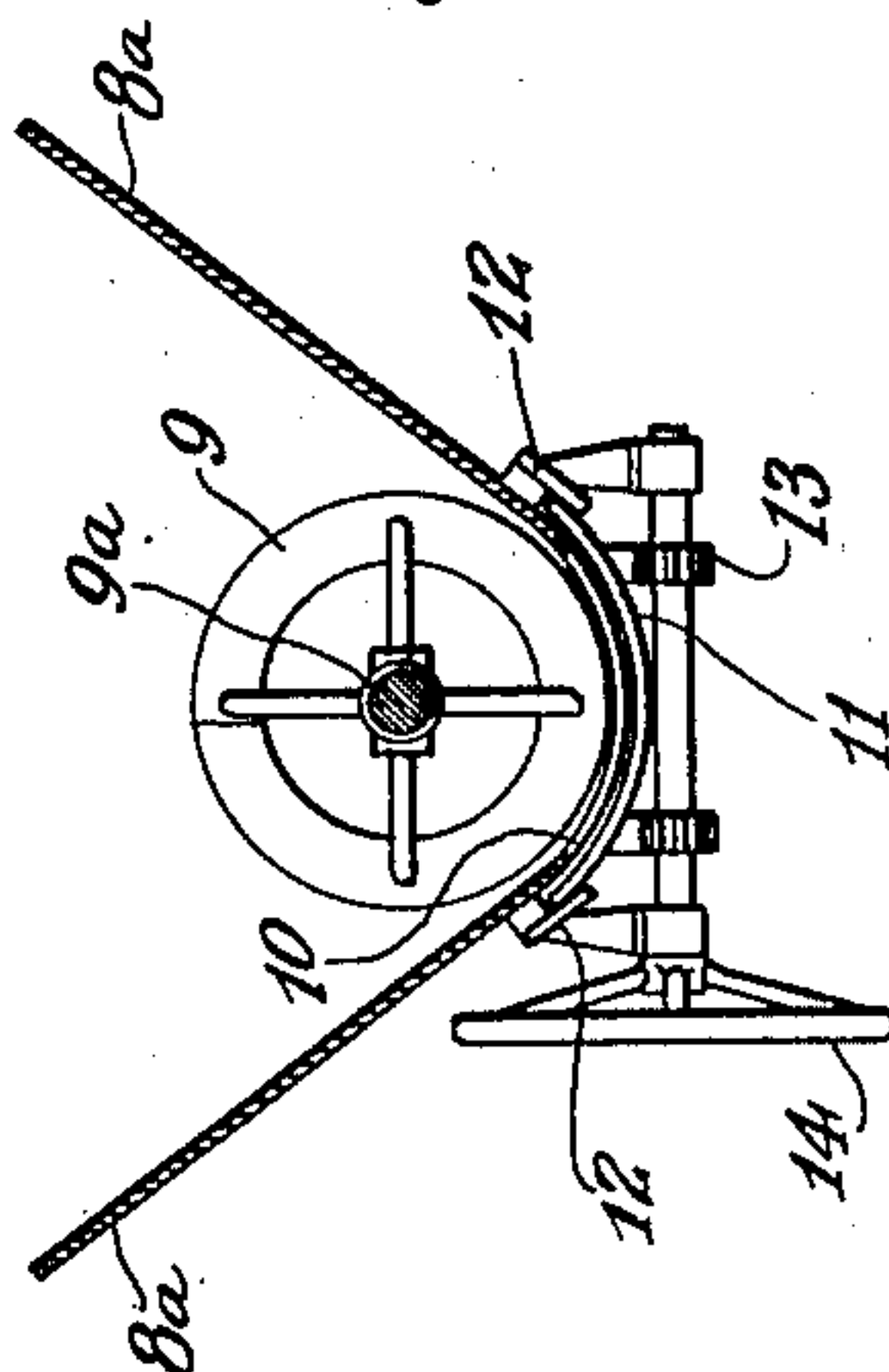


Fig. 3

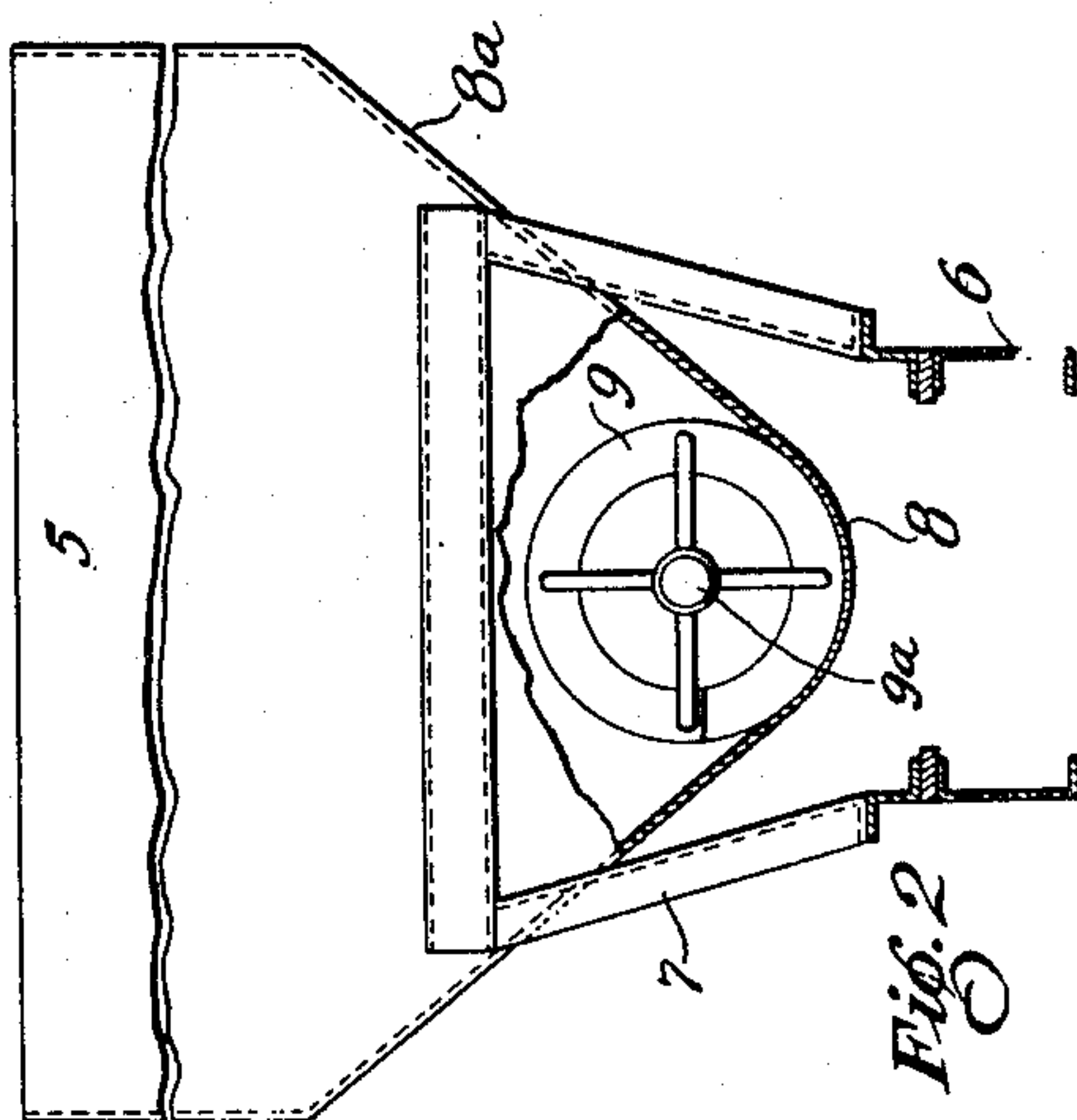


Fig. 2

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CONCRETE TRANSPORTING BODY

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2 Claims. (Cl. 259—169)

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This invention relates to a body for transporting previously mixed concrete and has for its primary objects the provision of more simple, lighter weight, more inexpensive and more easily cleaned equipment for this purpose.

Before proceeding with a more detailed description of the invention I wish to refer briefly to present practice because this will serve to emphasize the advantages of my invention. In order to assure a uniform mix at the point where the concrete is to be delivered it is customary to transport the mixed concrete in a drum-like body mounted so that it can roll on its axis in either direction and provided on its interior with suitable flights which serve both to maintain agitation and to discharge the load. As a general rule the drum is revolved in one direction during transit and in the opposite direction during discharge of the load. Such revolving drums are also used for mixing operations in transit where the body is charged with the necessary ingredients and mixing takes place during transportation. It is understood, of course, that the drums are suitably mounted on trucks. Equipment of this type has been costly to buy as well as to maintain and in addition has been exceedingly heavy which, of course, reduces the potential payload. Furthermore, the drums are difficult to clean.

How the objects of my invention may be attached is illustrated in a preferred form in the accompanying drawing wherein

Figure 1 is a diagrammatic side elevation of a truck equipped with my improved concrete transporting body, the body being shown partly in longitudinal section;

Figure 2 is a view partly in elevation and partly in section taken approximately as indicated by the line 2—2 of Figure 1 but with a portion of the lower wall of the transporting body broken away and in section;

Figure 3 is a section on the line 3—3 of Figure 1; and

Figure 4 is an elevation in the direction indicated by the line 4—4 of Figure 1.

I mount my improved body 5 on the truck frame 6 in any desired manner—in the present instance by means of the supporting framework 7. The body is elongated to extend lengthwise of the truck and is provided with an inclined, rounded-bottom hopper or trough 8 centrally located and extending along the length of the body. The sides 8a of the hopper portion are suitably inclined to feed the concrete toward the low point.

In the rounded bottom I place a ribbon type

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screw conveyor 9 the full weight of which is carried directly on the curved bottom of the trough 8. Since no bearings are employed it is free to move in directions transverse the axis of the conveyor. It will be noted that the curve of the bottom conforms to the curvature of the conveyor and if desired the trough portion in which the conveyor fits may be faced with hard liners in order to reduce wear.

At the upper end of the incline the trough or rounded bottom is provided with a discharge opening 10 controlled by a correspondingly curved gate 11 mounted at the sides in trackways 12 which provide for sliding movement of the gate in a direction longitudinally of the trough. The gate is moved by a duplicate rack and pinion mechanism 13 by means of the hand wheel 14. Preferably the gate moves upwardly to open and downwardly to close because this will tend to keep the opening clear.

Below the opening is a fixed chute or spout 15 adapted to deliver into the pivoted chute 16 whereby the concrete may be deposited in any desired direction.

At its upper end there is connected to the axis member 9a of the conveyor a flexible driving shaft 17—in this instance what is known as a Cardan shaft having a pair of universal joints 18. However, any suitable type of flexible drive may be employed which will permit movement of the conveyor in directions transversely of its axis while at the same time holding the conveyor in its proper position longitudinally of the axis. At the outer end the flexible driving connection 17 may be provided with a suitable gear 19 driven by a worm 20 which in turn receives its power from any desired source on the truck either directly from the engine of the truck or from an auxiliary engine. In the present instance, an auxiliary engine 21 is illustrated, power from which is delivered to the worm shaft 20 by means of a belt 22 operating on a pulley 23. Whatever speed control for the engine 21 that may be required or desired can, of course, be readily provided.

In use the body is charged with the desired amount of previously mixed concrete and the conveyor is set to run preferably at a relatively low rate of speed. During transit the conveyor carries the concrete from the lower end and causes it to well up toward the surface at the high end, the gate 11, of course, being closed. The concrete then flows slowly back across the surface toward the deep end of the body and thus constantly provides for a uniform mix. The

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action is simple and effective and I have found that the conveyor draws the material in largely although not entirely at the low end there being sufficient "pushing out" and "pulling in" of the mass throughout the length of the conveyor to insure an effective and steady re-mixing operation.

If any large pieces of the material such as coarse aggregate tend to become jammed between the flights of the conveyor and the shell or walls of the trough in which it rides, no damage will result because with my invention the conveyor simply rides up until it has rolled the obstruction free or until the obstruction passes into the clearance between flights.

On arrival at the point where the concrete is to be discharged the conveyor is preferably driven at a higher speed and the gate is opened either partially or fully so that the concrete may be delivered in the quantity and at the rate desired.

I prefer to slope the sides 8a of the body at approximately 45° or more because I have found that this will make the equipment substantially self-cleaning. When the work for the day is completed the body may be cleaned quite readily with a hose while the conveyor is rotating with the discharge gate open.

I claim:

1. A body for agitating and transporting concrete, said body having a hopper with sides sloping toward an elongated, rounded-bottom trough, said trough being inclined between said sloping

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sides, a screw conveyor freely lying in and fitting the rounded bottom of the trough, power means for rotating the screw conveyor in the direction which will move the concrete from the lower end to the upper end of the trough, and a flexible driving member between the power means and the screw adapted to permit movement of the screw in a direction generally at right angles to its axis, all of said parts being constructed and arranged so that agitation and circulation of the mass may be effected and jamming of the conveyor avoided.

2. A body in accordance with claim 1, which has in addition a discharge opening at the upper end of the trough together with a gate for controlling the discharge therethrough.

IRVING WARNER.

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