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BASE FOR CRANES AND THE LIKE

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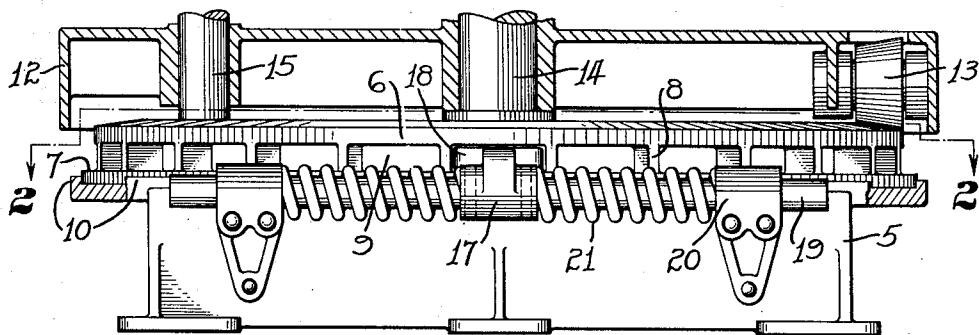


Fig. 1

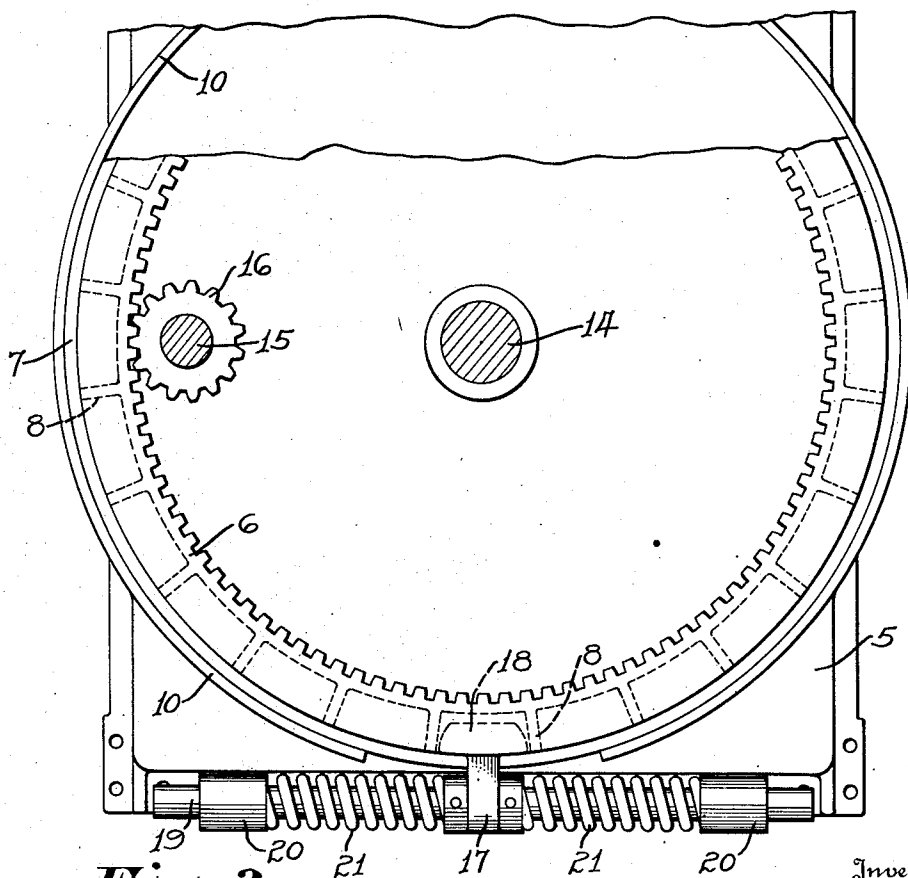


Fig. 2

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BASE FOR CRANES AND THE LIKE

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This invention relates to a base for cranes or other devices which are mounted for rotation and which are subject to sudden starting or stopping. In the operation of excavating machines embodying a crane of this type, for example, such starting and stopping of the rotatable base, which carries the power plant, as well as the boom with its load, causes a great deal of wear and tear, particularly on the gearing which imparts the rotary motion to the crane, and the object of the present invention is to relieve such wear and tear as far as possible. To this end, I have provided a shock absorbing device, so arranged as to permit a limited yielding movement of the upper part of the lower base, which gradually overcomes the inertia of the rotating part of the machine and which may be easily applied to such machines as they are ordinarily constructed, with substantially no change in the general type of the construction of the machine.

In the drawings which illustrate one embodiment of the invention,
Figure 1 is a side elevation of the invention with parts shown in section.

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

The invention is herein shown in connection with the base of a crane adapted to be mounted on a motor driven vehicle. The lower base member 5 is secured directly to the frame on which traction or alligator wheels are mounted. The lower base also includes a ring gear portion 6, which, in the present construction, has a limited rotational movement with respect to the lower part of the base 5. The member 6 is preferably of skeleton formation, having a circular periphery 7 and webs 8 which are separated by recesses 9. The member 5 is formed with an upstanding peripheral rim 10, which may or may not be continuous and which is machined to form a bearing for the portion 7 of the member 6.

The upper or rotary base 12 is formed in the usual manner and is supported by tapered rollers 13 on the crowned surface of the member 6. The base 12 is mounted for rotation about a vertical shaft 14 which extends

through the center of the lower base and is geared to the traction elements. A vertical shaft 15, also mounted in the rotary base 12, carries a pinion 16 which meshes with the ring gear of the member 6 and, when driven, is adapted to travel around the ring gear to rotate the crane.

Owing to the heavy load carried by the rotary base 12 and the inertia which must be overcome in starting and stopping, there is a great deal of wear and tear on the pinion and ring gear. This wear and tear is lessened to a very considerable degree by providing for a limited yielding movement of the ring gear portion 6 of the lower base. In order to permit this yielding movement and at the same time confine it within narrow limits, I have provided a stop member 17 having a head 18 which is disposed within one of the recesses 9. Preferably a slight clearance is allowed between the head 18 and the webs 8. The stop member 17 may conveniently be mounted on a bar 19 which extends in a direction tangential to the periphery of the member 6 and which is slidably mounted in bearings 20 secured to the lower member 5. The stop member 17 is normally held in central position by opposed springs 21 which extend between the stop and the bearings 20. These springs are comparatively stiff but yield sufficiently to prevent the excessive strain which would otherwise be occasioned by sudden starting and stopping, and then effect the immediate return of the stop 17 to its central or normal position.

It will be noted that the invention is particularly adapted to be applied to any excavator or other material handling machine of the usual type with substantially no change in the general construction or operation of the latter except that the ring gear is mounted within a circular seat on the lower base member instead of being rigidly secured thereto, and is normally held in an intermediate position by the spring held stop member 17.

While I have shown and described specifically one embodiment of the invention, it is obvious that many of the details may be

modified to a considerable extent without departing materially from the nature and scope of the invention as claimed.

What I claim is:

5 1. In a device of the character described, a relatively fixed base member, a member mounted for limited rotational movement thereon and formed with a peripheral recess, a bar supported on the relatively fixed member adjacent said recess and extending in a direction tangential to the relatively movable member, a stop mounted on said bar and extending into said recess, means holding said stop against longitudinal movement with relation to said bar, bearings on said relatively stationary member in which said bar is longitudinally slidable, and resilient means resisting slidable movement of the bar in either direction.

20 2. In a device of the character described, a relatively fixed base member having an up-standing arcuate rim, a relatively movable member seated within said rim and formed with a recess, a ring gear on said relatively movable member, an upper base rotatably mounted centrally of said rim, a pinion rotatably mounted in said upper base and meshing with said ring gear, a bar supported on the relatively fixed member adjacent said recess and extending in a direction tangential to the relatively movable member, a stop secured to said bar and extending into said recess, bearings on said relatively stationary member in which said bar is longitudinally slidable, and resilient means resisting slidable movement of the bar in either direction.

3. In a device of the character described, a relatively fixed base member, a ring gear mounted for limited rotational movement thereon about a substantially vertical axis, spaced upper and lower peripheral flanges formed on said ring gear, webs integrally connecting said flanges to form recesses, a stop projecting into one of said recesses, means for supporting and guiding said stop for reciprocatory movement in a direction tangential to the ring gear, and resilient means resisting such movement of the stop in either direction.

4. In a device of the character described, a relatively fixed base member, a member mounted for limited rotational movement thereon and formed with spaced upper and lower peripheral flanges to form recesses, a ring gear formed on said relatively movable member, an upper base rotatably mounted centrally of said ring gear and provided with supporting rollers, said upper flange constituting a track for said rollers, a pinion rotatably mounted in said upper base and meshing with said ring gear, a stop projecting into one of said recesses, means for supporting and guiding said stop for reciprocable movement in a direction tangential to the

rotatably mounted member, and resilient means resisting such movement of the stop in either direction.

In testimony whereof I have hereunto signed my name to this specification.

CHARLES L. GEORGE.

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