Oct. 1, 1929. G. E. MOORE 1,729,891

CRANE

Filed April 29, 1927 3 Sheets-Sheet 1

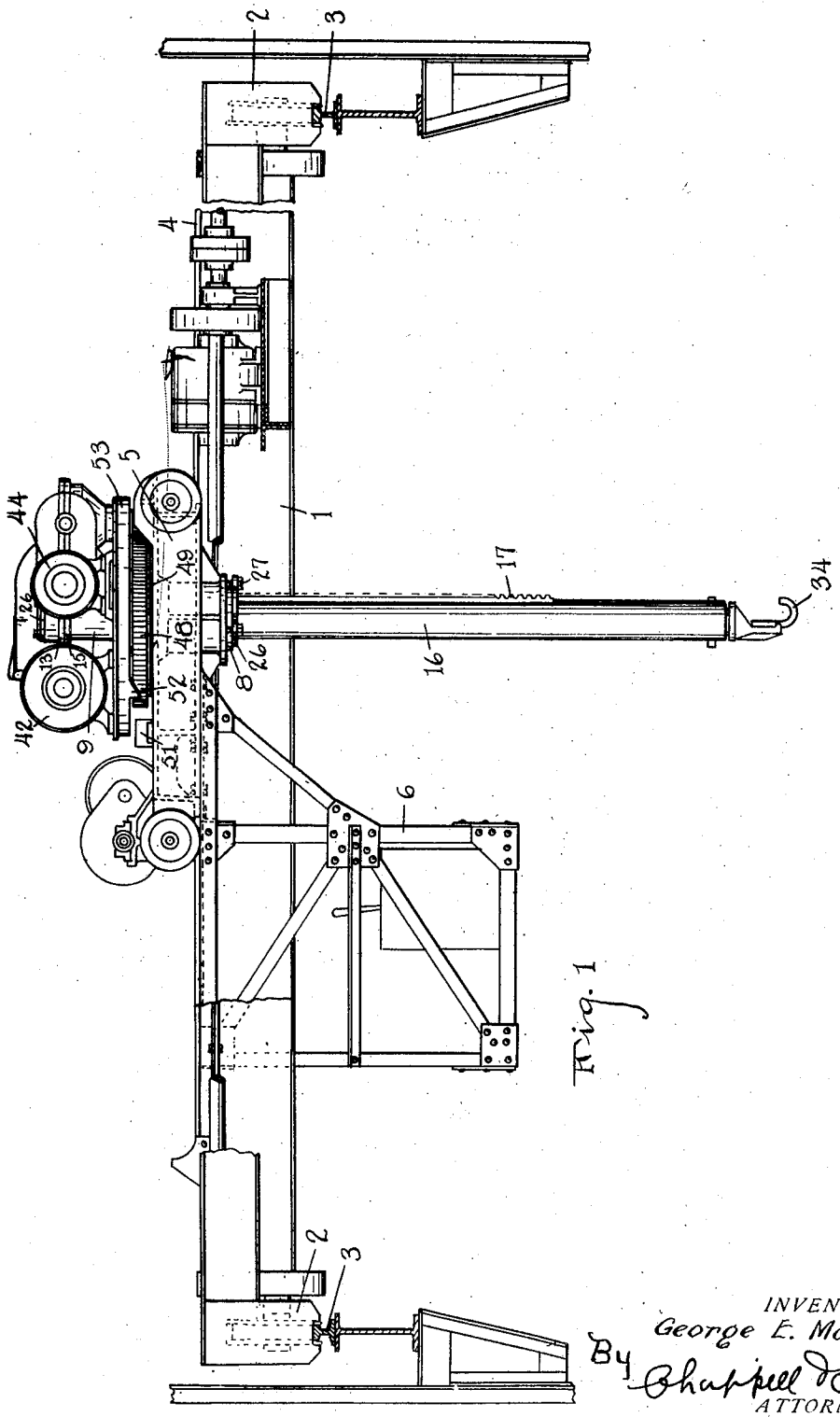


Fig. 1

INVENTOR
George E. Moore
By Chappell & Earl
ATTORNEYS

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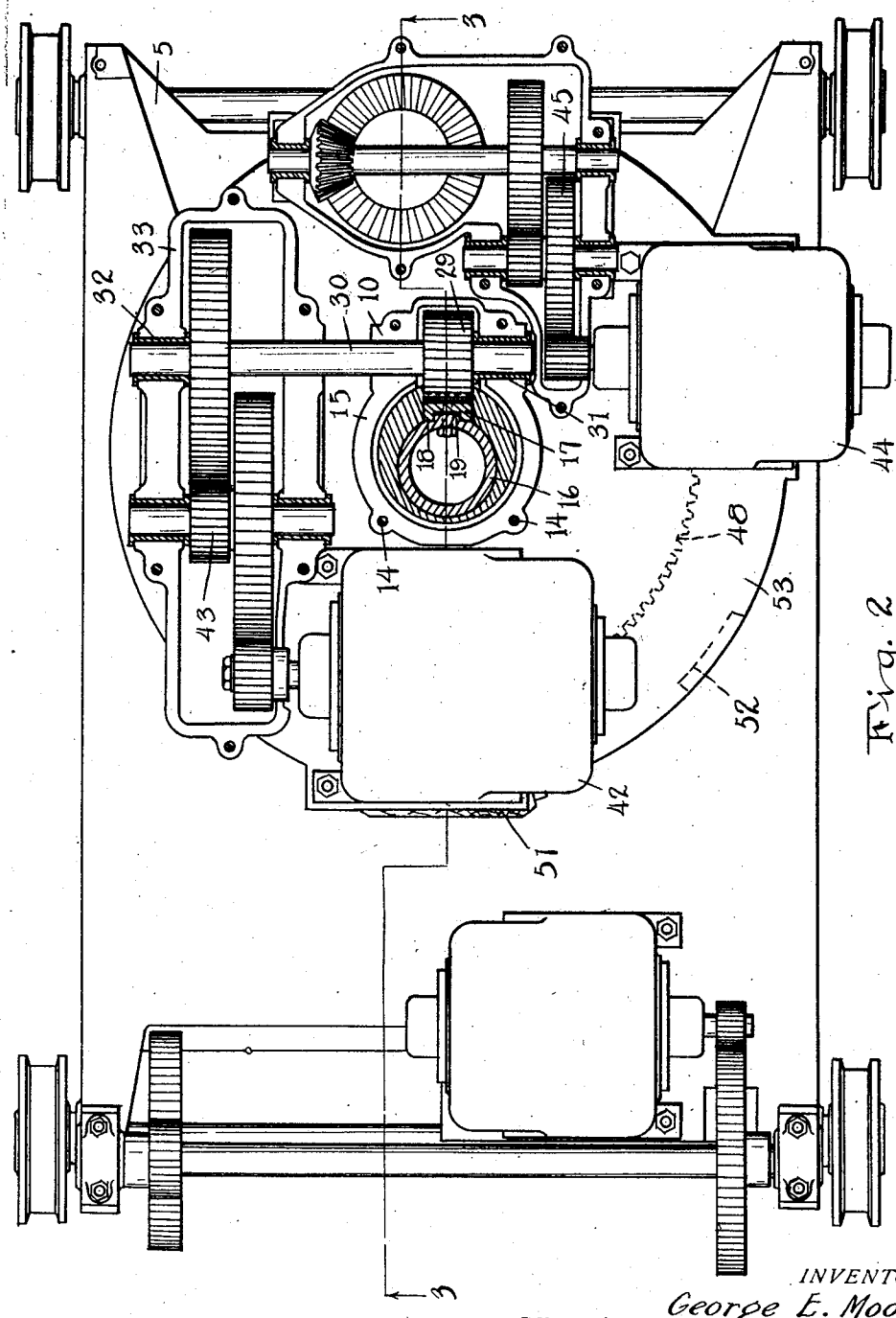


Fig. 2

INVENTOR
George E. Moore
BY Chappell & Earl
ATTORNEYS

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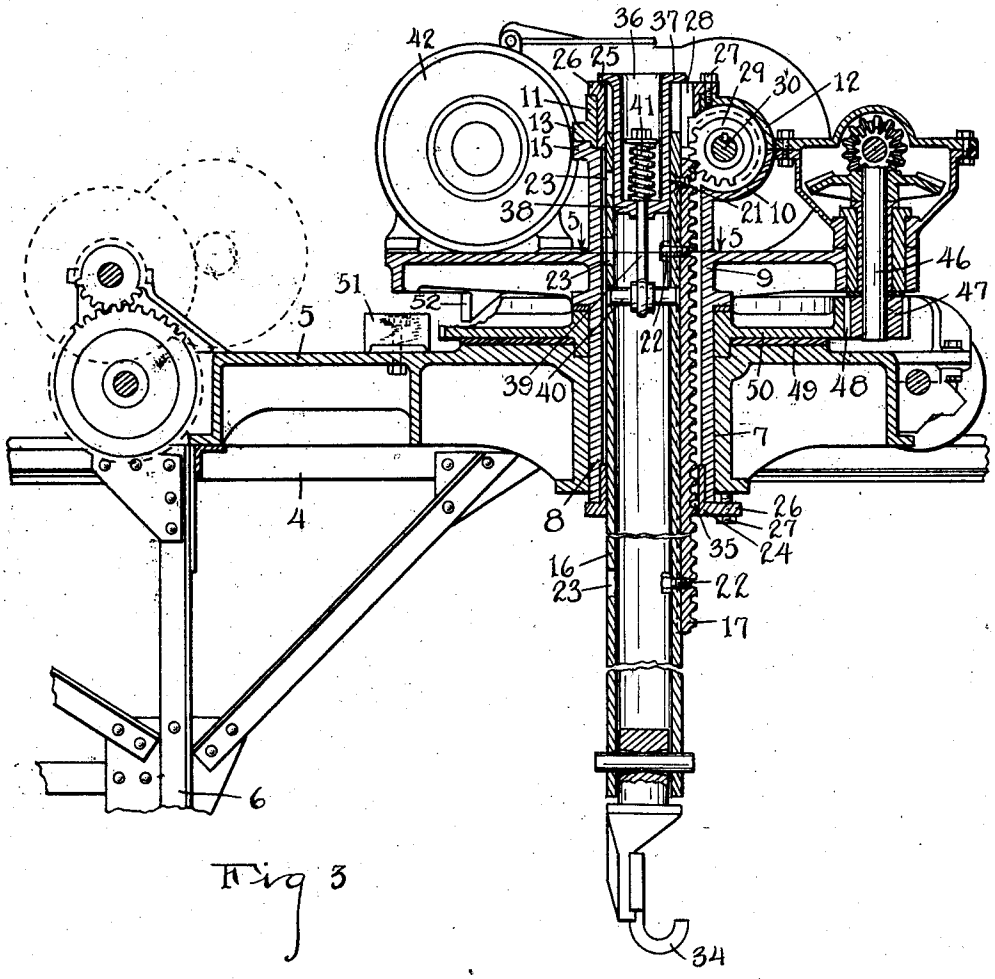


Fig 3

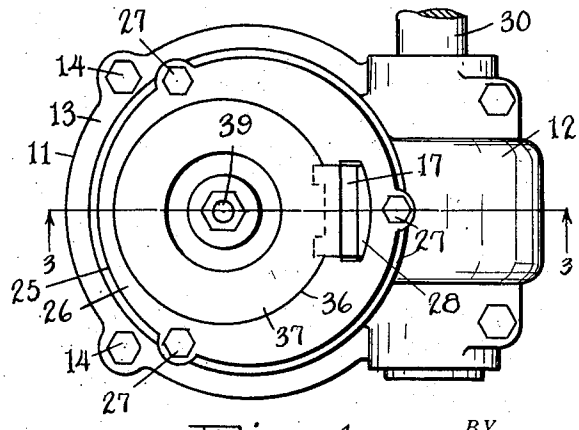


Fig. 4

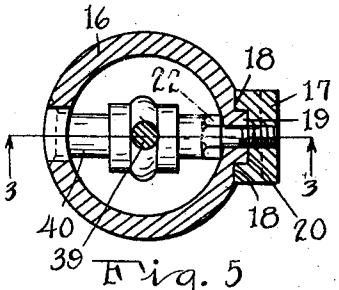


Fig. 5

INVENTOR
George E. Moore
BY
Chappell & Earl
ATTORNEYS

Patented Oct. 1, 1929 1,729,891

UNITED STATES PATENT OFFICE

GEORGE E. MOORE, OF MUSKEGON HEIGHTS, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SHAW-CRANE-PUTNAM MACHINE CO., INC., OF MUSKEGON, MICHIGAN, A CORPORATION OF DELAWARE

CRANE

Application filed April 29, 1927. Serial No. 187,492.

My improvements are particularly designed by me for embodiment in the type of cranes known as Anode-Bosch cranes, and I have illustrated the same in the accompanying drawing as embodied in such cranes. My improvements are, however, desirable for use in and readily adapted for use in cranes for various uses.

The main object of this invention is to provide an improved crane which is simple and compact in its parts and at the same time strong and durable in structure.

A further object is to provide an improved crane which is easily controlled or manipulated and is not likely to be injured or damaged by careless manipulation.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing in which:

Fig. 1 is a fragmentary side elevation of a structure embodying the features of my invention.

Fig. 2 is a fragmentary plan view partially in horizontal section.

Fig. 3 is a fragmentary view mainly in vertical section on line 3—3 of Figs. 2, 4 and 5.

Fig. 4 is a detail plan view.

Fig. 5 is a horizontal section through the ram on a line corresponding to line 5—5 of Fig. 3.

Referring to the drawing, 1 represents the bridge girder of a crane provided with suitable trucks 2 traveling on the rails 3. As the details of these parts form no part of this invention they are not fully illustrated or further described herein.

The bridge girders are provided with the usual tracks 4 for the carriage 5. This carriage has an operator's cage 6 suspended therefrom.

The carriage is provided with a vertical bearing 7 for the spindle portion 8 of a ram sleeve 9. This sleeve for convenience in fabrication is internally cylindrical. At its upper end the sleeve has an integrally formed pinion housing 10 at one side, the gear top or section 11 having a gear box extension 12 complementing the housing 10. The section 11 has an outwardly projecting flange 13 at its lower end secured by the bolts 14 to the flange 15.

The ram 16 is formed of a tubular part and is provided with a longitudinal rack 17. To secure the rack to the tubular ram I form by milling or planing two longitudinal grooves 18 in spaced relation thus forming a rib 19 which engages the channel 20 in the rear side of the rack. Screws 21 and 22 arranged through the tubular ram from the inside thereof secure the rack in place. The screws 21 can be manipulated from the end of the ram or through openings 23.

The sleeve is provided with bearing bushings 24 and 25 which are externally cylindrical, the bearings, however, being eccentrically disposed therein so that the ram is eccentrically supported relative to the sleeve of the carriage. The bushings have laterally projecting flanges 26 at their outer ends to receive the attaching bolts 27. The top bushing 25 is cut away at 28 to permit the pinion 29 to mesh with the rack 17. The pinion 29 is mounted on a shaft 30 supported at one end in a bushing 31 supported in the gear box extension of the sleeve, the other end of this shaft 30 being supported in a bushing 32 in the transmission gear box 33, see Fig. 2. At its lower end the ram is provided with a hook 34.

The bushings have alined recesses 35 coacting with the rack which constitutes a feather or spline for supporting the ram against rotation.

To limit the downward movement of the ram to avoid accident in the event of failure of the operator to cut off the motor, I provide a stop device consisting of the tubular tip support 36 flanged at its upper end as at 37 to engage the top bushing 25. This support has an end wall 38 through which the stop rod 39 reciprocates, the rod being connected to the ram by the pin 40. A spring 41 on the rod serves as a shock absorber allowing the rack to pass from out of mesh with the pinion 29 in the event of the failure to stop the pinion, the spring, however, returning the rack to pinion engaging position.

a stop means comprising a support member arranged within the upper end of said sleeve, a rod arranged through the inner end of said support and connected to said ram by a stop pin therein, a spring arranged on said rod, and a thrust member for said spring arranged on the upper end of said rod.

8. In a structure of the class described, the combination of a carriage, a turntable provided with a cylindrical tubular ram supporting sleeve, a tubular ram provided with a rack, a driving pinion coacting with said rack disposed in the upper end of said sleeve, a stop means comprising a support member engaging the upper end of the sleeve, a rod arranged through said support and connected to said ram, and a spring arranged on said rod to yieldingly support the ram with its rack in operative relation to said pinion.

9. In a structure of the class described, the combination of a carriage, a turntable provided with a cylindrical tubular ram supporting sleeve, a tubular ram provided with a rack, a driving pinion coacting with said rack disposed in the upper end of said sleeve, a stop means comprising a support member engaging the upper end of the sleeve, a rod arranged through the said support and connected to said ram, and a spring arranged on said rod to yieldingly support the ram when its rack is out of mesh with said driving pinion.

In witness whereof I have hereunto set my hand.

GEORGE E. MOORE.