

F. A. RUNDLE & A. H. McDOUGALL.
CLUTCH OPERATING MECHANISM FOR CRANES.

APPLICATION FILED MAR. 15, 1909.

951,845.

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2 SHEETS—SHEET 1.

Fig. 1.

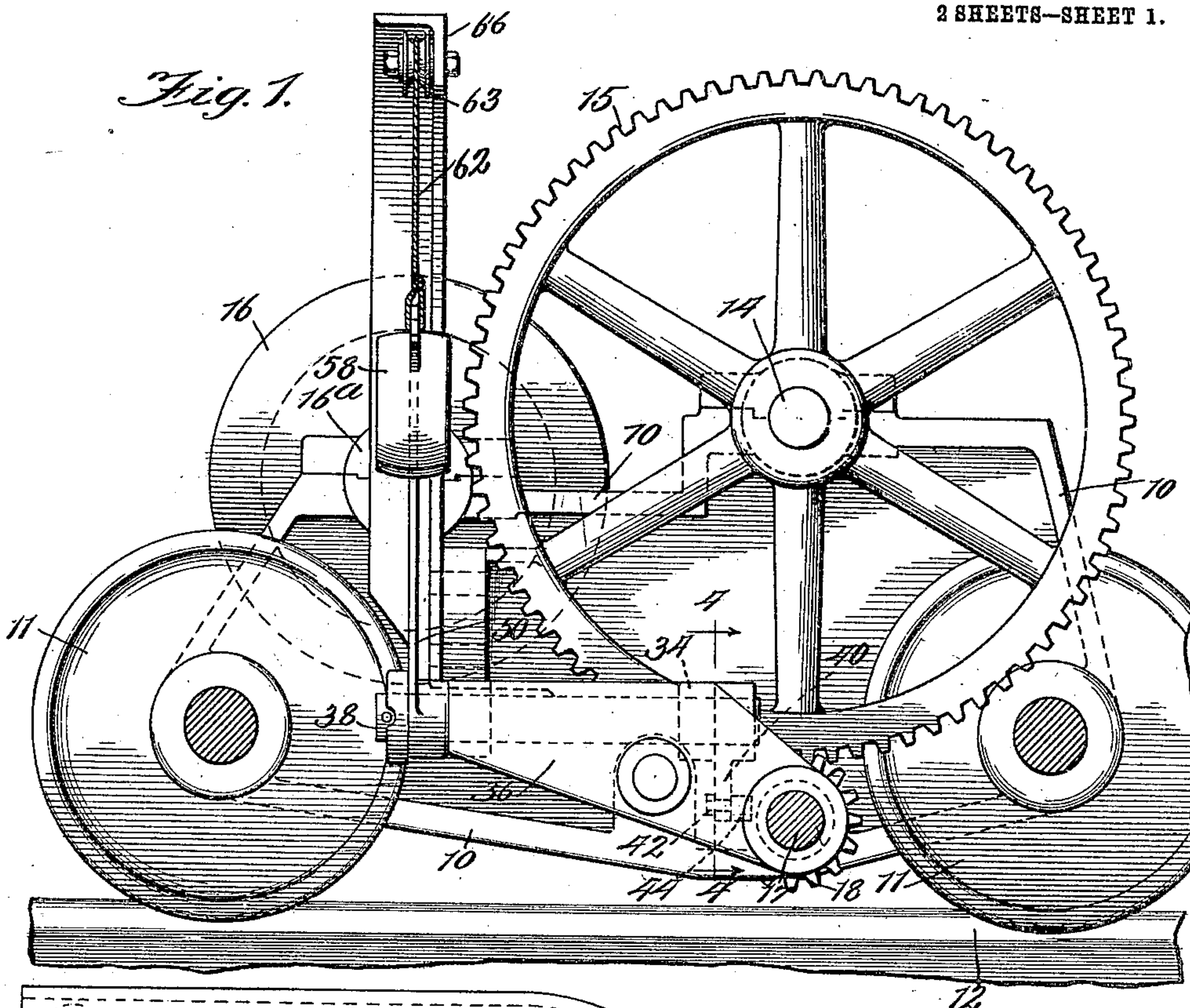
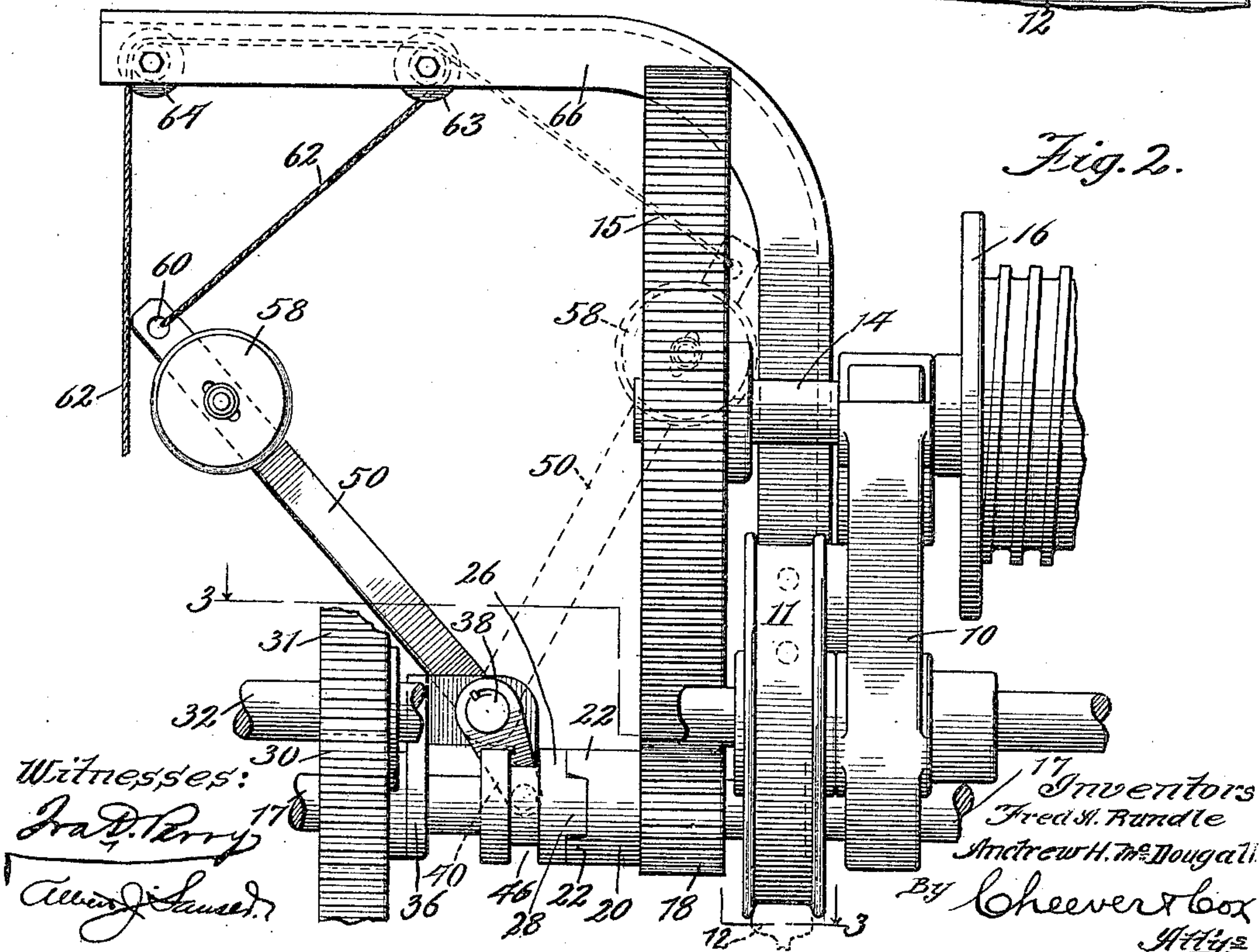


Fig. 2.



Witnesses:

Ira D. Perry

Alvin S. Leland

Inventors

Fred S. Rundle

Andrew H. McDougall

By Cheever & Cox

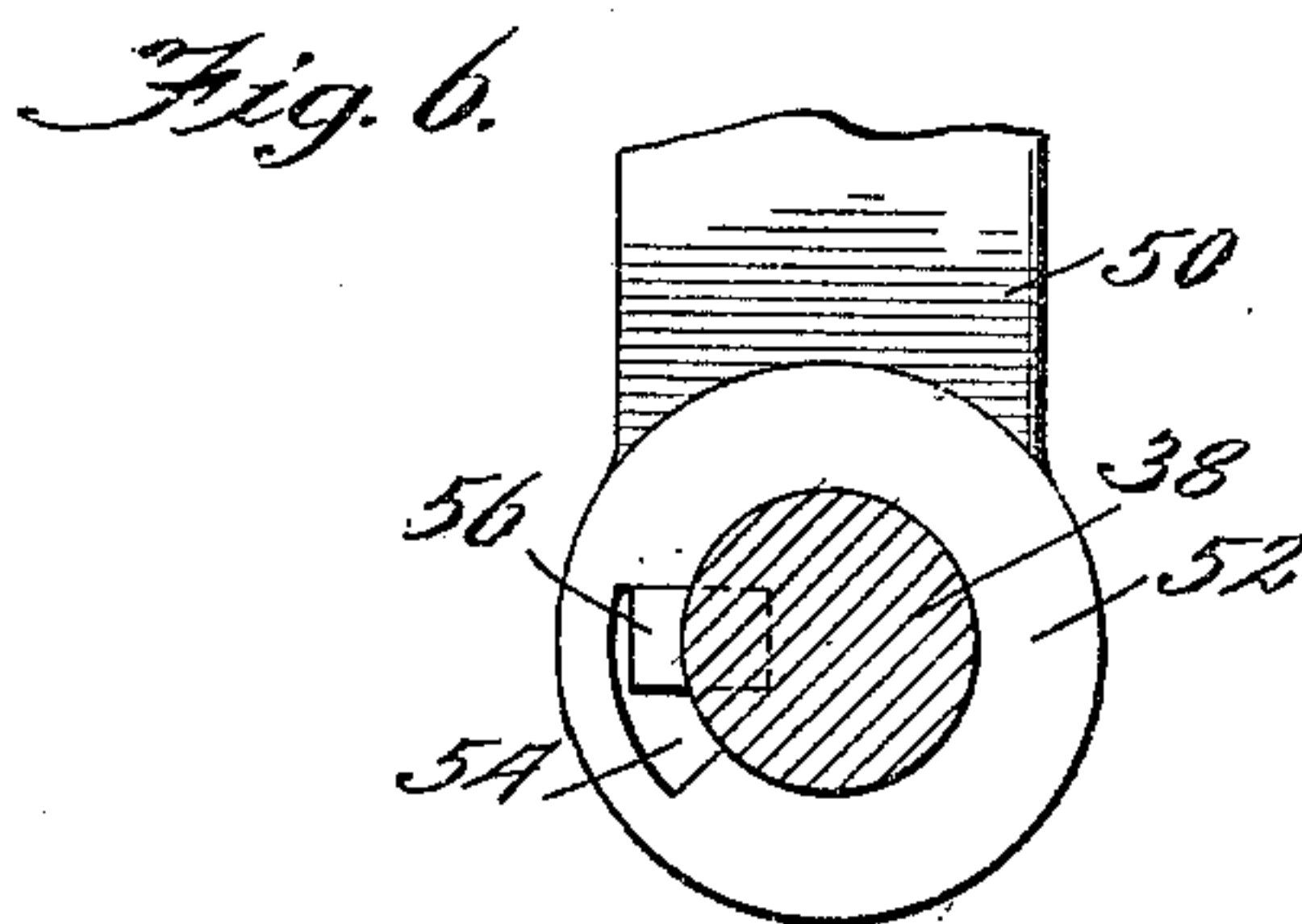
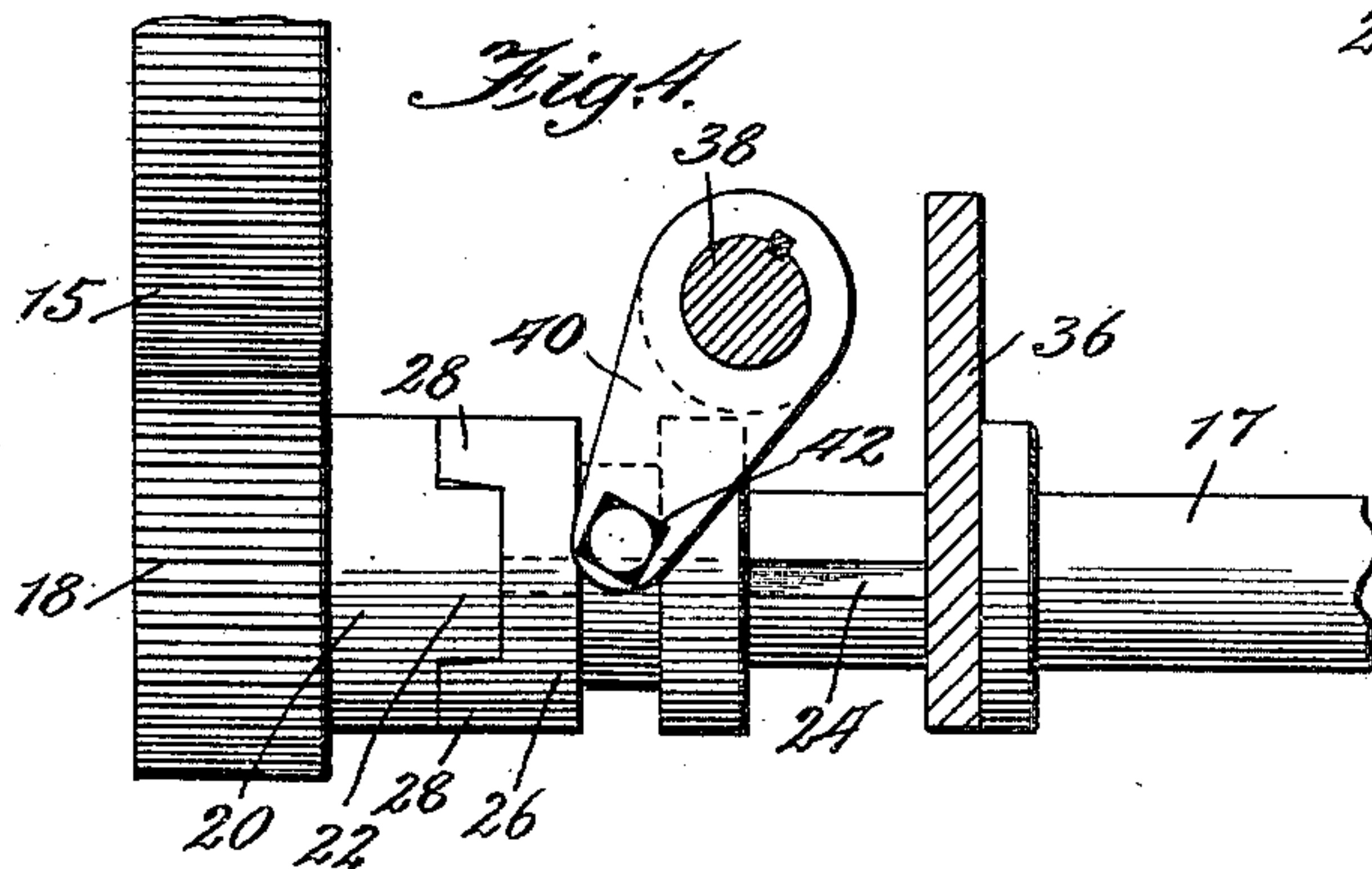
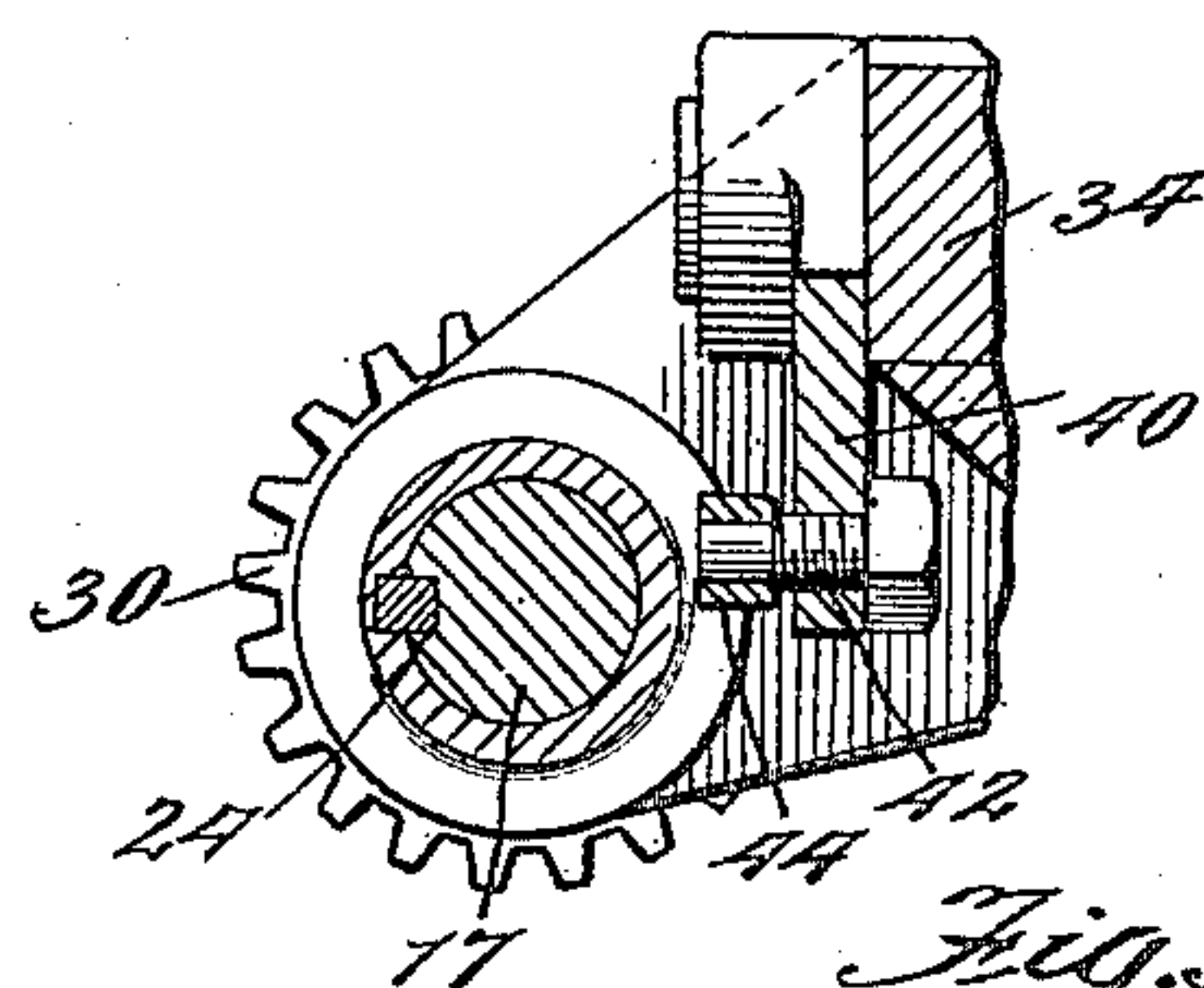
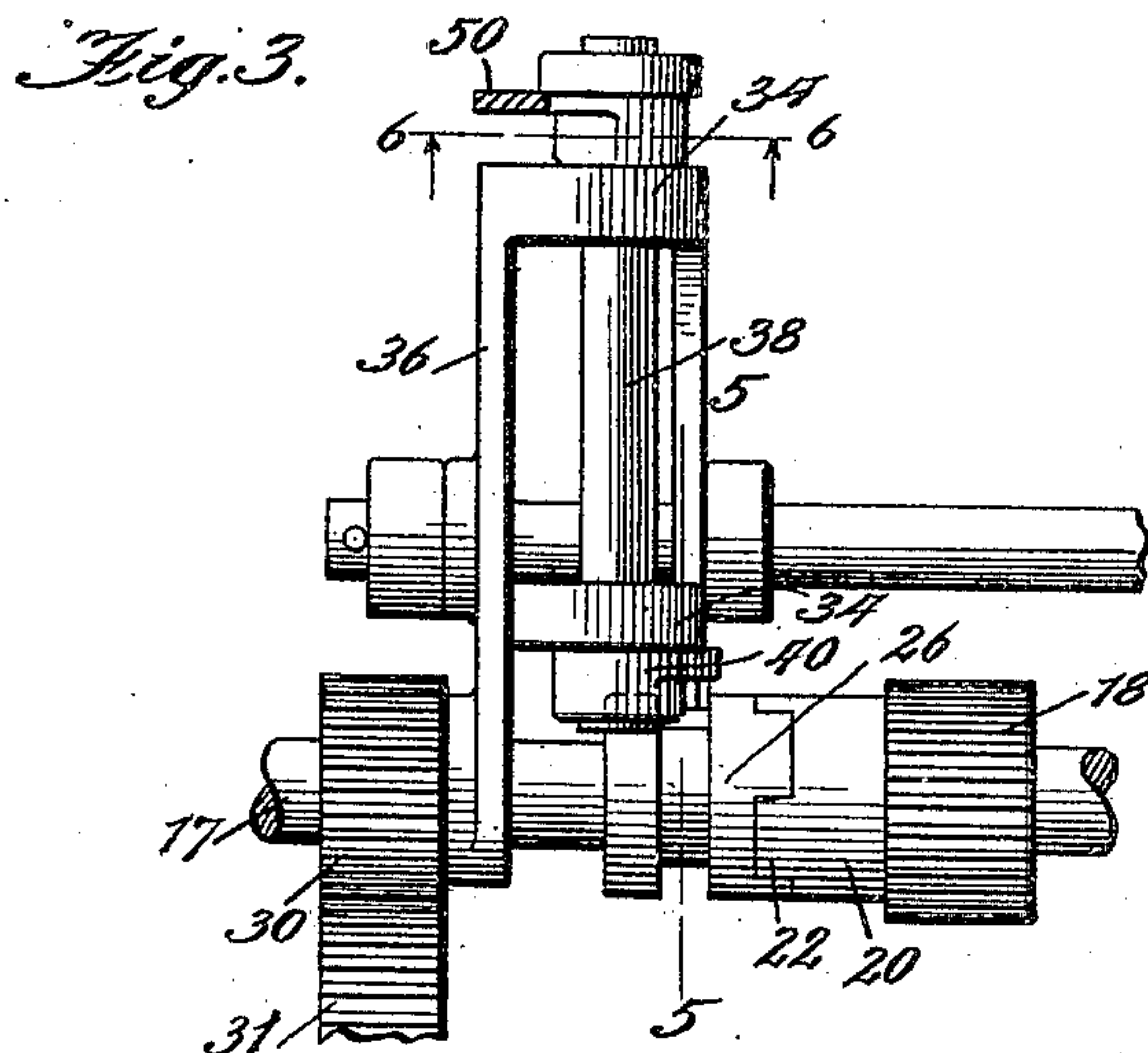
Attys

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2 SHEETS—SHEET 2.



Witnesses:
Wm. D. Perry
Alfred J. Lause

Inventors.
Fred A. Rundle
Andrew H. McDougall
By *Chever & Cox*
Attys.

UNITED STATES PATENT OFFICE.

FRED A. RUNDLE AND ANDREW H. McDOUGALL, OF HARVEY, ILLINOIS, ASSIGNORS TO
WHITING FOUNDRY EQUIPMENT COMPANY, OF HARVEY, ILLINOIS, A CORPORATION OF ILLINOIS.

CLUTCH-OPERATING MECHANISM FOR CRANES.

951,845.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed March 15, 1909. Serial No. 483,639.

To all whom it may concern:

Be it known that we, FRED A. RUNDLE and ANDREW H. McDOUGALL, both citizens of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Clutch-Operating Mechanism for Cranes, of which the following is a specification.

10 In a traveling crane operated by hand for use in foundries or the like, it is highly desirable to have two independent mechanisms, each operatable from the floor of the room in which the device is installed, to operate
15 the load lifting mechanism upon the crane; one of these mechanisms being operatable at high speed and therefore low power; the other operatable at slow speed with consequent greater power. As it is impracticable
20 and a waste of energy to have this high speed mechanism also rotate the slow speed mechanism above referred to it is desirable to provide a mechanism for readily throwing said slow speed operating mechanism into
25 and out of connection with the lifting mechanism as desired. The entire crane trolley is normally above the heads of workmen and out of their reach and it is desirable that this clutch operating mechanism be
30 one which can be very easily operated from the floor of the room.

The object of this invention is to provide a device for this purpose.

35 The invention in general terms consists in a clutch connecting the slow speed operating mechanism to the lifting mechanism proper in combination with a lever controlling said clutch and mechanism operatable from the floor designed to readily move
40 said lever in either direction by simply giving a quick jerk to one single cord or the like attached thereto and within reach of the operator upon the floor.

45 The invention also consists in minor details which will be hereafter more fully described and claimed as the specification proceeds.

50 Figure 1 is a side view of a crane trolley equipped with the device of this invention in its preferred form. Fig. 2 is a side detail view looking at the parts from the left hand side of Fig. 1. Fig. 3 is a plan view taken on the line 3—3 Fig. 2. Fig. 4 is a side detail view partially in section taken on the

line 4—4 Fig. 1. Fig. 5 is a vertical detail view partially in section on the line 5—5 Fig. 3. Fig. 6 is a vertical sectional detail view on the line 6—6 Fig. 3.

Again referring to the drawings, the number 10 indicates one of the parallel frames of an ordinary frame trolley, supported by wheels 11 running on tracks 12. Journaled upon these frames is a shaft 14 carrying a gear wheel 15 adapted to operate the winding drum 16 through pinion 16^a in the ordinary manner.

Journaled in suitable bearings some of which are not shown in the drawings, is a shaft 17 having loosely journaled thereon a pinion 18 meshing with this gear 15. Rigidly connected with this pinion 18 is a clutch member 20 having formed in its face clutch teeth 22 of the ordinary type. Upon this shaft 17 and adjacent to this clutch member 20 is a feather 24. Slidably mounted upon the shaft 17 but held in non-rotative engagement therewith by means of this feather 24 is a second clutch member 26 also having teeth 28 adapted to mesh with clutch teeth 22 in the ordinary manner. Rigidly connected to this shaft 17 by any suitable mechanism forming no part of this invention as for instance the gears 30 and 31 and the shaft 32 is the slow speed operating mechanism (not shown) for the crane.

Pivotaly mounted in bearings 34 on a suitable casting 36 provided and mounted for the purpose is a short shaft 38 at right angles to the shaft 17; said shaft 38 carrying a depending lever arm 40 having extending from it a projecting pin or bolt 42 carrying preferably a roller 44 fitting into the circular groove 46 formed in the clutch member 26. The fit of this roller 44 is loose enough so that as the shaft 38 is rocked backward and forward it will move the clutch member 26 into and out of engagement with the clutch member 20 thereby throwing the slow speed operating mechanism into or out of control of the gear 18 and consequently the lifting drum 16. This shaft 38 is rocked backward and forward by means of a lever 50 loosely journaled upon said shaft 38 in the inclosing collar bearing 52 which in the preferred form of construction is forged on the lever 50. One of these last mentioned members in the particular case here shown the inclosing member 52 has

in it an elongated slot 54 while the other member, in the particular case here shown the shaft 38, has rigidly secured to it a pin 56 entering said slot. As the slot 54 is elongated circumferentially of the shaft 38 it will readily be seen that the lever 50 is free to rotate or rock about the center of the shaft 38 a distance equal to the length of this elongated slot 54. Near the upper end of the lever 50 is a relatively heavy weight 58 and at the outer end 60 of this lever is attached a cord or equivalent device 62 extending over suitable pulleys 63 and 64 mounted upon a suitable supporting member 66 down to within reach of the operator standing upon the floor of the room in which the device is installed.

In operation let us assume that the parts are in the full line position of Fig. 2 the clutch member 26 being in engagement with the clutch member 20 and that it is possible for the operator upon the floor to by operating the slow lifting mechanism 30, 31 and 32 operate the drum through the gears 18—15. The operator now desiring to throw out this slow propelling mechanism for the drum takes hold of his adjacent portion of the cord 62 and gives that cord a sudden jerk starting the lever 50 to the right in Fig. 2; owing to the presence of the elongated slot 54 the first part of this movement of the lever 50 exerts no action upon the shaft 38. In other words this lever 50 and attached weight 58 has a chance to acquire considerable momentum before the pin 56 is engaged by the moving member 52 with the result that the lever and weight 58 move clear over to the dotted line position of Fig. 2 before they come to rest, in so doing moving the clutch member 26 out of engagement with the clutch member 20. In this position the slow speed hand operating mechanism has no control over the drum 16 and the high speed hand lifting mechanism (not shown) may be operated at will. When the operator desires to again use the slow speed hand lifting mechanism, he with the parts in the dotted line position of Fig. 2, gives the cord 62 another downward jerk thereby throwing the lever from the dotted line to the full line position thus throwing the clutch member into engagement with member 20 and rendering the slow speed lifting mechanism operative.

Attention is called to the fact that in the particular embodiment here shown the pivot 38 and the pulley 63 are both in approximately the same vertical plane and are midway between the two extreme positions of the lever 50 and the two extreme positions of the movable clutch member.

The words "rope" and "cord" used in

the claims are intended to include any equivalent connectors such as chains and the like.

The claims are:

1. In mechanism of the class described, the combination of a clutch member, a second clutch member movable into and out of engagement therewith, a lever pivotally mounted in a plane midway between the two extreme positions of the movable clutch member, mechanism connecting said lever to the clutch member whereby it operates the same, a counterweight upon the opposite end of the lever and a rope connected to the lever passing over a fixed point in approximately the same plane as the pivot of the lever adapted when given a sudden pull to operate said lever and consequently move the clutch member first in one direction and then in the other as described.

2. In mechanism of the class described, the combination of a clutch member, a second clutch member movable into and out of engagement therewith, a lever pivotally mounted in a plane midway between the two extreme positions of the movable clutch member, mechanism connecting said lever to the clutch member whereby it operates the same, a counterweight upon the opposite end of the lever and a rope connected to the lever passing over a fixed point in approximately the same plane as the pivot of the lever and consequently arranged to move the clutch member first in one direction and then in the other, there being a loose connection between two of the parts permitting the lever to move freely a predetermined distance at the beginning of its stroke in either direction before it begins to operate the clutch.

3. In mechanism of the class described, the combination of a clutch member, a second clutch member movable into and out of engagement therewith, a pivotally mounted lever adapted to move in a vertical plane substantially equal distances on opposite sides of its pivotal point, mechanism connecting one end of said lever to the movable clutch member, a loose connection between two of the parts permitting the lever to move freely a predetermined distance at the beginning of its stroke in either direction before it begins to operate the clutch and an operating cord connected to the free end of the lever, passing over a fixed point above the pivotal point of the lever for the purposes set forth.

FRED A. RUNDLE.

ANDREW H. McDOUGALL.

Witnesses:

JAMES HYSLOP,
J. A. FARRIS.