April 29, 1930. M. T. ARCHER 1,756,804

DRILLING RIG

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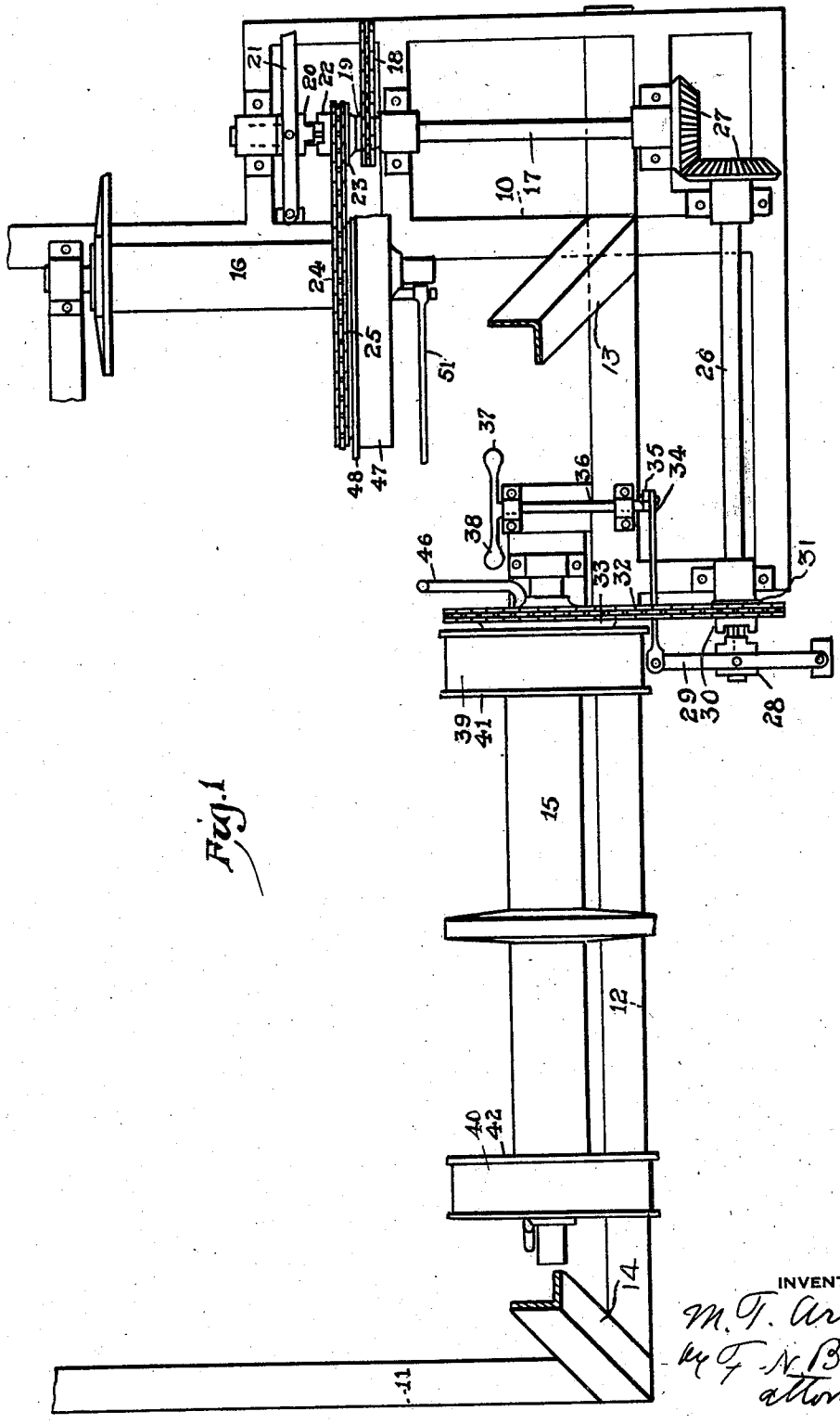


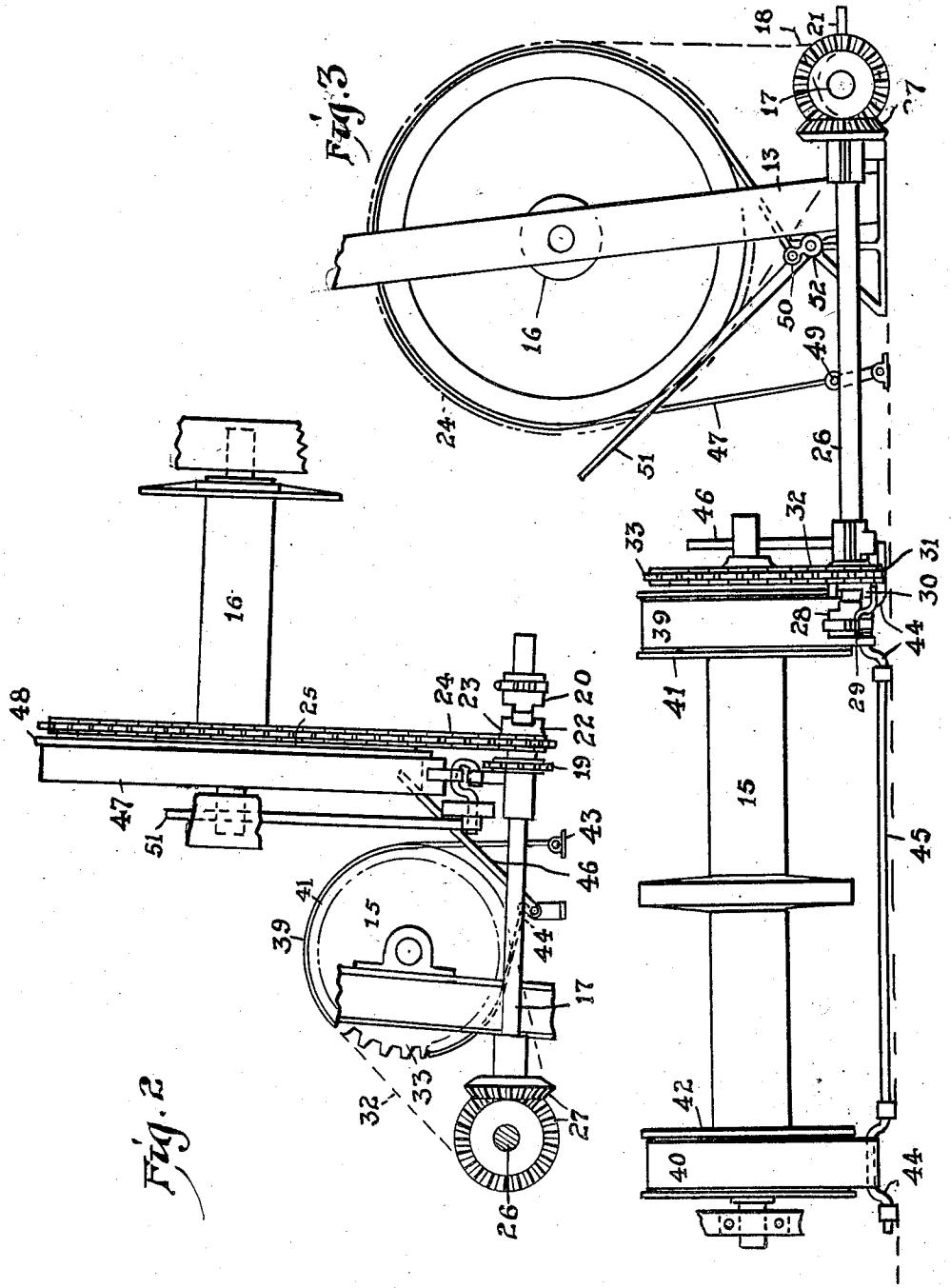
Fig. 1

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UNITED STATES PATENT OFFICE

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DRILLING RIG

Application filed March 31, 1928. Serial No. 266,415.

My invention relates broadly to well drilling rigs, but more specifically it pertains to certain drums or reels and their relation to each other and to the derrick, together with gear drives for the drums or reels.

One object of this invention is to clear the derrick floor of driving belts or chains and to rearrange the drums, as the bull and calf wheels, so that they are so close together that they may be driven selectively through gear wheels. Another object is to provide means whereby the drums may be independently driven. Another object is to arrange the bull and calf wheels at adjacent sides of a corner of the derrick and to place the drums and the mechanism for driving them substantially parallel with the wheels and at the same sides of the derrick, the driving mechanism being preferably outside the derrick, thereby freeing the interior of the derrick from the driving mechanism and its connections to the bull and calf wheels. Another object is to centralize the controls of the drums. Other objects appear hereinafter.

Referring to the accompanying drawings, Fig. 1 is a plan view of my invention with the derrick indicated by dotted lines and without supports for the journal boxes and in some instances without the journal boxes; Fig. 2, an elevation of my invention, the calf-wheel being in side elevation and the bull-wheel in end elevation, parts being omitted and broken away; and Fig. 3, a view similar to Fig. 2, but taken at right angles thereto, the bull-wheel being in side elevation and the calf-wheel in end elevation.

The dotted line 10 represents one side of a derrick; 11, the opposite side thereof; and 12, one side thereof connecting the corresponding ends of the sides 10 and 11. The side of the derrick opposite the side 12 is omitted. 13 is one of the corner posts of the derrick and is in the angle between the sides 10 and 12, and 14 is another corner post which is in the angle between the sides 11 and 12. The remaining corner posts are not shown, as the side of the derrick opposite the side 12 is omitted.

The bull-wheel 15 is mounted within the derrick and near to and parallel with the side 12 while the calf-wheel 16 is mounted within the derrick and parallel with the side 10. The wheels 15 and 16 have their adjacent ends as near as practicable to the corner where the post 13 is.

Outside the derrick and substantially parallel with the calf-wheel 16 I mount the drive-shaft 17 which is at the same side of the derrick that the calf-wheel is. The drive-chain 18 runs on the sprocket wheel 19 fixed to the shaft 17. The shaft 17 has thereon the clutch-member 20 moved by the lever 21 into and out of engagement with the clutch-member 22 which is loose on the shaft 17. The clutch-member 22 is on the side of the sprocket wheel 23 on the shaft 17, this sprocket wheel being connected by the chain 24 to the sprocket gear 25 on the calf-wheel.

26 is a shaft lying preferably outside the derrick and parallel with the bull-wheel 15. It lies at the same side of the derrick that the bull-wheel does. The shafts 17 and 26 are interconnected by the bevel gears 27. The shaft 26 has thereon the clutch member 28 rotatable with the shaft and slidable by means of the lever 29 into and out of engagement with the clutch-member 30 which is loose on the shaft 26. The clutch-member 30 is on the side of the sprocket wheel 31 on the shaft 26 and is connected to the bull-wheel by the drive chain 32 running on the sprocket gear 33 on one end of the bull-wheel. The lever 29 is operated by the rod or pitman 34 connected to the end of the lever 29 and to the crank 35 on the shaft 36 which lies opposite to the end of the bull-wheel and transversely thereof and is operated in either direction by the pedals 37 and 38 projecting in opposite directions from the shaft.

The bull-wheel has the flexible brake-bands 39 and 40 on the brake-drums 41 and 42. The brake-bands have each one end secured to a fixed point, as at 43 (only one shown) while the remaining ends are connected to cranks 44 on the brake-rod 45 operated by the lever 46.

The calf-wheel 16 has the flexible brake-band 47 on the brake drum 48. The brake-band has one end fixed at 49 while the other

end is secured to the crank 50 operated by the lever 51 pivoted at 52.

There is no novelty in the means shown and described for operating the brake-bands. However, it is to be noted that the brake-levers 46 and 51 and the pedals 37 and 38 are concentrated so that one operator can operate any one of them from practically a single point.

The driving shafts 17 and 26, their gears 27 and the driving chain 18 are all outside the derrick, and the chains 24 and 32 merely extend from the outside of the derrick to the sprocket wheels 25 and 33 which are close to the adjacent sides of the derrick. The derrick floor is clear of all mechanism for operating the bull and calf wheels, which makes the drilling rig much more safe for the operators than the usual rig with drive chains or ropes running on or over the derrick floor from the side where I have placed the calf-wheel to the bull-wheel which is placed directly opposite the calf-wheel close to the side 11 of the derrick.

I claim:—

1. The combination of a derrick, a calf-wheel and a bull-wheel at adjacent sides of the derrick, a pair of shafts mounted in an approximately horizontal plane and at right angles to each other, gears mounted on adjacent ends of the shafts to transmit rotary motion from one to the other, means mounted on one shaft to transmit rotary motion to the calf-wheel and means on the other shaft to transmit rotary motion to the bull-wheel, means for imparting rotary motion to one of the shafts, clutches for making either wheel inoperative, and two clutch-operating means adjacent to each other and the adjacent ends of the two wheels.

2. The combination of a derrick, a bull-wheel at one side of the derrick and within the same, a calf-wheel at an adjacent side of the derrick and within the same, a shaft outside the derrick and at the same side thereof as the bull-wheel, a shaft outside the derrick and at the same side thereof as the calf-wheel, driving connections between the shafts, means for driving one of the shafts, driving means between the bull-wheel and the first shaft, driving means between the calf-wheel and the second shaft, and means for making either driving connection inoperative.

In testimony whereof, I hereunto affix my signature.

MERTON T. ARCHER.