M. BERG.

VALVE GEAR.

APPLICATION FILED JUNE 12, 1908.

923,935.

Patented June 8, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

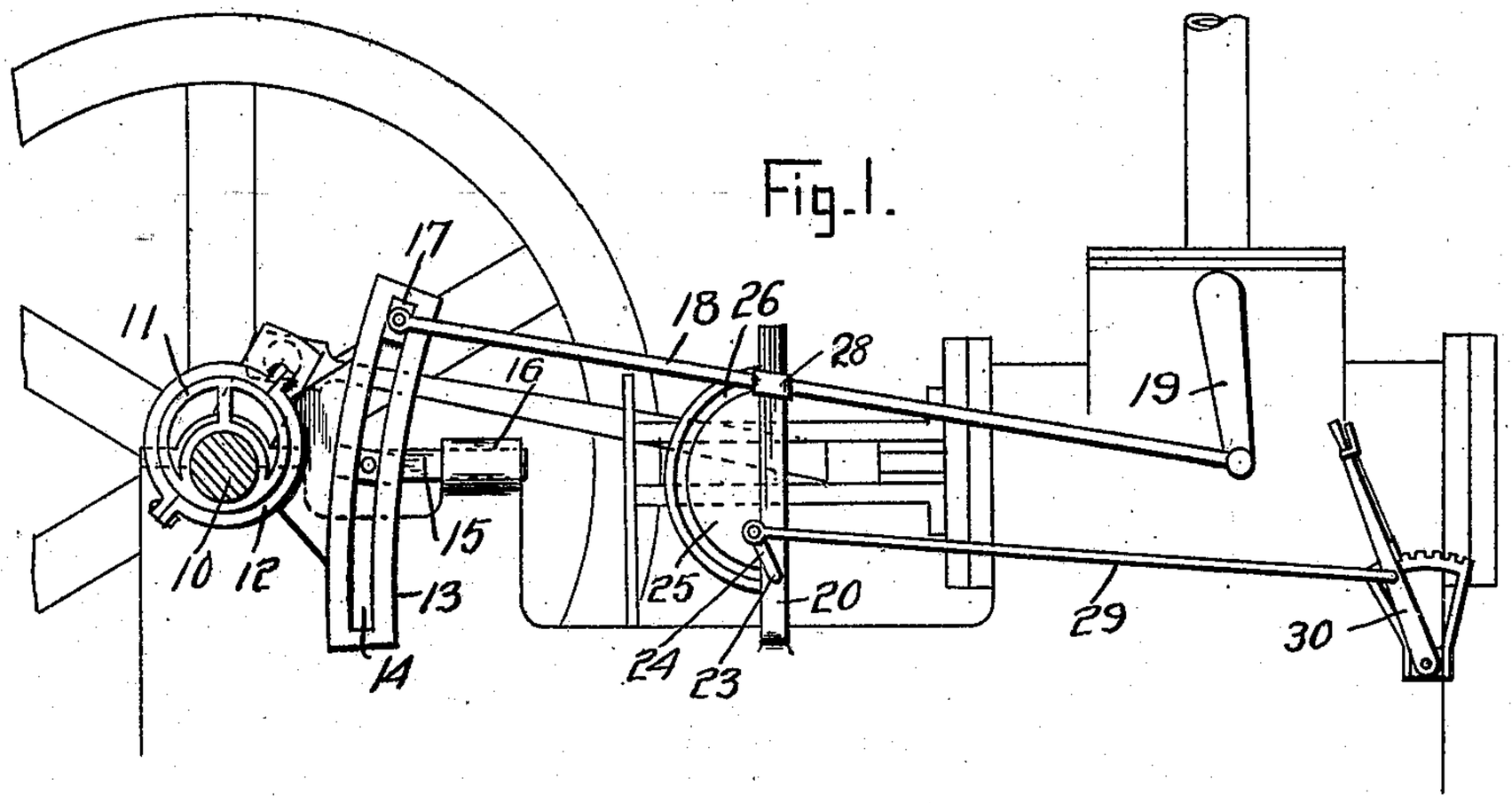
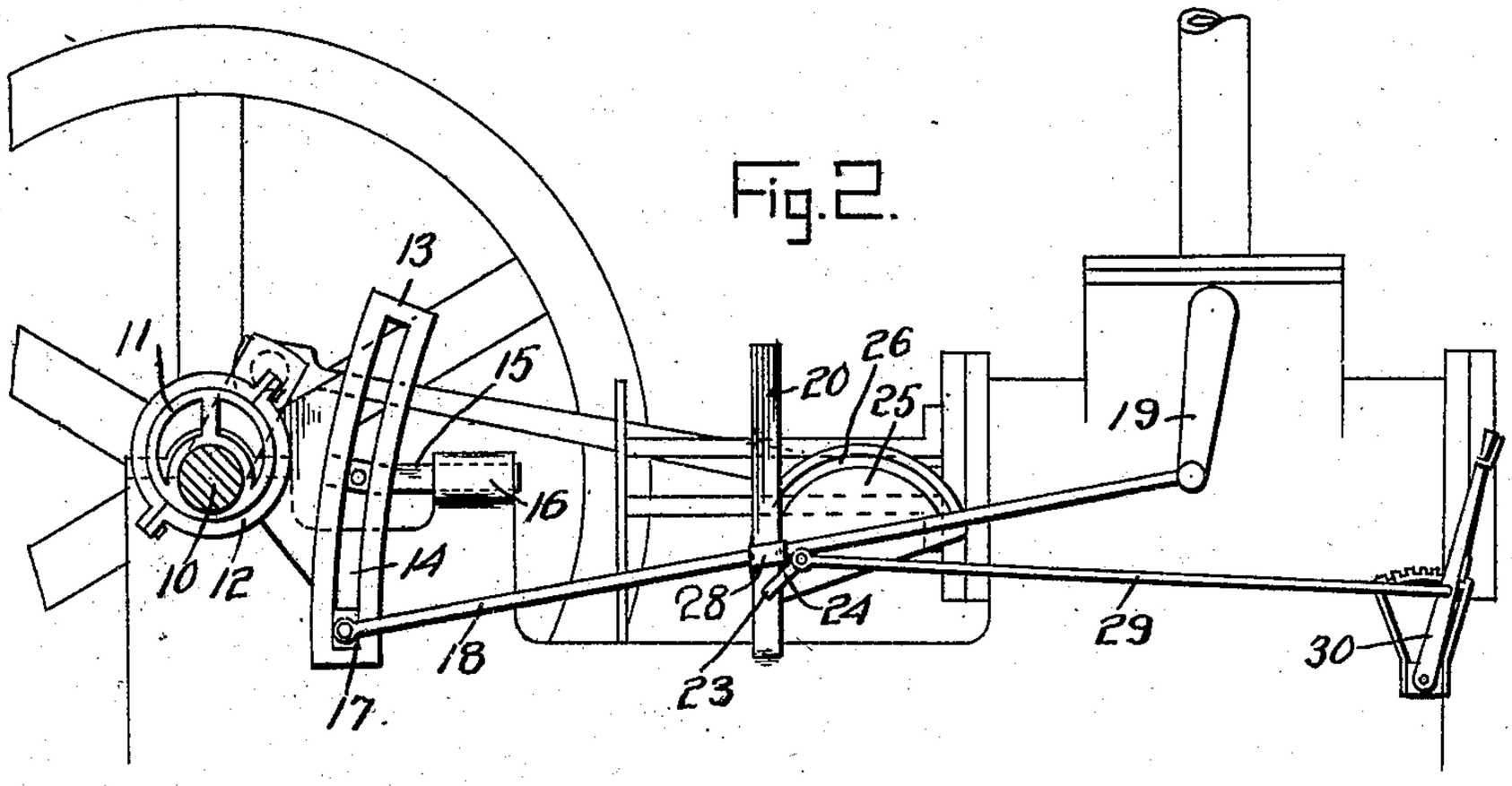


Fig. 2.



Witnesses

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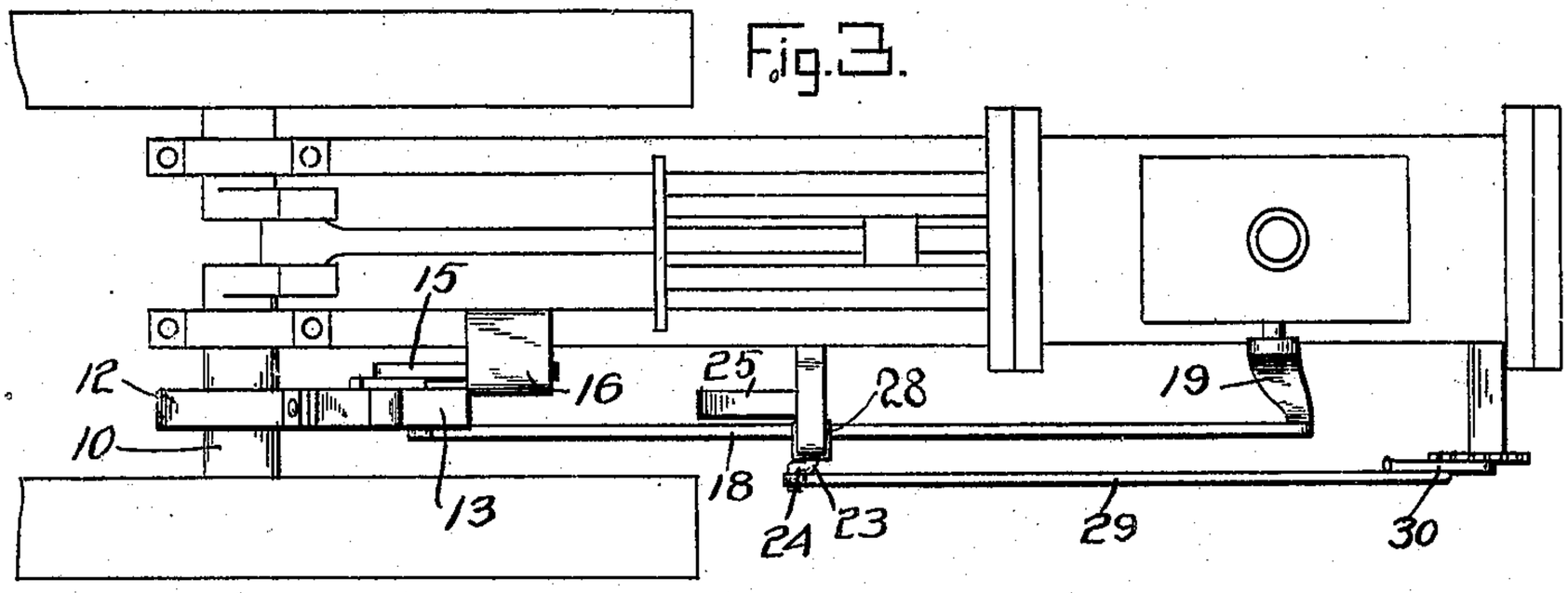
2 SHEETS—SHEET 2.

Fig. 3.



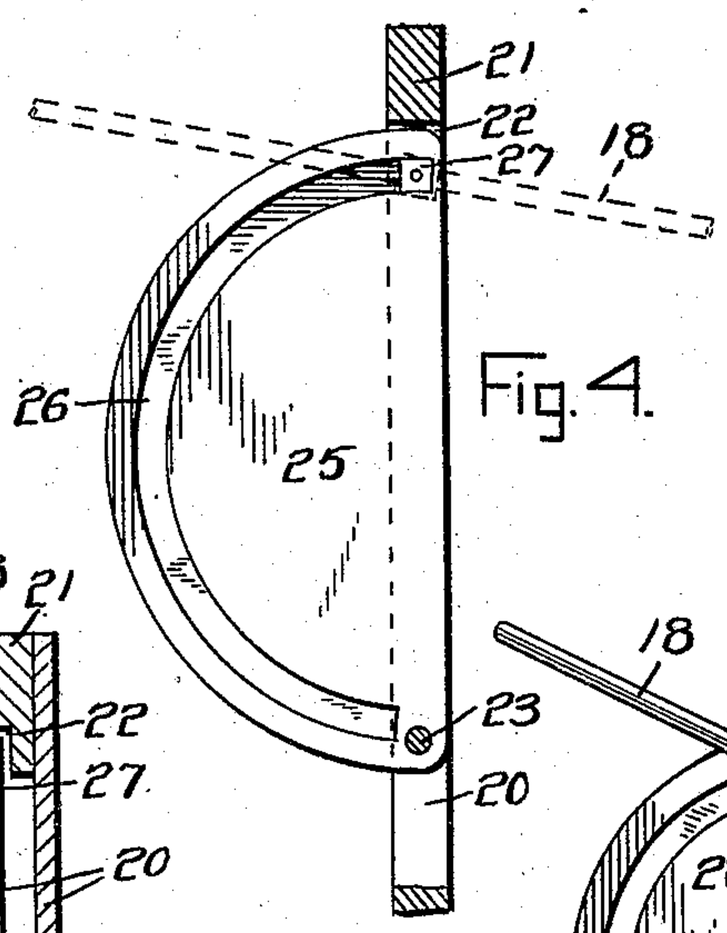


Fig. 4.

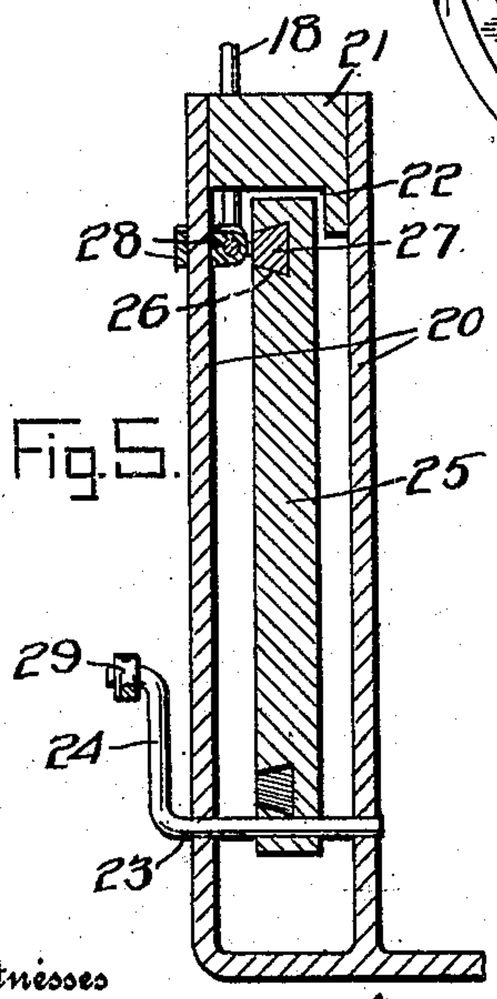


Fig. 5.

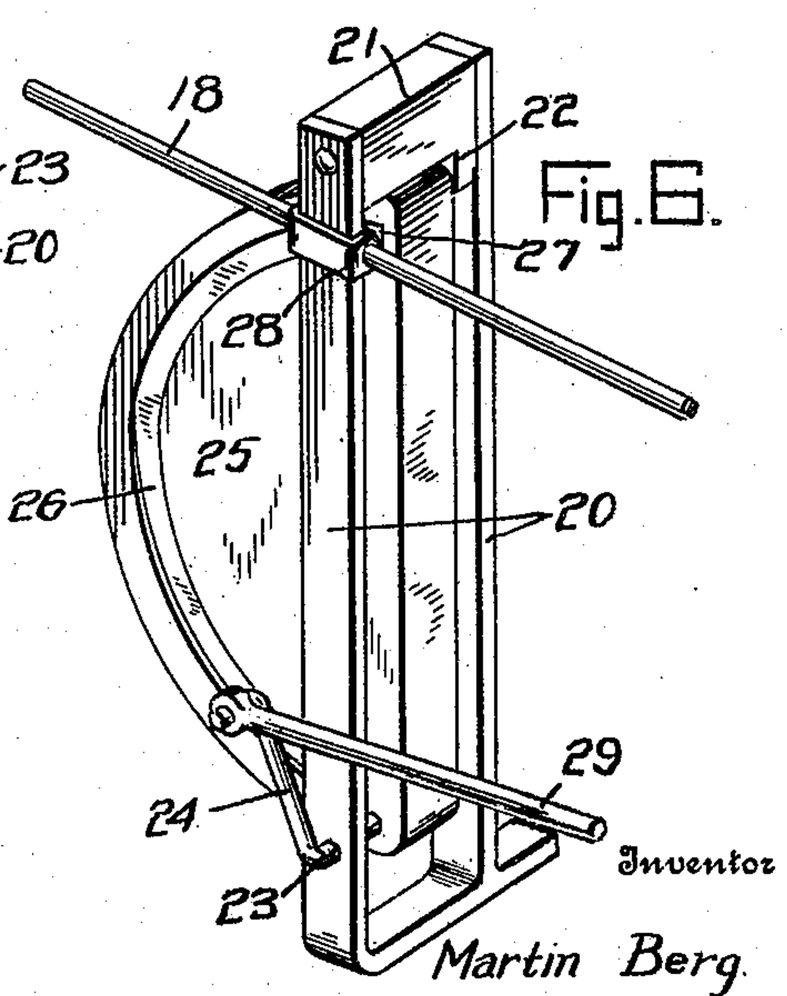


Fig. 6.

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UNITED STATES PATENT OFFICE.

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VALVE-GEAR.

No. 923,935. Specification of Letters Patent. Patented June 8, 1909.

Application filed June 12, 1908. Serial No. 438,243.

To all whom it may concern:

Be it known that I, MARTIN BERG, a citizen of the United States, residing at Battle Lake, in the county of Ottertail, State of Minnesota, have invented certain new and useful Improvements in Valve-Gears; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valve gears for steam engines.

More specifically speaking the valve gear embodying my invention is of that type in which the valve stem is connected operatively, with a rod which in turn is connected with a block which is slidably supported within a link which is oscillated from the engine shaft movement of the block on the link serving to adjust the stroke of the valve rod, and movement of the block from one end of the link to the other serving to reverse the engine and in carrying out my invention I have aimed to provide an extremely simple mounting for the eccentric which will hold it for oscillatory movement by rotation of the engine shaft and I have also aimed to provide a novel means whereby the valve rod may be adjusted to shift the block in the link.

In the accompanying drawings, Figure 1 is a side elevation of the valve gear embodying my invention the various elements of the gear being shown in position for driving the engine in one direction, Fig. 2 is a similar view but showing the elements of the gear in position for running the engine in the opposite direction, Fig. 3 is a top plan view of the valve gear, Fig. 4 is a vertical longitudinal section showing the means for raising and lowering the link block. Fig. 5 is a vertical transverse section thereof. Fig. 6 is a detail perspective view of the means for raising and lowering the link block within the link.

In the drawings, the engine shaft is indicated by the numeral 10 and fixed upon the shaft is an eccentric 11 the strap of which is indicated by the numeral 12. Cast or secured upon the eccentric strap 12 is an arcuate link 13 which is formed with a slot 14 and pivoted to the said link at one side thereof is one end of a slide 15 which is in the form of a bar and which works in a suitable guide 16 it being understood that the said slide supports the link in operative position.

Working in the slide 14 in the link is a link block 17 and pivoted to this block is one end of a rod 18. The other end of the rod is pivoted to the lower end of the rocker 19 which has operative connection with the valve rod of the engine in connection with which the valve gear embodying the invention is used.

It will be understood from the foregoing description of my invention, that upon rotation of the engine shaft 10, the link 13 will be oscillated, its upper and lower ends swinging alternately in a direction toward and from the rocker 19 and in arcs of circles. It will further be understood that there is but a very slight movement of the link at its middle and that consequently if the link block 17 is slid from position at the upper end of the link to the middle, the supply of steam to the engine cylinder will be cut off, further movement of the link block in a downward direction serving to reverse the engine.

The means for shifting the rod 18 so as to shift the link block 17 in the link will now be described.

Bolted or otherwise secured at their lower ends upon any convenient support are upstanding bracket arms 20 which at their upper ends are spaced by means of a block 21 which is formed at its under side with a notch 22. A short crank or rock shaft 23 is journaled for rocking movement in suitable bearings in the bracket arms adjacent their lower ends and this shaft is provided at one end with a crank 24, there being a semi-circular plate 25 secured adjacent one end of its longitudinal or cord edge to the rock shaft 23. This plate has its convex edge presented in the direction of the link 14 and has in one side face a dove-tail slot 26 the said slot extending parallel to the convex edge of the plate. A block 27 is provided with a swiveled sleeve 28 which works in the said slot 26 under conditions which will be presently explained and the eccentric rod 18 passes loosely through this swiveled sleeve. Pivoted at one end to the crank 24 of the rock shaft 23 is a rod 29 which at its other end is pivotally connected with a lever 30 which may be rocked to throw or oscillate the shaft 23 and swing the plate 25, the plate being shown in two of its positions in Figs. 1 and 2 of the drawings, it being under-

stood of course that swinging of the plate with the shaft 23 will result in a raising or lowering of the block 27 in the slot 26 and that this movement of the block will result in the block 17 being shifted in the link 14.

What is claimed is:

1. In a valve gear, a link, a link block adjustable in the link, a valve rod connected to said link block and adapted to connect with the valve stem of an engine, a sleeve surrounding said rod, a guide for said sleeve, a cam having operative connection with said sleeve, and means to move said cam and raise and lower the sleeve to adjust the link block in the link.

2. In a valve gear, a link, a link block adjustable in the link, a valve rod connected to said link block and adapted to connect with the valve stem of an engine, a sleeve surrounding said rod, a guide for said sleeve, a cam comprising a semi-circular plate provided with a dove-tailed groove near the periphery thereof, a dove-tailed block pivotally connected to said sleeve, a rock shaft attached to said cam near one corner thereof, a quadrant, a latch lever, and a reach rod connecting said rock shaft and quadrant.

In testimony whereof, I affix my signature, in presence of two witnesses.

MARTIN BERG.

Witnesses:
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E. O. HUSEBY