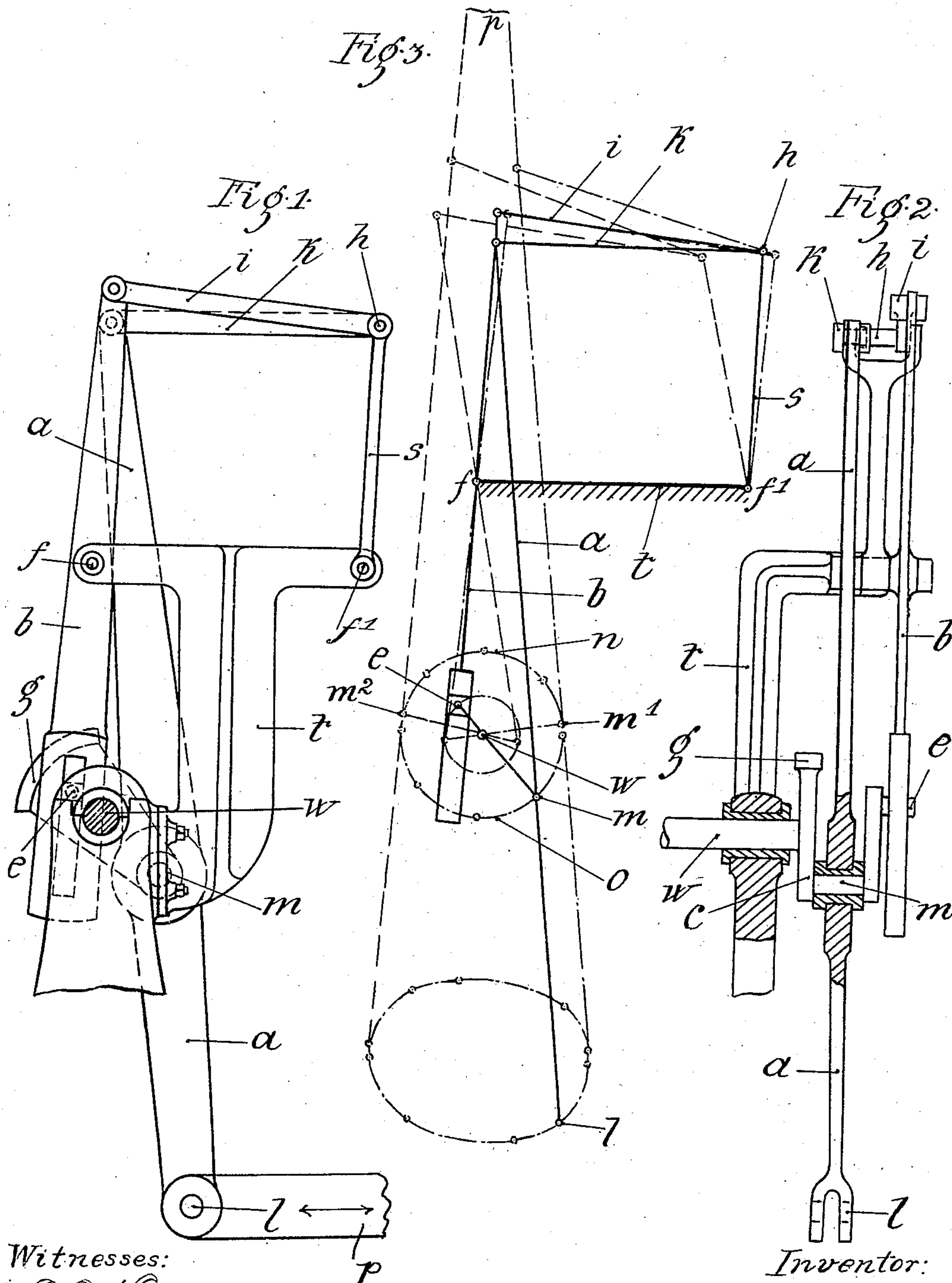


No. 874,285.

PATENTED DEC. 17, 1907.

X. BAIER.
SWINGING LEVER CRANK MECHANISM.
APPLICATION FILED FEB. 5, 1907.



Witnesses:

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UNITED STATES PATENT OFFICE.

XAVER BAIER, OF MUNICH, GERMANY.

SWINGING-LEVER CRANK MECHANISM.

No. 874,285.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed February 5, 1907. Serial No. 355,892.

To all whom it may concern:

Be it known that I, XAVER BAIER, citizen of Germany, residing at Munich, Bavaria, Germany, have invented certain new and useful Improvements in Swinging-Lever Crank Mechanism; 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.

In the case of crank mechanism actuated by a reciprocating part through a swinging lever pivoted in a slot or on a hinged arm, that portion of the crank-travel opposite to the point of pivoting and appertaining to rotation in one direction is always smaller than the other part of the crank-travel appertaining to the reverse motion. This difference increases if the length of the swinging lever is shortened.

The present invention relates to a swinging lever crank mechanism adapted for use in connection with reciprocating engines to convert the reciprocating into rotary motion, which makes it possible to reduce this difference in the crank-travel to a minimum, the length of the mechanism being at the same time relatively small.

The crank mechanism consists essentially of two cranks placed at an angle of 180° to each other, of which the one causes one end of the swinging lever to move in the same direction as the other end directly driven by the reciprocating part. The swinging lever therefore describes the same motion as a singly pivoted swinging lever of much greater length.

Referring to the accompanying drawing, Figures 1 and 2 show a form of construction of the new swinging lever crank mechanism; in Fig. 3 the crank-travel ($m^1 n m^2$) and ($m^1 o m^2$) have been ascertained, and it will be seen that they differ but little, a result that was only possible with the heretofore known swinging lever crank mechanism if they were made very much longer, for instance, by extending the end to p (Fig. 3).

The swinging lever a may for instance be connected with the reciprocating rod by means of a link p pivoted at l and engages with the crank m of the shaft w . This shaft carries a second crank e arranged at an angle of 180° to the crank m . A counterweight g is further arranged on the arm c of the crank e to insure steady running (Fig. 1). A swinging lever b turns upon a pin f of the arm

t , which latter may be secured to the frame of the mechanism or like fixed support, and this lever b engages the crank e with the help of a slot; the other end of this lever b is pivoted to an arm i turning upon the pin h of the swinging arm s ; this swinging arm s is pivotally secured to the frame or the like t at f^1 and is connected with the lever a by means of the arm k also turning upon the pin h of the arm s .

The manner of working of this crank mechanism is as follows: If for instance a reciprocating rod drives the end l of the lever a , the upper or fulcrumed end of this lever will always be moved in the same direction as the lower end, by means of the crank e and the double-armed lever b , wherefore the motion of the lever a will exactly correspond to the movement of the lower portion of a much longer swinging lever, according to the dimensions of the lever b and the cranks m and e .

What I claim as my invention and desire to secure by Letters Patent is:

1. In a crank mechanism, a reciprocating member, an oscillating lever pivoted at one end thereto and fulcrumed at the other end, a rotary member, a crank connecting the rotary member with the lever at a point intermediate its ends, and means to shift the lever fulcrum in the direction of movement of the reciprocating member.

2. In a crank mechanism, a reciprocating member, an oscillating lever pivoted at one end thereto and fulcrumed at the other end, a rotary member, a crank connecting the rotary member with the lever at a point intermediate its ends, a second oppositely disposed crank connected with the rotary member, a second lever driven by the second crank and connected with the fulcrum of the first lever to shift the same in the direction of movement of the reciprocating member.

3. In a crank mechanism, a reciprocating member, an oscillating lever pivoted at one end thereto and fulcrumed at the other end, a rotary member, a crank connected with the rotary member and having oppositely disposed arms one connected with the lever intermediate its ends, a second oscillating lever fulcrumed to a fixed point and driven by the second crank arm, the free end of the second lever connected with the fulcrum of the first lever to shift the same in the direction of movement of the reciprocating member.

4. In a crank mechanism, a reciprocating member, an oscillating lever pivoted at one end thereto and fulcrumed at the other end, a rotary member, a crank connected with
5 the rotary member and having oppositely disposed arms one connected with the lever intermediate its ends, a second oscillating lever fulcrumed to a fixed point and driven by the second crank arm, a swinging support,
10 a link connection between the swinging support and fulcrum of the first lever and the free end of the second lever, whereby the fulcrum of the first lever is shifted in the direction of movement of the reciprocating
15 member.

5. In a crank mechanism, a reciprocating member; an oscillating lever pivoted at one end thereto, and fulcrumed at the other end, a rotary member, a crank connected with
20 the rotary member and having oppositely

disposed arms one connected with the lever intermediate its ends, a second oscillating lever fulcrumed intermediate its ends to a fixed point and slotted at one end to receive the second crank arm, a swinging support
25 pivoted to a fixed point, a link connection between the swinging support and the fulcrum of the first lever, and a link connection between the swinging support and the free end of the second lever, whereby the fulcrum
30 of the first lever is shifted in the direction of movement of the reciprocating member to approximately equalize the crank-ways.

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 35

XAVER BAIER.

Witnesses:

ABRAHAM SCHLESINGER,
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