

No. 776,228.

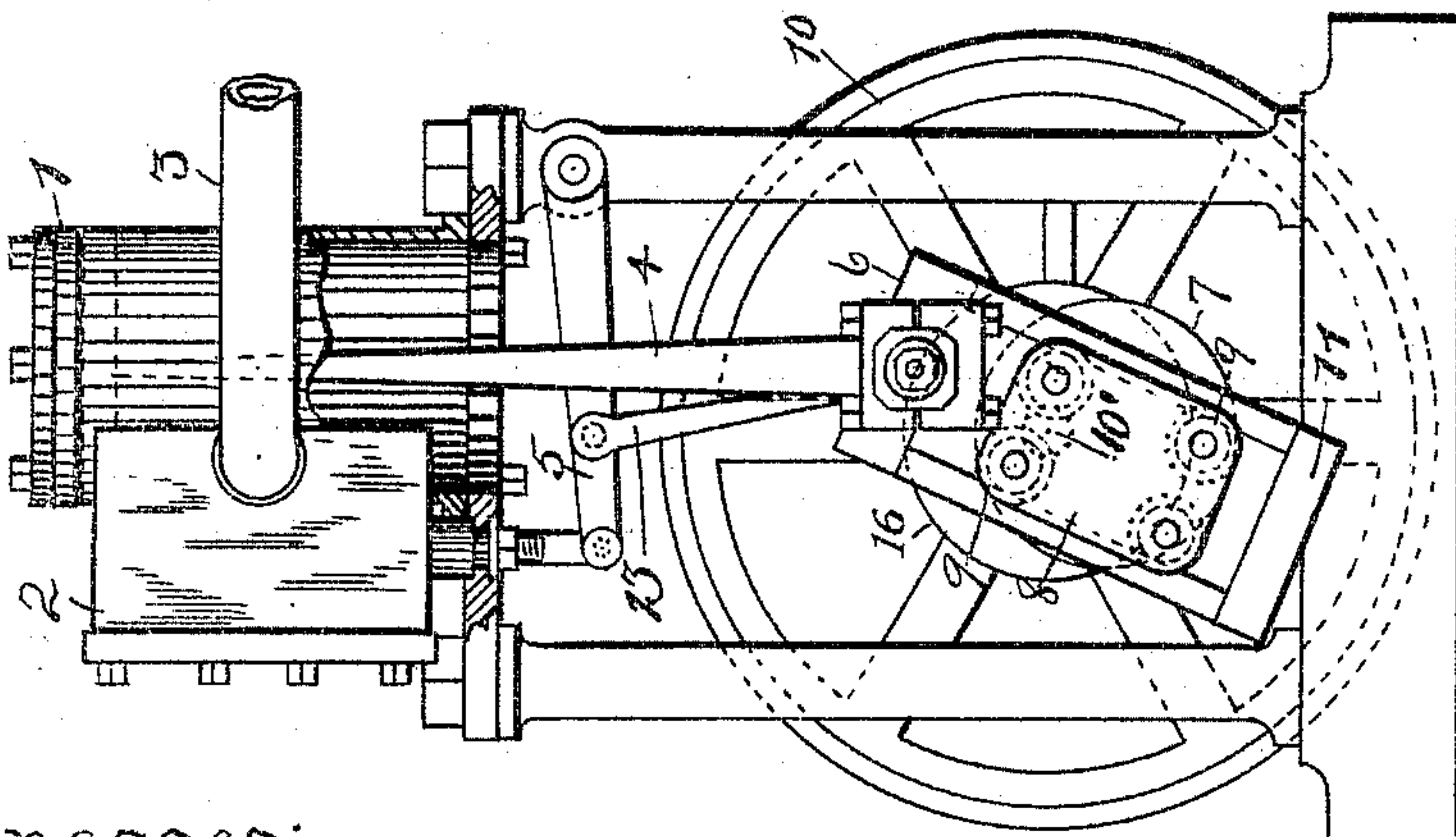
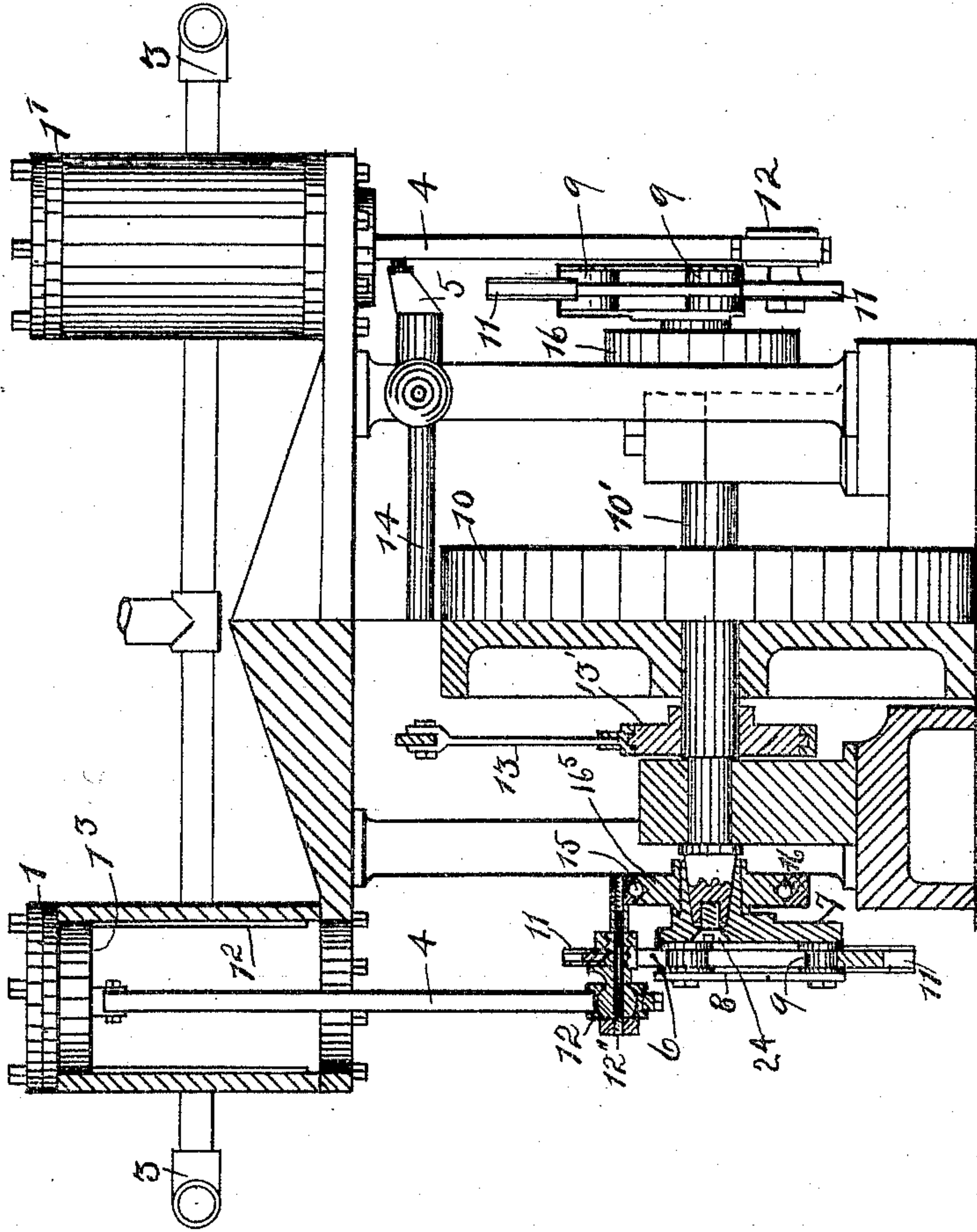
PATENTED NOV. 29, 1904.

C. J. ENGLERT.
ENGINE CRANK.

APPLICATION FILED OCT. 16, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
A. J. Engle
Geo R Brown

Inventor:
 Conrad J. Englert:
 By *A. M. Brown*:
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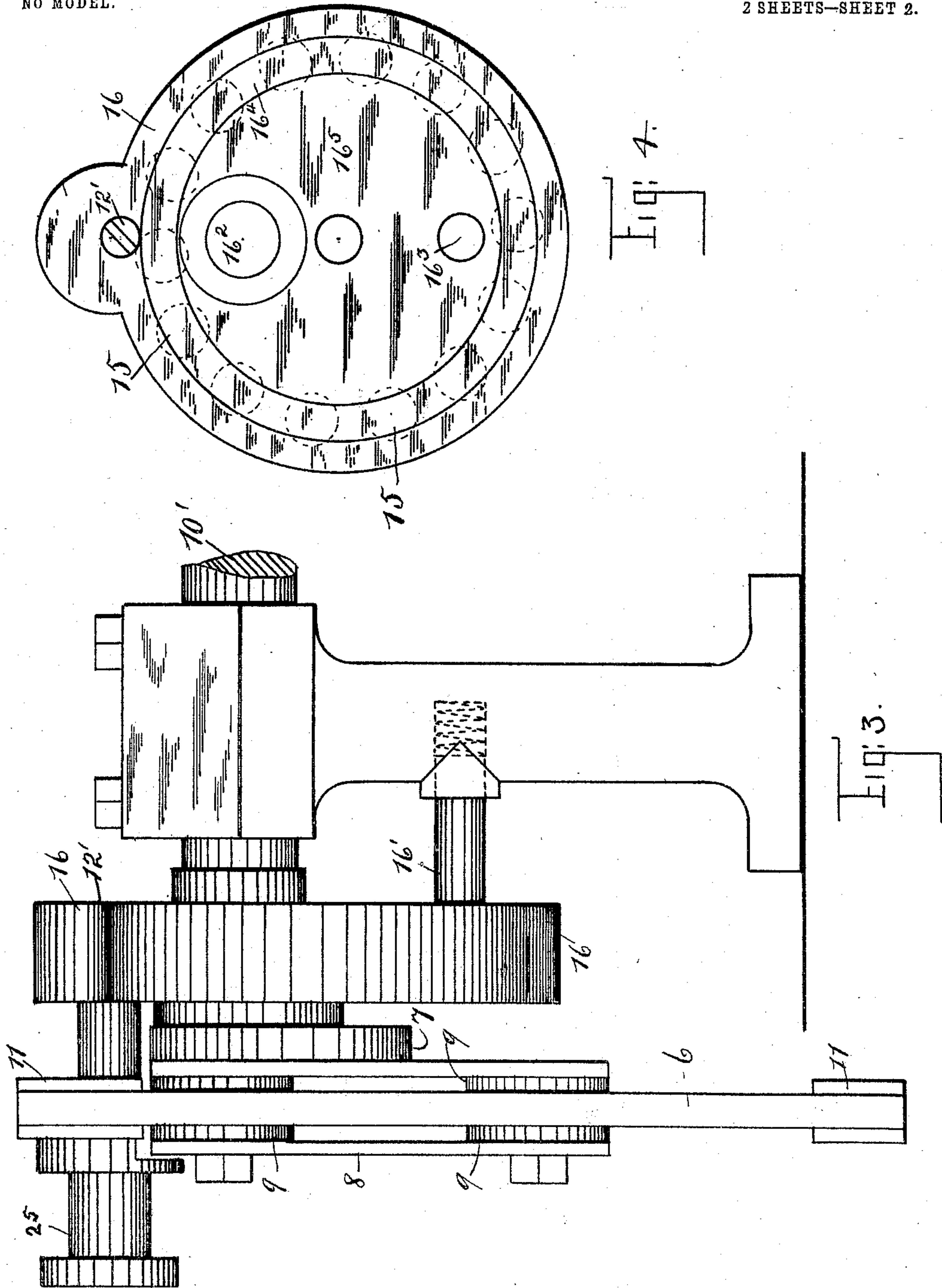
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

CONRAD J. ENGLERT, OF SCHENECTADY, NEW YORK.

ENGINE-CRANK.

SPECIFICATION forming part of Letters Patent No. 776,228, dated November 29, 1904.

Application filed October 16, 1903. Serial No. 177,328. (No model.)

To all whom it may concern:

Be it known that I, CONRAD J. ENGLERT, a citizen of the United States, residing at Schenectady, New York, have invented certain new and useful Improvements in Engine-Cranks; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to cranks for engine and other uses, whereby a greater leverage is obtained by certain elongation of the parts at certain and predetermined points of movements of the parts, thereby allowing me to take advantage of such leverage in turning the crank-shaft.

In the drawings, Figure 1 shows an end view of one form of my engine fitted with my improved crank; Fig. 2, a side elevation thereof, one-half of the figure being shown in vertical section; Fig. 3, a side elevation of my crank enlarged, and Fig. 4 a face elevation of the eccentric as used by me.

The numeral 1 shows one of the cylinders, which is open at its bottom end, the piston 1³ taking steam above it only and having guides 1² for the piston. The second cylinder 1' is constructed the same as cylinder 1, the valves being set so that the cylinders take the steam alternately, thus producing a continuous application of the power upon the engine-shaft 10'.

2 denotes the steam-chest, and 3 the steam-pipe.

The eccentric consists of the outer rim 16, an inner plate 16⁵, and affixed between them, preferably by being threaded and screwed in place, is the face-plate 16⁴, under which and acting as antifriction devices are balls 15, allowing the rim 16 to rotate about the face-plate 16⁵ with as little friction as possible.

The engine-shaft 10' enters and is made fast in the opening 16², preferably by means of a screw 24, (see Fig. 2,) the end of the shaft entering an opening in the member 7 and made fast thereto by the said screw also. To the face of the member 7 is attached the frame 6,

to which the piston-rod 4 is operatively connected, as seen in Figs. 1 and 2. This frame 6 carries a member 8, the frame 6 sliding on the member 8 by means of the antifriction-rollers 9 9, and allows of the frame 6 moving on the member 8 as the piston 1³ and rod 4 moves, the object being that when the rod 4 revolves the shaft 10' on the downstroke of the rod the frame 6 will project outward from the center of the shaft 10' and give an increased leverage on the shaft on that stroke, and as the rod 4 rises by the downstroke of the opposite rod the frame will recede on the member 8 and be brought to the position shown in Fig. 1, where the rod is shown as just beginning its downward stroke and applying the power to turn the shaft 10'.

5 indicates the valve-actuating rod, and 13 the rod in connection with the eccentric, which gives it motion, (seen at 13'.)

11 shows the cross-pieces staying the frame, and 14 the rod operating the valve-lever 5.

12 in Fig. 2 shows the strap operatively connecting the piston-rod with the crank, and 12' a bolt connecting the crank both with the frame 6 and eccentric, which are both revolved with the action of the piston-rod 4.

The operation is as follows: When steam is entered in the cylinder 1 above the piston, the piston descends, carrying piston-rod 4 down with it. This downstroke is the only stroke of the rod that applies a turning power to the shaft 10', for the reason that there is no steam ever applied to the under side of the piston. As the piston starts to descend at the point shown in Fig. 1 it is beginning to apply its power to turning the shaft 10', and as it turns the frame and eccentric and member 8 the frame 6 slides on the member 8 and projects the crank-pin outward, thus giving an increased leverage between the center of the shaft 10' and the crank-pin, thus giving an advantage to the steam-pressure otherwise not attainable in the form of engine shown. As the rod 4 reaches its lowest position and at the point where it will begin its upper stroke it has ceased to exert any turning power on the shaft 10'; but its upstroke is accomplished by the other rod 4, which is just beginning its downstroke, and the frame 6 on

the rod making the upstroke slides rearward on the member 8 and continues this motion until it reaches the position shown in Fig. 1, when it is again in readiness to make a downstroke, while the opposite piston-rod and its frame 6 are beginning its upstroke. The point of constant unchangeable revolution of the eccentric 16 is the center of the opening 16², (see Fig. 4,) the face-plate 16⁵ remaining immovable by reason of the stop 16¹ entering the opening 16³ therein, the outer rim or casing 16 being attached by the screw 12' to the crank-pin 25, being compelled to perform an eccentric revolution about the plate 16⁵, this eccentric revolution causing the frame 6 to slide on the antifriction members 9 of member 8, forcing the crank-pin 12 to assume a position farther away from the opening 16² at precisely the time it is to exert its full power on the crank-shaft 10'. I therefore gain an advantage of leverage on the shaft in proportion to the distance between the center of the shaft and 10' and that of the crank-pin when it is farthest away from the shaft. My reversing device (not shown) releases the plate 16⁵ from the pin or stop 16¹ and turns the plate over until the reverse action is produced; but as I claim nothing on that part of my invention I have not shown it.

Having described my invention so that those skilled in the art may know how to make and use the same, what I claim is—

1. In a crank for an engine and other devices a member arranged so as to be partly rotated when the engine is reversed but stationary while the engine is running, as 16⁵, carried upon the shaft and eccentric there-

with; a ring rotatable about said member and in operative connection with the crank-pin; a revoluble member also carried by the shaft and eccentric therewith forming an end plate to the member 16⁵; a sliding member in operative connection with the said end plate, the crank-pin, and rotatable ring, and having means whereby it may slide and maintain its relation to the other parts all arranged and operating so that when the piston and its rod make a propelling stroke the sliding crank or member will move away from the axis of rotation of the shaft and make an increased leverage upon the shaft substantially as described.

2. In a crank for an engine and other similar devices a plate stationary while the engine is running, carried by the shaft and eccentric therewith; a rotatable member arranged to revolve about said plate and in operative connection with the crank; a crank having antifriction devices and a member arranged to slide thereon in operative connection with the crank-pin and the rotatable member revolving about the said plate all arranged and operating so that as the piston makes a propelling stroke the crank will slide and move away from the axis of rotation of the shaft and produce an increased leverage on the shaft substantially as described.

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

CONRAD J. ENGLERT.

Witnesses:

GEO. R. BROWN,
J. C. MACCULLOCH.