No. 682,935. Patented Sept. 17, 1901.

C. G. HOLMBERG.

CRANK MECHANISM.

(Application filed Feb. 1, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

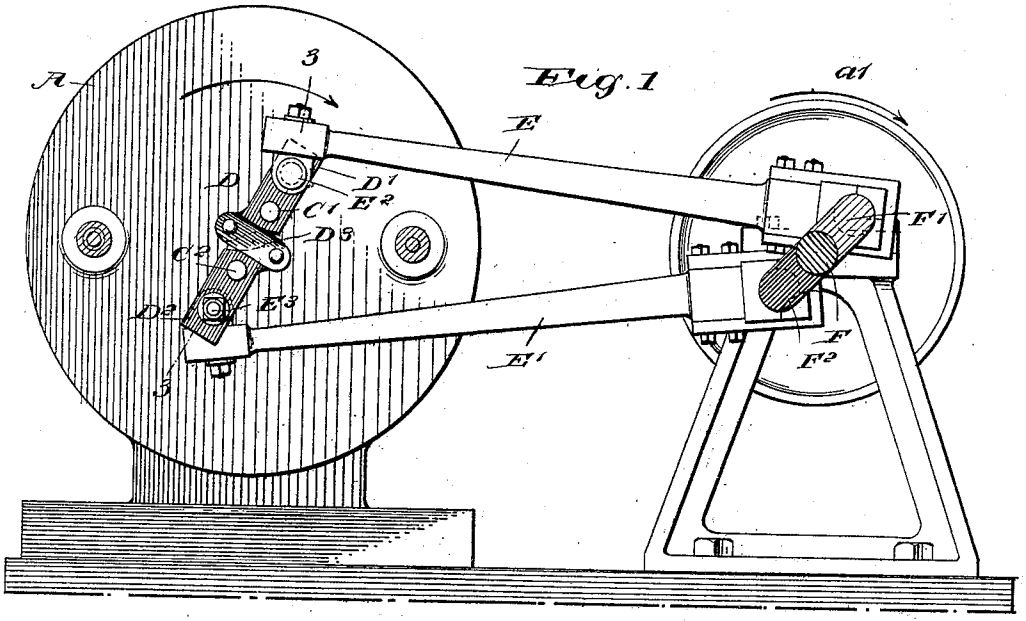


Fig. 2

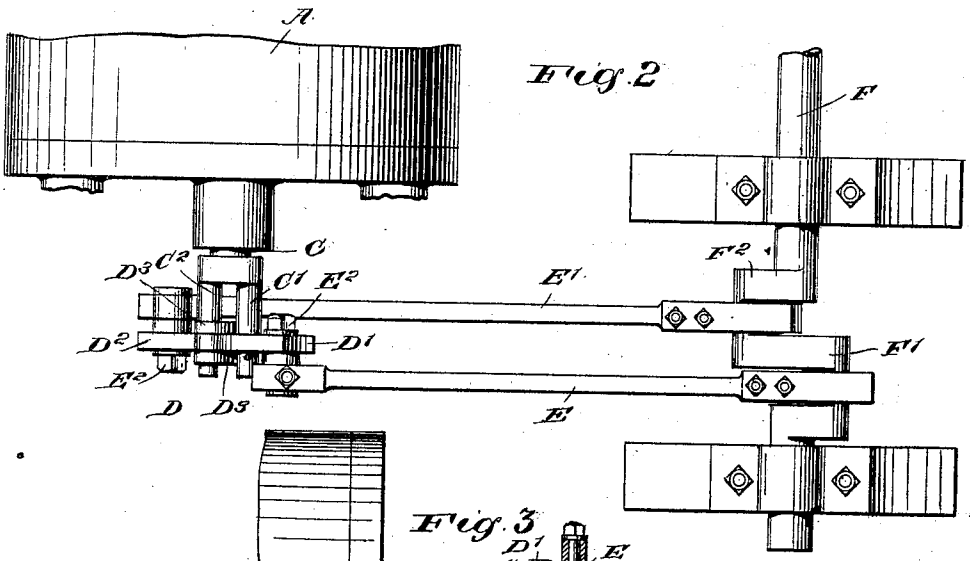
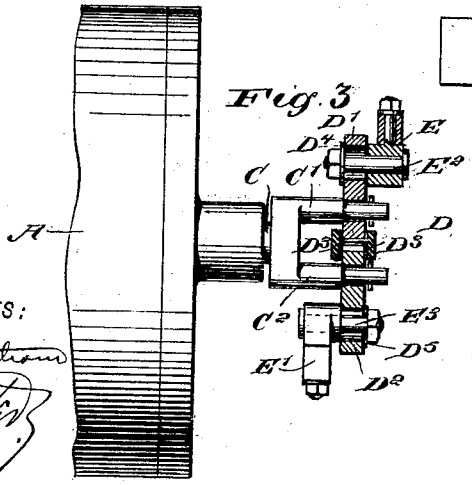


Fig. 3



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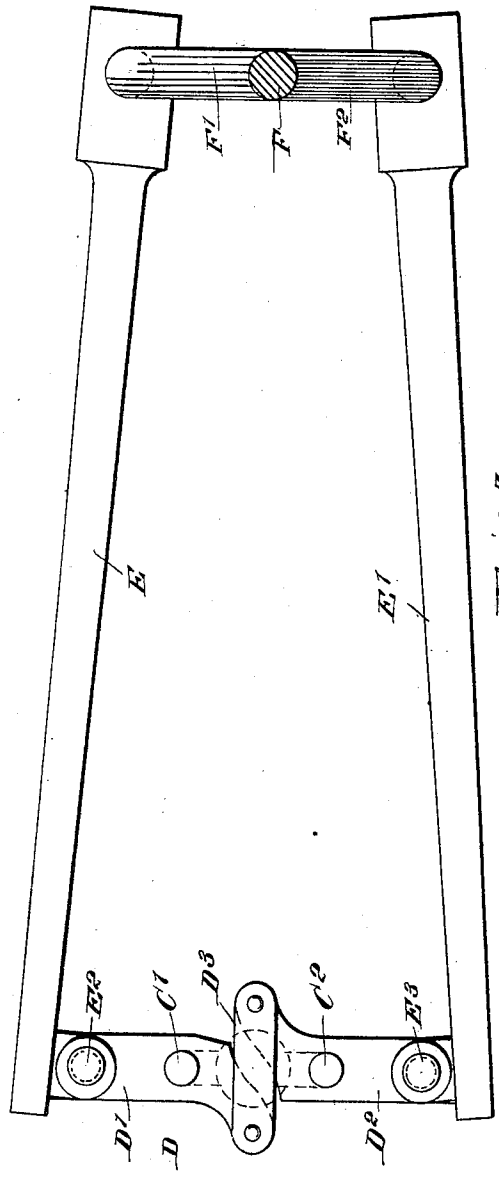


Fig. 4

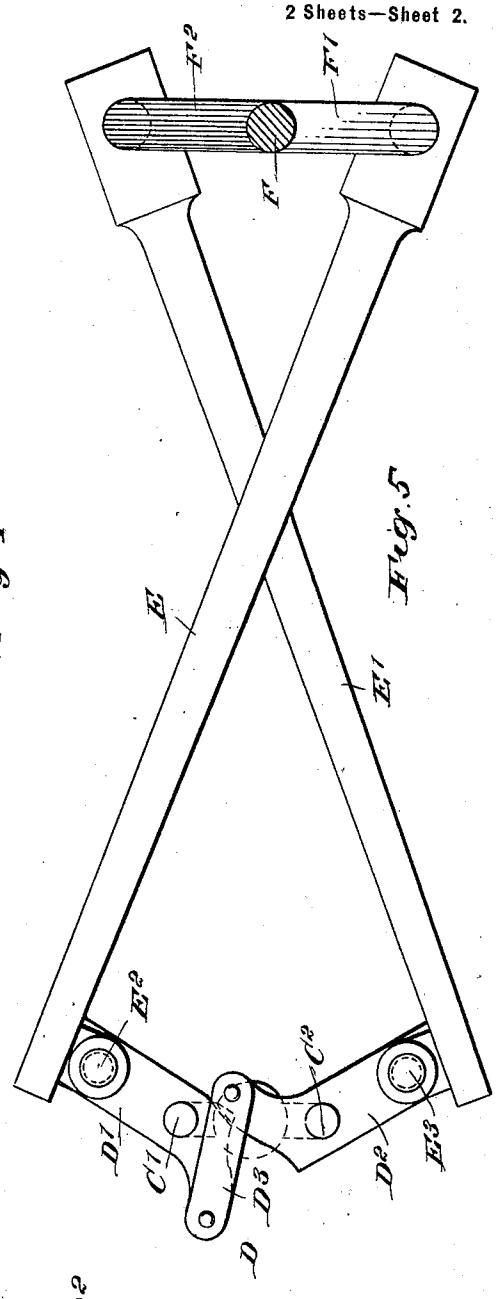


Fig. 5

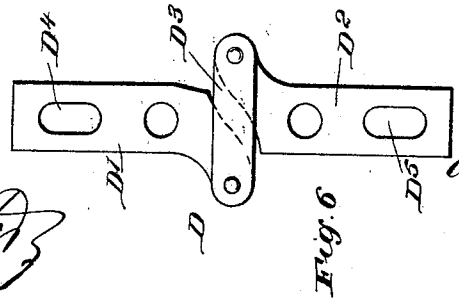


Fig. 6

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UNITED STATES PATENT OFFICE.

CHARLES GUSTAVE HOLMBERG, OF WOONSOCKET, SOUTH DAKOTA, ASSIGNOR TO ANNA HOLMBERG, JOHN M. WHEELER, AND LOREN H. PIER, OF SAME PLACE.

CRANK MECHANISM.

SPECIFICATION forming part of Letters Patent No. 682,935, dated September 17, 1901.

Original application filed October 4, 1900, Serial No. 31,975. Divided and this application filed February 1, 1901. Serial No. 45,576. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GUSTAVE HOLMBERG, a citizen of the United States, and a resident of Woonsocket, in the county of Sanborn and State of South Dakota, have invented a new and Improved Crank Mechanism, of which the following is a full, clear, and exact description, this being a division of the application for Letters Patent of the United States for an engine, Serial No. 31,975, filed by me on October 4, 1900.

The object of the invention is to provide a new and improved crank mechanism for the transmission of power, and more especially for use on oscillating engines and other machines, and arranged to avoid dead-center positions.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to an oscillating engine of the character referred to in the above-mentioned application, parts being shown in section. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section of the same. Fig. 4 is an enlarged side elevation of the crank mechanism, the pitmen, and driving-shaft. Fig. 5 is a similar view of the same with parts in a different position, and Fig. 6 is an enlarged side elevation of the double crank.

The engine on which the improvement is shown applied in the drawings consists of a cylinder A, in which oscillates a piston (not shown) secured on a transversely-extending shaft C, mounted to turn in suitable bearings in the heads of the cylinder and connected at one outer end by a double crank D with pitmen E E′, connected with the crank-arms F′ F^2 of the main driving-shaft F, so that when an oscillating motion is given to the piston in the cylinder A and to the shaft C then the crank D, pitmen E E′, and crank-arms F′ F^2 impart a continuous rotary motion to the main shaft F. The crank is made in sections D′ D^2, pivotally connected with each other at adjacent ends by links D^3, extending diametrically relatively to the piston-shaft C, and said sections are pivoted on opposite sides of the links D^3 on the fork-arms C′ C^2, carried by the main shaft C, as is plainly indicated in Figs. 2, 3, 4, and 5. The pitmen E E′ have their wrist-pins E^2 E^3 adjustably secured in alined slots D^4 D^5 in the outer portions of the crank-sections D′ D^2, respectively. By this arrangement the pitmen E E′ can be properly adjusted relatively to the sections D′ D^2 and crank-arms F′ F^2. The fork-arms C′ C^2 on the oscillation of the piston B and the shaft C carry the crank-sections D′ D^2 of the crank along, so that the pitmen E E′ and crank-arms F′ F^2 impart a rotary motion to the main shaft F. It is understood that the action of the fork-arms C′ C^2 on the crank-sections is such as to impart simultaneous motion to the crank-sections, but in opposite directions, and as the crank-sections are connected with each other by the link D^3 the sections act on their pitmen to push the one and pull the other, so that the shaft receives at all times power from two points. As the shaft C, with its fork-arms C′ C^2, oscillates and the main shaft F, with its crank-arms F′ F^2, rotates it is evident that the crank-sections D′ D^2 on each full oscillation of the shaft C and the corresponding full revolution of the shaft F assume different positions relatively to each other and to the crank-arms. The crank-sections D′ D^2 stand in alinement with each other, as shown in Fig. 4, during part of the revolution given to the shaft F; but when the pitmen cross each other, as shown in Fig. 5, the sections D′ D^2 move into angular positions to avoid dead-center positions and at the same time compensate for the different position of the pitmen during a revolution of the shaft F.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A crank mechanism having a crank made in sections, and links for connecting the inner

ends of the sections with each other, as set forth.

2. A crank mechanism, comprising an oscillating shaft having fork-arms, a crank made in sections held on said fork-arms, links connecting the inner ends of the sections with each other, and pitmen connected with the outer ends of the said sections, as set forth.

3. A crank mechanism, comprising an oscillating shaft having fork-arms, a crank made in sections held on said fork-arms, links connecting the inner ends of the sections with each other, pitmen connected with the outer ends of said sections, and a main or driven shaft having diametrically-arranged crank-arms connected with said pitmen, as set forth.

4. A crank mechanism for connecting an oscillating shaft with a rotary shaft, comprising a crank made in sections standing across the oscillating shaft and pivoted on fork-arms of the said oscillating shaft, a link for connecting the inner ends of the crank-sections with each other, the link standing approximately at a right angle to the sections and diametrically across the oscillating shaft, and connections between the outer ends of the crank-sections and the crank-arms on the rotary shaft, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES GUSTAVE HOLMBERG.

Witnesses:
L. H. PIER,
S. J. MITCHELL.