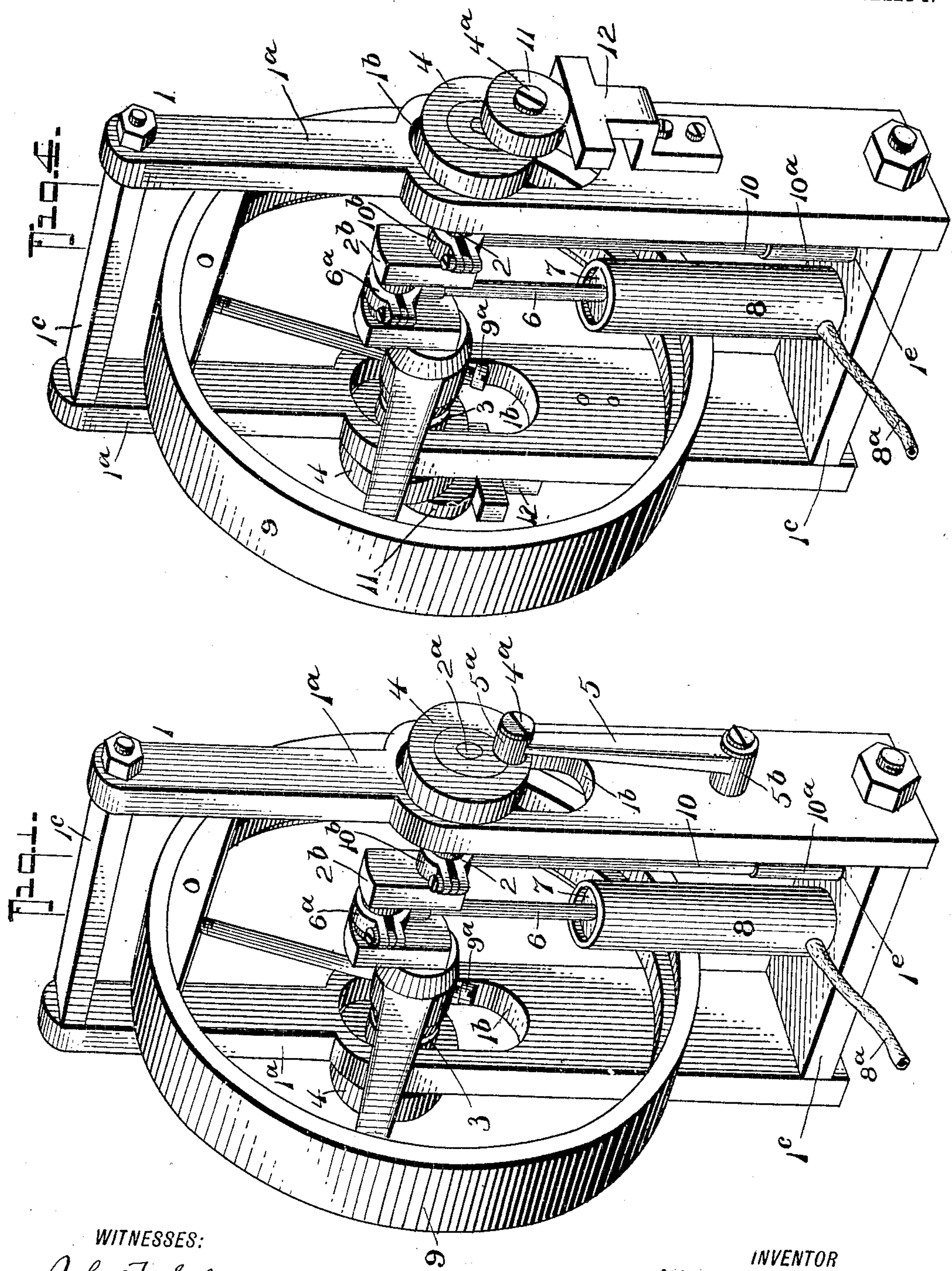


No. 843,110.

PATENTED FEB. 5, 1907.

A. SACK.  
MECHANICAL MOVEMENT.  
APPLICATION FILED NOV. 30, 1906.

2 SHEETS—SHEET 1.



WITNESSES:  
*John T. Schriott.*  
*Ch. L. Gibson.*

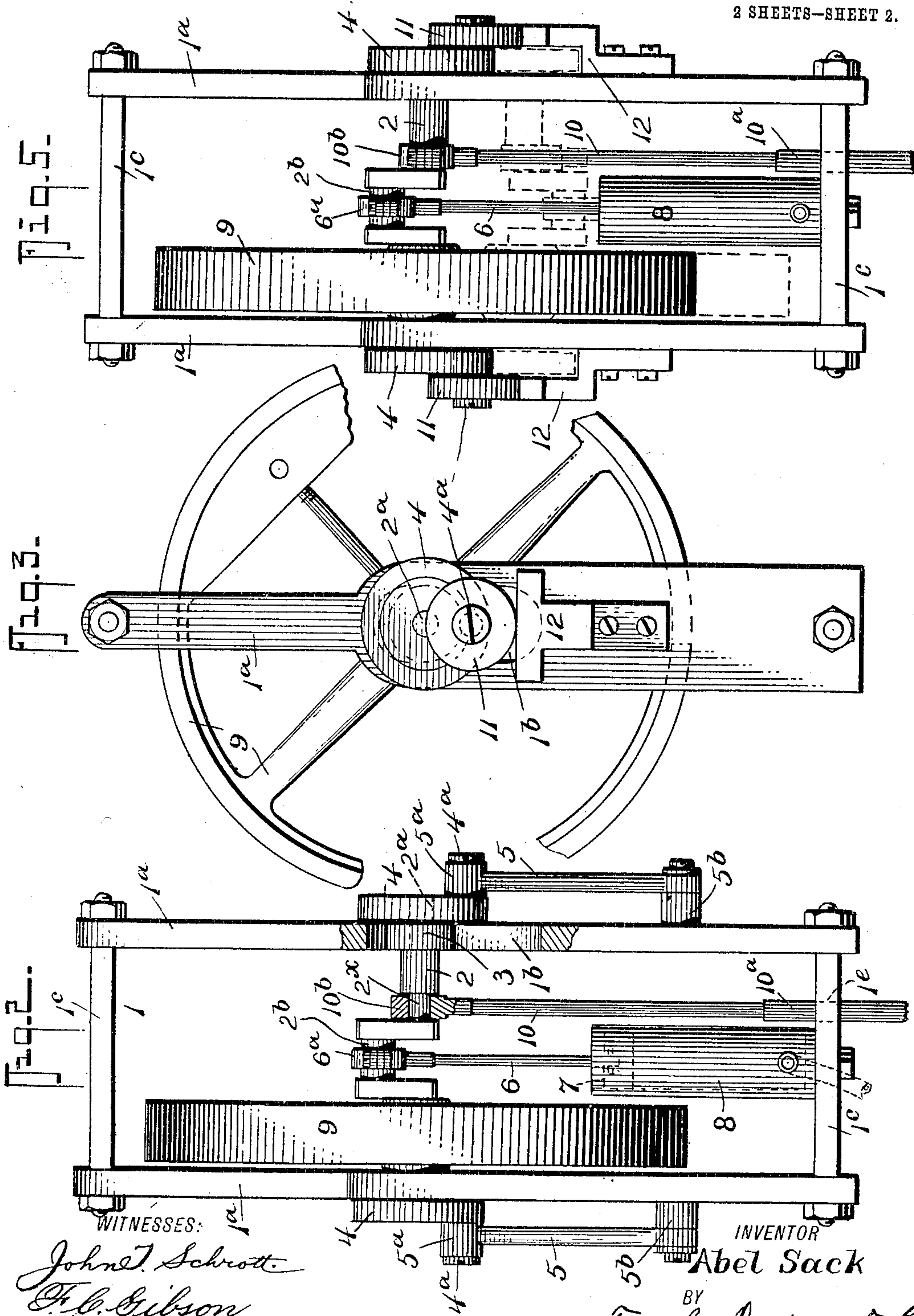
INVENTOR  
**Abel Sack**  
BY  
*Fred Goetz*  
ATTORNEYS.

No. 843,110.

PATENTED FEB. 5, 1907.

A. SACK.  
MECHANICAL MOVEMENT.  
APPLICATION FILED NOV. 30, 1906.

2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

ABEL SACK, OF ASHTON, NEBRASKA.

## MECHANICAL MOVEMENT.

No 843,110.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed November 30, 1906. Serial No. 345,800.

*To all whom it may concern:*

Be it known that I, ABEL SACK, residing at Ashton, in the county of Sherman and State of Nebraska, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

My invention relates to certain new and useful improvements in mechanical movements, and it particularly seeks to provide an improved crank-slide motion for all kinds of machinery.

In its generic nature my invention comprises a supporting-framework having grooved guideways, a shaft mounted in said frame and projecting through said guideways and carrying friction-rollers to cooperate with the guideways, means for moving the shaft along the guideways and simultaneously rotating the same, together with means for transmitting the motion of the shaft.

In its more detailed nature my invention comprises certain novel constructions, combinations, and arrangements of parts, all of which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my invention. Fig. 2 is a front elevation thereof, the supporting-frame being broken away in part to more clearly illustrate the invention. Fig. 3 is a side elevation of a modified form of my invention. Fig. 4 is a perspective view of a modified form of my invention. Fig. 5 is a front elevation thereof, showing the position of the parts when the shaft is at the limit of its movement in one direction in the guideways in full lines and showing the position of the parts when the shaft is at the limit of its movement in the opposite direction in dotted lines.

Referring now to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all of the figures, it will be seen that 1 designates a supporting-frame, which comprises the side bars 1<sup>a</sup> 1<sup>a</sup>, having the elongated slots 1<sup>b</sup> 1<sup>b</sup> to serve as guideways, which will be hereinafter again referred to. The side bars 1<sup>a</sup> are connected by transverse beams 1<sup>c</sup>, as shown.

2 designates a crank-shaft passing through

the supports 1<sup>a</sup> and the guideways therein and having its ends 2<sup>a</sup> reduced in diameter to receive friction-rollers 3, which operate in the guideways, and on the end of the shaft 2 are crank-disks 4, having wrist-pins 4<sup>a</sup>, which connect with the bearing 5<sup>a</sup> of pitmen or levers 5, which are pivotally secured at 5<sup>b</sup> to the supporting-bars 1<sup>a</sup>, as shown. The shaft 2 is also provided with a crank 2<sup>b</sup>, disposed midway the side bars 1<sup>a</sup>, which crank connects with the piston-rod 6 through a divided bearing 6<sup>a</sup> on the end of the piston-rod, and the piston-rod 6 may be provided with a piston 7 to operate in the cylinder 8, secured to one of the cross-bars 1<sup>c</sup> of the supporting-frame.

Adjacent one of the side bars 1<sup>a</sup> the shaft 2 carries a fly-wheel 9, which is fixedly secured thereto by a set-screw or key 9<sup>a</sup>, so that it will turn with the shaft.

10 designates a rod which projects through a bearing-aperture 1<sup>e</sup> in one of the transverse bars 1<sup>c</sup> and has an enlarged portion 10<sup>a</sup> to cooperate with the aperture in the transverse bar. One end of the rod 10 has a divided bearing 10<sup>b</sup> to receive the shaft 2, the shaft 2 being of a slightly reduced diameter, as at 2<sup>x</sup>, to receive said bearing.

In the operation of my invention the bar 10 may be secured to any suitable source of reciprocating power which will transmit its reciprocation to the shaft 2, making it move from end to end in the slideways 1<sup>b</sup>, and by virtue of the fixed levers or pitmen that are connected with the shaft and the supporting-frame the shaft will be rotated and the movement of the shaft imparted to the piston-rod, which causes the piston in the cylinder to operate. The cylinder 8 may be provided with a valved offtake-pipe 8<sup>a</sup>, if desired, so that the same can be used as an air-compressor, it being noticed that the stroke of the piston-rod when power is applied to the rod 10 will be double that of the rod 10.

Instead of using the piston as an air-compressor the same may be used as an engine and the power transmitted through the medium of the rod, being simply a reversal of the operation just above described.

In Fig. 4 I have shown a modified form of my invention, in which the crank-disks 4 have their crank-pins provided with rollers



11 and the arms 5 are omitted. To take the place of the arms 5, I provide bracket members 12, which may be detachably secured to the supporting-bars 1<sup>a</sup> of the framework to  
 5 coöperate with the rollers 11 and produces the same result as when the arms 5 are used.

While I have described two methods of using my invention, particularly by using the piston as an air-compressor or as an engine,  
 10 as the case may be, yet I desire it understood that my invention can be used in connection with any machinery with which it may be found to be applicable.

From the foregoing description, taken in  
 15 connection with the accompanying drawings, it is thought the complete construction, operation, and numerous advantages of my invention will be readily understood by those skilled in the art to which the invention ap-  
 20 pertains, and I desire to call attention to the fact that my invention can be used with the supporting-framework held in a vertical plane, in a horizontal plane, or inclined at any angle desired.

25 When the invention is used with the parts in a vertical plane, as shown in Fig. 1, then the weight in the fly-wheel on the downward movement of the shaft-piston will add its equivalent power to that exerted by the piston,  
 30 and hence aid the pumping stroke thereof when the device is used as an air-compressor or other pump.

What I claim is—

1. An apparatus of the class described,  
 35 comprising a supporting-framework having guides, a shaft held in said framework and mounted in said guides, crank-carrying disks secured at each end to said shaft, a fixedly-held member secured to the supporting-  
 40 frame and coöperating with said crank-disks, a fly-wheel mounted on said crank-shaft within said framework, said crank-shaft having a crank, a piston-rod connected to said crank, and a reciprocable rod con-  
 45 nected with said shaft, substantially as shown and described.

2. An apparatus of the class described, comprising the combination with a support-  
 50 ing-frame having elongated guideways, a shaft mounted therein, friction-rollers on said shaft within said guideways, said shaft projecting through said guideways, crank-disks carried by the ends of said shaft, said crank-disks having cranks, friction-wheels  
 55 mounted on said cranks, fixed members secured to the supporting-framework for engaging said friction-wheels, means for moving said shaft in its guideways, said shaft having a crank, and means for transmitting  
 60 motion connected with said crank.

3. An apparatus of the class described, comprising the combination with a support-  
 ing-frame having elongated guideways, a

shaft mounted therein, friction-rollers on  
 said shaft within said guideways, said shaft 65  
 projecting through said guideways, crank-disks carried by the ends of said shaft, said crank-disks having cranks, friction-wheels mounted on said cranks, fixed members se-  
 70 cured to the supporting-framework for engaging said friction-wheels, means for moving said shaft in its guideways, said shaft having a crank, means for transmitting motion connected with said crank, and a fly-wheel carried by said shaft. 75

4. The combination with a supporting-  
 framework having guideways, of a shaft  
 journaled therein, friction-wheels carried by  
 said shaft in said guideways, crank-carrying  
 80 disks secured to said shaft at its ends, friction-wheels carried by the cranks of said disks, fixed members carried by the support-  
 ing-frame for coöperating with said friction-  
 wheels, a rod connected with said shaft, said  
 shaft having a crank, a rod connected with 85  
 said crank, and a fly-wheel carried by said shaft, all being so arranged that when power is applied to one of said rods, the same is  
 transmitted through the medium of the other  
 90 rod, substantially as shown and described.

5. The combination with a supporting-  
 framework having guideways, of a shaft jour-  
 naled therein, friction-wheels carried by said  
 shaft in said guideways, crank-carrying disks  
 secured to said shaft at its ends, friction- 95  
 wheels carried by the cranks of said disks, fixed members carried by the supporting-  
 frame for coöperating with said friction-  
 wheels, a rod connected with said shaft, said  
 shaft having a crank, a rod connected with 100  
 said crank, a fly-wheel carried by said shaft, a piston connected to said crank-connected  
 rod, and a cylinder carried by the support-  
 ing-frame for coöperating with said piston  
 105 substantially as shown and described.

6. The combination with a supporting-  
 framework having guideways, of a shaft jour-  
 naled therein, friction-wheels carried by said  
 shaft in said guideways, crank-carrying disks  
 secured to said shaft at its ends, friction- 110  
 wheels carried by the cranks of said disks, fixed members carried by the supporting-  
 frame for coöperating with said friction-  
 wheels, a rod connected with said shaft, said  
 shaft having a crank, a rod connected with 115  
 said crank, a fly-wheel carried by said shaft, a piston connected to said crank-connected  
 rod, and a cylinder carried by the supporting-  
 frame for coöperating with said piston, said  
 first-mentioned shaft-connected rod project- 120  
 ing through a bearing-aperture in the sup-  
 porting-frame to guide the same, substan-  
 tially as shown and described.

7. An apparatus of the class described,  
 comprising a supporting-framework having 125  
 guides, a shaft held in said framework and

mounted in said guides, crank-carrying disks / a piston-rod connected to said crank, and a  
secured at each end to said shaft, a member reciprocable rod connected with said shaft  
secured to the supporting-frame at each side substantially as shown and described.  
and coöperatively connected with the cranks ABEL SACK.  
5 of the crank-carrying disks, a fly-wheel  
mounted on the crank-shaft within the  
framework, said crank-shaft having a crank,

Witnesses:

I. M. POLSKI,  
S. S. POLSKI.