

No. 748,024.

PATENTED DEC. 29, 1903.

S. D. STEVENS.  
MECHANICAL MOVEMENT.

APPLICATION FILED APR. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

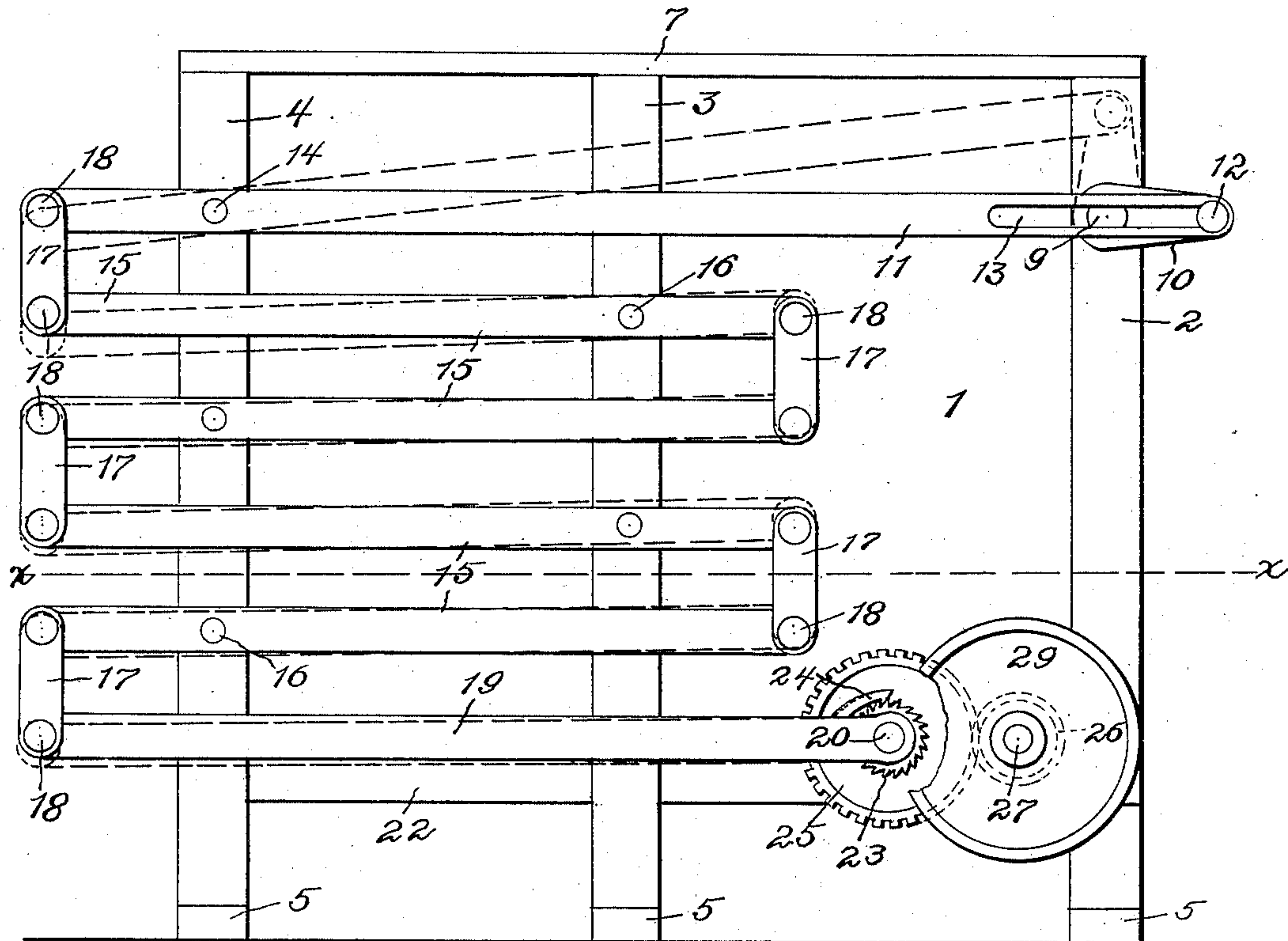


Fig. 1.

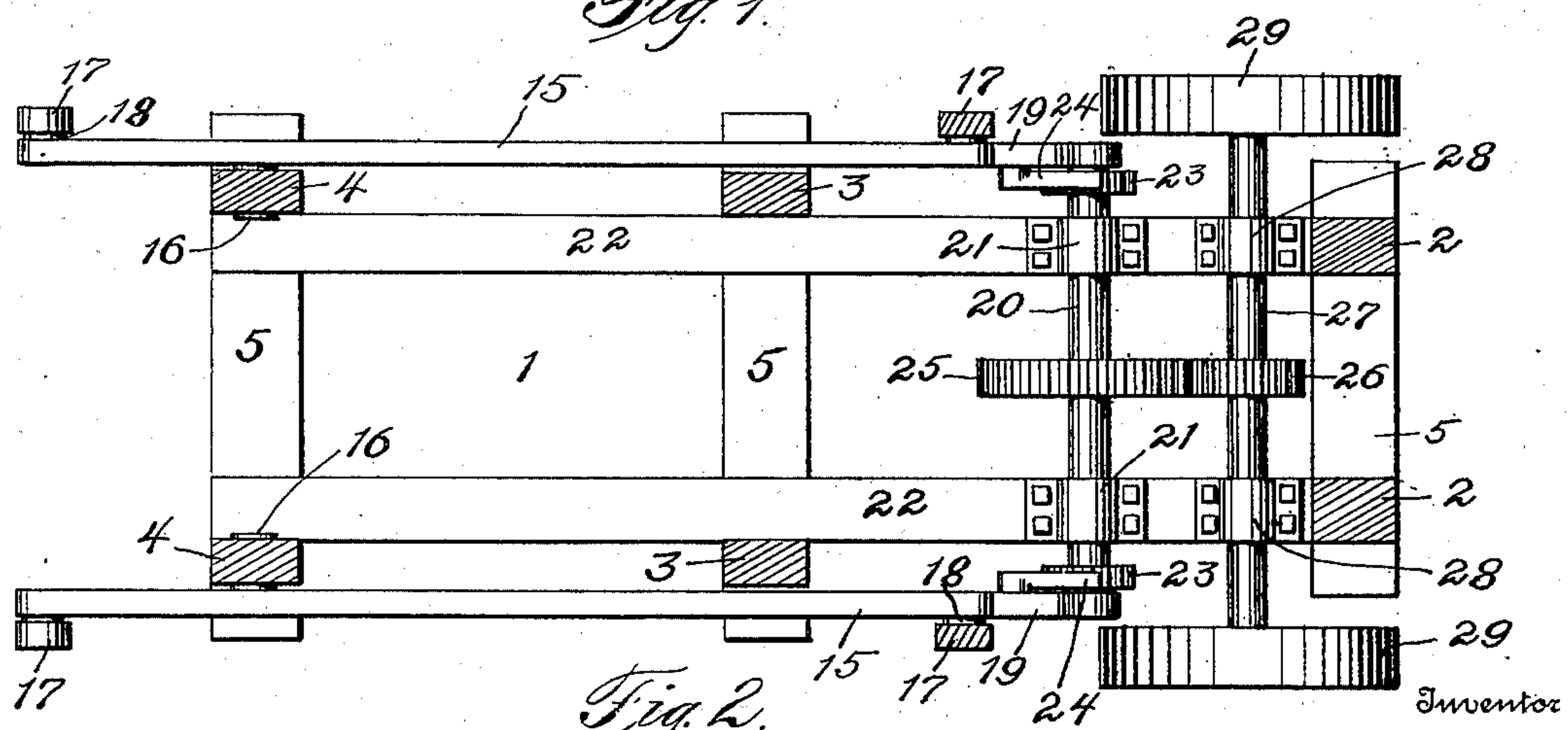


Fig. 2.

Witnesses

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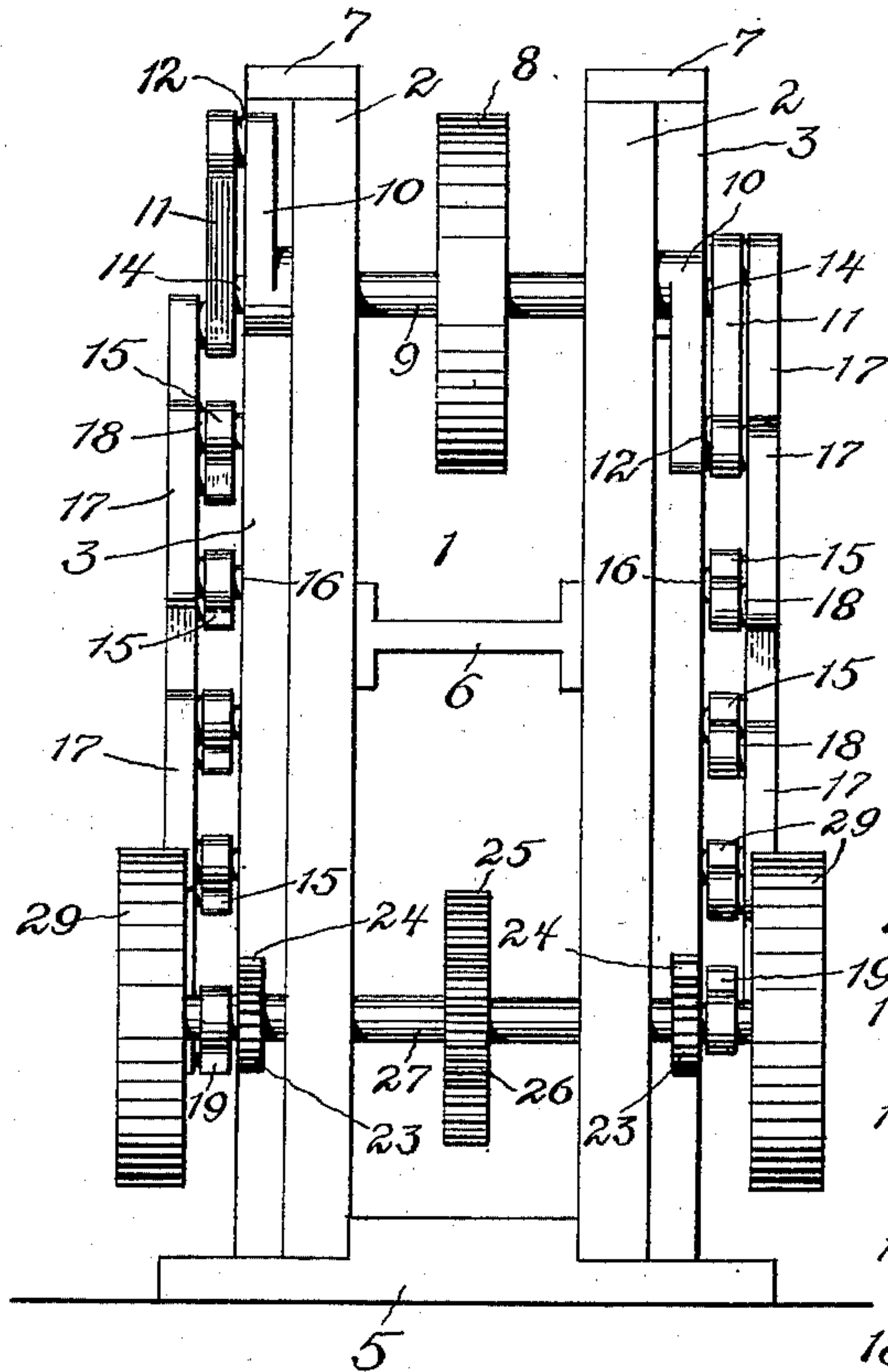


Fig. 3.

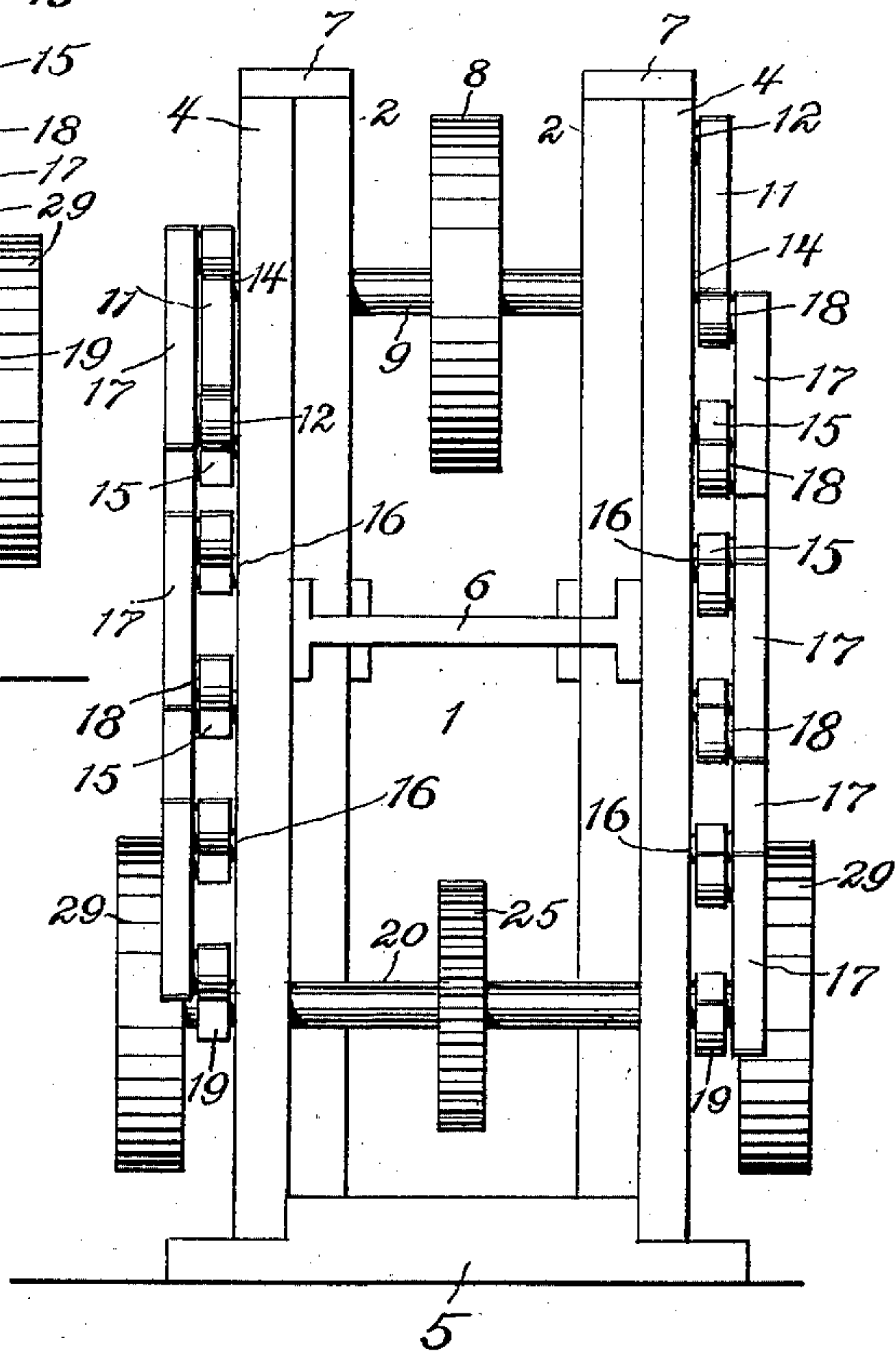


Fig. 4.

Witnesses  
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# UNITED STATES PATENT OFFICE.

SAMUEL DAVID STEVENS, OF CHANDLER, TEXAS.

## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 748,024, dated December 29, 1903.

Application filed April 2, 1903. Serial No. 150,838. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL DAVID STEVENS, a citizen of the United States, residing at Chandler, in the county of Henderson and State of Texas, have invented certain new and useful Improvements in Mechanical Move-  
5 ments, of which the following is a specification.

My invention relates to an improvement in  
10 mechanical movements.

The object of my invention is to produce an apparatus for multiplying power. I have constructed such an apparatus employing a plurality of connected levers pivoted to a  
15 frame and adapted to multiply the power generated by a balance-pulley mounted on the upper part of the frame and transmit the same through the levers to a pair of band-pulleys carried on the base of the said frame.

20 My invention is more especially designed for use in connection with sawmills, gins, and the like; but it may be used in various manners.

Finally, my invention has for its object the  
25 provision of an apparatus that will be strong, durable, and efficient and comparatively simple and inexpensive to construct.

With the above and other objects in view my invention consists in the novel details of  
30 construction and operation, a preferable embodiment of which is described and illustrated in the accompanying specification and drawings, wherein—

Figure 1 is a side elevation of the apparatus, showing the levers in two of their positions. Fig. 2 is a transverse sectional view  
35 taken on the line *xx* of Fig. 1. Fig. 3 is a front elevation, and Fig. 4 is a rear elevation.

In the drawings the numeral 1 designates  
40 the frame, which comprises the standards 2, 3, and 4, connected at their bases by sill-blocks 5 and braced by bars 6, placed intermediate their ends. The standards are capped by longitudinal bars 7, which brace their upper  
45 ends. Between the standards 2 a balance-wheel 8 is mounted upon a shaft 9, passing through the standards. Cranks 10 are keyed to the outer ends of the shaft and project at approximately right angles thereto,  
50 but from opposite sides of the said shaft. Long levers 11 are connected to the cranks by wrist-pins 12, which slide in the elongated

slots 13, provided in the ends of the levers, and the said levers are pivoted to the standards 4 upon pins 14. It might be here stated  
55 that the levers for multiplying the power are provided on both sides of the frame, and the long levers 11 being connected to the oppositely-disposed cranks it will be readily seen that the levers will move in opposite direc-  
60 tions, thereby causing the levers on one side of the frame to be at the limit of their upward stroke when the levers on the opposite side are at the limit of their downward stroke.

Arranged on each side of the frame are a  
65 plurality of levers 15, pivoted alternately to the standards 3 and 4 upon pins 16. The levers are pivotally connected in pairs by links 17, each lever being connected to the lever above at one end and to the lever below at  
70 the other end. The links 17 and the levers 15 are pivoted together by pins 18, and the rear ends of the uppermost levers 15 are connected to the long levers 11 also by the links 17 and pins 18. Operating-arms 19, connect-  
75 ed to the levers 15 by the links 17, are journaled upon the ends of a shaft 20, mounted in bearings 21, secured upon the side rails 22, which latter are supported upon the standards 2, 3, and 4. The shaft 20 carries a pair of fixed  
80 ratchet-wheels 23, which are rotated by pawls 24, pivoted upon the inner faces of the arms 19. Keyed upon the shaft 20 is a gear 25, which meshes with a pinion 26, fixed upon a second shaft 27, mounted in bearings 28, se-  
85 cured on the side rails 22 in front of the shaft 20.

The shaft 27 supports upon its outer ends a pair of pulleys 29, which may be connected in any suitable manner with the machine or  
90 apparatus to which power is to be furnished. One of the pulleys 29 may be used as a fly-wheel to balance the shaft 27.

The operation of the apparatus is as follows: Motion being imparted to the balance  
95 pulley or wheel 8 by any suitable engine or power means, the cranks 10 are rotated, which in turn swing the long levers 11, the wrist-pins 12 sliding in the slots 13. As before stated, the cranks are oppositely dis-  
100 posed. Thus one of the long levers will be swung downwardly while the other is being swung upwardly, and the levers 15, being connected to the long levers 11, will be swung



upon their pivot-pins 16, the levers upon the opposite sides of the frame moving or swinging in opposite directions.

From the foregoing it will be evident that  
 5 such alternate swinging will be imparted to the arms 19 through the links 17, one of the arms 19 swinging upwardly and causing its pawl 24 to slip over the teeth of the ratchet-wheel 23, and at the limit of its upward movement  
 10 the pawl 24 catches on one of the ratchet-teeth, while the other arm 19, having gone through the operation of the first-named arm and swinging downwardly, rotates the ratchet-wheel 23. Thus it will be readily understood that a continuous rotation of the  
 15 shaft 20 will be maintained through the alternate movement of the pawls. The gear 25, being keyed to the shaft 20 and meshing with the pinion 26, rotates the latter, which  
 20 causes the pulleys 29, carried on the pinion-shaft 27, to be rotated at a high rate of speed.

It is easily seen that a small force applied to the pulley 8 will be multiplied by the levers  
 25 and arms and through the pawls and ratchets and gears, so that when it reaches the pulleys its magnitude will be greatly increased, and such power may be utilized to operate machinery which would otherwise  
 30 require powerful operating means.

I do not wish to limit my invention to the exact details of construction and operation herein set forth, as I may make various changes in the same without departing from  
 35 the spirit of my invention.

Having fully described my invention, what I claim to be new and useful, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, a frame, a plurality of levers swing- 40  
 ingly mounted on the frame, a power-wheel mounted on the frame, a shaft supporting the power-wheel, cranks carried on the shaft and connected to the levers, swinging arms connected to the levers, a shaft having the arms 45  
 journaled thereon, ratchet-wheels fixed on the shaft, pawls carried by the arms and engaging the ratchet-wheels, a gear mounted on the shaft, a pinion meshing the gear, and a pulley mounted on the shaft carrying the 50  
 pinion, substantially as described.

2. In an apparatus of the character described, the combination with a plurality of pivoted levers, the pivots of the levers being alternately arranged adjacent the opposite 55  
 ends thereof, links pivoted to the ends of the levers, said links being alternately arranged and each engaging two successive levers, means for imparting movement to said levers, and means for transmitting power generated by the levers. 60

3. The combination with a plurality of levers alternately pivoted at points adjacent their opposite ends, alternately - arranged 65  
 links each pivoted to the ends of two levers, means connected with the free end of one end lever for actuating the same, and means connected to the other end lever for transmitting the power generated by the levers.

In testimony whereof I affix my signature 70  
 in presence of two witnesses.

SAMUEL DAVID STEVENS.

Witnesses:

GEO. P. HUGHES,

CHARLES R. YARBROUGH.