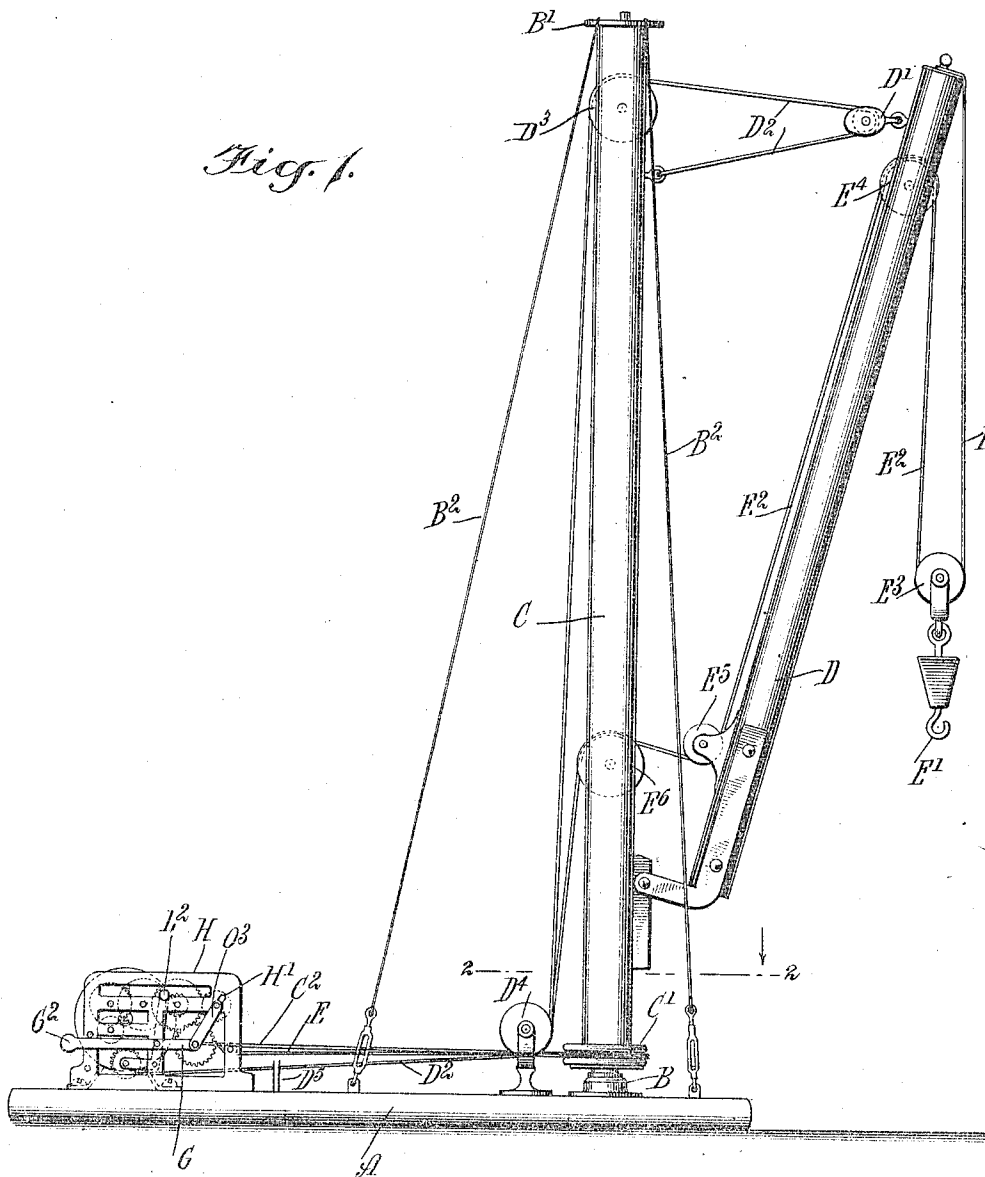


A. PFEIFFER.
MECHANISM FOR OPERATING TOY DERRICKS.
APPLICATION FILED JAN. 26, 1912.

1,038,949.

Patented Sept. 17, 1912.

3 SHEETS—SHEET 1.



WITNESSES
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Rev. H. H. H. H.

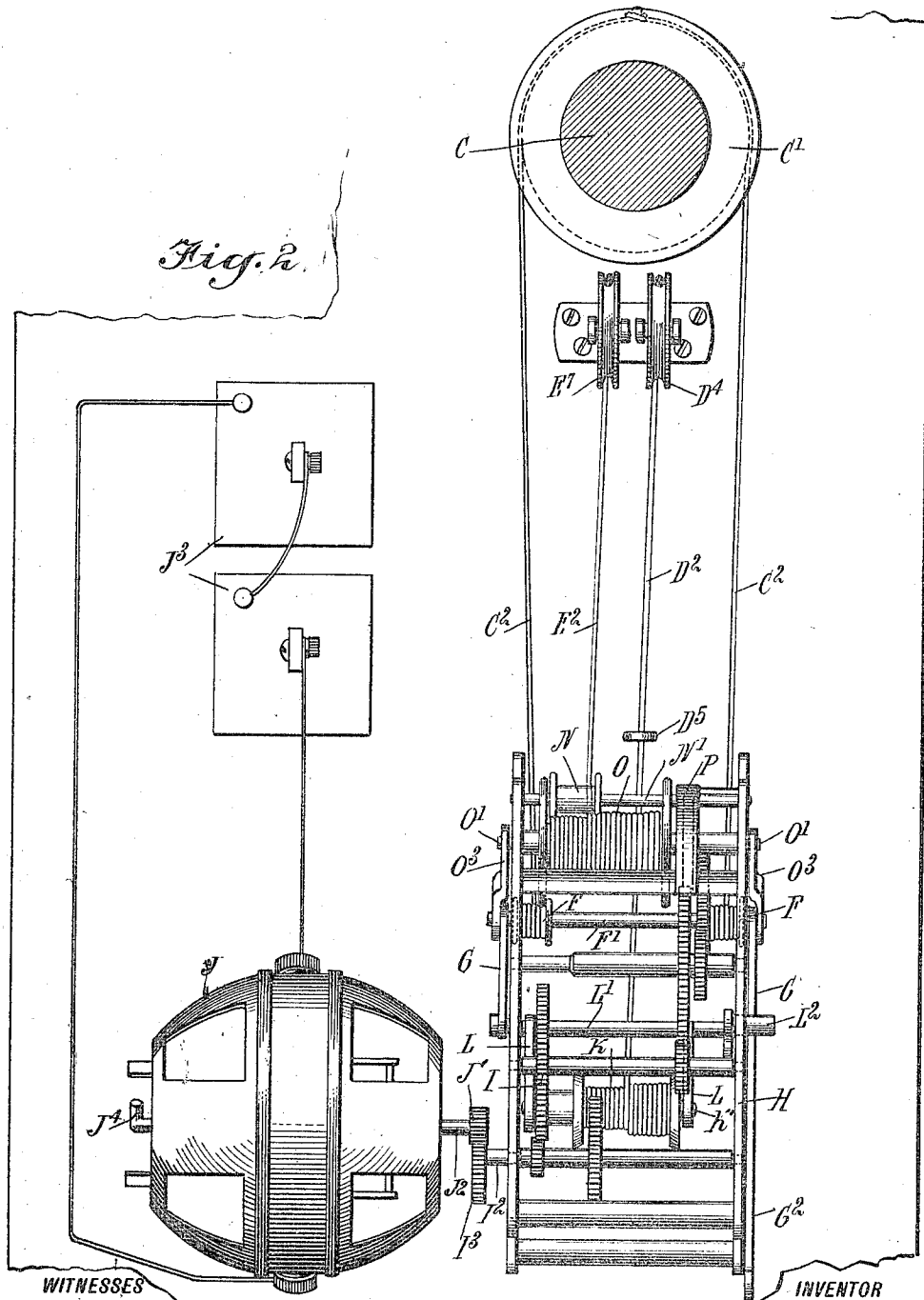
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

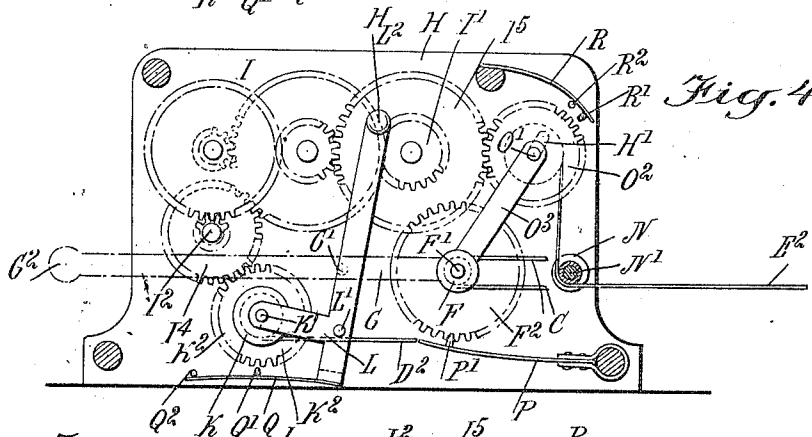
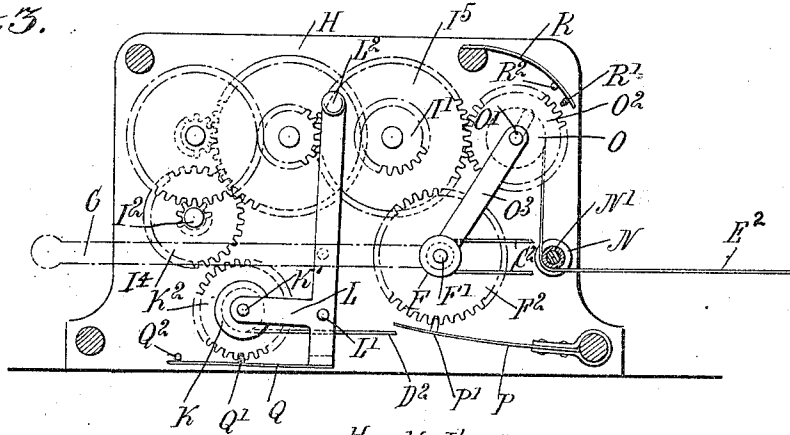
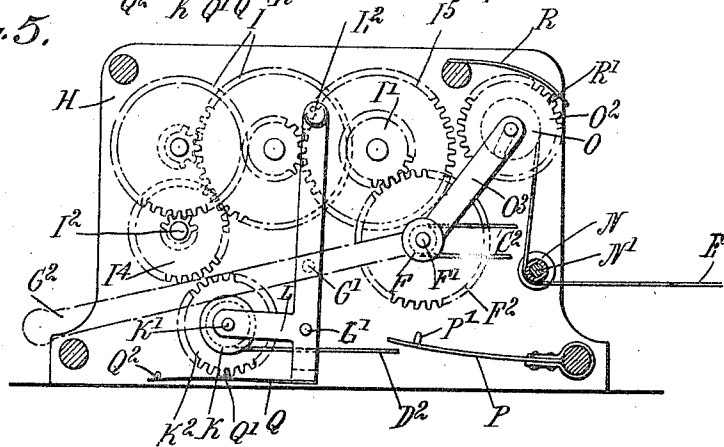


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR OPERATING TOY DERRICKS.

1,038,949.

Specification of Letters Patent.

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Application filed January 26, 1912. Serial No. 673,530.

To all whom it may concern:

Be it known that I, ADOLPH PFEIFFER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Mechanism for Operating Toy Derricks, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved mechanism for operating toy derricks arranged to raise, lower or swing sidewise small loads by the use of a motor driven mechanism easily controlled by children, affording considerable amusement and at the same time providing an instructive toy.

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; Fig. 2 is an enlarged plan view of the same, parts being in section on the line 2-2 of Fig. 1; Fig. 3 is an enlarged sectional side elevation of the driving mechanism and with parts in position for manipulating the boom; Fig. 4 is a similar view of the same with the parts in position for manipulating the boom and hoisting device; and Fig. 5 is a like view of the same with the parts in position for turning the post with a view to swing the boom sidewise.

On a suitably constructed base A is arranged a step B on which is mounted to turn the lower end of a post C provided with a top bearing B' connected by stays B² with the base A so as to hold the post C in a vertical position. On the lower portion of the post C is mounted to swing up and down a boom D carrying a hoisting device E provided with a supporting hook E' for supporting a small load to be raised or lowered or moved sidewise according to the fancy of the operator, as hereinafter more fully described.

On the lower end of the post C is secured a pulley C' around which passes a rope C² having its ends winding in opposite directions on a drum F, preferably called the post drum, and having its shaft F' journaled in a swing frame G fulcrumed at G' on a framework H attached to the base A. The swing frame G is provided with a handle G² under the control of the operator for

swinging the drum F up or down for a purpose hereinafter more fully explained.

On the shaft F' of the post drum F is secured a gear wheel F² adapted to move in or out of mesh with a gear wheel I' forming part of a train of gear wheels I mounted on the frame H. The train of gear wheels I is provided with a driving shaft I² extending beyond one side of the frame H (see Fig. 2), and on the outer end of this shaft I² is secured a gear wheel I³ in mesh with a pinion J' secured on the shaft J² of a motor J of any approved construction, the motor being preferably, however, a reversible electric motor such as is now frequently used for driving mechanical toys, etc. The electric motor J is electrically connected with a battery J³ held on the base A, and the motor is provided with a reversing lever J⁴ under the control of the operator for rotating the motor in either direction. When the motor J is running and the operator swings the lever G² of the swing frame G downward (see Fig. 5) then the gear wheel F² is moved in mesh with the gear wheel I' of the speed-reducing train of gear wheels I so that the said gear wheel F² is rotated and with it the drum F to wind up one end of the rope C² and unwind the other with a view to turn the post C in either direction according to the direction in which the motor J is running at a time. It is understood that when the post C is turning, the boom D moves with it thus swinging the load sidewise either to the right or to the left.

In order to swing the boom D up or down the following manipulating device is provided: Near the free end of the boom D is mounted a sheave D' around which passes a rope D² fastened at one end to the post C and passing over a guide pulley D³ journaled in the upper end of the post C, the rope then extending downward and passing under a guide pulley D⁴ mounted on the base A. The rope D² then extends forward and passes through an eye D⁵ attached to the base A, and the end of the rope finally winds on a drum K, which is preferably called the boom drum and which has its shaft K' journaled in the arms L of a swing frame provided with a shaft L' journaled in the sides of the frame H. The swing frame is provided with a handle L² under the control of the operator for imparting an up and down swinging motion to the drum K. On the shaft K' of the drum K is secured a gear

wheel K^2 adapted to be moved in and out of mesh with a gear wheel I^4 secured on the shaft I^2 of the train of gear wheels I previously mentioned. When the drum K is in lowermost position, as shown in Figs. 3 and 5 then the gear wheel K^2 is out of mesh with the gear wheel I^4 and consequently the drum K is at a standstill, but when the drum K is swung upward into the position shown in Fig. 4 then the gear wheel K^2 moves into mesh with the gear wheel I^4 and when the motor J is now running and driving the train of gear wheels I then a rotary motion is given to the drum K to wind up or unwind the rope D^2 according to the direction in which the motor J is running at the time. When the rope D^2 is winding up on the drum K then an upward swinging movement is given to the boom D , and when the rope D^2 unwinds from the drum K then the boom D swings downward and with it the load carried.

In order to actuate the hoisting mechanism E , the following arrangement is made: A hoisting rope E^2 supports a sheave E^3 carrying the hook E' , and one end of the hoisting rope E^2 is attached to the end of the boom D , as shown in Fig. 1. The rope E^2 passes over a pulley E^4 journaled near the outer end of the boom D and then the rope E^2 extends down from the boom and passes around a guide pulley E^5 journaled on the boom D then over a guide pulley E^6 journaled on the post C and then under a guide pulley E^7 journaled on the base A . The rope E^2 then extends forward and passes around a traverse guide pulley N mounted to slide loosely in a transverse direction on the rod N' carried on the frame H , and the rope E^2 passes from the said traverse guide pulley N onto a drum O , preferably called the hoisting drum. The drum O has its shaft engaging inclined guideways H' arranged on the frame H , and the said shaft O' is journaled in links O^3 fulcrumed loosely on the shaft F' of the post drum F . On the shaft O' is secured a gear wheel O^2 adapted to move in and out of mesh with a gear wheel I^5 forming part of the train of gear wheels I , and when the swing frame is in lowermost position, as shown in Figs. 3 and 4, then the gear wheel O^2 is in mesh with the gear wheel I^5 and consequently the drum O is rotated whenever the motor J is running. When the motor is running in one direction and with it the drum O to wind up the rope E^2 then the load supported on the hook E' and hoisting device E is raised, and when the motor J and with it the drum O runs in the opposite direction then the rope E^2 unwinds and the load is lowered.

In order to hold the drum gear wheel F^2 and consequently the drum F against rotation at the time the said gear wheel F^2 is

out of mesh with the gear wheel I' use is made of a spring P secured on the frame H and provided with a tooth P' adapted to pass between adjacent teeth of the gear wheel F^2 to hold the latter against rotation. When the drum F and with it the gear wheel F^2 is swung upward the gear wheel F^2 moves out of engagement with the tooth P' and is hence free to rotate. A similar locking device is provided for the gear wheel K^2 of the drum K , that is, a spring Q is attached to the arm L and is provided with a tooth Q' adapted to pass between adjacent teeth of the gear wheel K^2 to hold the latter against rotating at the time the drum K is in lowermost position, as indicated in Figs. 3 and 5. A stop pin Q^2 on the frame H is adapted to be engaged by the free end of the spring Q to hold the tooth Q' out of engagement with the gear wheel K^2 at the time the said gear wheel K^2 and the drum K move into uppermost position (see Fig. 4). A similar locking device is also provided for the gear wheel O^2 of the drum O , that is, a spring R is attached to the frame H and is provided with a tooth R' adapted to pass between adjacent teeth of the gear wheel O^2 at the time the drum O is in uppermost position, as shown in Fig. 5. A stop pin R^2 held on the frame H is adapted to be engaged by the spring R at the time the gear wheel O^2 moves into mesh with the gear wheel I^5 so that the tooth R' is held out of engagement with the said gear wheel.

The operation is as follows: When the several parts are in the position shown in Fig. 3, then the gear wheels F^2 and K^2 are in lowermost position and held against rotation by their locking devices P' , Q' , and the gear wheel O^2 is in mesh with the gear wheel I^5 so that when the motor J is running then the load supported on the hook E' is raised or lowered according to the direction in which the motor is running. While this is going on the boom D may be swung up or down and in order to do so it is only necessary for the operator to swing the handle L^2 from the position shown in Fig. 3 into the position shown in Fig. 4 so that the gear wheel K^2 is moved in mesh with the gear wheel I^4 whereby the drum K is rotated to cause the rope D^2 to swing the boom D up or down. When it is desired to turn the post C the operator swings the handle G^2 downward into the position shown in Fig. 5 so that the gear wheel O^2 is moved out of mesh with the gear wheel I^5 and the gear wheel F^2 is moved into mesh with the gear wheel I' whereby the drum F is rotated and a turning motion is given by the rope C^2 and pulley C' to the post C in a direction corresponding to the direction in which the motor is running at the time.

From the foregoing it will be seen that

by the arrangement described a boy or other child can readily control the motor J by manipulating the reversing lever J* thereof, and he can also readily control the handles L² and G² for operating the derrick with a view to raise or lower the load, to swing the boom D up or down or sidewise on turning the post C.

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

1. In mechanism for operating toy derricks, a train of gearing, a motor for operating the said gearing, a swinging frame having a handle at one end, a power transmitting shaft mounted in the frame, and a gear wheel on the power transmitting shaft and adapted to be moved into and out of mesh with one of the wheels of the train of gearing by said swinging frame.

2. In mechanism for operating toy derricks, a frame, a train of gearing mounted in the frame, a swinging frame having a handle at one end, a power transmitting shaft mounted in the swinging frame, a gear wheel on the power transmitting shaft and adapted to be moved into and out of mesh with one of the wheels of the train of gearing by said swinging frame, and a spring provided with a tooth adapted to engage the said gear wheel when the gear wheel is out of mesh with a wheel of the train of gearing to hold the said shaft from rotating.

3. In mechanism for operating toy derricks, a main frame, a train of gearing

mounted in the frame, a motor for operating the said gearing, a manually operated swinging frame, a power transmitting shaft mounted in one end of the swinging frame, a gear wheel on the said shaft and adapted to mesh with one of the wheels of the gearing, a second power transmitting shaft mounted in guideways of the main frame, a gear wheel on the said second shaft and adapted to mesh with another wheel of the train of gearing, and links connecting the said transmitting shafts.

4. In mechanism for operating toy derricks, a main frame, a train of gearing mounted in the frame, a motor for operating said gearing, a manually operated swinging frame, a power transmitting shaft mounted in one end of the swinging frame, a gear wheel on said shaft and adapted to mesh with one of the wheels of said gearing, a second power transmitting shaft mounted in guideways of the main frame, a gear wheel on said second shaft and adapted to mesh with another gear wheel of the train of gearing, links connecting said shafts, and a spring secured to the main frame adjacent to each of the said gear wheels and provided with a tooth for engaging the same when out of mesh with the train of gearing.

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

ADOLPH PFEIFFER.

Witnesses:

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PHILIP D. ROLLHAUS.