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W. H. PIKE, JR.

PATENTED JAN. 7, 1908.

OPERATING DEVICE FOR CALCULATING MACHINES.

APPLICATION FILED JUNE 28, 1906.

4 SHEETS—SHEET 1.

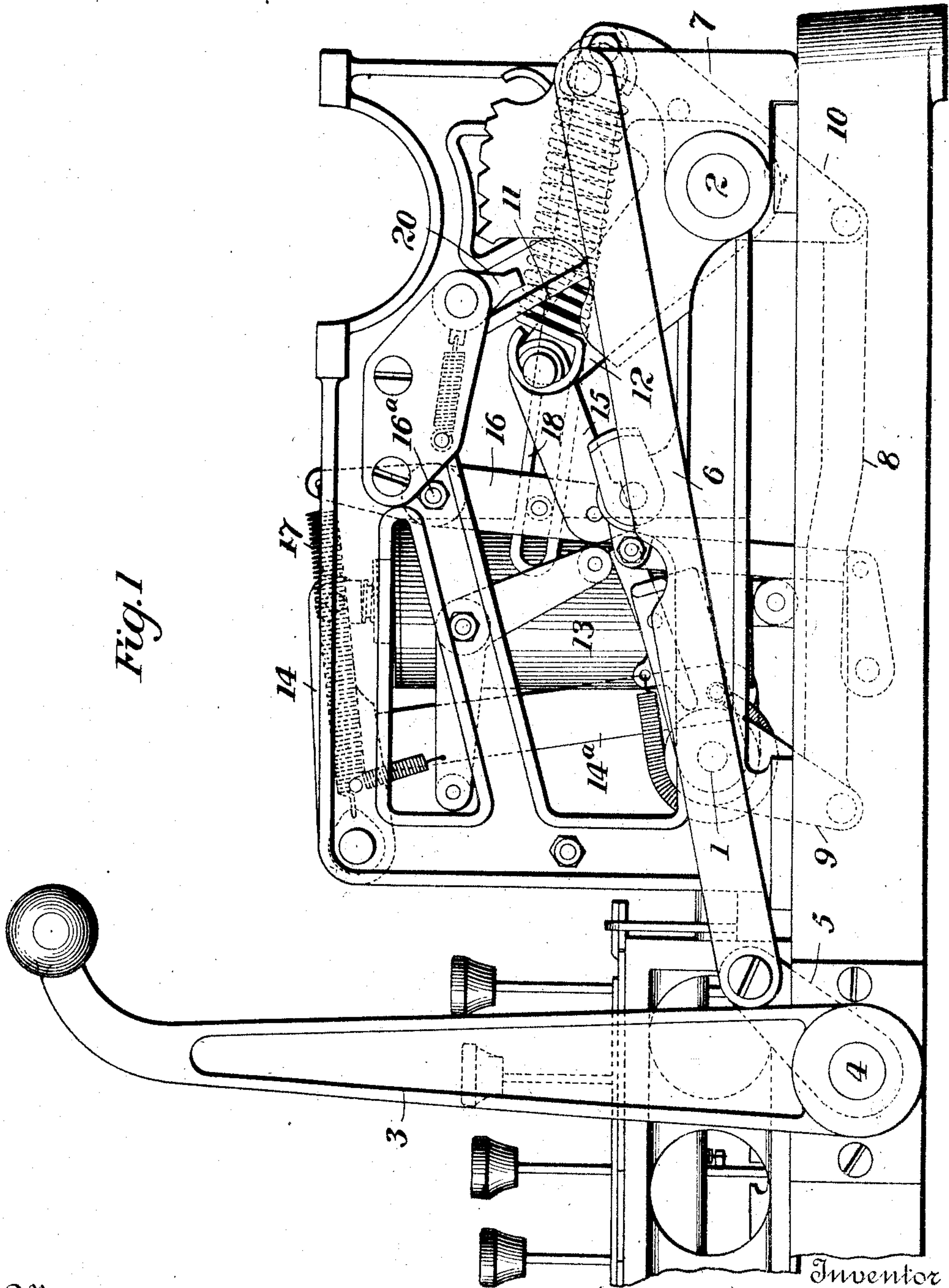


Fig. 1

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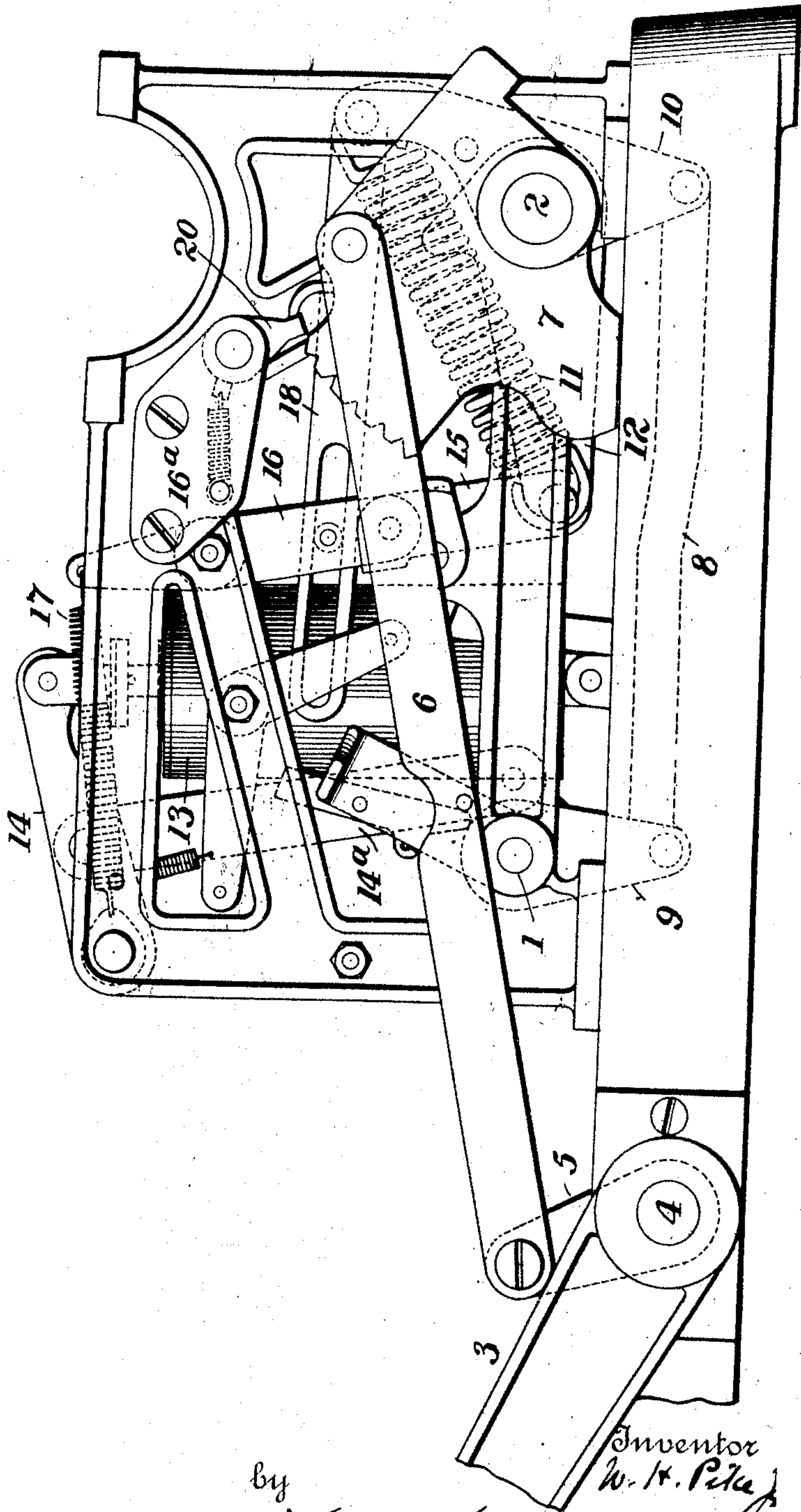
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

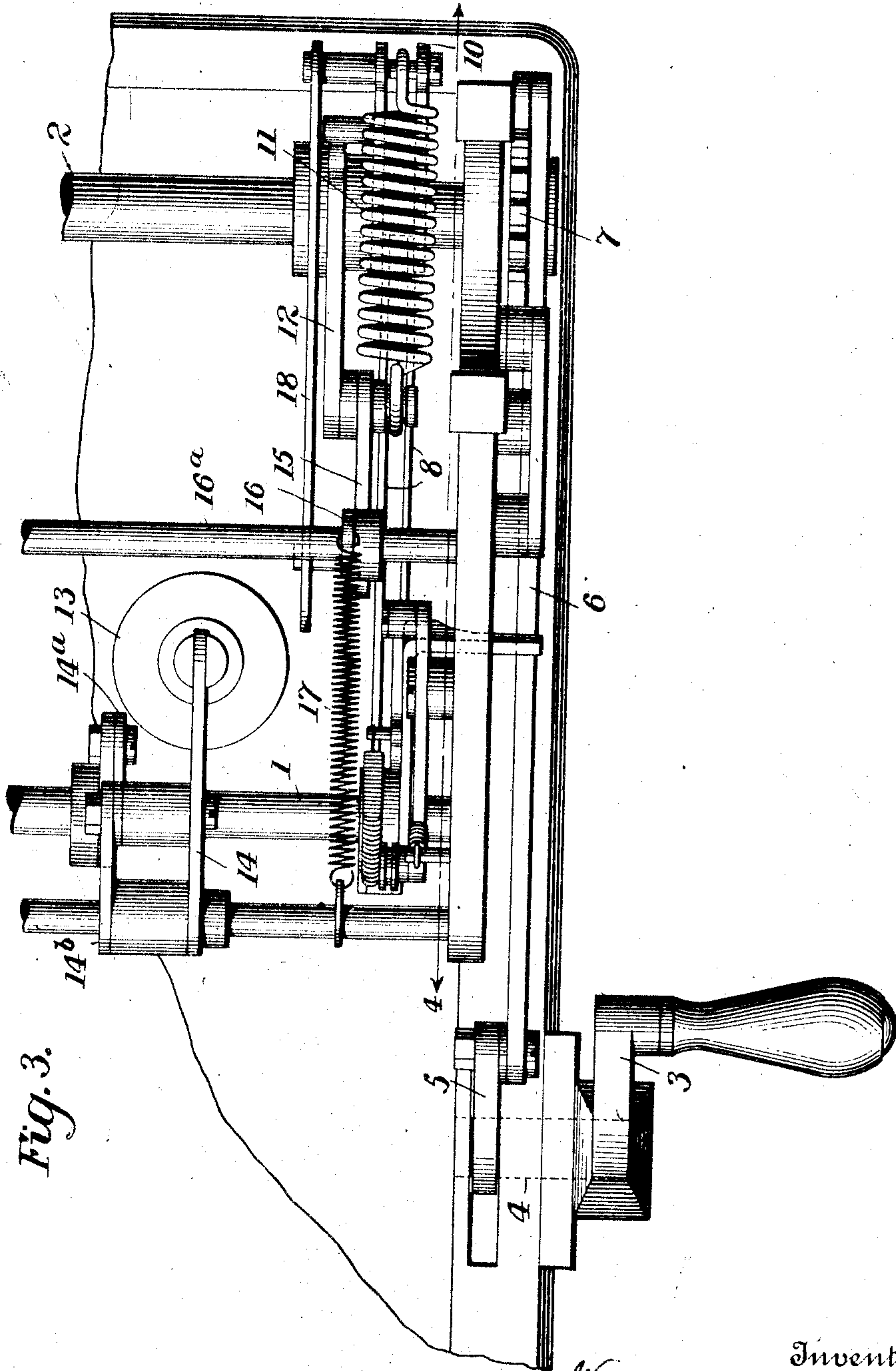


Fig. 3.

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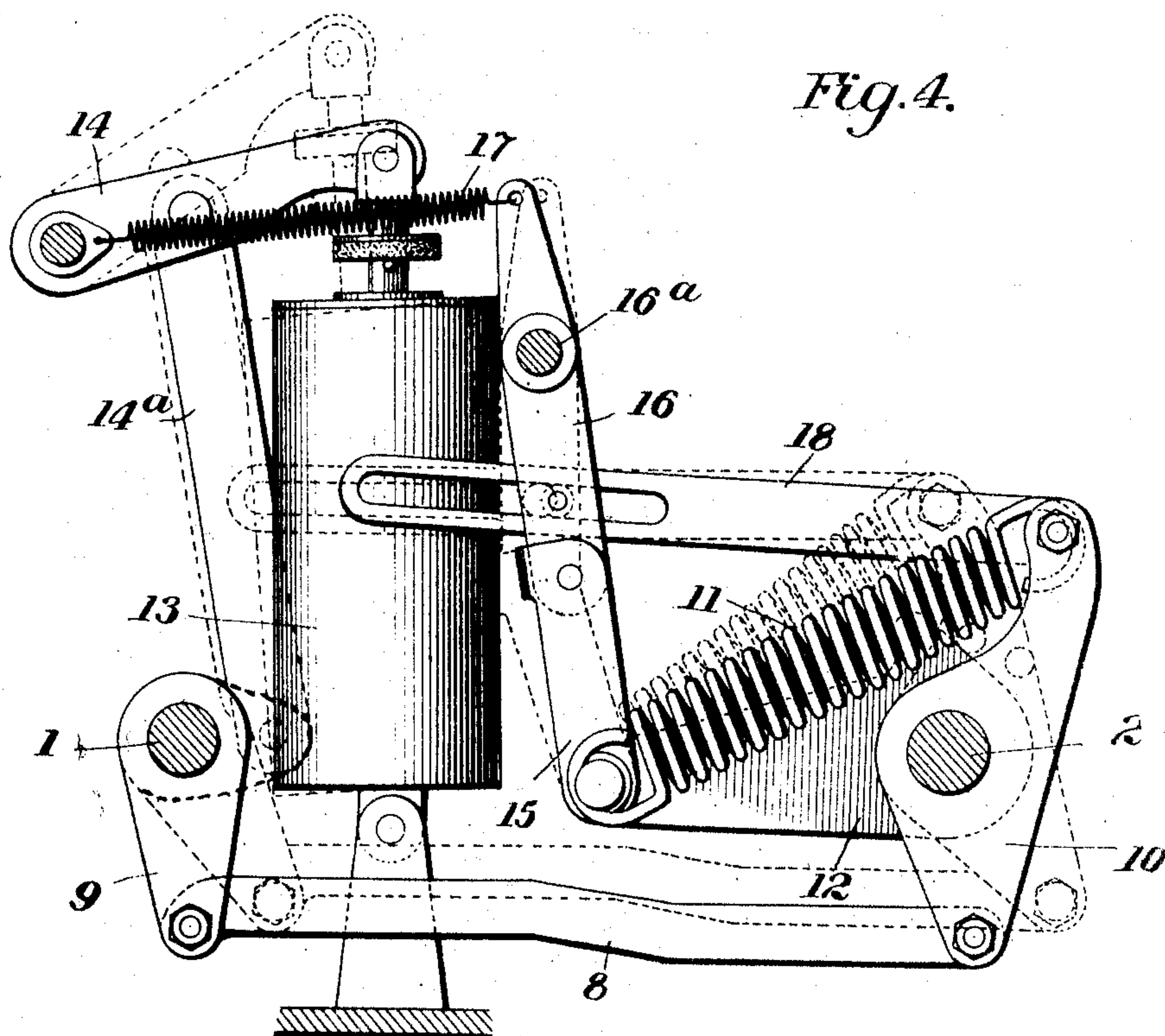
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4 SHEETS—SHEET 4



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UNITED STATES PATENT OFFICE.

WILLIAM H. PIKE, JR., OF SOUTH ORANGE, NEW JERSEY, ASSIGNOR TO PIKE ADDING MACHINE COMPANY, OF ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

OPERATING DEVICE FOR CALCULATING-MACHINES.

No. 876,232.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed June 28, 1906. Serial No. 323,826.

To all whom it may concern:

Be it known that I, WILLIAM H. PIKE, JR., a citizen of the United States, residing at South Orange, Essex county, State of New Jersey, have invented certain new and useful Improvements in Operating Devices for Calculating-Machines, of which the following is a specification.

The present invention relates to improvements in machines of any character in which a rocking hand lever or handle is employed to actuate the parts, and is particularly adapted for use in connection with calculating machines.

The object of the invention is to provide means by which a regular actuation of the working shaft of a machine will be secured however abrupt and irregular the operation of the hand lever may be.

The invention is shown in the accompanying drawing as applied to a calculating machine of the character illustrated and described in U. S. Patent No. 763,692, granted June 28, 1904, although, as above stated, it may be employed in connection with other forms of hand operated machines.

In the drawings,—Figure 1 is a side elevation of a calculating machine illustrating one embodiment of the present invention, parts of the machine not required to illustrate the present invention being omitted; Fig. 2 is a similar view showing the parts in a different position; Fig. 3 is a plan view of part of the machine; Fig. 4 is a sectional view on the line 4—4 of Fig. 3, the parts being in the position shown in Fig. 2.

Referring to the drawings, 1 designates the main or working shaft of the machine, by which the several parts of the machine, not shown, are operated, and 2 designates a countershaft extending parallel with the main shaft and connected therewith, as will be hereinafter described. The operating handle 3 is mounted on a shaft 4 suitably journaled in the frame of the machine, and having an arm 5 connected by a link 6 with a plate-like arm 7 on the countershaft 2. A link 8 connects an arm 9 on the work shaft with an arm 10 loosely mounted on the countershaft, the upper end of said arm 10, being connected by a coiled spring 11 with an arm 12 rigid with the countershaft 2.

The movement of the main or working shaft 1 is controlled by a dash-pot 13 stationarily mounted in the frame of the machine,

and having its plunger connected with a lever arm 14 carried by a rocking sleeve and having a second arm 14^b which is connected by a link 14^a with an arm on said working shaft. This dash-pot regulator insures a regular and even movement of the working shaft, and the spring 11 constituting a yielding connection between the countershaft and said working shaft provides means by which such regular movement of the working shaft will not be affected by an irregular or sudden movement of the handle 3. That is, if the handle 3 is drawn forward more rapidly than the working shaft 1 is permitted to move the effect will be to stretch the spring 11, because the arm 12, being fast on the countershaft which is rigidly connected by the link 6 with the handle shaft, will be moved at the same rate of speed as the handle, while the arm 10, being loose on the countershaft and linked to the working shaft, can move no faster than the latter shaft.

It is necessary that the handle should be retained in its forward position until the completion of the first half of the movement of the working shaft, and therefore a toggle lock is provided, which, when the handle is drawn forwardly more rapidly than the speed permitted the working shaft, will lock the handle and countershaft at the limit of their forward movement until the corresponding movement of the working shaft has been completed. Said toggle has one member 15 connected with the arm 12 of the countershaft, and its other member 16 mounted to turn on a rod 16^a in the frame of the machine, a spring 17 being connected with the upper end of said arm 16 and acting to hold the toggle in the position shown in Fig. 1. When the operating handle is drawn forward, the arm 15 of said toggle will be rocked downwardly from the position shown in Fig. 1 to that shown in Fig. 2, and when the parts reach the position shown in the latter figure in which the point of connection of the arm 12 with said toggle member 15 is in line with the connection between the toggle members and the rod 16^a, the parts will be locked and retained in such position until the member 16 of the toggle is rocked as hereinafter described. A slotted bar or link 18, connected at its rear end with the arm 10 on the countershaft, loosely engages a pin or stud projecting laterally from the toggle arm 16, and is adapted, under the

pull of the spring 11, as hereinafter described, to release the toggle lock at the proper time.

In operating machines of the character shown in the drawing, it is essential that after a movement of the working shaft has commenced, it be completed, and therefore a full motion device is provided, consisting of a serrated member formed on the plate-like arm 7, to which the link 6 from the handle shaft is connected, and a dog 20 pivotally mounted on the frame of the machine.

The operation of the invention may be briefly described as follows: Normally the parts will occupy the positions shown in Fig. 1. If the handle be moved forwardly more rapidly than the dash-pot controller permits the working shaft to rock, the parts will be brought into the position shown in Fig. 2. That is, the spring 11 will be stretched and the toggle lock rendered operative to hold the handle and countershaft at the forward limit of their movement. As the working shaft completes the first half of its movement, the arm 10, through the link 9 will move the bar 18 to rock the upper member 16 of the toggle against the action of its spring 17. As soon as the members of the toggle are thus moved out of locking relation, the pull of the spring 11 will operate to restore all of the parts to their normal position, shown in Fig. 1.

The construction illustrated is very simple and compact. It will be noticed that all of the parts are arranged within the side lines of the machine, and that but a single spring, 11, is required to transmit the movements of the handle and countershaft to the main or working shaft.

By the construction described it is possible to employ a dash-pot regulator containing oil or similar fluid, the cylinder of such regulator being stationary and having the opening for the piston at its upper end.

What I claim is,—

1. The combination of a working shaft, a countershaft, an operating handle, rigid connections between the handle shaft and countershaft, an arm loosely mounted on the countershaft, a spring connecting said arm and an arm rigid with the countershaft, a rigid connection between the working shaft and said loosely mounted arm on the countershaft, means for holding the handle and countershaft stationary until a predetermined movement of the working shaft is completed, and means actuated by the working shaft at the completion of such movement for releasing the handle and countershaft.

2. The combination of a working shaft, a counter-shaft, an operating handle, rigid connections between the handle shaft and counter-shaft, connections between the counter-shaft and working shaft for operating the working shaft from the handle but not neces-

sarily in unison therewith, means for locking the handle and counter-shaft, and a releasing device adapted to be reciprocated by the working shaft for releasing the counter-shaft and handle, substantially as described.

3. The combination of a working shaft, a counter-shaft, an operating handle rigidly connected with the counter-shaft, an arm loosely mounted on the counter-shaft and rigidly connected with the working shaft, a second arm rigid on the counter-shaft, a yielding connection between said arms on the counter-shaft, means for locking the handle and counter-shaft in one position until a predetermined movement of the working shaft is completed, and means actuated by the loosely supported arm on the counter-shaft for releasing said holding means on the completion of such movement of the working shaft.

4. The combination of a working shaft, a counter-shaft, an operating handle, means for operating the working shaft from the handle but not necessarily in unison therewith, a toggle lock having one member adapted to be moved by the handle whereby said toggle will act to hold the handle at the limit of its movement in one direction, and an arm connected with the working shaft and adapted to engage one member of the toggle to release said toggle lock when a predetermined movement of the working shaft is completed.

5. The combination of a working shaft, a counter-shaft, an operating handle, means for operating the working shaft from the handle but not necessarily in unison therewith, a toggle lock having one member adapted to be moved by the handle whereby said toggle will act to hold the handle at the limit of its movement in one direction, and an arm connected with the working shaft and having a slot receiving a projection on one of the arms of the toggle lock, whereby said lock will be released on the completion of a predetermined movement of the working shaft.

6. The combination of a working shaft, a counter-shaft, an operating handle, means for operating the working shaft from the handle but not necessarily in unison therewith, means for locking the handle and countershaft in their extreme positions until a predetermined movement of the working shaft is completed, means actuated by the working shaft for releasing the handle and counter-shaft on the completion of said movement of the working shaft, and a full motion device connected with the counter-shaft, substantially as described.

7. The combination of a working shaft, a counter-shaft, an operating handle rigidly connected with the counter-shaft, a yielding connection between the counter-shaft and working shaft, a dash-pot having its plunger connected with the working shaft, means for locking the handle and counter-shaft until a

predetermined movement of the working shaft is completed, and means for releasing said lock on the completion of said predetermined movement of the working shaft.

- 5 8. The combination of a working shaft, a counter-shaft, a handle rigidly connected with the counter-shaft, a vertically arranged dash-pot having the upper end of its plunger connected with the working shaft, an arm
10 loosely mounted on the counter-shaft and rigidly connected with the working shaft, a yielding connection between said arm and the counter-shaft, means for holding the

counter-shaft in an extreme position until a predetermined movement of the working 15 shaft is completed, and means operated by the working shaft for releasing said lock on the completion of the predetermined movement of the working shaft.

In testimony whereof I affix my signature 20 in presence of two witnesses.

WILLIAM H. PIKE, Jr.

Witnesses:

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