H. LANDSIEDEL.

OPERATING MECHANISM FOR ADDING MACHINES.

APPLICATION FILED APR. 9, 1914.

1,248,678.

Patented Dec. 4, 1917.

3 SHEETS—SHEET 1.

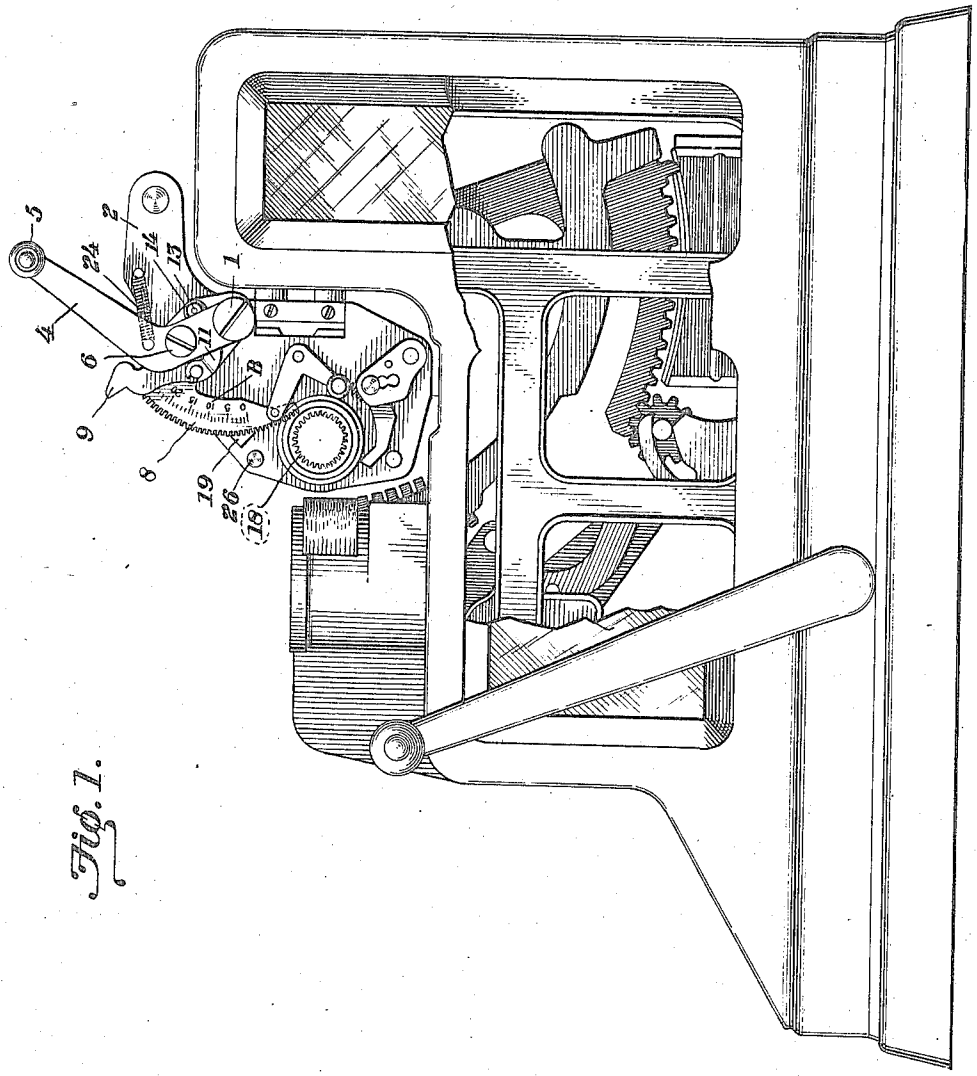


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

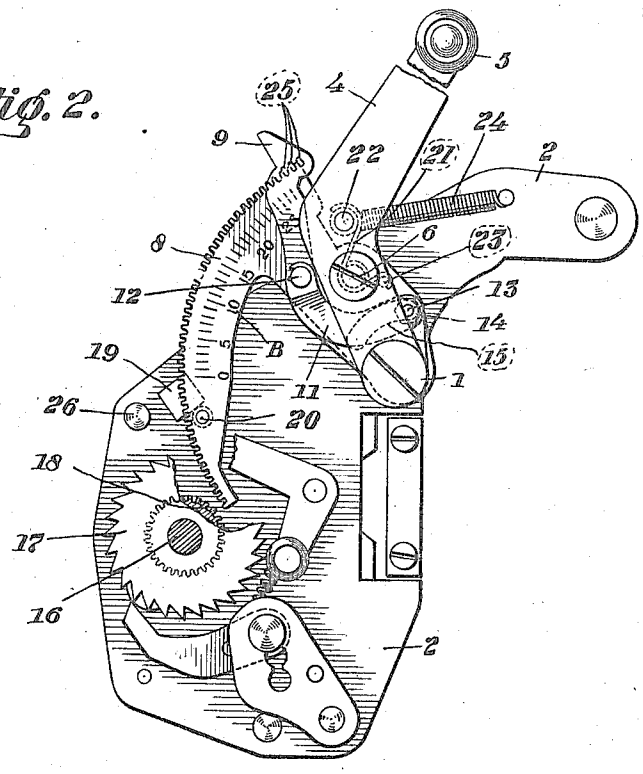


Fig. 4.

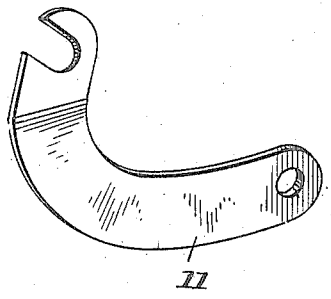
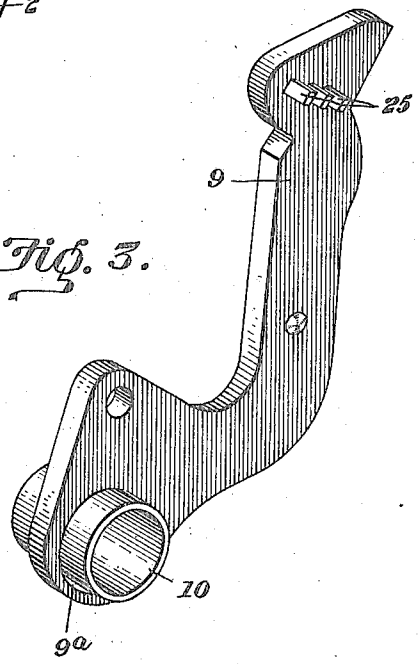


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 5.

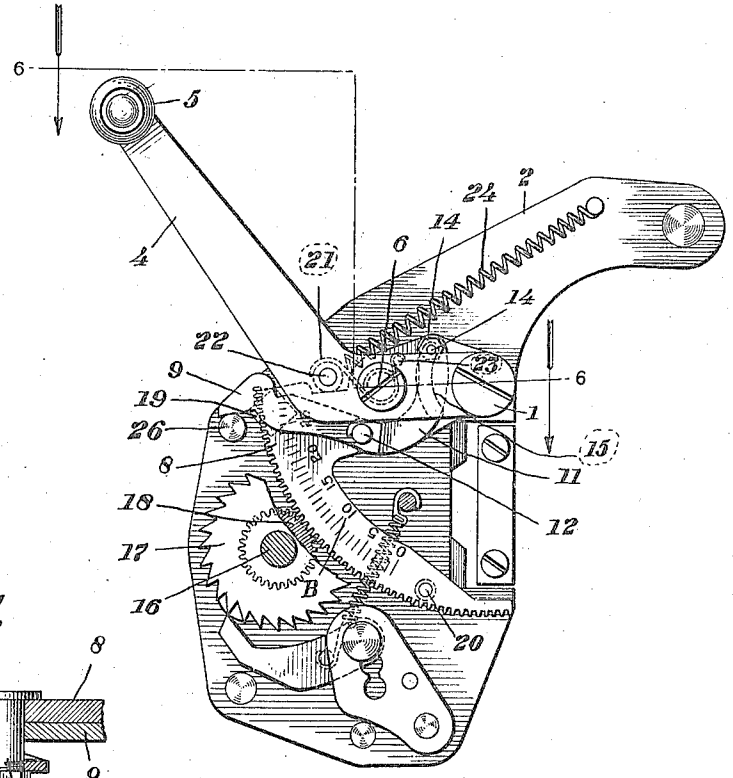
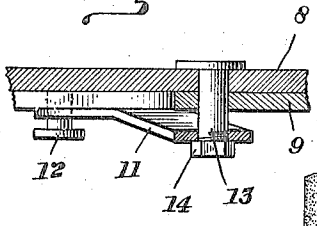


Fig. 7.



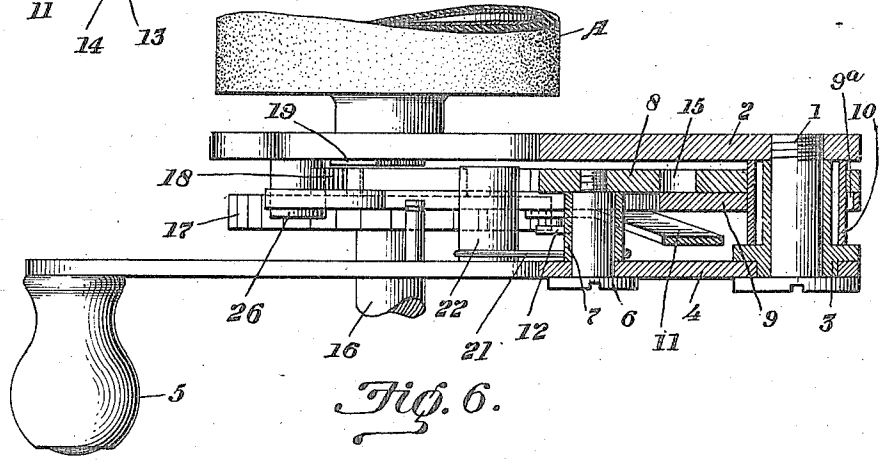


Fig. 6.

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UNITED STATES PATENT OFFICE.

HARRY LANDSIEDEL, OF POPLAR BLUFF, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE DALTON ADDING MACHINE COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

OPERATING MECHANISM FOR ADDING-MACHINES.

1,248,678. Specification of Letters Patent. Patented Dec. 4, 1917.

Application filed April 9, 1914. Serial No. 830,562.

To all whom it may concern:

Be it known that I, HARRY LANDSIEDEL, a citizen of the United States, residing at the city of Poplar Bluff and State of Missouri, have invented a new and useful Operating Mechanism for Adding-Machines, of which the following is a specification.

This invention relates to recording machines, and it consists of novel and improved mechanism for coöperating with the paper feed devices to feed the paper any desired distance, with provision for precision in operation, so that the paper may be moved equal or varying distances by different operations of the mechanism.

An object of the invention is to provide an improved mechanism adjustable to cooperate with the platen for feeding the paper varying distances from a very small fraction of a line space movement to an advance exceeding a considerable number of line space movements, with adjustable guiding and controlling devices for the guidance of the writer in adjusting the mechanism and for limiting movement of the mechanism when operated.

With the foregoing and various other objects in view all of which will be apparent from the following description, I have embodied my invention in one suitable form which I have illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a recording machine equipped with a laterally movable paper carriage containing a platen and paper feed devices, and having my invention combined therewith.

Fig. 2 is an end elevation of the paper carriage illustrating the mechanism in its idle position.

Fig. 3 is an enlarged perspective view of the combined indicator and stop arm which coöperates with the platen actuating mechanism.

Fig. 4 is a perspective view of a plate spring coöperating with the platen actuating rack and the indicator-stop arm.

Fig. 5 is an end elevation of the paper carriage illustrating the mechanism in its advanced position after operation thereof for actuating the paper feed mechanism.

Fig. 6 is an enlarged sectional view approximately on the line 6—6 of Fig. 5.

Fig. 7 is a detail sectional view illustrating the connection between the actuating rack, the indicator stop-arm, and the cooperating plate spring.

For convenience I have illustrated my invention combined with the laterally movable carriage and paper feed mechanism of a well known adding and listing machine, but it will be apparent that the invention may be employed with equal advantage in combination with the paper feed mechanism of various types of recording machines, including typewriting machines. Indeed, it will be apparent that the invention may be employed in combination with the various kinds of typewriting or recording machines which employ revoluble rolls for feeding the paper. Since this is true it will be understood that I do not restrict myself to the use of the invention in combination with any specific type of machine.

In the particular embodiment illustrated the paper carriage is laterally movable, and includes a revoluble platen A which may be under control of the usual line space mechanism to move the paper in line spacing. Since the line spacing mechanism constitutes no part of the present invention, except in the limited sense hereinafter explained, it is unnecessary to describe such mechanism.

The screw 1 which supports many of the active elements included in the present invention is supported by the right end plate 2 of the paper carriage. A bushing 3 is mounted on the screw 1 and supports the operating lever 4 which extends toward the operator facing the machine, and is provided on its free end with a handle 5. A screw 6 extends through the lever 4, and supports a sleeve 7, the inner end of the screw being engaged with an arm of an arcuate rack 8. The indicating-stop arm 9 is pivoted on a sleeve 10 which is supported on the bushing 3. As illustrated in Fig. 6 the sleeve 10, as to its interior diameter, is larger than the bushing 3, thus permitting said sleeve 10 to have a movement which is eccentric with respect to the support on which it is mounted. The indicator-stop arm 9 is pivoted upon the sleeve 10, and is provided with an enlarged hole 9^a for receiving said sleeve 10, so that said arm 9 is capable of outward or radial movement with respect to the rack 8. This provision for the rela-

tive movement of the arm 9 with respect to the rack 8 is made because the arc in which the teeth are formed on the rack is not concentric with the sleeve 10 or the support upon which the sleeve is mounted. As above indicated the arm of the rack 8 is supported upon the sleeve 10, in close proximity to the indicator-stop arm 9.

A plate spring 11 is connected to the arm 9 intermediate of the ends thereof by a notch formed in said spring receiving a headed pin 12 attached to said arm. The opposite end of the plate spring 11 is connected to the arm 9 by a bolt 13 provided with an adjustable clamping nut 14 whereby the tension of the spring may be slightly varied as desired. The bolt 13 passes through an arcuate slot 15 formed in the supporting arm of the rack 8. The slot 15 is concentric with respect to the arc in which the teeth are formed on the rack, but is eccentric with respect to the axis of the sleeve and also as to the support upon which the said sleeve 10 is mounted. Thus, the spring 11 presses the arm 9 against the side of the rack 8, and the connection between the arm and the rack (comprising the bolt 13 and the arcuate slot 15) permits movement of the arm 9 to its various adjustments with respect to the rack 8, as hereinafter explained.

The platen shaft 16 is provided with the usual ratchet wheel 17 upon which the actuating devices operate to actuate the platen and the paper feed devices in moving the paper. In the embodiment illustrated the ratchet wheel 17 is the only part of the mechanism for actuating the paper feed devices with which my invention coöperates, and it will be apparent that the direct connection between the parts of this invention and the devices for actuating the platen in line spacing movements may be effected only by the platen shaft, or by attaching one of the parts of this invention directly to the ratchet wheel 17, as preferred. Thus, on the shaft 16 adjacent to the ratchet wheel 17 is mounted a pinion 18, adapted to be engaged by the rack 8 when the latter is operated by manipulation of the lever 4, to operate the platen and the paper feed devices. The normal or idle position of the mechanism is that illustrated in Figs. 1 and 2 in which the rack 8 and its associated mechanism are supported in an elevated position disengaged from the pinion 18. An abutment 19 having an obliquely disposed lower edge, is supported by the carriage end plate 2, and is engaged by a stud 20 on the rack 8, thereby limiting the upward movement of the parts which are in connection with the rack. A spring 21 (Fig. 6) extends under and fulcrums against the sleeve 7, and has its front end engaging over a projection 22 on the lever 4, and its rear end engaged over a projection 23 on the supporting arm of the rack 8, thus actuating the rack 8 in a direction such that when the lever 4 is drawn forwardly the said rack will be moved into mesh with the pinion 18, such movement being permitted by the enlarged sleeve 10 which supports the rack upon the bushing 3. A coiled spring 24 of the retractile type has its front end connected to the projection 22 and its rear end connected to a projection on the carriage end plate 2, and is effective normally to hold the parts in idle position, and to restore them to idle position after each operation.

The side of the indicator-stop arm 9 which is toward the rack 8 is provided with a number of projecting lugs 25 adapted to engage between teeth on the rack 8 and thereby lock the arm 9 in an engagement with said rack 8. The outer surface of the rack 8 is provided with an indicating scale B by which the user of the device is guided in the adjustment of the arm 9 with respect to the rack 8. Thus, when it is desired to move the arm 9 from one adjustment in engagement with the rack 8 to another adjustment in engagement with said rack, the free end of said arm is pushed away from the rack 8, in opposition to the pressure of the spring 11, until the lugs 25 are disengaged from the teeth of the rack. As soon as the lugs 25 are thus disengaged from the rack the arm 9 may be moved to any desired position with respect to the rack 8, the eccentric slot 15 retaining the arm 9 in position so that the lugs 25 will engage the teeth of the rack irrespective of the position to which the arm 9 may be moved. The arm 9 extends beyond the edge of the rack 8. The abutment 26 rigid with the carriage end plate 2 constitutes a stop for the arm 9 (Fig. 5) to limit movement of the actuating mechanism, including the rack 8 with which the arm 9 is engaged.

In idle position the mechanism of the present invention occupies substantially the position illustrated in Figs. 1 and 2, in which the spring 24 supports the parts in their elevated position with the rack 8 disengaged from the pinion 18. When the lever 4 is drawn forwardly the spring 24 is extended so that no pressure is exerted by said spring 24 upon the rack 8. Forward movement of the lever 4 in addition to taking the tension of the spring 24 away from the rack 8 leaves the spring 21 free to exert its power upon the rack 8. Since the spring 21 is engaged with the arm of the rack 8 rearwardly from the pivot 6 by which said rack is united to the lever 4, the said spring actuates the rear end of the arm of the rack downwardly as far as permitted by the large sleeve 10, and such movement is sufficient to engage the lower end of the rack 8 with the pinion 18 before the rack 8 starts its downward move-

ment. That is to say, the rack 8 is pivotally supported by the pivot 6, and is actuated by the spring 21 into mesh with the pinion 18 before said rack begins to revolve about the pivot 1. After the rack 8 becomes engaged with the pinion 18 said rack is actuated by the lever 4 and rotates the platen and the paper feed rolls until the movement of the rack is stopped by engagement of the arm 9 with the abutment 26. The arm 9 may be engaged with the rack 8 in different selected adjustments in order to vary the scope of movement of said rack. The scale B affords a visual indication of the extent of movement of the rack, so that the devices may be adjusted to enable the paper feed mechanism to actuate the paper to any desired extent. For instance, by adjusting the arm 9 at the line 10 on the scale B the paper will be moved a distance equal to ten units of measurement; and by adjusting the arm at other lines on the scale the paper will be moved distances indicated by the demarcations on the scale. After the paper has been advanced the required distance the rack 8 is automatically disengaged from the pinion 18 by the retraction of the spring 24 enabling the arm of the rack 8 to turn slightly upon the pivot 6 because of the enlarged sleeve 10. Such movement is sufficient to disengage the rack 8 from the pinion 18, thereby enabling the spring 24 to restore the parts to the position illustrated in Fig. 2, the rack 8 being disengaged from the pinion 18 during the return movement of said rack.

It will be understood that there may be various modifications within equivalent limits without departure from the spirit and scope of the invention. I do not limit myself to the precise features of construction and arrangement illustrated, but

What I desire to secure by Letters Patent is:

1. In a machine of the character described, the combination with a revoluble member and a pinion for rotating it, of an arcuate rack, a support upon which said rack is pivoted to operate to rotate said pinion, a lever also pivoted upon said support for actuating the rack to rotate the pinion, a pivot connecting the lever and the rack eccentrically of the arc of the latter and at a distance from said support upon which the rack is pivoted, a spring acting upon said rack to turn the same upon said pivot to engage said rack with said pinion, and a spring operable to disengage the rack from the pinion and to actuate said lever and rack to idle position.

2. In a machine of the character described, the combination with a revoluble member and a pinion for rotating it, of a support, a rack pivoted upon said support for movement into and out of engagement with said pinion, a lever also pivoted upon said support for actuating the rack to rotate the pinion, a pivot connecting the lever and the rack, a spring acting upon said rack to turn the same upon said pivot to engage said rack with said pinion when said lever is operated, and a spring connected to said lever and arranged to move the same to idle position after operation and to disengage the rack from the pinion prior to movement of said rack toward its starting point.

3. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a pivot, a rack supported by said pivot, a lever supported by said pivot, a second pivot connecting said rack and said lever, a spring acting on said lever effectively to hold said rack disengaged from said pinion, and another spring acting to engage said rack with said pinion as an incident to the second movement of said lever.

4. In a machine of the character described, the combination with a revoluble member, and a pinion rigidly connected to said member, of a rack and lever device for rotating said pinion, a pivot upon which said rack and lever device is mounted, a spring for holding said rack disengaged from said pinion, and another spring arranged to engage said rack with said pinion as an incident to the operation of said rack and lever device.

5. In a machine of the character described, the combination with a support, a revoluble member supported by said support and a pinion for rotating said member, of a rack for rotating said pinion, a lever for actuating said rack, a pivot upon which said lever and said rack are supported, another pivot connecting said rack with said lever, a spring holding said rack and said lever in idle position, means for moving said rack relative to said lever to engage said rack with said pinion as an incident to the operation of said rack and lever, and adjustable mechanism for varying extent of movement of said rack and lever.

6. In a machine of the character described, the combination with a revoluble shaft and a pinion attached to said shaft, of a support, a rack mounted on said support, a lever pivoted on said support for actuating said rack, a connection between said rack and said lever, whereby said rack will be actuated by said lever, means holding said rack and said lever in idle position and operating to restore them to idle position after each operation and to disengage said rack from said pinion, and an additional element for actuating said rack into engagement with said pinion when said rack is actuated by said lever.

7. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft,

of a support, a rack pivoted on said support, an arm pivoted on said support, projections for locking said arm and said rack together, a spring for holding said projections engaged in interlocked relation with said rack, an abutment for limiting movement of said arm and thereby said rack, means for actuating said rack into engagement with said pinion, and means for disengaging said rack from said pinion.

8. In a device of the character described, a pivot, a rack supported by said pivot, an arm supported by said pivot, means for holding said arm and said rack in different selected adjustments relative to each other, a lever mounted on said pivot, a pinion, means for engaging said rack with said pinion when said lever is operated, means for restoring said lever to idle position, and means holding said rack out of engagement with said pinion when said lever is in idle position.

9. In a machine of the character described, the combination with a revoluble shaft and a pinion attached to said shaft, of a pivot, a rack supported by said pivot, a lever also supported by said pivot, a connection between said rack and said lever whereby said lever will actuate said rack, a spring normally holding said rack and lever in idle position and being operable to restore said lever and rack to idle position after each operation and to disengage said rack from said pinion, and an independent actuator for moving said rack into engagement with said pinion as an incident to the operation of said rack by said lever.

10. In a machine of the character described, the combination with a revoluble shaft and a pinion attached to said shaft, of a pivot, a rack supported by said pivot, a lever supported by said pivot, another pivot uniting said rack and said lever whereby said lever will move said rack, a spring arranged to move said rack eccentrically with respect to the first-named pivot to turn said rack on the second-named pivot and thereby disengage said rack from said pinion, and an actuating device in addition to said second-named pivot for actuating said rack into mesh with said pinion as an incident to the operation of said rack by said lever.

11. In a machine of the character described, the combination with a revoluble shaft and a pinion attached to said shaft, of a pivot, a rack supported by said pivot, a lever supported by said pivot, another pivot uniting said rack and said lever, an actuator for turning said rack on said second named pivot and moving said rack into engagement with said pinion as an incident to movement of said rack in one direction by said lever, and an additional actuator for restoring said rack and said lever to their starting points and disengaging said rack from said pinion.

12. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a supporting pivot, a rack supported by said supporting pivot, a lever supported by said supporting pivot, another pivot uniting said rack and said lever, a spring normally holding said rack disengaged from said pinion, and another spring acting to engage said rack with said pinion as an incident to the operation of said lever.

13. In a machine of the character described, the combination with a revoluble shaft and a pinion attached to said shaft, of a supporting pivot, a rack supported by said supporting pivot, a lever supported by said supporting pivot, means for actuating said rack by said lever, a spring normally holding said rack disengaged from said pinion and holding said lever in idle position, and a spring acting to engage said rack with said pinion as an incident to the operation of said lever.

14. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a supporting pivot, a rack supported by said supporting pivot, a lever supported by said supporting pivot, means for actuating said rack by said lever, a spring acting to restore said lever and said shaft to idle position after operation to disengage said rack from said pinion, another spring for engaging said rack with said pinion as an incident to the operation of said rack by said lever, and means for limiting movement of said rack and lever, substantially as described.

15. In a machine of the character described the combination with a revoluble shaft, and a pinion attached to said shaft, of a supporting pivot, a rack supported by said supporting pivot, a lever supported by said supporting pivot, means for actuating said rack by said lever, a spring for restoring said lever and said rack to idle position after each operation and acting to disengage said rack from said pinion, a device acting to engage said rack with said pinion as an incident to the operation of said rack by said lever, and an adjustable stop device for limiting movement of said rack, substantially as described.

16. In a machine of the character described, the combination with a revoluble shaft, a pinion attached to said shaft, of a supporting pivot, a spring acting to restore said rack to idle position and to disengage said rack from said pinion after each operation, means for operating said rack, means for engaging said rack with said pinion as an incident to the operation of said rack, a stop device for said rack supported by said

pivot, means for interlocking said stop device in any desired adjustment with respect to said rack.

17. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a supporting pivot, a rack supported by said supporting pivot, a spring acting to restore said rack to idle position and to disengage said rack from said pinion after each operation, means for operating said rack, means for engaging said rack with said pinion as an incident to the operation of said rack by said operating means, a stop arm supported by said supporting pivot, means for interlocking said stop arm and said rack whereby said stop arm and said rack will be retained in any desired relative adjustment, and a spring for holding said stop arm and said rack interlocked, substantially as described.

18. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a rack for operating said pinion, a spring effective to hold said rack normally out of mesh with said pinion, a lever for actuating said rack in opposition to said spring, and another spring acting to mesh said rack to said pinion as an incident to the operation of said lever.

19. In a machine of the character described, the combination with a revoluble shaft, a pinion attached to said shaft, of a rack for actuating said pinion, a pivot upon which said rack is supported, an arm supported on said pivot, a pin-in-slot connection between said arm and said rack, means for interlocking said arm with said rack, an abutment adapted to be engaged by said arm when said rack and said arm are operated, and a lever for operating said rack and said arm.

20. In a machine of the character described, the combination with a revoluble shaft, and a pinion attached to said shaft, of a pivot, a rack supported on said pivot, an arm supported on said pivot, pin-in-slot connection between said rack and said arm, a spring pressing said arm against said rack, projections on said arm arranged to engage with teeth on said rack, an abutment in the path of movement of said arm, and a lever supported on said pivot for operating said rack and said arm until said arm engages said abutment.

In witness whereof, I have signed this specification in the presence of two subscribing witnesses.

HARRY LANDSIEDEL.

Witnesses:
HARRY C. YAEGER,
BIRNEY DYSART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."