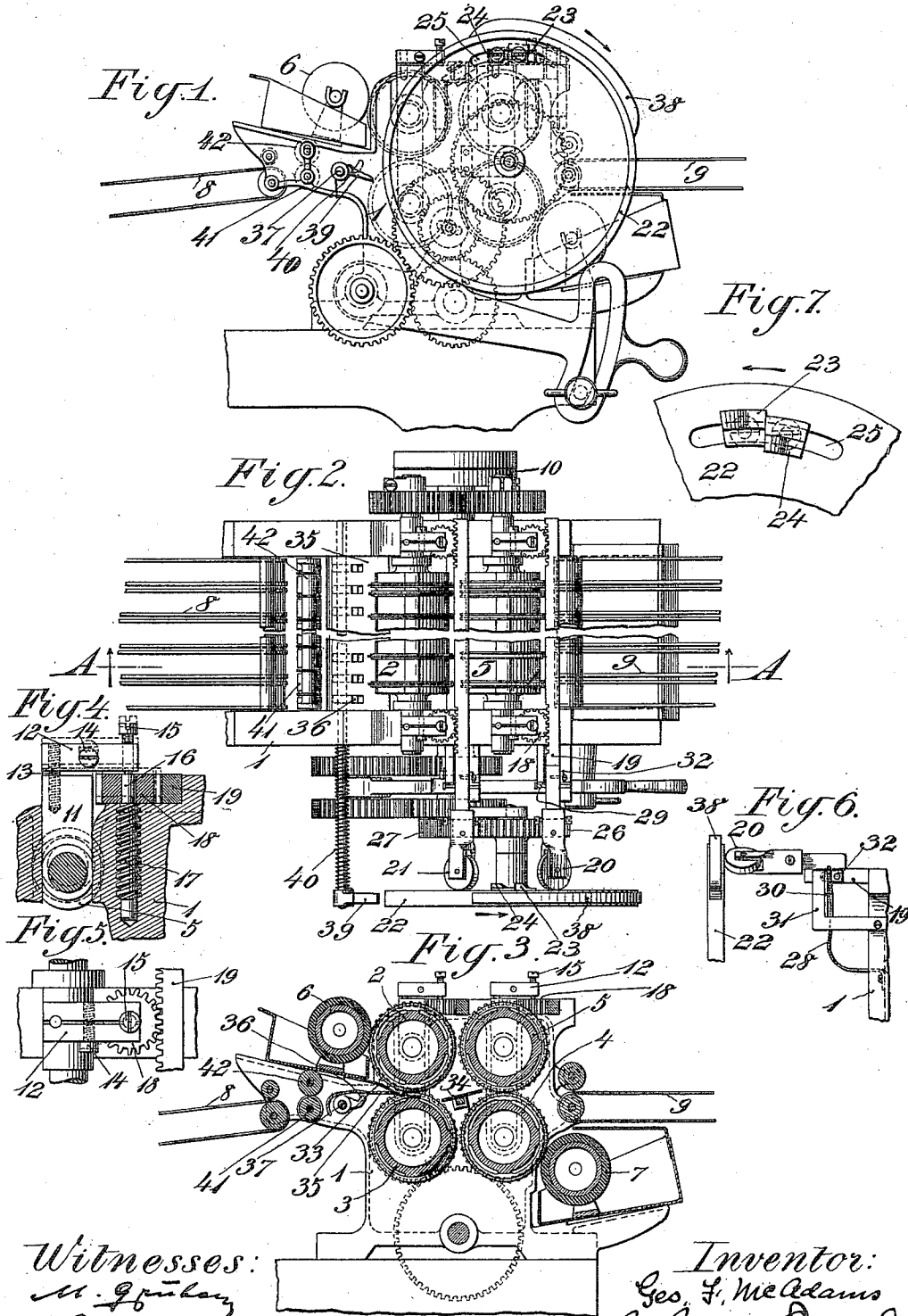


G. F. McADAMS.
 RULING MACHINE.
 APPLICATION FILED MAY 20, 1909.

985,360.

Patented Feb. 28, 1911.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE F. McADAMS, OF NEW YORK, N. Y.

RULING-MACHINE.

985,360.

Specification of Letters Patent.

Patented Feb. 28, 1911.

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To all whom it may concern:

Be it known that I, GEORGE F. McADAMS, a citizen of the United States, and resident of the borough of Brooklyn, in the city and State of New York, have invented a new and useful Ruling-Machine, of which the following is a specification.

My invention relates to ruling machines and more particularly to what I am pleased to term striking mechanism for ruling machines, with the object in view of providing simple and effective means for accurately stopping the ruling of the vertical lines on a page at the point where the head line crosses, or at any other predetermined point.

In the accompanying drawings, Figure 1 is a view in end elevation of so much of a ruling machine as will suffice to show the practical application of my invention, Fig. 2 is a top plan view of the same with inking rollers removed, Fig. 3 is a vertical section in the plane of the line A—A of Fig. 2, Fig. 4 is an enlarged section in detail taken vertically through the machine at the point where one of the lifting screws is located, Fig. 5 is a top plan view of the same, Fig. 6 is a view in detail in elevation showing the means for holding the rack bar which operates the lifting screws against the face of the bar operating cam wheel, and Fig. 7 is a partial view in face elevation of the cam wheel at the point where the cams are located thereon.

The framework of the machine is in general form that commonly used in ruling machines and is here denoted as a whole by 1.

The roll, provided with the ruling disks for ruling the upper side of the sheet, is denoted by 2 and its companion roll, provided with grooves corresponding to the ruling disks on the roll 2, is denoted by 3.

The roll, provided with the ruling disks for ruling the under side of the sheet, is denoted by 4 and its companion roll, provided with grooves corresponding to the ruling disks on the roll 4, is denoted by 5.

The inking rollers are denoted, respectively, by 6 and 7. The tapes for feeding the sheets of paper to the machine are denoted by 8 and those for taking the ruled sheets away from the machine by 9.

The feeding rolls, discharge rolls, ruling disks and companion rolls, are arranged and operated in a well known manner, subject to certain modifications which will be here-

inafter particularly pointed out, by systems of gears for transmitting motion from a drive pulley 10 which is actuated from a suitable source of power, not shown.

The disk carrying roll 2 of the pair 2 and 3, and the platen roll 5 of the pair 4 and 5, are mounted in vertically movable bearings quite similar to one another, one of these bearings being shown in detail in Fig. 4 and denoted by 11.

The bearing 11 is attached to a cross head 12, in the present instance by means of a screw 13 which is screwed into the bearing 11 and is grasped by the two sections of the cross head 12, these two sections being crowded toward each other by means of a binding screw 14, see Fig. 5. This cross head 12 carries in its end, which overlaps the frame 1, an adjusting screw 15 which rests on an inclined faced support, in the present instance on the upper end of the stem 16 of a screw 17 engaged in a screw threaded socket in the frame 1. The stem 16 of the screw 17 also has fixed to it to rotate therewith a pinion 18 engaged by the teeth of a horizontally reciprocating rack bar 19. Each of the rolls 2 and 5 have each of their end bearings similarly provided with cross heads and adjusting screws resting on screws set in the main frame and each of these rolls has a rack bar corresponding to the rack bar 19 which rests in recesses in the upper portions of the side frames of the machine and extend across so as to engage the pinions 18 for simultaneously operating the two end bearings of a roll. The position of the rack bar 19 with respect to these pinions at the opposite ends of a roll, is clearly shown in Fig. 2.

The rack bar 19 and its companion rack bar have, on their ends, anti-friction wheels 20 and 21, which bear against the face of a cam wheel 22. The face of the cam wheel 22 (see Fig. 7) is provided with two cams, denoted by 23 and 24, adjustably secured in a circumferential track on the face of the wheel by means of a curved elongated slot 25. The cam 23 is in position to engage the anti-friction wheel 21 and the cam 24 is in position to engage the anti-friction wheel 20. The cam wheel 22 is rotated by means of gear 26 fixed to rotate with the wheel, the gear 26 being driven by the pinion 27 operated in turn through a system of gear from the drive pulley 10. As the cam wheel

22 revolves, the cam 23 will first engage the wheel 21 and operate its rack bar longitudinally thereby turning the pinions corresponding to the pinions 18 and hence the screws corresponding to the screws 17 in a direction to turn the screws out of their threaded sockets in the frame 1, thereby lifting the roll 2 away from its companion roll 3. After the proper interval determined accurately by the adjustment of the cams 23 and 24 on the face of the wheel, the cam 24 will engage the wheel 20 and operate its rack bar in a direction to lift the roll 5 away from its companion roll 4. This operation of the rolls will prevent the ruling of the lines during the interval of time that the wheels 21 and 20 are riding along the faces of their respective cams and when the said wheels drop off these cams, the ruling will promptly begin.

The rack bar 19 and its companion are yieldingly held against the face of the cam wheel and the cams thereon by a spring pressure device shown in detail in Fig. 6, where a spring 28 is fixed at one end to the frame 1 and its free end extends upwardly and presses against a pin 29 on the side of the rack bar, the throw of the rack bar toward the face of the cam wheel 22 being softened by means of a buffer 30 which may consist of a felt or leather casing on a bracket 31 secured to the frame against which buffer a block 32 on the side of the rack bar 19 opposite that on which the spring 28 operates, is fixed. The spring 28 serves to promptly return the rack bar after it has been forced to move longitudinally by the cam 23 or 24 and in returning it with its anti-friction wheel into engagement with the face of the cam wheel, it turns the screws 17 in the direction to lower the roll into position to continue the ruling. The paper to be ruled as it enters between the rolls 2 and 3 may be deflected away from the face of the roll 2 by means of a guide 33 and in passing from between the rolls 2 and 3 to the rolls 4 and 5 it may be deflected by a guide 34 away from the roll 4, *i. e.*, the paper may be directed away from the ruling rolls or rolls provided with the ruling disks until it is actually forced into contact therewith by the roll which carries the grooves corresponding to the ruling disks. It therefore follows that when the ruling roll 2 is lifted away from the groove roll 3, the paper will not receive the impact of the ruling disks on the roll 2 and when the groove roll 5 is lifted away from the disk roll 4, the paper will not be forced by the said roll 5 into engagement with the ruling disks on the roll 4.

As the paper is fed from the tapes 8, it passes onto a lower guide 35 through which project a series of toes or abutments 36 which momentarily hold the front edge of the paper from advancing, causing it to

square itself if it is out of alinement and to begin its travel between the ruling rolls at the proper intervals. These toes 36 are fixed on a rock shaft 37 which is operated by means of a cam 38 on the periphery of the cam wheel 22, which cam comes at the proper intervals into engagement with the dog 39 on the rock shaft 37 and rocks it to lift the toes 36 above the guide 35 and thereby prevent the sheet from moving onward, until the proper moment arrives for it to advance. The return of the rock shaft 37 is provided for by a coil spring 40 surrounding the shaft 37, one end of the said spring being made fast to the shaft and the other to the frame of the machine. As the cam 38 leaves the dog 39, the toes 36 will move downwardly out of the way and the paper will advance toward the ruling rolls. Before the paper reaches the ruling rolls, the cam 23 will have engaged the wheel 21 and the roll 2 will be lifted to leave an unruled heading on the upper face of the sheet, the width of which heading will depend upon the position of the cam 23 in its groove and the length of the cam. In like manner, the roll 5 will be lifted by the cam 24 before the paper reaches the ruling roll 4 and an unruled heading will be left on the under face of the sheet. It is important that the sheet start its advance movement promptly when the toes 36 drop and to insure this I provide a pair of auxiliary feed rolls 41, 42, which engage the sheet with just sufficient friction to advance it when it is released but slip on its face while the sheet is obstructed by the toes 36 without buckling it.

In operation, as the sheet of paper enters between the rolls 2 and 3, its upper face will be ruled from the head toward the foot and when its head reaches the rolls 4 and 5, the ruling will begin at the proper point on the under or opposite side of the sheet. Immediately following the stopping of the ruling of the upper face of the sheet, a new sheet will be positioning itself ready to begin its advance for ruling on the upper face and so on, the moment at which the succeeding sheet shall be introduced being precisely determined by the cam 38 on the cam wheel 22, which cam releases the shaft 37 and takes the toes or abutments 36 out of the path of the sheet to permit it to enter between the rolls 2 and 3.

What I claim is:—

1. In a ruling machine, a disk roll and its companion platen roll, one of the said rolls being mounted in movable bearings, inclined faced supports for said movable bearings, means for adjusting the bearings relative to the inclined faced supports, means for operating the rolls, a traveling cam timed with respect to the roll operating means and means for transmitting motion from the traveling cam to the inclined faced supports

for operating the inclined faced supports and hence the movable bearings to separate the rolls at predetermined intervals.

2. In a ruling machine, a disk roll and
5 its companion platen roll, one of the said rolls being mounted in movable bearings, screws forming supports for said movable bearings, means for adjusting the bearings
10 relative to the supporting screws, means for operating the rolls and means timed with respect to the roll operating means for operating the screws and hence the movable bearings to separate the rolls at predetermined intervals.

15 3. In a ruling machine, a disk roll and its companion platen roll, one of the said rolls being mounted in vertically sliding bearings, bearing screws located at one side of the ver-

20 tically sliding bearings, cross heads behind the bearings extending over the upper ends of said screws, adjusting screws extending through the heads and resting on the upper ends of the aforesaid screws, means for operating the rolls and means for operating
25 the bearing screws to raise and lower the sliding bearings to separate the rolls at predetermined intervals.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 30th day of April 1909.

GEORGE F. McADAMS.

Witnesses:

F. GEORGE BARRY,
HENRY THIEME.

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