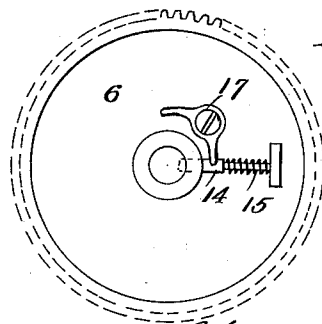
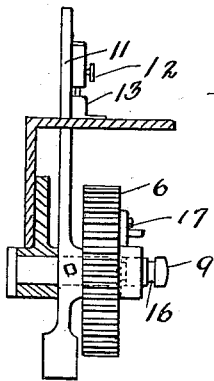
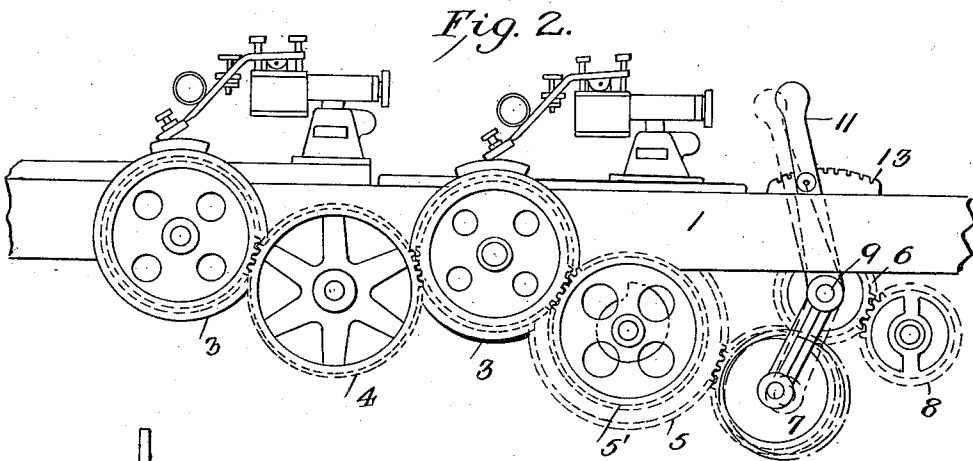
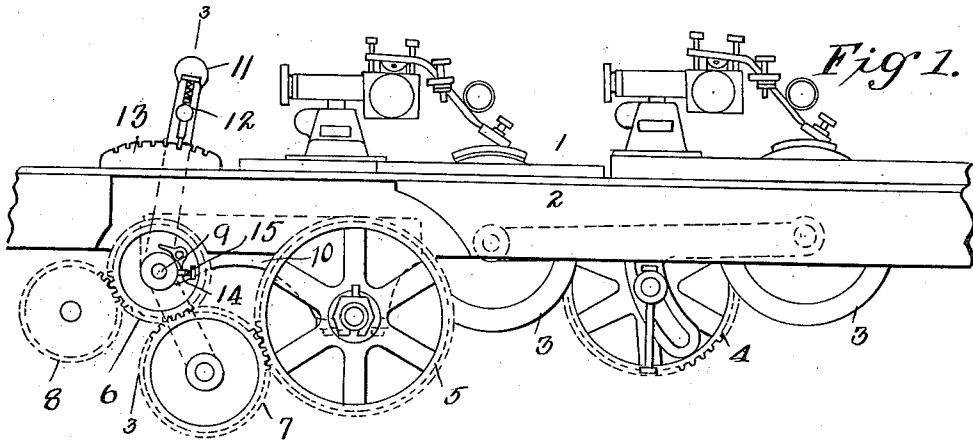


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 RULING MACHINE.
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1,027,986.

Patented May 28, 1912.



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RULING-MACHINE.

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To all whom it may concern:

Be it known that I, CHARLES BURROWS, a citizen of the United States, residing at Weehawken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Ruling-Machines, of which the following is a specification.

Ruling machines at the present time in general use utilize certain mechanism ordinarily called the "striker," by which lines are ruled down the paper, starting at one or more of the head-lines, or at different places, and lifting the pens from the paper at the foot-lines. The operation of the striker is well known to those versed in the art, but the mechanisms at present in use are open to several serious objections. The paper passing through the ruling machine is controlled and held from feeding by the gate which releases it at intervals, according to the length of the sheet which is being struck or ruled, allowing the paper to move forward to meet the pens accurately when the latter are dropped by the striker cams. The amount of movement of the paper as controlled by the gate is regulated by change gears, the latter being operated by a suitable train of gearing connecting a drive gear with the striker cams. The train of gearing above referred to ordinarily includes a large intermediate gear normally operable by the drive gear, but adapted to be moved out of mesh with other gears in order to discontinue the operation of the striker mechanism. The gears of the striker mechanism are usually located on the side of the machine opposite the ruler, necessitating that he go around the machine to make adjustments, a disadvantage of considerable importance. Furthermore, when once the intermediate gear of the ordinary mechanism is disengaged, it cannot be again accurately engaged with its associated gears because the gears frequently fail to mesh true, thereby requiring resetting of the intermediate gear and considerable adjustment on the part of the operator to reset the gears properly with respect to the striker cams. Certain machines are made with the gears of the striker mechanism on the side adjacent to the ruler, but these machines are objectionable in that the gears project considerably from the machine. There are other objections in reference to the operation and

adjustment of the parts of striker mechanism of the class hereinbefore referred to and which are designed to be eliminated by the present invention wherein the gearing by which the striker cams are driven is connected directly with the cloth or apron roll, avoiding likelihood of variation of striking, and inaccuracy resulting from operation of striker mechanisms actuated by the top or string roll of the machine.

The details of construction of the present invention will now be more fully described and finally claimed.

In the accompanying drawings: Figure 1 is a side elevation of a portion of a ruling machine showing the invention applied thereto; Fig. 2 is a view of the angle plate and gearing of the striker mechanism, and other parts comprising the invention, mounted thereon, looking from the opposite side of the machine; Fig. 3 is a cross section taken about on a line 3—3 of Fig. 1; Fig. 4 is a detail view bringing out more clearly the catch and operating lever co-acting with the idler gear.

Referring to the drawings, it is contemplated that the invention shall comprise a train of gearing and other cooperating parts which may be bodily applied to machines at present in use, after removal of certain parts of the striker mechanism of such machines, whereby the advantages of the present invention may be derived. Having the foregoing in view, an angle plate 1 is employed and adapted to be securely fastened to a side of the frame 2 of the machine, as shown in Fig. 1, said angle plate being provided with suitable bearings to receive the stub axles upon which the striker cams 3 are mounted, and which also carry the transmission gear 4, connecting the cams, the second transmission or change gear 5, the idler gear 6, and the intermediate gear 7. The foregoing mentioned gears constitute a train of gearing adapted to connect the drive gear 8 operatively with the striker cams 3. The idler gear 6 is supported loosely on a stub shaft 9 which passes through a bearing in a bracket plate 10 which is attached to the inner side of the angle plate 1, said idler gear meshing with the drive gear 8, and with the intermediate gear 7. The gear 7, however, is supported upon the lower end of a rocker lever 11 of which shaft 9 forms the pivotal axis, the upper end of the lever 11 having a suit-

able spring latch 12 for coöperation with a segment 13 to lock the lever in a predetermined adjustment.

The mounting of the idler gear 6 is peculiar, the shaft 9 aforesaid being sufficiently long to permit of movement of the gear 6 lengthwise thereof, whereby said gear may be placed into engagement and withdrawn from engagement with respect to the gears 8 and 7. In order to hold the gear 6 in its respective operative and inoperative positions, a catch 14 is carried by said gear and normally held by a spring 15 in engagement with one or the other of annular grooves 16 adjacent to the outer end of the shaft 9. A hand lever 17 has one end engaged with the catch 14 and facilitates the operation of disengaging said catch from the grooves 16. It will be apparent that when the gear 6 is arranged at its inner adjustment, it may be locked in engagement with the gears 8 and 7 by engagement of the catch 14 in the inner groove 16. Should it be desired to quickly discontinue the operation of the striker mechanism, it will be apparent that the gear 6 may be readily pulled outwardly on the shaft 9, after disengagement of the catch 14 from the inner groove 16, and locked at its outer adjustment, in which position it does not mesh with the gears 7 and 8, the operation of the train of gearing being thus discontinued immediately.

As above premised, the rocker lever 11 is adapted for pivotal movement and affords an auxiliary means for discontinuing the operation of the striker cams 3 in that by moving the lever 11 pivotally in one direction, the gear 7 may be readily disengaged from the gear 5. An especial advantage of the arrangement of the gear 7 and the actuating means therefor comprising the lever 11, resides in the fact that when said gear 7 is moved bodily away from the gear 5, it turns about the gear 6, remaining in mesh with the same so that the relative positions of the gears 8, 6 and 7 are not altered by temporary disengagement of the gears 5 and 7 for the purpose of discontinuing the operation of the striker and permitting the use of the machine for faint lining. When the intermediate gear 7 is temporarily disengaged from the gear 5, it may be accurately reset with respect to the latter gear without difficulty, thereby eliminating the necessity of expense of time and labor in accurately positioning the various gears in the operation of either discontinuing the motion of the striker temporarily, or when it is necessary to replace the change gear with one of a different size. It is to be noted that in general use, the operation of the striker may be discontinued by movement of the idler gear 6 in the manner hereinbefore described, though when the change gear 5 is to be replaced, the rocker lever 11 will be operated

to unmesh the gears 5 and 7 and permit the last mentioned operation.

In the practical embodiment of the present invention, all of the various gears described except only the main drive gear on the cloth roll shaft, are supported or carried by the angle plate, and are arranged on the ruler's side of the machine, completely under the upper rail of the frame and out of his way. They will be covered by a gear guard, not shown.

The above arrangement permits of making the striker operating mechanism of this invention in the shop as a complete machine, to be subsequently placed in position upon the ruling machine, and on any machine already in use. The provision of the idler gear permits the striker to be immediately stopped, and started again without resetting the striker cams, enabling a ruler to stop on a long run and do another job and start again just as he left off. On the shaft carrying the drive gear 5 for the striker cams will be mounted also the gate cam and transmission gear 5', thereby avoiding liability of discrepancy or error in the action of the striker cams which must operate in unison. Furthermore, by the present invention the use of shafts for the striker mechanism, which run across the machine, excepting only the gate shaft, is avoided, and likelihood of binding of shafts is eliminated, the ruler being permitted to remove the cloth or apron for the purpose of cleaning, or the like, without any interference from the striker mechanism.

Having thus described the invention, what is claimed as new is:—

1. In combination, striker mechanism for ruling machines, means for operating said mechanism comprising a drive gear, gearing connecting the drive gear with the striker mechanism and including an axially movable gear meshing with the drive gear, an intermediate gear meshing with the axially movable gear, a shaft supporting the axially movable gear, and a locking device carried by the last mentioned gear and comprising a sliding bolt, said shaft having grooved portions adapted to be engaged by said bolt to hold the axially movable gear positively in an operative or an inoperative position with respect to the adjacent gears.

2. Striker mechanism for ruling machines comprising a supporting plate, striker cams, a shaft projecting laterally from the plate, an idler gear mounted thereon, a rocker lever also mounted on the shaft, a change gear mounted on the plate, an intermediate gear carried by the rocker lever and meshing with the change and idler gears, means on said shaft for holding the idler gear in or out of mesh with respect to the intermediate gear, and means on said plate for holding the rocker lever in position wherein the in-

intermediate gear is in or out of mesh with respect to the change gear.

3. In a ruling machine, striker mechanism comprising striker cams, an idler gear, a lever mounted coaxially with respect to said gear, a change gear, an intermediate gear carried by the lever and adapted to mesh with the change and idler gears, means co-operating with the lever to hold the same in a position wherein the intermediate gear is

in or out of mesh with the change gear, and means for moving the idler gear into and out of mesh with the intermediate gear without imparting rotation to said idler gear.

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

CHARLES BURROWS.

Witnesses:

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