

April 20, 1954

R. E. CONE
DRAFTING INSTRUMENT

2,675,619

Filed May 31, 1952

2 Sheets-Sheet 1

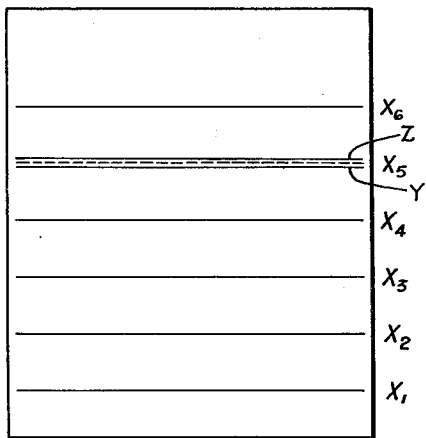
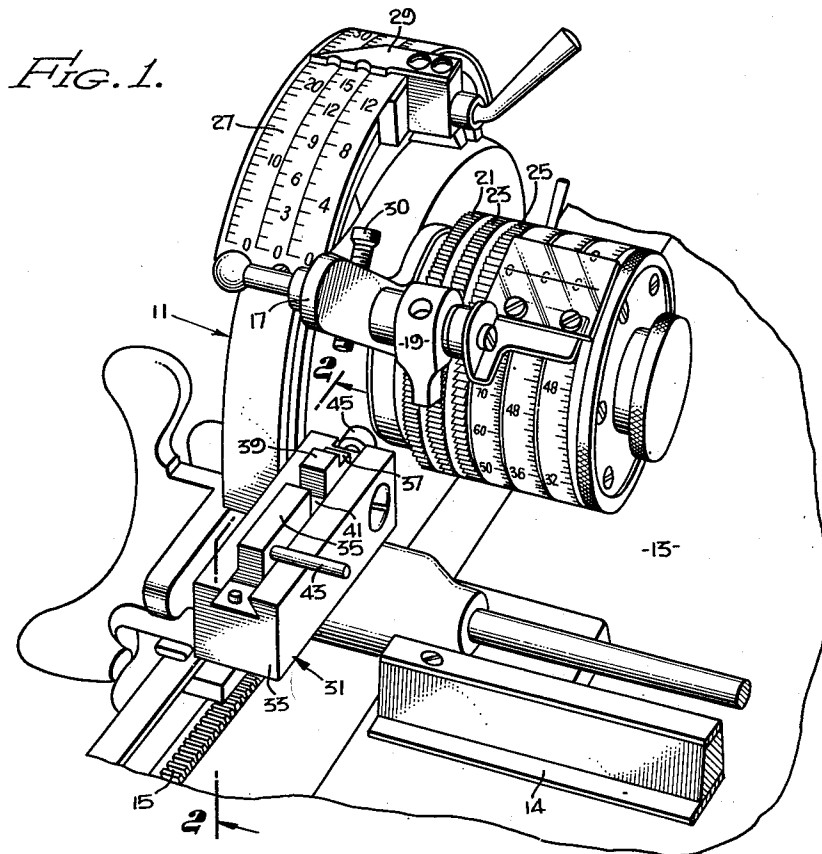


FIG. 4.

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2 Sheets-Sheet 2

FIG. 2.

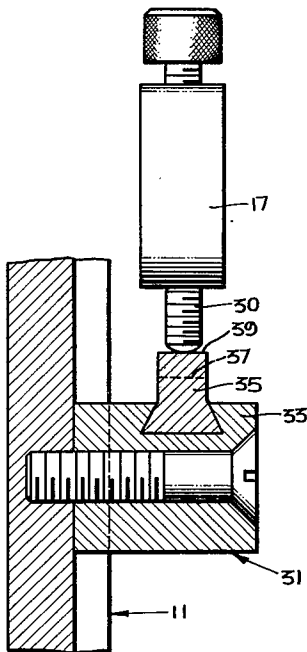
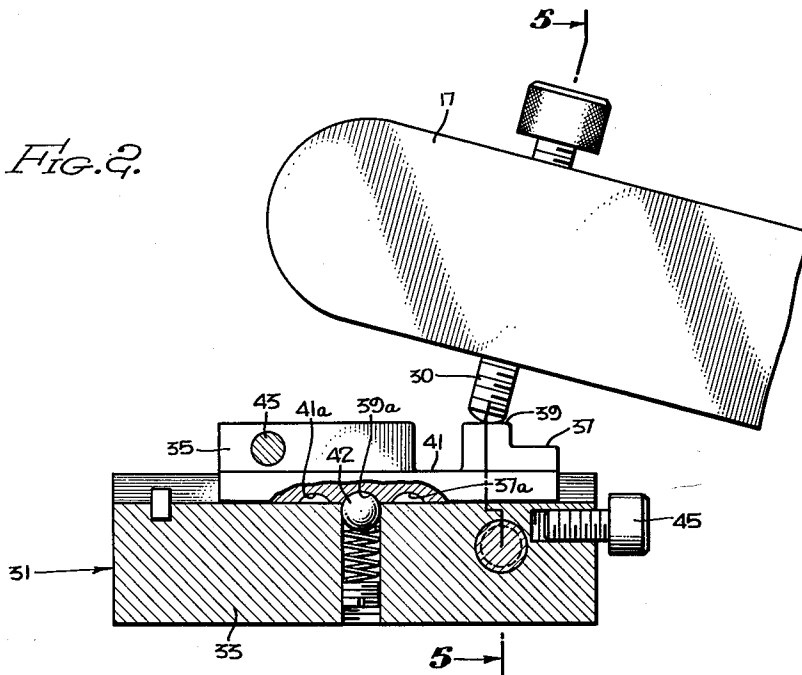


FIG. 5.

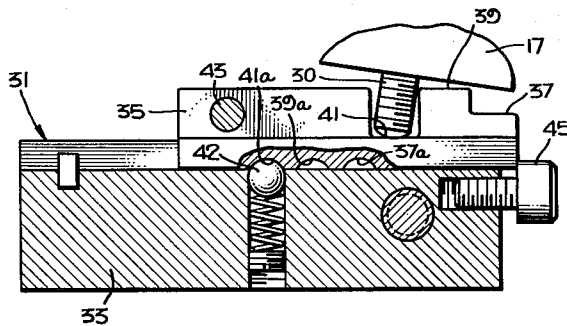


FIG. 3.

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DRAFTING INSTRUMENT

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1 Claim. (Cl. 33—76)

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This invention relates to a ruling apparatus and has for its general object the provision of improvements in such an apparatus.

The conventional ruling apparatus includes a carriage movably mounted on a ruling table and carrying a straightedge by which plates or sheets on the table can be cross-ruled by incrementally advancing the carriage. A driving mechanism is provided on the carriage and is drivably connected to the table to provide means whereby the carriage can be accurately incrementally advanced. The driving mechanism includes a pivoted arm having a handle by which it can be manually moved toward a fixed stop to incrementally advance the carriage the desired amount, and then moved away from the stop to condition the driving mechanism for a succeeding advancing movement of the carriage upon a succeeding movement of the arm toward the fixed stop. By this mechanism, sheets, plates and the like for use in producing business forms and similar articles can be accurately cross-ruled.

It is frequently desirable to rule a number of equally spaced single lines and then a double line and then other equally spaced single lines, then another double line etc., wherein each double line occupies the general location of a single line if such were provided.

At present, with the above-described machine it is necessary to start a single line at the edge of the paper, then move the straightedge to one side of the small line so provided to rule one side of the double line, and then to move the straightedge to the opposite side of the small line to rule the other side of the double line.

In order to provide a commercially satisfactory product, it is important that each double line be equally spaced between adjacent single lines and that the sides of each double line should be spaced apart the same distance as the sides of the other double lines. This means that the sides of a double line must be disposed on the opposite sides of and equally spaced from the position that would be occupied by a single line if such were supplied instead of the double line. It requires experience and practice for an operator to achieve substantial uniform positioning and spacing of double lines by the procedure outlined above.

It is a main object of the present invention to provide a ruling machine of the type above described equipped with a special mechanism designed to enable double lines to be accurately and quickly ruled without requiring any degree of skill or training of the operator.

A more particular object of the present invention is to provide a machine as above described in which the fixed stop is made adjustable and provided with three stop faces disposed at different levels, the middle level being disposed in

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an operative position when ruling single lines, whereby, when it is desired to rule double lines the stop face at the highest level is shifted into its operative position to be engaged by the manually operated arm to enable ruling one side of the double line, and thereafter the lowest level stop face is interposed in the path of the arm to enable ruling of the other side of the double line, and thereafter the arm may be moved away from the stop, and the stop shifted to dispose the middle stop face in its operative position to again enable ruling of single lines.

Various other objects of the present invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a fragmentary perspective view of a ruling apparatus embodying the concepts of the present invention;

Fig. 2 is a vertical section taken along line 2—2 of Fig. 1, but showing the manually operable arm as having been moved down to its highest level down position for ruling one side of a double line;

Fig. 3 is a view similar to Fig. 2, but showing the stop member as having been shifted to allow the arm to be moved down to its lowest level down position for ruling the other side of a double line;

Fig. 4 is a plan view of a sheet which has been ruled with single and double lines by the apparatus of the present invention;

Fig. 5 is a sectional view taken along line 5—5 of Fig. 2.

Referring to the accompanying drawings, wherein similar reference characters designate similar parts throughout, the ruling apparatus includes a traveling carriage 11 slidably mounted on one side of a ruling table 13. Extending outwardly from carriage 11 and across table 13 is a straightedge 14. There is an automatic inking mechanism, not shown, provided on the machine to enable inking of the lines.

Carriage 11 is adapted to be incrementally advanced across table 13 by means of a driving mechanism mounted on the carriage and engaging a rack 15 fixed in the table. The driving mechanism is adapted to be actuated by a manually operable arm 17, which is pivotally mounted on the carriage for movement about a horizontal axis. Arm 17 carries a pivotally mounted pawl 19 which is supported for lateral adjustment for selective engagement with any one of three ratchet wheels 21, 23 and 25, which are rotatably mounted on the frame for movement coaxially with arm 17. Ratchet wheels 21, 23 and 25 are drivably connected to rack 15 so that when a particular ratchet wheel is circumferentially advanced by movement of arm 17 and pawl

19, corresponding linear advancement of carriage 11 across the table is effected.

Ratchet wheels 21, 23 and 25 have the teeth thereon spaced differently from one another to enable selective incremental advancement of the carriage. Adjacent arm 17 is a sector scale 27 having three sets of scales, one for each ratchet wheel, which have their indicia spaced to correspond to the spacing of the teeth on the ratchet wheels.

Mounted on scale 27 is an adjustable indicator stop 29 adapted to be arcuately adjusted along the scale to determine the degree of advancement of carriage 11 upon each movement of arm 17, said arm carrying a screw 30 adapted to engage said stop. The machine to this point is conventional in construction.

Also mounted on carriage 11 adjacent the lower end of sector scale 27 is a stop device generally entitled 31 which is disposed in the same position as is the fixed stop in the conventional machine. When arm 17 is swung downwardly screw 30 abuts against stop device 31.

Stop device 31 includes a fixed guide block 33 and a movable stop member 35 having a dovetail connection with guide 33. Stop member 35 has three stop faces thereon entitled 37, 39 and 41, said faces being disposed at different levels. Formed in the bottom of stop member 35 are three recesses 37a, 39a and 41a corresponding to the stop faces. Mounted in guide block 33 is a spring-pressed ball detent 42 adapted to selectively snap into the recesses to selectively hold the stop member in positions for selective engagement of screw 30 with the stop faces.

Stop face 39 is disposed equi-distance between stop faces 37 and 41, and as is apparent from the figures, stop face 39 is at a higher level than stop face 41. As is also apparent from the drawings the middle level stop face 37 is disposed forwardly of the highest level stop face 39, and highest level stop face 39 is disposed forwardly of the lowest level stop face 41. Stop member 35 is provided with a handle 43 by which it may be shifted. A stop element 45 may be provided on the inner end of block 33 to limit inward movement of stop member 35. The operation of the apparatus will be explained with particular reference to Fig. 4. In order to rule lines X1, X2, X3 and X4, stop member 35 is shifted to its outermost position to dispose middle stop face 37 in the path of travel of screw 30. For convenience in description, hereinafter, arm 17 will be considered as engaging stop member 35 (it does indirectly engage stop member 35 through the medium of screw 30). Arm 17 is swung downwardly to engage middle stop face 37 to enable the ruling of line X1, and upon an upward movement of said arm, the pawl 19 merely freely rides over the ratchet wheel 23 which is frictionally held in place. Upon a second downward pivoting movement of arm 17 the carriage 11 is advanced another equal increment and line X2 can be formed. Thereafter, another up and down movement of arm 17 enables line X3 to be ruled and a still subsequent up and down movement of arm 17 enables line X4 to be ruled. The dotted line X5 indicates where a single line X5 would be ruled in case such were provided, but on the particular sheet shown, it is desired to provide a double line at this place.

In order to rule the double line shown in Fig. 4, stop member 35 is shoved inwardly to dispose upper stop face 39 in the path of travel of arm 17 so that when said arm is swung downwardly and engages face 39, it is stopped at a position just short of its normal stopped down position,

and the straightedge 14 is accordingly stopped just short of its normal position of advancement, to enable the ruling of line Y. Then, stop member 35 is shoved further inwardly to dispose lower stop face 41 in the path of travel of arm 17 and said arm moved further downwardly against said stop face to dispose the arm a distance beyond its normal stopped down position equal to the distance it was stopped short of such down position. Straightedge 14 is accordingly advanced by such movement of arm 17 beyond its normal position of advancement to enable the ruling of line Z.

Thereafter, arm 17 can be swung upwardly and stop member 35 shifted rearwardly to dispose middle stop face 37 in the path of travel of arm 17, so that upon a subsequent downward movement of said 17, the straightedge will be disposed in a position to enable the ruling of line X6.

By the present invention, there has been provided a ruling apparatus having an attachment enabling double lines to be rapidly and accurately located and spaced with reference to evenly spaced single lines.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claim.

Having first described my invention, what I claim and desire to secure by Letters Patent is:

In a ruling apparatus, a table, a carriage mounted on the table for movement along one edge thereof, a straightedge on the carriage, a driving mechanism on the carriage drivingly connected to the table for incrementally advancing the carriage and straightedge across the table, said driving mechanism including a manually actuated arm movably mounted on the carriage for movement toward a stop zone to drive said mechanism and advance the carriage, and away from the stop zone to condition the driving mechanism for a succeeding advancing movement of the carriage, an adjustable stop engaging screw threaded through said arm, a stop on the carriage disposed at the stop zone and having three stop faces disposed at different levels, said stop being adjustably mounted to enable the stop faces to be selectively disposed in the path of travel of the manually actuated arm, one of said three stop faces being the one normally engaged by said stop engaging screw and being located at a level midway between the levels of the other two stop faces, the distance between the upper and lower stop faces being equivalent to the amount of arm travel required for accurate spacing for a double line, whereby for any given setting of the stop engaging screw a double line accurately centered with the lines equidistant on either side of the normal position of a single line may be drawn by shifting the stop carriage in such manner that the stop engaging screw first engages the upper stop faces and then engages the lower stop face.

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