

Dec. 8, 1925.

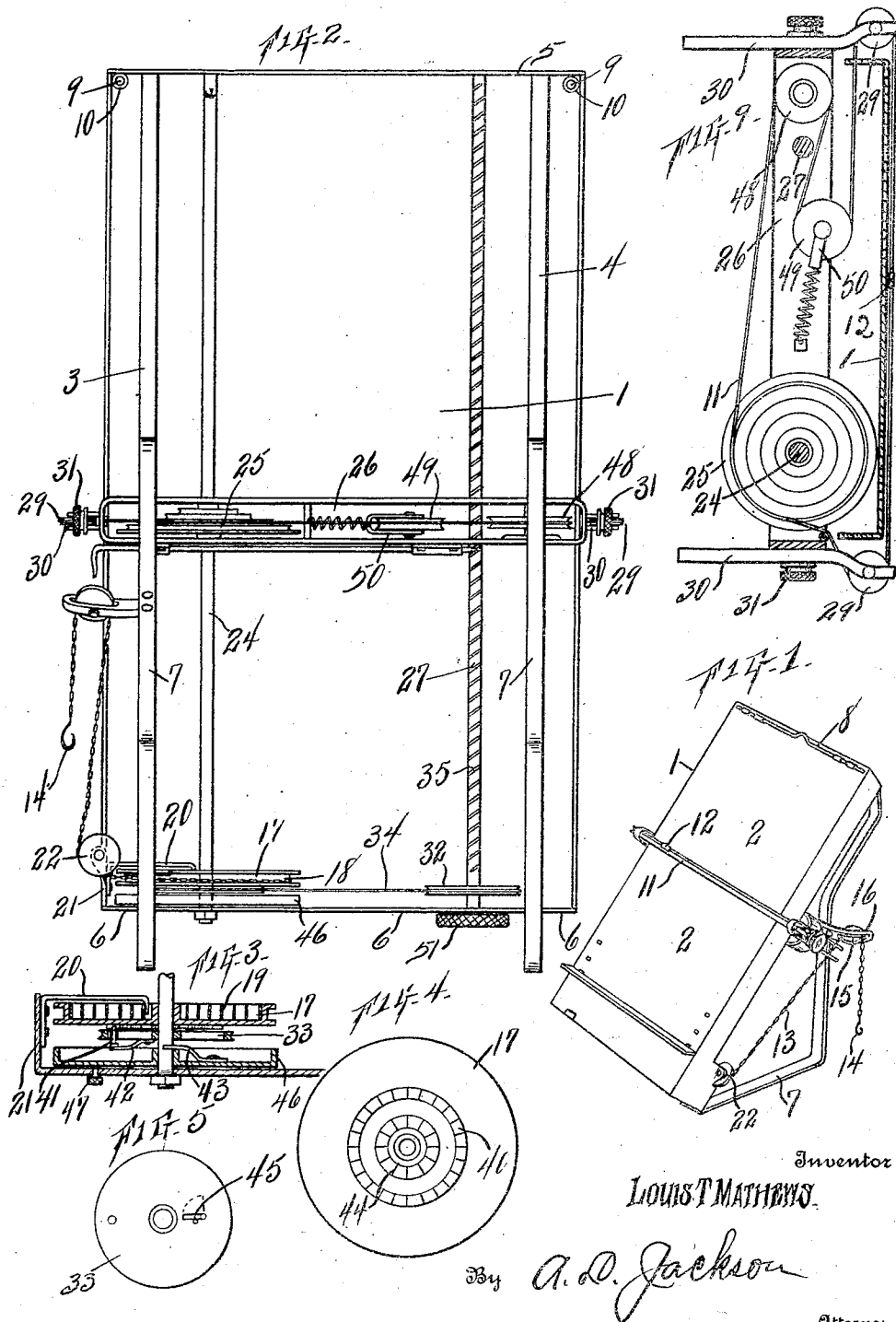
1,564,879

L. T. MATHEWS

COPY HOLDING POINTOGRAPH

Filed Aug. 21, 1922

2 Sheets-Sheet 1



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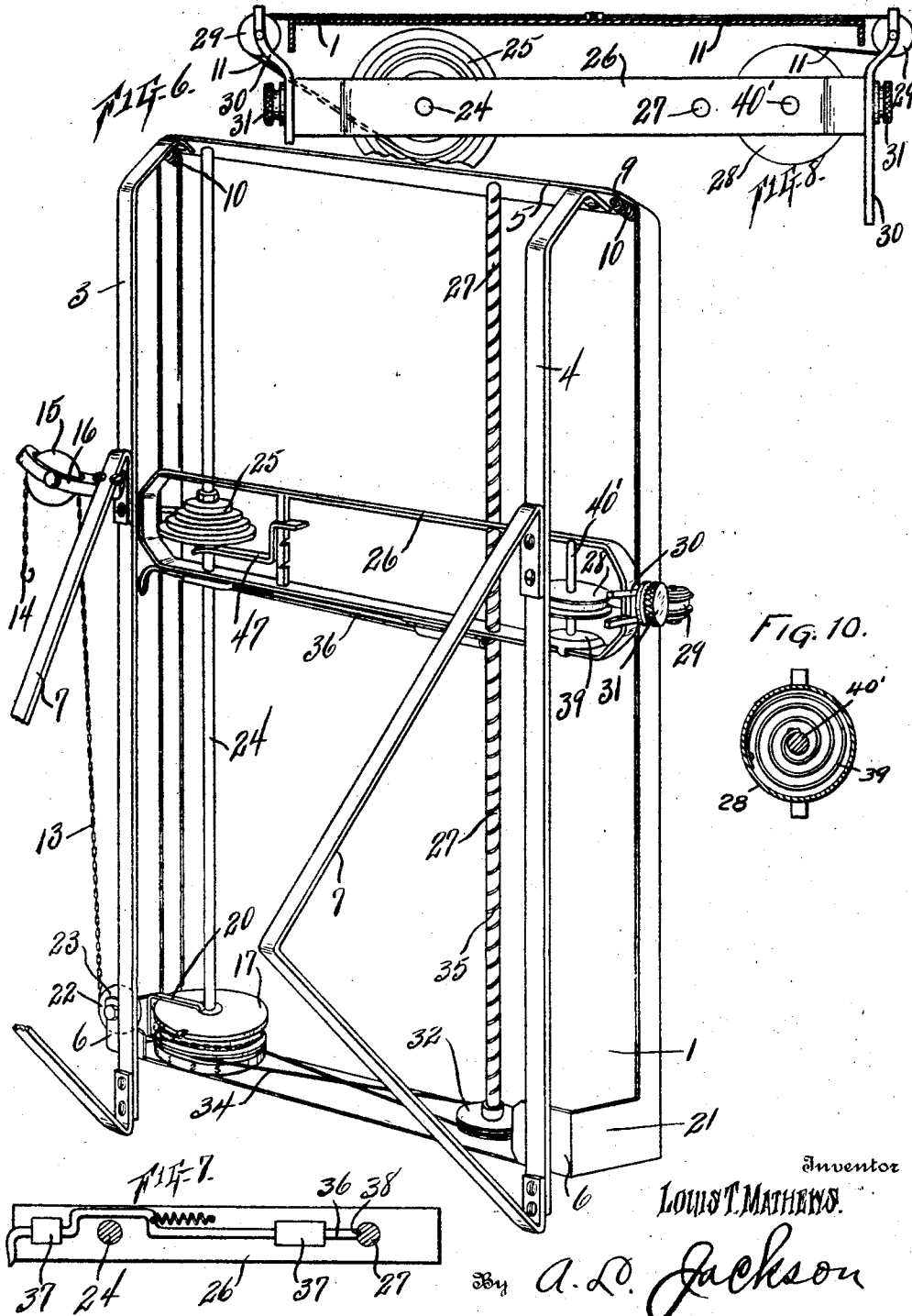
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2 Sheets-Sheet 2



Inventor

LOUIS T. MATHEWS.

By

A. L. Jackson

Attorney

UNITED STATES PATENT OFFICE.

LOUIS THOMAS MATHEWS, OF SAN ANTONIO, TEXAS, ASSIGNOR TO POINT-O-GRAPH MACHINE CO., OF DOVER, DELAWARE, A CORPORATION OF DELAWARE.

COPY-HOLDING POINTOGRAPH.

Application filed August 21, 1922. Serial No. 583,307.

To all whom it may concern:

Be it known that I, LOUIS T. MATHEWS, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful Improvements in Copy-Holding Pointographs, of which the following is a specification.

My invention relates to copy holders or pointographs and indicators and shifting mechanism therefor, and the object is to provide simple and practical apparatus for holding documents to be copied and for indicating the particular line and word to be copied and for shifting the indicating mechanism automatically, and to operative connections between said devices and the typewriter carriage or other moving part of a writing machine whereby the devices will be automatically adjusted and operated by moving parts of the typewriter or other writing machine so that the indicator will move step by step to the next word, letter or figure to be copied and the line-spacing bar will be automatically shifted from line to line. Means are also provided for changing the beat or travel of the indicator to longer or shorter lines so that the indicator may be made to point to different sizes of type or differently spaced letters or figures and also differently spaced lines. I do not limit my invention to typewriters as the devices can be used with writing or copying machines generally. It is apparent that these devices can be used with typesetting or linotype machines.

Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Fig. 1 is a perspective view of the machine, showing the face and one side. Fig. 2 is a rear view of the machine. Fig. 3 is a detail view of the line spacing devices with means for adjusting the line-spacing devices. Fig. 4 is a face view of the drive wheel. Fig. 5 is a face view of one of the line spacing wheels. Fig. 6 is an enlarged view of the rear face of the machine, shown in perspective. Fig. 7 is a detail view of the step by step control bar and co-operating parts. Fig. 8 is an enlarged detail view of

the line spacer and the co-operating parts. Fig. 9 is an enlarged plan view of the same. Fig. 10 is a detail view of the barrel spring for moving the letter indicator.

Similar characters of reference are used to indicate the same parts throughout the several views.

The improved pointograph is provided with a copy-holding frame 1 which is a box-like structure and the exterior of this frame constitutes a bearing face 2 for the paper or sheet which has the matter to be copied. The frame 1 is supported on bars 3 and 4 which are riveted to the upper flange 5 and the lower flange 6 of the box-like frame 1. Angular bracket frames 7 are riveted to the bars 3 and 4 and constitute the supports for the machine. The sheet of paper which contains the matter to be copied rests on the face 1 of the frame. The paper is held on the face by a spring-controlled bar 8. This bar is bent U-shaped with the legs 9 which project through the frame 1 and spiral springs 10 are confined on the legs 9 and tend to keep the bar 8 held in close contact with the face of the frame 1 and so adapts the bar 8 to hold sheets of paper on the face of the frame 1.

The machine is provided with a line marker 11 and the line marker or spacer 11 carries an indicator 12. Means are provided for moving the marker and the indicator both longitudinally and transversely on the face of the bearing face 2. The machine is driven by a chain or cord 13 which is provided with a hook 14 for engaging some part of a typewriter carriage (not shown). The chain 13 runs over an idle pulley 15 which is mounted in a bracket bearing 16 and then down to the drive wheel 17 and is attached thereto, the chain 13 running or lying in a groove 18 in the wheel 17 and being partly wound thereon. The wheel 17 is a barrel spring wheel, having barrel spring 19 which has one end attached to the outer rim 17 and the inner end attached to a bar 20 which is attached rigidly to the flange 21 of the frame. The chain 13 runs under a pulley 22 which is journaled in a bearing 23 which may be integral with the flange 6 of the frame. The wheel 17 is rigid with shaft 24 and drives this shaft. A stepped wheel 25 is rigid with the shaft 24. The different steps constitute pulleys of different diameters for varying the travel of

the indicator 12 and line spacer band 11. The wheel 25 rotates with the shaft 24 and is prevented from turning on the shaft by a key way and a groove longitudinally of the shaft so that the wheel is movable axially on the shaft to permit line spacing. A bracket yoke 26 is mounted on the shafts 24 and 27 and is movable axially on these shafts. A spool 28 is provided with a shaft which is journaled in the yoke 26. One end of the line spacing band 11 is attached to the stepped wheel 25 and the other end is attached to the spool 28. The band 11 runs over idlers 29 which are journaled in bracket bearings 30 which serve as guides and antifricition devices. The bracket bearings 30 are adjustable and are held at different adjustments on the yoke 26 by set screws or bolts 31. The object of the bracket bearings 30 is to make provision for documents or books of different thicknesses to be placed on the frame 1 to be copied.

The shafts 24 and 27 are journaled in the end flanges 5 and 6 on the frame 1. The yoke 26 is movable axially on the shafts 24 and 27 and is made to move on these shafts by means hereinafter explained. A pulley 32 is rigid with shaft 27 and a wheel 33 is rigid with wheel 17. A band 34 runs over the pulley 32 and over the wheel 33 so that the shaft 27 is driven whenever the wheel 17 is driven. The shaft 27 has a spiral groove 35. A spring actuated bar 36 is slidably mounted on the yoke 26 and held in place by keepers 37 and this bar is provided with a tongue 38 which projects in the groove 35. When the shaft 27 is rotated, the groove 35 with bar 36 with tongue 38, causes the carriage or yoke 26 and the line spacer 11 and indicator 12 to move from the upper part of the frame 1 to the lower part step by step for the line spacing. To move the line spacing mechanism back to the upper part of the frame 1, draw the tongue 38 from the groove 35 and move the mechanism manually back to the upper part of the frame. The moving of the indicator 12 is controlled as to amount of space moved at each step by the typewriter carriage. The tension of the band 11 is controlled and the slack taken up by a barrel spring 39 which cooperates with the shaft 40' of the wheel 28. Wheel 17 has ratchet teeth 40. The wheel 33 carries a dog 41 which is controlled by a spring 42 which is attached to wheel 33. The spring 42 holds the dog 41 projected through an opening in wheel 33 and into engagement with the teeth 40. When the wheel 17 is driven, it carries with it wheel 33 until a disengaging device 43 lifts the dog 41 out of engagement with the teeth 40. When the wheels 17 and 33 are moving together, wheel 32 is being driven which causes shaft 27 to turn and move the line spacer 11 the required distance. As

soon as the dog 41 is disengaged from the teeth 40, wheel 33 stops and consequently wheel 32 stops, and wheel 17 continues to turn until the indicator 12 reaches the end of the line being copied. The spring 19 will then turn wheel 17 in the opposite direction. The wheel 17 has a ratchet 44 and wheel 33 has a dog 45. When wheel 17 is turning backward, the dog 45 will engage ratchet 44 and this will return wheel 33 to starting point. The wheel 32 is a ratchet wheel and drives the shaft 27 only in one direction and so turns backward without turning the shaft 27. When the wheel 33 reaches the starting point, the dog 41 is in position to be driven by the ratchet 40. The operations are repeated in the same manner. The disengaging device 43 is mounted on a gaging disk 46 and the distance to be traveled or turned by wheel 33 is controlled by position of disengaging device 43 on the disk 46. The disk 46 is held in position by a set screw 47 which is adjustable in a curved slot in the frame 6 of the machine.

The stepped wheel 25 is moved to different positions by an adjustable bracket 47 to bring any one of the steps in alignment with the guide pulley 29.

The variations are shown in Figs. 6 and 8. The preferred form of the device is shown in Figs. 2 and 9. The line spacer 11 is preferably a continuous band and when different steps on the wheel 25 are used, the slack is taken up by pulleys 48 and 49, the pulley 49 being movable and controlled by a spring-controlled yoke bearing 50.

The shaft 27 is provided with a hand-wheel 51 for adjusting the shaft independently of the operating mechanism for adjusting the line spacing mechanism to the exact position required.

What I claim, is:—

1. A copy-holding pointograph comprising a frame, shafts journaled longitudinally in said frame, a yoke movable on said shafts, a line spacing band carried by said yoke and transversely disposed on the face of said frame and an indicator carried by said band, and gearing for causing said yoke to move step by step longitudinally on said shafts.

2. A copy-holding pointograph comprising a frame, shafts journaled longitudinally in said frame, one shaft being a driving shaft and the other being a spacing shaft and provided with a spiral groove therein, a yoke movable on said shafts and a spring-actuated dog carried by said yoke and engaging said spiral groove for moving said yoke, a line spacing band and gearing therefor carried by said yoke and transversely disposed on said frame, an indicator carried by said band, the gearing for said band being operatively connected to said driving shaft, a drive pulley on said driving shaft provided with a barrel spring for returning

said shaft to starting point, and a chain operatively connected to said pulley and to a moving part of a writing machine to be moved step by step by the writing machine.

5 3. A copy-holding pointograph comprising a frame set at an angle, a driving shaft and a spacing shaft journaled longitudinally in said frame, a yoke movable on said shafts and a spacing band operatively connected to
10 said yoke and extending transversely on said frame and an indicator carried by said band, gearing for said driving shaft operatively connected to a movable part of a writing machine for driving said spacing
15 band step by step, and gearing actuated by said driving shaft gearing for driving said spacing shaft intermittently for moving said band from one line to another.

20 4. A copy-holding pointograph comprising a frame having an inclined face, a driving shaft and a spacing shaft journaled longitudinally in said frame, a yoke on the back of said machine movable on said shafts,

a stepped gear wheel rigid with said driving shaft, a re-winding gear wheel carried by said yoke, a spacing band operatively connected to said wheels and disposed transversely on the face of said frame and provided with an indicator, said spacing shaft having a spiral groove therein and said yoke carrying a spring-actuated dog adapted to engage said groove for moving said yoke when said spacing shaft is driven, driving gear for said driving shaft operatively connected to a moving part of a writing machine for causing a step by step movement of said spacing band, and gearing operatively connected to said driving gear and to said spacing shaft and timed to drive said spacing shaft just after said indicator has traversed the face of said frame once, said rewinding wheel being adapted to move the indicator back to starting point.

In testimony whereof, I set my hand, this 4th day of August, 1922.

LOUIS THOMAS MATHEWS.