Jan. 22, 1929. 1,699,708

G. J. NETH

AUTOGRAPHIC REGISTER

Filed Aug. 13, 1926 5 Sheets-Sheet 1

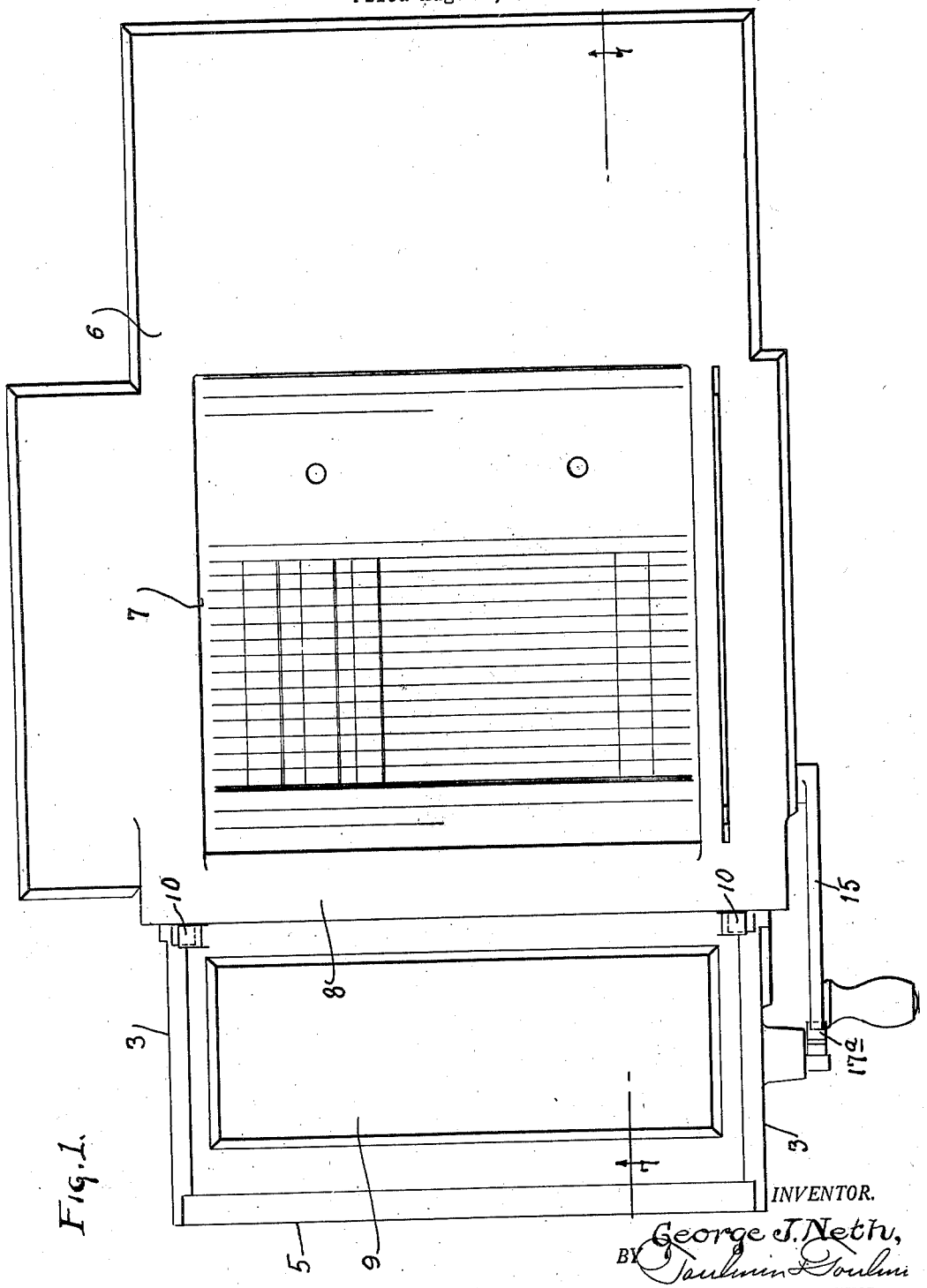


Fig. 1.

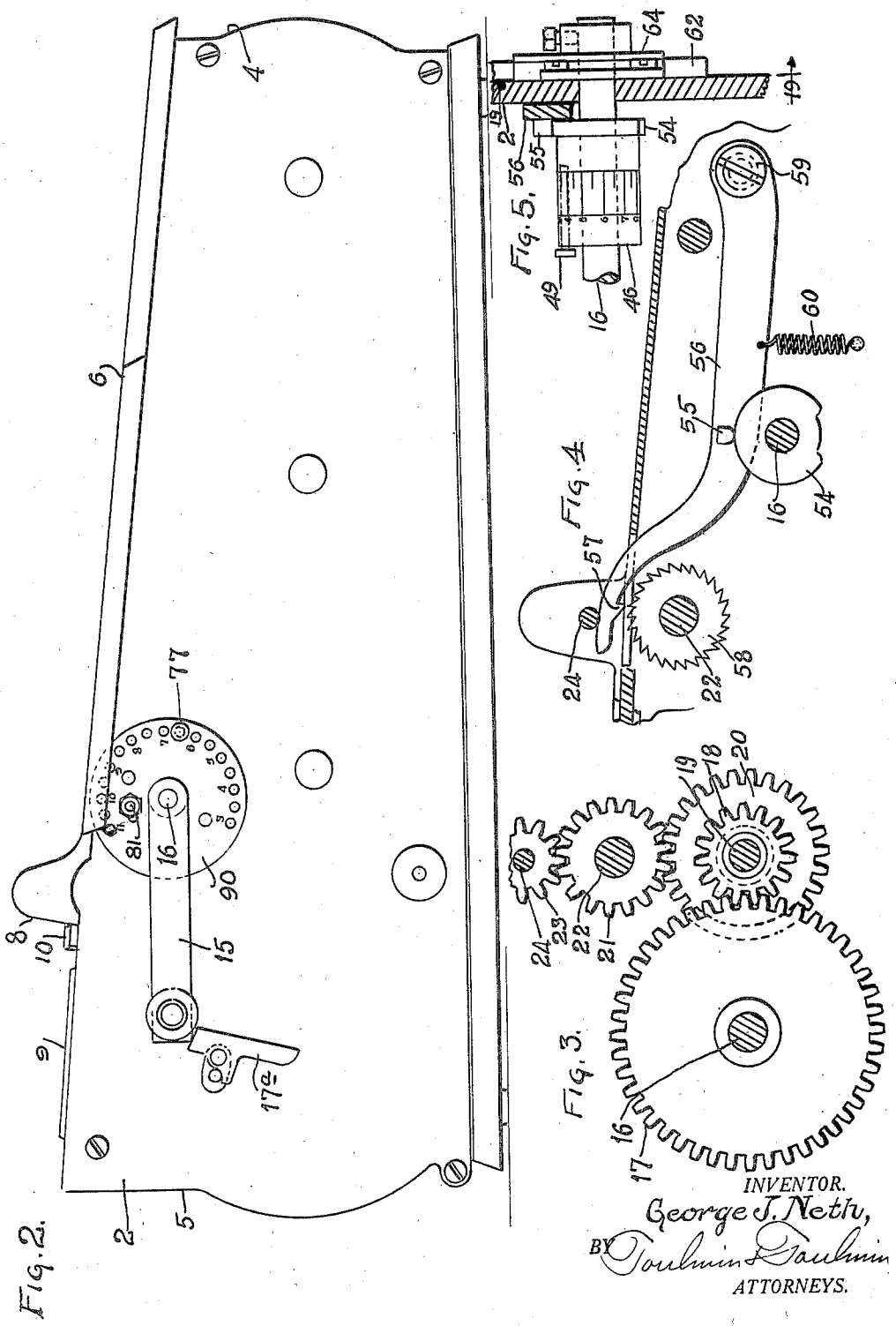
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AUTOGRAPHIC REGISTER

Filed Aug. 13, 1926 5 Sheets-Sheet 2



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AUTOGRAPHIC REGISTER

Filed Aug. 13, 1926 5 Sheets-Sheet 3

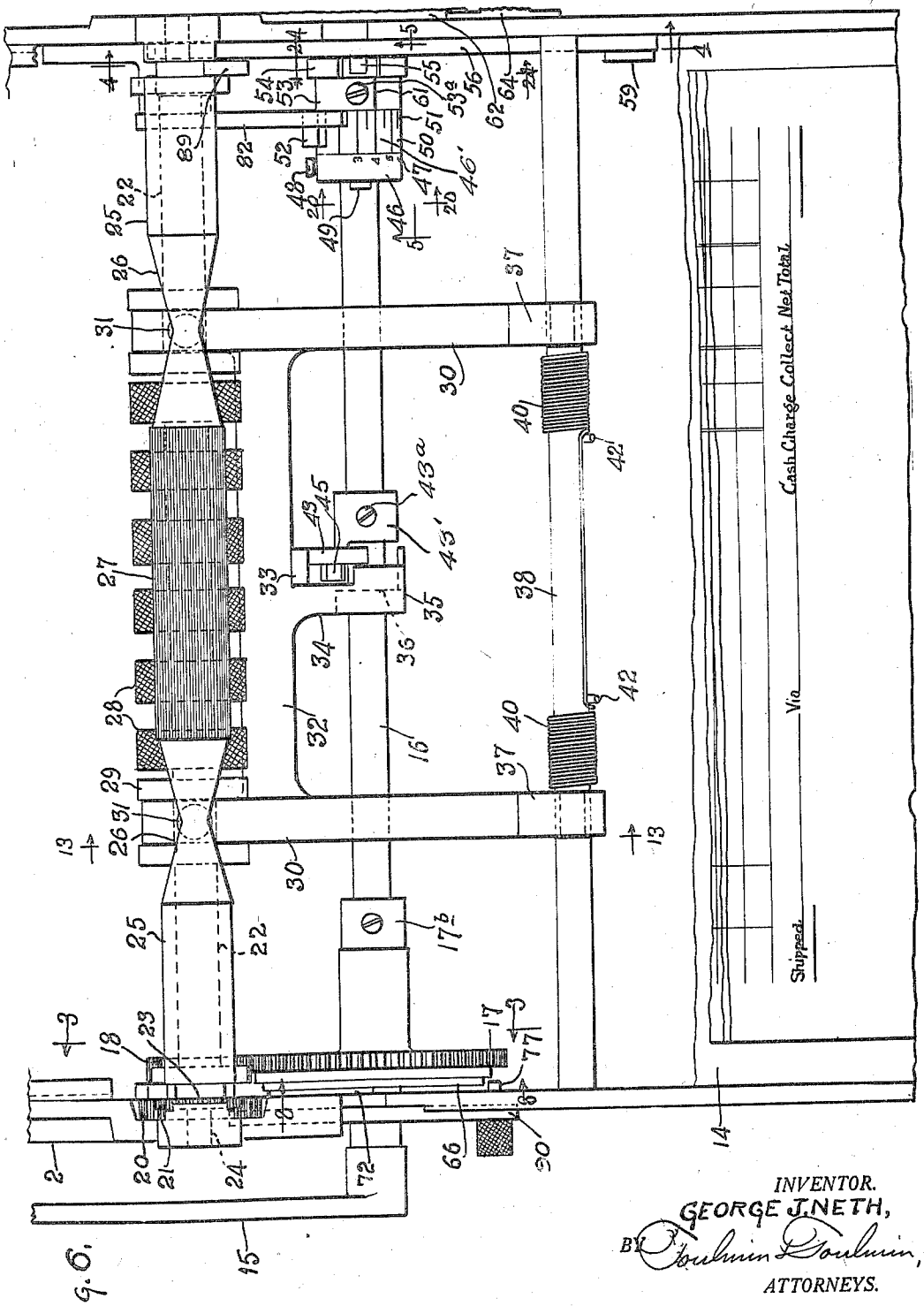


Fig. 6.

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AUTOGRAPHIC REGISTER

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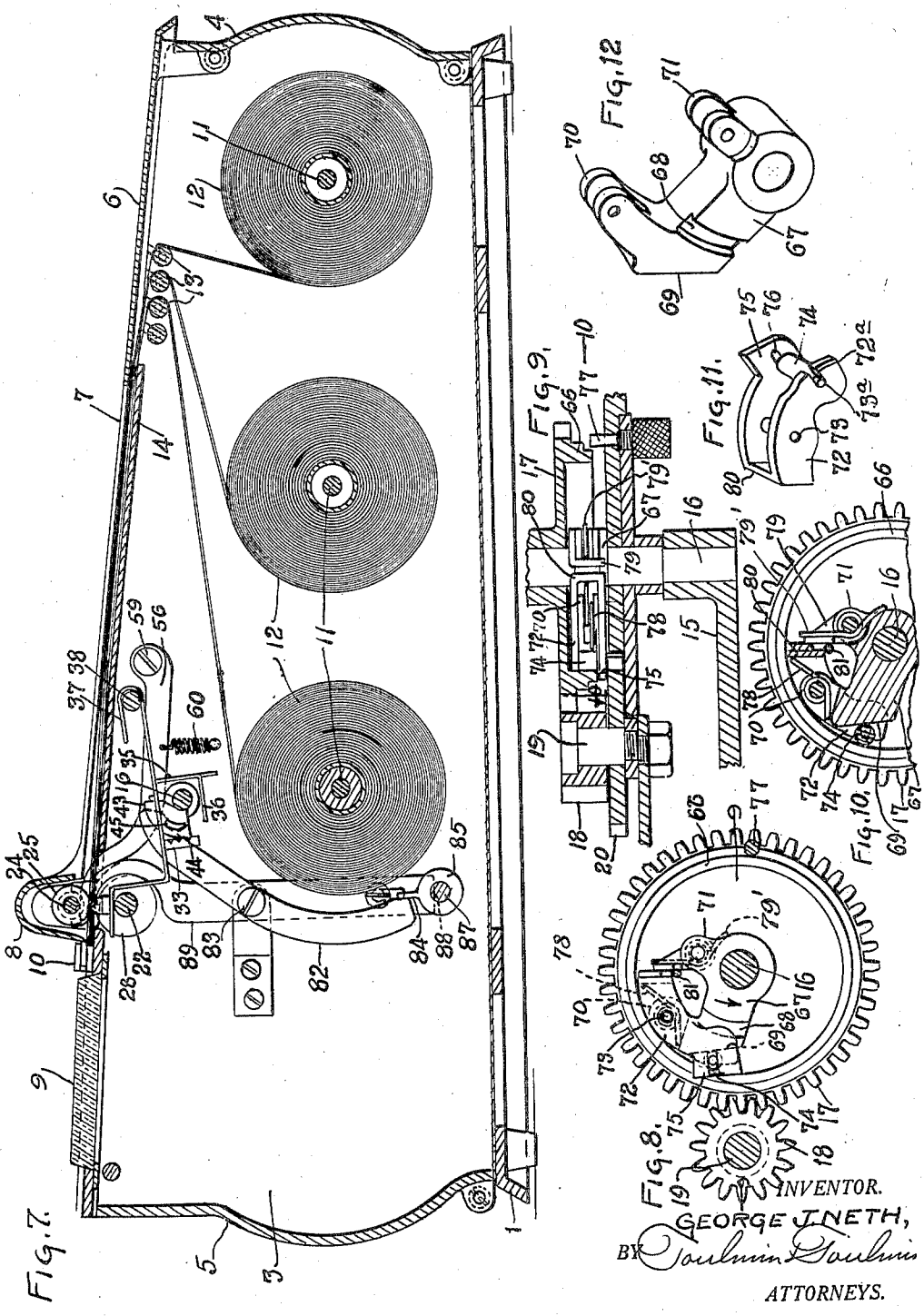


Fig. 7.

Fig. 12.

Fig. 9.

Fig. 11.

Fig. 10.

Fig. 8.

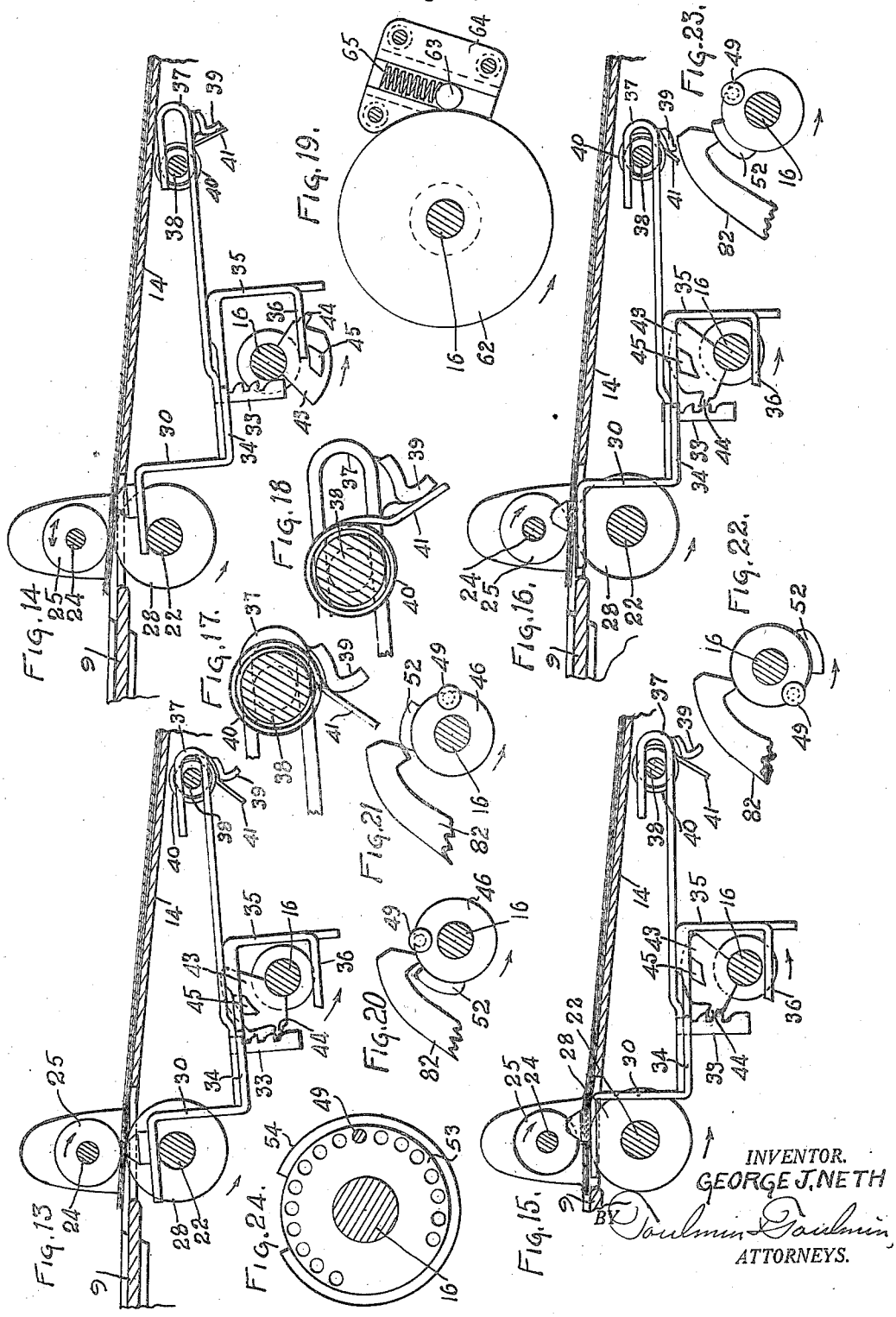
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AUTOGRAPHIC REGISTER

Filed Aug. 13, 1926 5 Sheets-Sheet 5



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Patented Jan. 22, 1929. 1,699,708

UNITED STATES PATENT OFFICE.

GEORGE J. NETH, OF DAYTON, OHIO, ASSIGNOR TO THE EGRY REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

AUTOGRAPHIC REGISTER.

Application filed August 13, 1926. Serial No. 129,041.

My invention relates to autographic registers.

It is the object of my invention to provide an autographic register which may be adjustable, without change of mechanism, to varying lengths of tickets or bills which are printed on the strips of paper passing through the register.

In particular, it is the object of my invention to provide a mechanism for ejecting the paper and aligning the paper, preferably in the file punch holes. My aligning mechanism is characterized by an engagement with the paper through the holes, a slight movement forward of the paper by the engaging means and aligning means and a shaking or vibrating of the aligning means to bring the sheets into alignment while in loose condition, and the ejection of the sheets when the aligning means is inoperative by frictional engaging means.

It is the object of my invention to provide further novel features of adjustment for different lengths of bills, mechanism for preventing an overrun of the friction ejecting rolls, and mechanism to prevent the reverse movement of the feeding mechanism.

In the accompanying drawings:

Figure 1 is a top plan view of the register;

Figure 2 is a side elevation of the register on the handle side;

Figure 3 is a section on the line 3—3 of Figure 6 showing the gear train;

Figure 4 is a section on the line 4—4 of Figure 6 showing the mechanism for controlling the overrun of the friction rolls;

Figure 5 is a section on the line 5—5 of Figure 6 showing the adjusting mechanism for adjusting the position of the overrun cam;

Figure 6 is a top plan view of the register with the cover broken away to show the operating mechanism;

Figure 7 is a section on the line 7—7 of Figure 1;

Figure 8 is a section on the line 8—8 of Figure 6 disclosing the interior arrangement of the clutch mechanism which controls the operation of the ejecting friction rolls;

Figure 9 is a section on the line 9—9 of Figure 8;

Figure 10 is a section on the line 10—10 of Figure 9;

Figure 11 is a perspective of the clutch roll support;

Figure 12 is a perspective of the clutch arm;

Figure 13 is a section on the line 13—13 of Figure 6 showing the alignment mechanism and ejecting mechanism in the position in which the sheets are engaging the friction rolls and the writing operation can take place;

Figure 14 is a similar view showing the similar mechanism after the carriage for the pins has been pushed backwardly and then moved to its rearmost position by the springs and cams;

Figure 15 is a similar view showing the aligning mechanism in its uppermost position with the rolls spread apart having been elevated by the cam;

Figure 16 is a similar view of similar parts as the parts are being vibrated for jarring the sheets into alignment;

Figure 17 is an enlarged view with the shaft in section of the spring control for the aligning mechanism showing the spring and cam pressing down on the carriage, as in Figure 13;

Figure 18 is a similar view showing the spring and cam pushing back on the carriage having forced it to its rearmost position as in Figure 14;

Figure 19 is a section on the line 19—19 of Figure 5 illustrating the roller clutch to prevent the rearward movement of the mechanism;

Figure 20 is a section on the line 20—20 of Figure 6 showing the roller spreading cam and roller spreading arm in position at the starting of the handle stroke;

Figure 21 shows similar parts in the position at the beginning of the spreading operation;

Figure 22 shows similar parts just as the aligning mechanism is being moved backwardly;

Figure 23 shows similar parts when the spreading has taken place by the movement of the spreading arm through the cam;

Figure 24 is a section on the line 24—24 of Figure 6 showing the adjusting rollers from the roller spreading adjusting means.

Referring to the drawings in detail, 1 is the base of a register having side walls 2 and 3 with end walls 4 and 5. The usual hinge cover 6 is provided having a writing opening 7 and an upper ejecting roller cage 8. The slide 9 is provided on the forward part of the top of the machine adapted to hold the forward end of the cover 6 in position through the lugs 10.

In the register, there are mounted on shafts 11 the several paper rollers 12 which pass over guide rollers 13 to the writing table 14 where they are suitably interleaved with carbon paper.

A handle 15 is mounted on a main actuating shaft 16. The handle is brought to rest by the usual movable stop 17ª carried on the outside of the machine.

This main shaft 16 carries on it a main operating gear 17, which, in turn, meshes with a pinion 18 mounted on a stud shaft or stud 19. On this stud is also mounted a gear 20 which drives the lower roller gear 21 carried on the roller shaft 22. This gear meshes with the gear 23 of the upper roller shaft 24. This provides for the driving of the two ejecting rollers. The gear 17 is loosely mounted on the shaft 16 and is maintained in position by the wall of the register on one side and a collar 17ᵇ mounted on the shaft 16 on the other side.

The rollers themselves are arranged as follows. The upper roller consists of solid end members 25 having spaced depressed portions of gradually narrowing diameter, designated 26, to permit the aligning pins to pass therethrough. Between these depressed portions of restricted diameter there is a cylindrical knurled portion 27 for engaging with the paper sheets.

The lower roller is provided centrally adjacent the upper knurled portion with a plurality of spaced knurled disks 28. The purpose in relying upon disks instead of a solid roller is to reduce the weight of the moving roller and therefore the tendency of the roller to overrun its position when brought suddenly to a stop. On either side of the knurled disks on the lower shaft 22 will be found a pair of spaced disks 29 between which the pin supporting plates 30 reciprocate carrying the aligning pins 31. A transverse bar 32 joins these pin supporting plates. This bar carries centrally thereof a depending rack 33 and a rearwardly and downwardly extending U-shaped member having an upper horizontal portion 34, a downwardly projecting portion 35 and a forwardly extending horizontal portion 36. The rear ends of the plates 30 are bent into U-shaped hooks 37 so that they can reciprocate upon the shaft 38. Each one of these U-shaped ends is provided with a downwardly projecting finger 39 adapted to engage with the free end of the coil spring 40, such free end being designated 41. The other free end of the spring rests against a projection 42 on the shaft 38.

Returning to this main operating shaft 16 it will be observed that it has mounted thereon a cam 43 by means of sleeve 43′, which is adjustably mounted on shaft 16 by means of the screw 43ª. This cam has a supplementary projecting tooth 44 and a laterally projecting cam member 45 which is known as the elevating cam, while the cam 43 serves the purpose primarily of cooperating with the tooth 44 for pressing the aligning mechanism backwardly. The tooth 44 also serves the purpose of engaging with the rack 33 for reciprocating the aligning mechanism to jog the sheets into aligned condition.

On this same shaft 16 is the adjustable mechanism for adjusting the position of the cam which determines the time at which the rollers are spread apart to release the sheets so that they can be aligned.

This mechanism is arranged as follows. On the shaft 16 is a collar 46 having numerals 47 thereon to designate the lengths of tickets. This collar is fixed to the shaft 16 by the set screw 48. It carries a pin which passes therethrough and through the sleeve 46′ into sleeve 53, the head of the pin being seen in Figure 6 and designated 49.

On this sleeve 46′ corresponding to the numerals are a series of lines 50 and 51 respectively designating the inches and half inches of length of the tickets. The sleeve carries the roller spreading cam 52. The pin 49 is adapted to be inserted into any one of a series of holes corresponding to any one of the lines, such holes being found in the sleeve 46′ and the sleeve 53 which carries the overrun cam 54. This sleeve is adjustably fixed on the shaft 16 by the set screw 53ª. This overrun cam 54 is adapted to engage with the projection 55 on the overrun pawl 56 which has a tooth 57 for engaging with a ratchet 58 on the lower roller shaft. This pawl 56 is pivoted at 59 on the side wall of the register and is normally pulled downwardly by the spring 60.

By adjusting the position of the graduated collar 46 by the set screw 48 on the shaft 16 and by adjusting the position of the desired graduation opposite to the line 61 on the sleeve 53 and the insertion of the pin to bring those two parts together, the register will be synchronized for the desired length of bill when the clutch hereinafter to be described is likewise adjusted to a similar length of bill.

To prevent the reversal of the shaft 16, I provide a disk 62 turning therewith and mounted thereon. A roller 63 engages the margin of this disk. The roller is guided in a guideway 64 and is spring pressed downwardly tangentially into engagement with the periphery of the disk by the spring 65. So long as the disk 62 travels in the desired direction, the roller 63 will turn freely but if the register is reversed and is turned backwardly the roller 63 will jam between its guideway and the periphery of the disk 62 preventing such backward movement.

Turning to the clutch mechanism which disengages the ejecting rollers from the driving shaft, it will be observed that the shaft

16 carries the master gear 17. This gear carries on one face thereof a clutch band or ring 66. The shaft itself has mounted thereon and turning therewith a clutch arm 67. On one side thereof is a groove 68 and on the end thereof is a cam surface 69 with a pair of spaced arms 70 disposed at substantially right angles to the arm 67. On the hub of this arm 67 are another pair of spaced arms 71 for supporting the locking member 79.

On the arm 70 is pivoted a clutch roller support consisting of a pair of joint arcuate members 72 spaced from one another pivoted at 73 on the arm 70. One of these arms has a slot 72^a for supporting the shaft 73^a of the clutch roller 74. The other of the arms is provided with an extending flange 75 there being a slot 76 in this arm for supporting the other end of the roller 74. This flange 75 overlaps the side of the clutch ring 66 and is adapted to be engaged by the stationary pin 77 carried on the side wall of the register which depresses the end of the clutch roller support carrying the roller against the resistance of the spring 78 thereby permitting the disengagement of the roller between the inside of the clutch ring 66 and the cam face 69 which has caused the gear 66 to travel with the shaft 16. The gear 17 will now come to rest and the arm 72 will be held in depressed position by the locking member 79 which is impelled into engaging position by the spring 79. The end of the latch 68 gets beneath the end 80 of the clutch roller support 72, holding it in depressed position. This continues until it is desired to re-engage the clutch roller and arm and the clutch ring. This re-engagement is effected by the locking member 79 coming in contact with the unlocking pin 81 which is carried on the side wall of the register which detains this locking member 79 sufficiently to unlock it from the end of the arm 80 after which the locking arm will slip by the pin 81.

The groove 68 in the clutch 67 is provided so that the arm 67 can pass over this pin 81.

A scale 90 is provided on the outside of the machine for supporting the pin 77 which determines the period of clutching. The several holes in which the pin may be mounted are marked to correspond to the length of the sheets which are to be ejected. In this particular case, the sheets may be handled in this machine in lengths ranging from three to eleven inches, such as three, three and one-half, four, etc.

With this understanding of the mechanism carried by the shaft 16, it will be understood that the cam 52 actuates the arm 82 which may be seen in Figure 7, pivoted on the side wall of the register at 83. The lower end of this arm engages with a flange 84 on a sleeve 85 carried on the shaft 87. This sleeve is fastened to the shaft. On the shaft is a cut-away portion 88 upon which rests the upper roller lifter 89. There is a lifter of this character at either end of the shaft 87. When the shaft is rotated and the higher portion of the shaft is brought under the lifter, the lifter is elevated and the upper roller is spread from the lower roller. The rotation of the shaft is effected by the engagement of the lower end of the lever 82 with the flange 84 on the sleeve 85.

Method of operation.

Starting with the handle at rest, the sheets are ejected by the movement of the rollers as the shaft 16 is in clutched engagement with the master gear loosely mounted thereon. This continues until the stationary pin 77 brings about the de-clutching of the gear so that the shaft 16 will continue to travel without the gear moving and without the rollers moving. At a similar instant, the rolls will be spread by the cam 52, arm 82 and spreader 89, while the lower roller will be prevented from continuing to turn by the mechanism shown in Figures 4 and 6.

While this ejection has been taking place the aligning pins on their frame have been drawn backwardly as the paper can easily pass over the pin points in the lower position of the pins.

This rearward movement is accomplished due to the engagement of the nose 44 of the cam 43 with the vertical portion 35 of the frame.

The spring 41 has no effect in the first part of this operation because it tends to press down on the frame through the finger 39, but, when the frame has been pushed back sufficiently far, the spring can then come into operation as in Figure 18, pushing the frame suddenly backwards. The frame is then in its rearmost position as well as in its most depressed position.

The cam 43 then continues to turn anti-clockwise until the cam 45 engages with the horizontal portion 34 of the frame elevating the frame forcing the pins into the holes of the paper which have now come over the pins in approximate relationship thereto. The continued movement of the cam brings the nose 44 into engagement with the rack 33 which serves to intermittently move forwardly the frame while the spring 40 moves the frame backwardly, thus imparting a reciprocatory motion to the frame and pins to jog the sheets into alignment.

This continues to the extent of the several teeth on the rack until the nose 44 engages with the lowermost tooth of the rack, at which time it pulls the frame downwardly withdrawing the pins from engagement with the paper, at which time the rollers are engaging the paper for another ejecting operation after the writing has taken place.

After the pin 77 and the sleeves 43', 46' and and 53 have been adjusted to accommodate

the sheets of the length desired, the handle 15 is operated to actuate the mechanism to eject the sheets. After the handle has been moved a certain distance the clutch mechanism is operated to release the gear 17 by means of the pin 77. At the same time the cams 52 and 54 operate to spread the rollers apart and to lock them against further rotation. These actions are substantially simultaneous, but do not effect the continued rotation of the shaft 16, which carries the pawl of the sleeve 43′ to which the cam 45 and other associated parts are attached.

By the continued rotation of the shaft 16 and the operation of the cam 43 the sheet-adjusting mechanism is caused to operate, and the pins which are used to engage the holes in the sheets of paper are forced into said holes so that the sheets are aligned. The continued operation of the shaft 16 brings the cam 43 to a position where the pins that engage the holes in the sheets are lowered and the bars that separate the rollers are removed so that the rollers again come in contact with the sheets of paper and the device is again ready to operate in a normal sheet-ejecting performance.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions and uses.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an autographic register having a plurality of sheets, means to frictionally engage and eject the sheets, rotatable means to drive said engaging means, means including a ball engaged disc to prevent rotation of said rotatable means in one direction, means to disengage and connect said driving means and ejecting means, and means to prevent the continued rotation of a portion of the ejecting means when disconnected from the driving means.

2. In an autographic register having a plurality of sheets, means to frictionally engage and eject the sheets, means to drive said engaging means, means to dis-engage and connect said driving means and ejecting means, means including a pivoted member and a vertically movable member to spread said ejecting means when disengaged from the driving means, and aligning means adapted to align said sheets when the ejecting means have ceased operating and have been spread apart.

3. In an autographic register having a plurality of sheets, means to frictionally engage and eject the sheets, means to drive said engaging means, means to dis-engage and connect said driving means and ejecting means, means including a rocking member and a longitudinally movable member to spread said ejecting means when disengaged from the driving means, aligning means adapted to align said sheets when the ejecting means have ceased operating and have been spread apart, and means to pull said sheets into final aligning position.

4. In an autographic register having a plurality of sheets, means to frictionally engage and eject the sheets, rotatable means to drive said engaging means, means including a ball engaged disc to prevent rotation of said rotatable means in one direction, means to disengage and connect said driving means and ejecting means, and means operated by said driving means to spread said ejecting means, aligning means adapted to align said sheets when the ejecting means has ceased operating and has become spread apart, means to pull said sheets into final aligning position, and means to reciprocate said sheets to shape them into aligning position prior to final alignment by the aligning means.

5. In an autographic register having a plurality of sheets, a pair of ejecting rollers, rotatable means to drive said rollers, means including a ball engaged disc to prevent rotation of said rollers in one direction, a clutch between said rollers and said driving means, means to spread said rollers when they are declutched, said spreading means being separate from the rollers and actuated by the common driving means.

6. In an autographic register having a plurality of sheets, a pair of ejecting rollers, rotatable means to drive said rollers, means including a ball engaged disc to prevent rotation of said rollers in on direction, a clutch between said rollers and said driving means, means to spread said rollers when they are declutched, said spreading means separate from the rollers and actuated by the common driving means, and means to adjust the position of clutching and declutching of the driving means.

7. In an autographic register having a plurality of sheets, a pair of ejecting rollers, means for driving said rollers, a clutch between said rollers and said driving means, means to spread said rollers when they are declutched, said spreading means being actuated by the common driving means, means to adjust the position of clutching and declutching of the driving means, and means to adjust the period of spreading of the rollers in synchronism with the declutching and clutching of the driving means to the roller.

8. In an autographic register having a plurality of sheets, driving means, ejecting rollers, a clutch adapted to connect the driving means and rollers and disconnect them at predetermined intervals, roller spreading means actuated by the driving means adapted to spread the rollers and return them to engaging position at predetermined intervals, and paper aligning means adapted to align said sheets when said rollers are inoperative and spread apart.

9. In an autographic register having a plurality of sheets, driving means, ejecting rollers, a clutch adapted to connect the driving means and rollers and disconnect them at predetermined intervals, roller spreading means actuated by the driving means adapted to spread the rollers and return them to engaging position at predetermined intervals, and paper aligning means adapted to align said sheets when said rollers are inoperative and spread apart, and means connected with the driving means for moving the aligning means backwardly in inoperative condition and forwardly in operative condition to move the sheets forwardly by the aligning means at a predetermined amount.

10. In an autographic register having a plurality of sheets, driving means, ejecting rollers, a clutch adapted to connect the driving means and rollers and disconnect them at predetermined intervals, roller spreading means actuated by the driving means adapted to spread the rollers and return them to engaging position at predetermined intervals, and paper aligning means adapted to align said sheets when said rollers are stationary and spread apart, and means connected with the driving means for moving the aligning means backwardly in inoperative condition and forwardly in operative condition to move the sheets forwardly by the aligning means at a predetermined amount, and means to reciprocate the aligning means and sheets during the forward movement of the aligning means and sheets together to jog the sheets into alignment and means to withdraw the aligning means from the sheets upon reengagement of the sheets by the rollers.

11. In an autographic register having a plurality of sheets, driving means, a clutch thereon, ejecting rollers driven by said driving means through said clutch, and means to adjust the action of the clutch in operating the rollers according to the length of the sheets desired to be ejected.

12. In an autographic register having a plurality of sheets, driving means, a clutch thereon, ejecting rollers driven by said driving means through said clutch, and means to adjust the action of the clutch in operating the rollers according to the length of the sheets desired to be ejected, and means to spread the rollers actuated by said driving means, and means to adjust the timing of spreading the rollers according to the length of the sheets to be ejected so that the stopping of the rollers and the spreading of them will be synchronized.

13. In an autographic register having a plurality of sheets, driving means, a clutch thereon, ejecting rollers driven by said driving means through said clutch, and means to adjust the action of the clutch in operating the rollers according to the length of the sheets desired to be ejected, and means to spread the rollers actuated by said driving means, and means to adjust the timing of spreading the rollers according to the length of the sheets to be ejected so that the stopping of the rollers and the spreading of them will be synchronized, and means for preventing an overrun of the lower roller when it has been disconnected from its driving means by the clutch.

14. In an autographic register having a plurality of sheets, driving means, a clutch thereon, ejecting rollers driven by said driving means through said clutch, and means to adjust the action of the clutch in operating the rollers according to the length of the sheets desired to be ejected, and means to spread the rollers actuated by said driving means, and means to adjust the timing of spreading the rollers according to the length of the sheets to be ejected so that the stopping of the rollers and the spreading of them will be synchronized, and means for preventing an overrun of the lower roller when it has been disconnected from its driving means by the clutch, and means for adjusting the overrun mechanism to be synchronized with the adjustments of the driving and spreading mechanism.

15. In an autographic register having a plurality of sheets, driving mechanism, a clutch thereon, a scale, a clutch controlling means adapted to be placed in different positions on said scale to control the operation of the clutch and ejecting mechanism driven by said driven means through said clutch.

16. In an autographic register having a plurality of sheets, driving mechanism, a clutch thereon, a scale, a clutch controlling means adapted to be placed in different positions on said scale to control the operation of the clutch and ejecting mechanism driven by said driven means through said clutch, spreading means, adjusting means for determining the operation of the spreading means, said spreading means being operated by the driving means and a scale for determining the setting of the spreading means, said scale and said clutch scale carrying indications indicating the length of the sheet to which the mechanism is to be adjusted for ejection.

17. In an autographic register having a plurality of sheets, frictional engaging means for ejecting the sheets, driving means for driving the engaging means, aligning means consisting of a frame, aligning pins thereon adapted to be moved backwardly in inoperative condition, upwardly and forwardly into operative condition, a cam for moving the frame backwardly driven by the driving means, a cam for lifting the frame and aligning means driven by the driving means, a rack and tooth mechanism actuated by the driving means for reciprocating the aligning means and frame to jog the sheets into align-

ment, means for rendering said engaging means temporarily inoperative during alignment of the sheets and means for spreading said adjusting means during the alignment of the sheets.

18. In an autographic register having a plurality of sheets, frictional engaging means for ejecting the sheets, driving means for driving the engaging means, aligning means consisting of a frame, aligning pins thereon adapted to be moved backwardly in inoperative condition, upwardly and forwardly into operative condition, a cam for moving the frame backwardly driven by the driving means, a cam for lifting the frame and aligning means driven by the driving means, a rack and tooth mechanism actuated by the driving means for reciprocating the aligning means and frame to jog the sheets into alignment, and a yielding means connected to said frame for suddenly withdrawing it rearwardly and for resisting its forward movement, means for rendering said engaging means temporarily inoperative during alignment of the sheets and means for spreading said adjusting means during the alignment of the sheets.

19. In an autographic register having a plurality of sheets, driving means, ejecting means, a clutch therebetween, means to spread the ejecting means, means to prevent the overrun of the ejecting means, aligning pins, a frame therefor, a cam to withdraw said frame and pins in lower inoperative position rearwardly and to move said pins and frame forwardly in upper operative position, a cam for elevating said frame and pins, a rack, an agitating finger associated with said first mentioned cam and cooperating with said rack for jogging said sheets into alignment, said driving means being adapted to control the actuation of the ejecting means, spreading means, overrun means and aligning means.

20. In an autographic register having a plurality of sheets, driving means, ejecting means, a clutch, a reciprocating pin carrying frame having pins thereon, the forward end of said frame being supported on the lower roller and the rear end on a transverse member, a transverse member, yielding means adapted to withdraw said frame mounted on said transverse member, a cam actuated by the driving means adapted to engage with the frame to move it backwardly and forwardly, a second cam associated therewith adapted to elevate said frame in its forward movement, a rack carried by the frame, means associated with the driving means for engaging with said rack to reciprocate the frame, and means to positively lower the frame and withdraw the pins after the sheets have been aligned thereby.

21. In an autographic register having a plurality of sheets, frictional ejecting means, driving means, clutch means to intermittently connect the driving means to the ejecting means, spreading means for said ejecting means, pin aligning means and means actuated by the driving means for moving the pin aligning means backwardly in inoperative position upwardly and forwardly in operative position, means to reciprocate the aligning means in operative position and means to positively withdraw the aligning means after the alignment has been completed.

22. In an autographic register having a plurality of sheets, driving mechanism, ejecting rollers, means for spreading said rollers, means for adjusting the time of spreading said rollers consisting of a scale member carrying a spreading cam, and means for adjustably connecting said scale member and cam to the driving means according to a predetermined point thereon to adjust synchronously the spreading of the ejecting means with the length of the sheets being ejected.

In testimony whereof, I affix my signature.

GEORGE J. NETH.