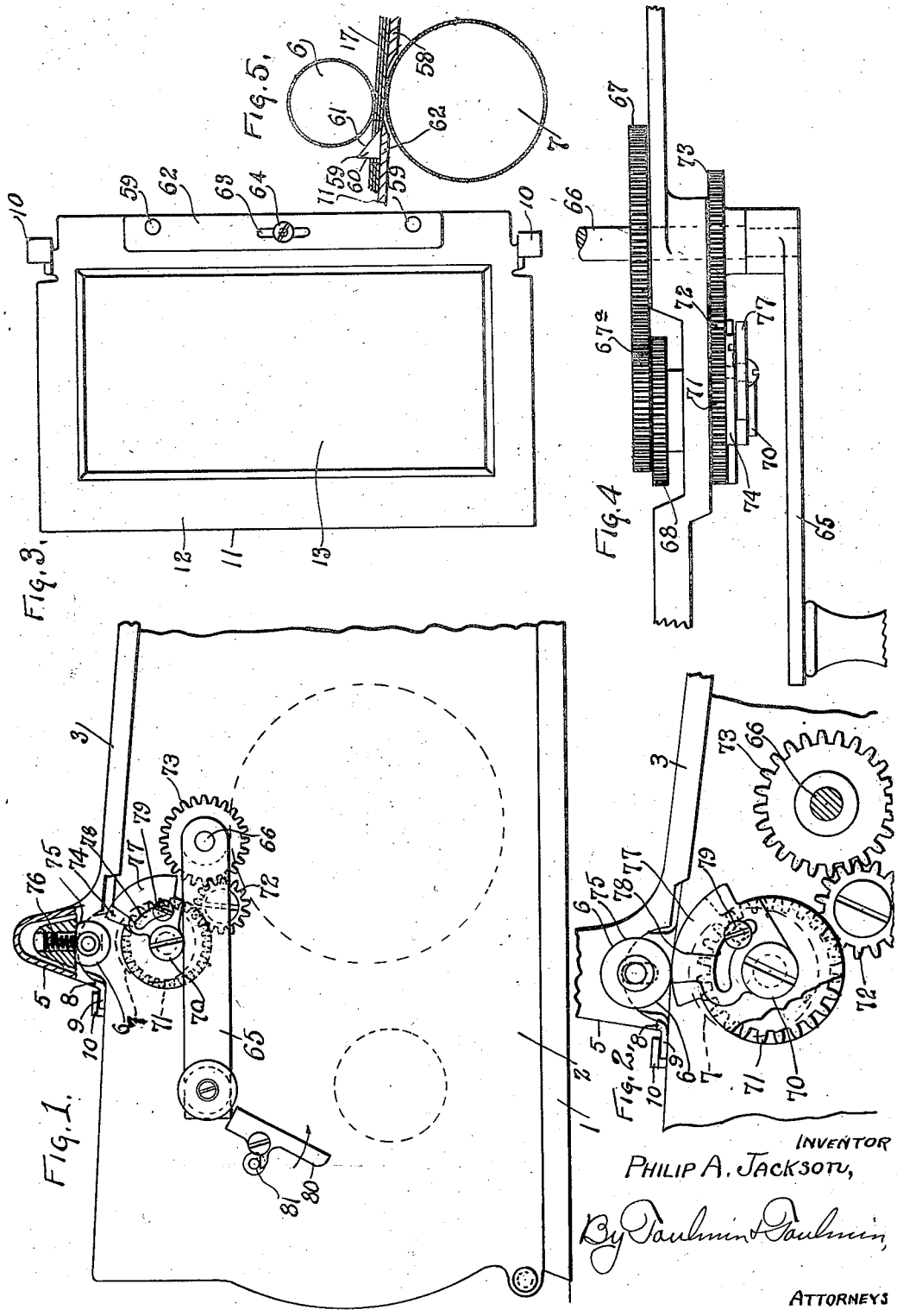
Feb. 5, 1929. 1,701,005

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AUTOGRAPHIC REGISTER

Filed Aug. 9, 1924 5 Sheets-Sheet 1



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AUTOGRAPHIC REGISTER

Filed Aug. 9, 1924 5 Sheets-Sheet 2

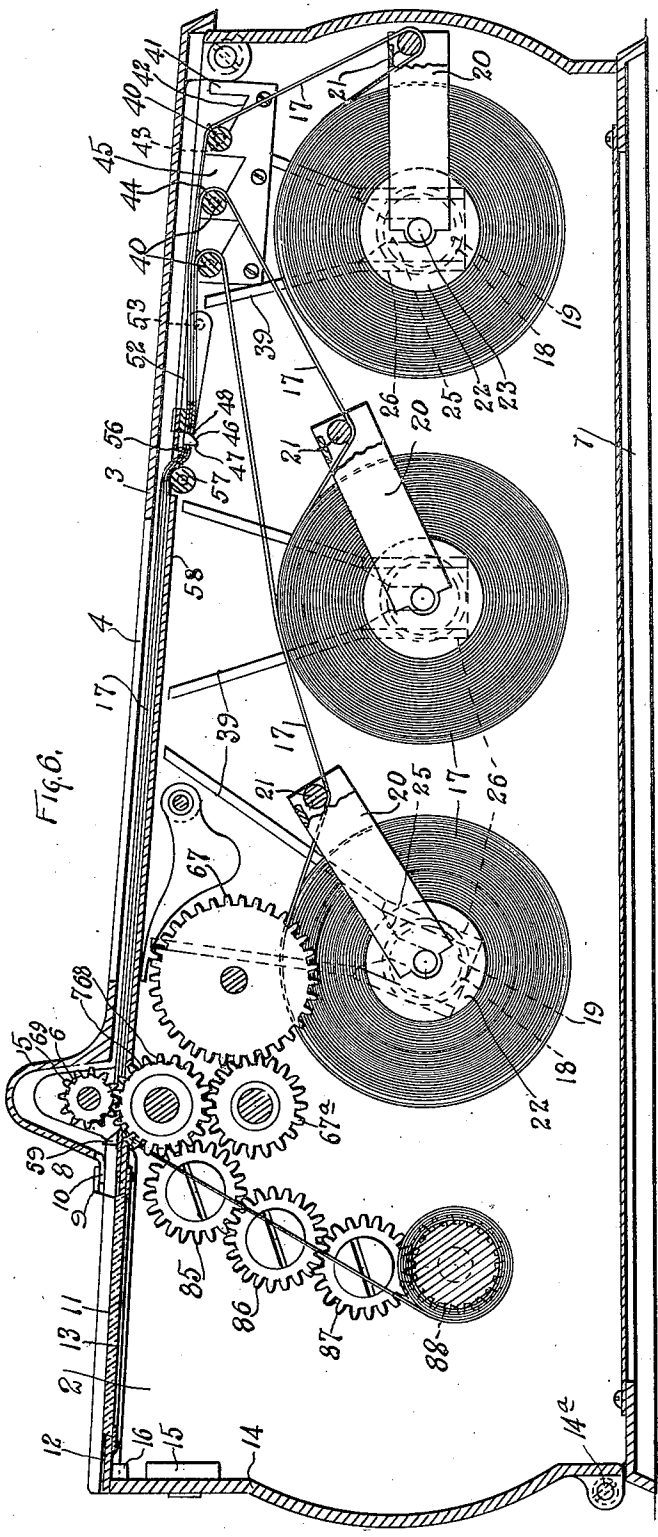


Fig. 6.

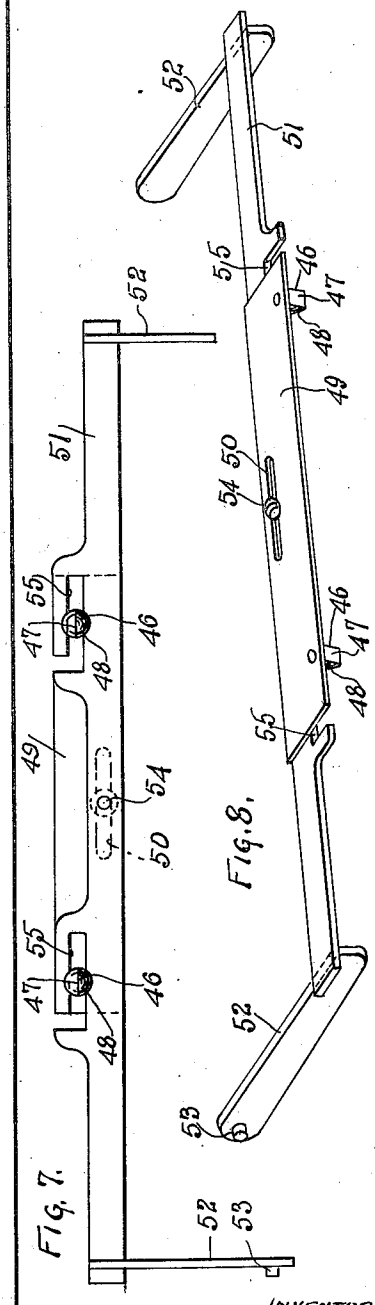


Fig. 8.

Fig. 7.

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Fig. 9.

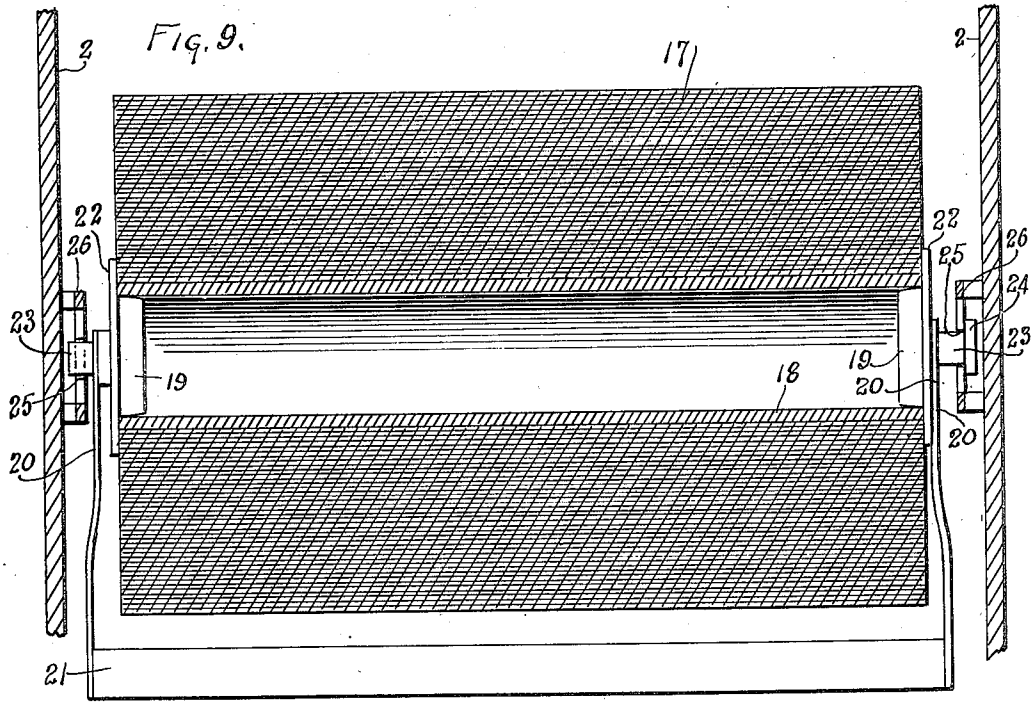
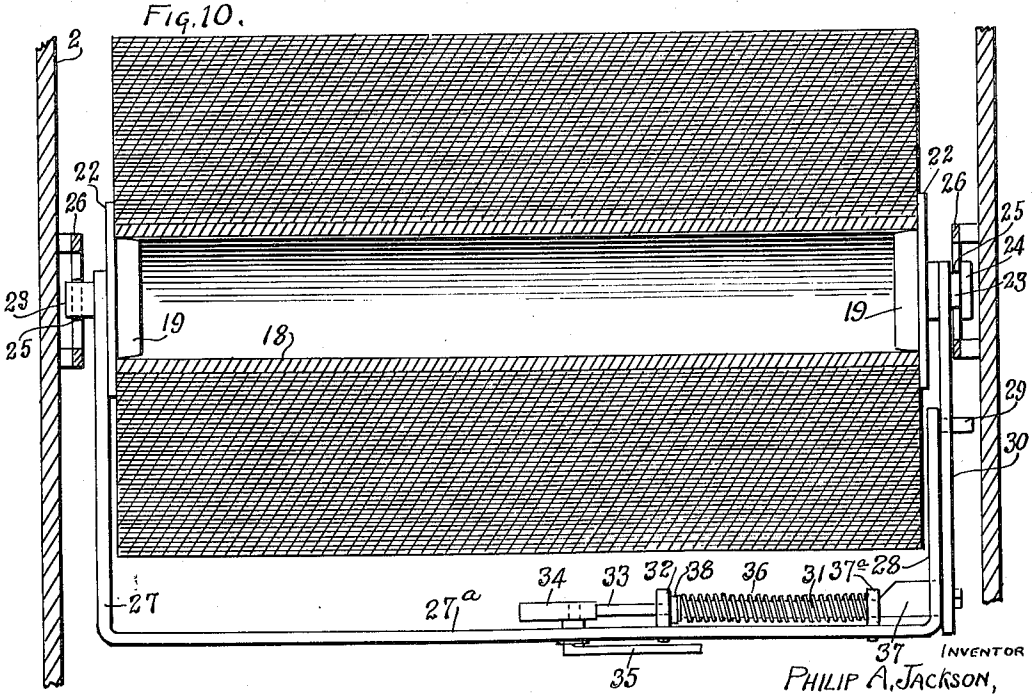


Fig. 10.



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Filed Aug. 9, 1924 5 Sheets-Sheet 4

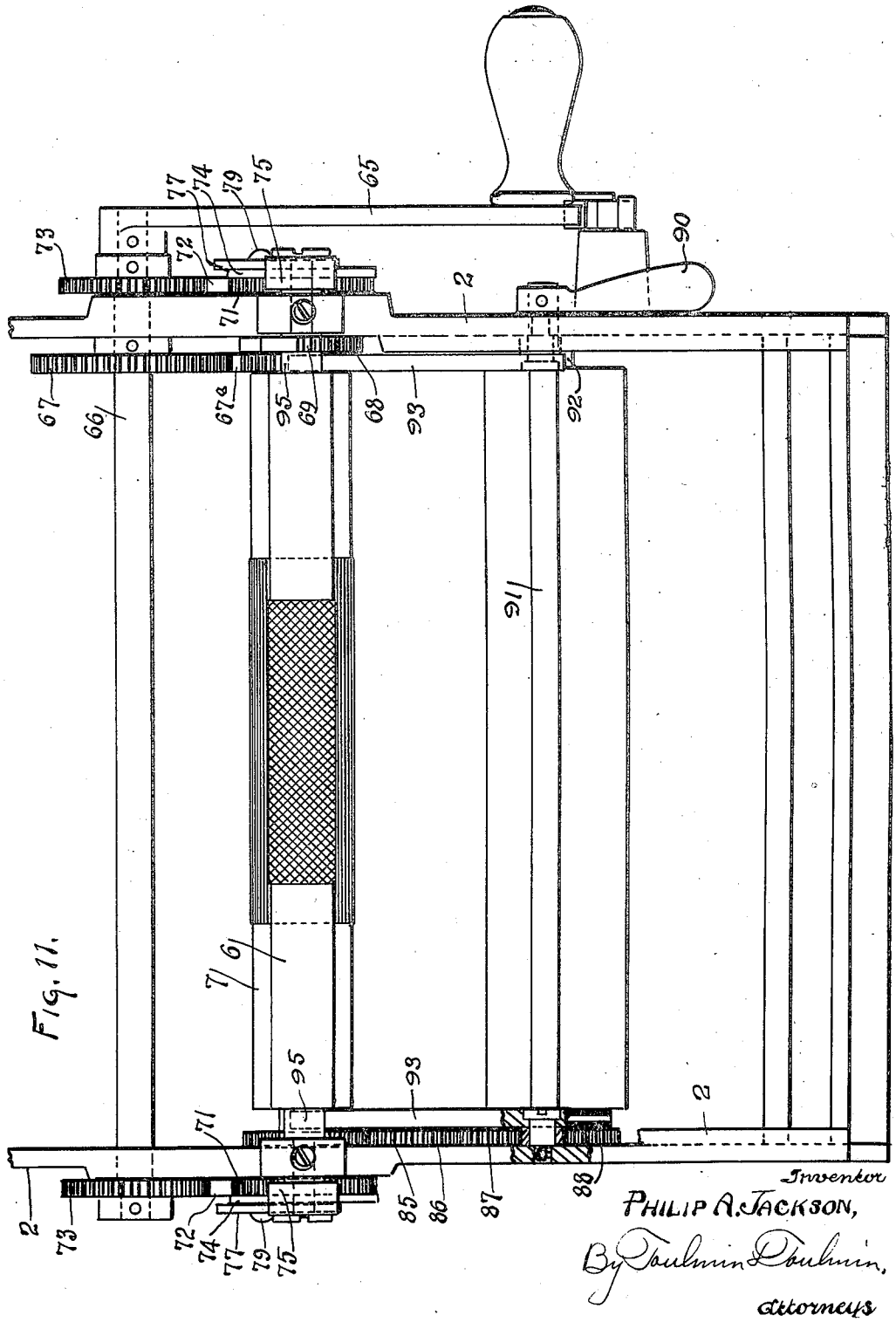


Fig. 11.

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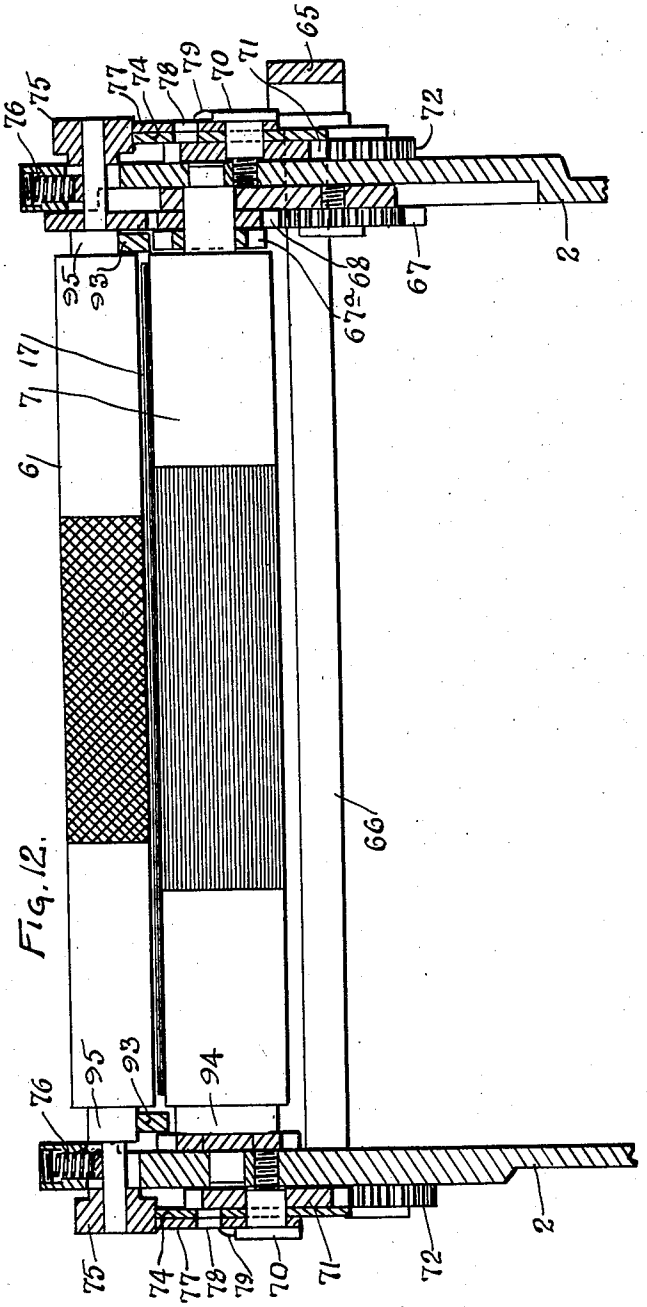


Fig. 12.

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UNITED STATES PATENT OFFICE.

PHILIP A. JACKSON, OF DAYTON, OHIO, ASSIGNOR TO THE EGRY REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

AUTOGRAPHIC REGISTER.

Application filed August 9, 1924. Serial No. 731,030.

My invention relates to autographic registers.

It is the object of my invention to provide an autographic register in which the sheets are automatically fed a predetermined distance with approximate accuracy as to length of feeding, are then released and automatically realigned, whereupon they are again engaged by the ejecting means so that they are firmly held in position by both the aligning means and the ejecting means. It is an additional object of my invention to provide means for holding such sheets taut during the period of writing and it is a further object to use the same means for cooperating in aligning the sheets.

It is an object of my invention to provide an adjustable means in the single machine for feeding sheets of various lengths and of releasing sheets at predetermined points as desired according to the adjustment.

It is a further object of my invention to provide means of laterally adjusting the position of the aligning means.

It is my object to wind out the sheets, allowing the aligning pins to drop in the holes, to release the sheets, to pull the sheets against the pins, to reengage the sheets and move them forward slightly against the tension of the pulling means or weights.

It is obvious weights, springs, etc., may be used to pull the paper sheets back.

Another object of my invention is to make it entirely automatic in action except the setting of the actuating cam by hand when it is desired to adjust the machine to provide for different lengths of bills, all other parts, measured throw, spreading cam and aligning means acting automatically.

It is an object of my invention to provide means to eject any desired length of bills by one turn of the actuating crank, and without change of actuating gears. It is economy to use only one set of actuating gears which I may do by adapting different widths of spreading cams and different lengths of bills.

Another and specific object of my invention is to provide automatic means for aligning bills, means for automatic measured throw, automatic crank stop, and to avoid all manual manipulation except to actuate the crank, one round of which issues one complete set of bills perfectly aligned and with definite measures.

With these objects in view, I refer to the following drawings, which further illustrate a typical embodiment of my invention.

Figure 1 is a side elevation of the handle side of the forward end of the register, showing the cam mechanism for elevating the upper feed roll and the associated gearing.

Figure 2 is an enlarged detail view of the gearing and cams shown in Figure 1.

Figure 3 is a plan view of the forward aligning mechanism which is located in front of the ejecting rolls.

Figure 4 is a plan view of the gearing for actuating the cams and the feed rolls with the cover plates removed from the register.

Figure 5 is a section showing the feed rolls spread apart and the sheets about to be drawn backwardly to be aligned against the forward aligning pins.

Figure 6 is a vertical section through the register showing the arrangement of the several parts.

Figure 7 is a bottom plan view of the rear aligning mechanism.

Figure 8 is a perspective of the rear aligning mechanism.

Figure 9 is a section through one form of roll supporting mechanism, the paper roll, etc.

Figure 10 is a similar view of a modified form of a roll supporting mechanism.

Figure 11 is a top plan view of the register with the slide plate, cover and writing table removed.

Figure 12 is a detail sectional view taken centrally through the gearing for the ejecting rollers.

Referring to the drawings in detail:

1 is the base of an autographic register having the usual walls 2 and a cover 3. This cover is cut away to provide a writing opening as at 4. The cover is also formed into an upwardly extending transversely located housing 5 to contain the upper drive rolls 6, which is arranged to move in a substantially vertical way above the lower roll 7 when it is elevated by the cams to be hereinafter described. The forward end of the cover 3 has a cutting edge 8 and projecting fingers 9, which are located beneath the overlapping fingers 10, of a slide plate 11, which is formed of a metal frame 12 and a glass 13. This plate is held in position by the forward wall 14 pivoted to the bottom of the register at 14ª and locked to one of the side walls 2 by the lock 15. A stud 16 on the bottom of the slide 11 engages with the front wall 14.

The paper rolls 17 are supported in the side walls of the register in the following manner with special reference to Figure 9. The paper is wound on a pasteboard core 18, which is a cylindrical member. In the end of this cylindrical member is thrust a head 19 carried on spring plates 20, which are joined together by the bar 21. The bar 21 rides on top of the paper strip to keep it under tension and to also cooperate in pulling it backwardly for realigning purposes to be hereinafter described.

The frictional engagement of the plates 22 with the ends of the roll prevent the unwinding of the paper roll too freely, and prevents the unwinding of the paper rolls by the weight of the bars 21 which pulls the sheets backwardly for aligning purposes. The weight bars 21 would fail to pull the sheets of paper rearwardly against aligning pins since the sheet would more easily unwind from the rolls, but for said frictional plates 22 pressing on the end of the rolls. Carried on these plates are the studs 23, one of which has a head 24. These studs are dropped in sockets 25 in the brackets 26 formed in the side walls 2 of the register on the inside thereof.

Due to the fact that only one of the studs has a head 24, it is possible to align the paper rolls accurately without the necessity of inserting spindles through the side walls of the register. It also obviates the difficulty of getting the roll mounted on the spindle. This arrangement further eliminates springs and other brakes used on such rolls to prevent their unwinding.

In Figure 10 is shown a modified form of this same arrangement. Arms 27 and 30 are mounted on the studs 23. The arm 27 carried by one of the spindles 23 has a right angle portion 27^a extending parallel with and a trifle beyond the width of the paper roll where the right angle part 28 is provided with a stud 29. The stud 29 projects through an arm 30 carried on the spindle 23. On the free end of this arm 30 is carried a plunger 31 which projects through the member 28 and through an eye 32 carried on the inside of the cross-member 27. The head 33 of this plunger 31 is adapted to be engaged by the cam 34, which is rocked by the arm 35 on the outside of the cross-member 27. The purpose of this cam and arm is to move the plunger 31 by engaging its head 33 and thereby compressing the helical spring 36 against a collar 37 and between the abutment 38 carried by the plunger 31.

It is thus possible with this mechanism to have the varying widths of rolls accommodated by the spring and to have the parts forcibly spread to release the roll by the actuation of the lever 35 and the cam 34.

It is practical by this mechanism to have sufficient tension on varying widths of rolls by the spring which presses the plates 22 squarely against the ends of the rolls, and to have the arms forcibly spread apart to release the rolls by the actuating bar 35 and cam 34. This mechanism shown in Figure 10, and the mechanism shown in Figure 9 are quick loading or refilling of the roll supply devices and are mounted loosely on the inner walls of the register. They are readily detachable from the register and expedite the refilling of the register with roll supplies. With either device shown in Figure 9 or Figure 10 the loading is done by detaching said loading means from the register, when the side arms and plates of the device may be spread apart, the rolls inserted and the said loading device carrying the rolls, dropped back into its position on the register walls.

Referring to Figure 6 it will be noted that the brackets 26 project upwardly and outwardly as at 39 so that the stud shafts 23 may be guided into positions required in the slots 25.

The several sheets from the rolls are carried backwardly under cross bars 21 mounted on cross bar and arms 20. Said arms and cross bars serve as weights to pull the sheets rearwardly when released from the gripper rolls for aligning purposes. Thence the several sheets from each of the rolls are conveyed around and over the rollers 40 at the back of the machine, which rollers are freely carried in side plates 41 having rearwardly sloping supports 42 for the ends of the rollers and forward abutments 43 to limit the forward movement of the rollers. These abutments are overhung by hooks 44 to prevent the upward displacement of the rollers when they are in the foremost position. To the rear of these hooks 44 are open spaces 45, through which the spindles of the rollers may be dropped to get them upon the inclined supports 42.

It will thus be apparent that the rollers constantly tend to move backwardly and assist in keeping the paper under tension and returning the paper backwardly. These sheets pass forwardly over the rollers 40 beneath an aligning mechanism which has downwardly projecting teeth 46, the forward ends of which are vertical as at 47, and the rear sides of which are tapered as at 48, which causes the teeth to automatically ride out of the apertures in the sheets by the lifting bar 51, and said teeth ride on the top side of sheets until the next pair of aligning perforations are brought underneath said teeth when again all bills are aligned. These teeth are carried upon a plate 49 which is slotted as at 50 to permit of its lateral movement on the supporting bar 51, which is carried on the arms 52. These arms are pivotally mounted as at 53 to the side walls of the register. A set screw 54 in the slot 50 sets the position of the pin-carrying plate 49, while the projec-

tion of the pins themselves through the slots 55 in the bar 51 prevent the rotation of the pin-carrying plate and the pins about the set screw 54.

The reason for having this lateral adjustment of the plate and its pins is to accommodate variations in spacings of the perforations 56 in the paper strips. These perforations are relatively large openings which are spaced from each other and from the margin of the paper strips and arranged between forms in transverse series throughout the length of the paper. It is the engagement of such sheets through the medium of these apertures with the pins 46 that the alignment of the sheets takes place, as will be hereinafter described. These sheets pass upwardly over a roller 57, over the writing table 58, beneath the writing opening 4, and forwardly between the rolls 6 and 7 and over the upwardly projecting aligning pins 59 which have vertical forward faces 60 and rearwardly tapering faces 61. These pins are carried on a plate 62 which has a slot 63 and a set screw 64 therein for aligning the pins with apertures in said sheets. The plate 62 is mounted on the front cover plate 11, which consists of a glass 13 and a metal frame 12.

Turning to the forward rolls once more, these rolls are actuated by a handle 65 which is mounted on an operating shaft 66, carrying a main operating gear 67, which meshes with an idler 67^a which in turn meshes with a gear 68 on the shaft of the roller 7. This roller gear 68 in turn meshes with the upper roller gear 69 for the actuation of the rollers 6 and 7 in unison with the sheets 17 therebetween for the purpose of ejecting such sheets. These rollers are usually knurled in order to facilitate engagement with the sheets.

Carried on stud shafts 70 mounted on the outside of each side frame member of the register are gears 71, which are driven by intermediate gears 72, which in turn are driven by third gears 73, which are mounted upon the ends of the main operating shaft 66 which receives its impulse from the handle 65.

Mounted upon the gears 71 are cams 74, which are adapted to engage with rollers 75 carried on the ends of the upper roller shaft 6 so that at a predetermined point in the revolution of the rolls the upper roll will be moved upwardly away from the lower roll against the resistance of the springs 76, one of which is located at each end of the upper roll shaft in the housing 5 to maintain the two feed rollers in engagement with one another.

In order to vary the length of the cams 74 and to therefore vary the time during which the feeding operation is rendered inoperative by the spreading of the rolls, which in turn will regulate the length of sheets fed at each cycle of operations, I provide a second cam 77, which has a slot 78, in which is located a set screw 79 carried by the cam 74. It is possible by moving one cam relative to the other to vary the total area the two cams will occupy. Said cams also vary the time of the ejecting action of the gripper rollers 6 and 7 to accommodate the different lengths of bills, only one revolution of the actuating crank being necessary to issue any length of bill without change of actuating gears.

It will be understood that the handle 65 comes in contact with the movable finger piece stop 80 pivoted on the outside of the register at 81.

In case a record roll is desired, I provide a record roll strip 83 wound on a roll 84. This roll is actuated by the gears 85, 86, 87 and 88.

It will be further understood that the conventional carbon leaves are interleaved between the strips of paper over the writing table 58 in the usual manner.

Method of operation.

At the time of writing, the feed rolls will be clamped upon the forward ends of the sheets and the weights or tension rolls will keep the paper sheets taut. This will insure perfect alignment between the several sheets during the writing operation and will prevent displacement of the sheets during this important part of the operation of an autographic register.

Upon the handle being released from its stop 80 and rotated, the paper sheets are drawn forwardly by the rolls 6 and 7. The sheets by their forward movement against the rearward tapered faces of the pins, lift such pins out of the aligning apertures and said sheets are thus freed to pass on to the end of the crank round. The sheets are also permitted to slip by the pins because of the rearward tapered faces on such pins. When the next series of transverse perforations are brought under or have passed by the aligning pins, at that time the cams will come into operaton and will lift the upper feed roller to release the sheets from the gripping action of the rollers and at that time the tension members will draw the sheets backwardly until the new set of perforations register with the pins and forward edges of the perforations are brought against the forward, substantially vertical, edges of the pins to perfectly align the several sheets and their forms one over the other. By this time the cam will have passed by the ends of the upper roller and have permitted the roller to drop back in clamping engagement with the paper sheets, move the sheets forwardly slightly, thus holding them in position so that the ejected portions may be torn off and a new writing operation may take place.

It will thus be seen that in my invention the sheets are fed forwardly and may become displaced, but they are pulled backwardly near the end of each feeding opera-

tion when they are loose and are lined up against the substantially vertical abutments of the pins which are forced into the apertures due to the paper being drawn over or under them or due to the weight of the pins and carriers causing the pins to drop into the holes in the paper. This rearward tension of the tension members, such as 21 and 40, either together or singly, will be sufficient to gently draw the sheets back into position without tearing them.

By this arrangement I am enabled to eliminate marginal perforations which are objectionable. I am enabled to use the perforations between forms which are customarily put into such sheets to bind the slips into books.

I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions.

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

1. In an autographic register for feeding a plurality of paper sheets having spaced series of perforations, aligning pins having one face substantially vertical and the other at an inclination and supporting arms therefor, such arms being pivoted adjacent the path of travel of the paper sheets, whereby the pins will rest normally on the paper and by the pivotal movement of the arms may readily drop into the perforations when they arrive opposite the pins and readily ride out of the perforations when the sheets move on.

2. In an autographic register having a plurality of sheets with spaced series of perforations, means to frictionally engage with the sheets to feed them, means to spread said frictionally engaging means to release the sheets, pins adapted to ride upon the surface of the sheets while the sheets are being fed and to fall into the perforations prior to the release of the sheets, means to pivotally support said pins on the register relative to said sheets, and means including a swinging and spring-supported bar to pull said sheets against said pins when the sheets are released, said means for releasing the sheets being adapted upon the sheets being realigned to cause the sheets being re-engaged to hold them taut between the feeding means and the pulling means, said pins having substantially vertical forward faces and tapered rear faces, whereby the paper will slide by the pins when it is moving forwardly and will be engaged by the vertical faces of the pins when it moves backwardly and be exactly aligned, and means to adjust said releasing means for varying the period during which the sheets are released and during which they are fed for a single cycle of the operating mechanism.

3. In an autographic register having a plurality of sheets with spaced series of perforations, frictional paper engaging means for drawing the sheets through the register, means consisting of a bar and depending pins pivotally mounted on the inside of the register, said means riding on the paper sheets and adapted to enter the perforations in the sheets to align them, said means being pivoted in the rear of a writing table, a writing table, means carried by the rollers for separating them during a predetermined period of the cycle of operations to release the sheets after the pins have fallen into the holes, and means including a swinging and spring-supported bar for drawing the sheets backwardly after the pins have so entered the holes of the sheets and the sheets have been released.

4. In an autographic register having a plurality of sheets with spaced series of perforations, frictional paper engaging means for drawing the sheets through the register, means consisting of a bar and depending pins pivotally mounted on the inside of the register, said means riding on the paper sheets and adapted to enter the perforations in the sheets to align them, said means being pivoted to the rear of a writing table, a writing table, means carried by the rollers for separating them during a predetermined period of the cycle of operations to release the sheets after the pins have fallen into the holes, and means for drawing the sheets backwardly after the pins have so entered the holes of the sheets and the sheets have been released, said means for drawing the paper backwardly consisting of guide rollers engaging with the sheets and supported on rearwardly and downwardly directed bearings which cause the rollers to move backwardly and downwardly pulling against the sheets and a swinging and spring supported bar.

5. In an autographic register having a plurality of sheets with spaced series of perforations, an aligning means consisting of arms pivoted on the register, a bar connecting said arms and having slots, a plate adapted to be adjustably mounted on said bar, pins carried by said plate and extending through the slots in said bar to prevent the fore and aft displacement of the pins with respect to the bar.

In testimony whereof, I affix my signature.

PHILIP A. JACKSON.