Nov. 15, 1927. 1,649,234

A. A. JOHNSON

AUTOGRAPHIC REGISTER

Filed May 11, 1923

Fig. 1.

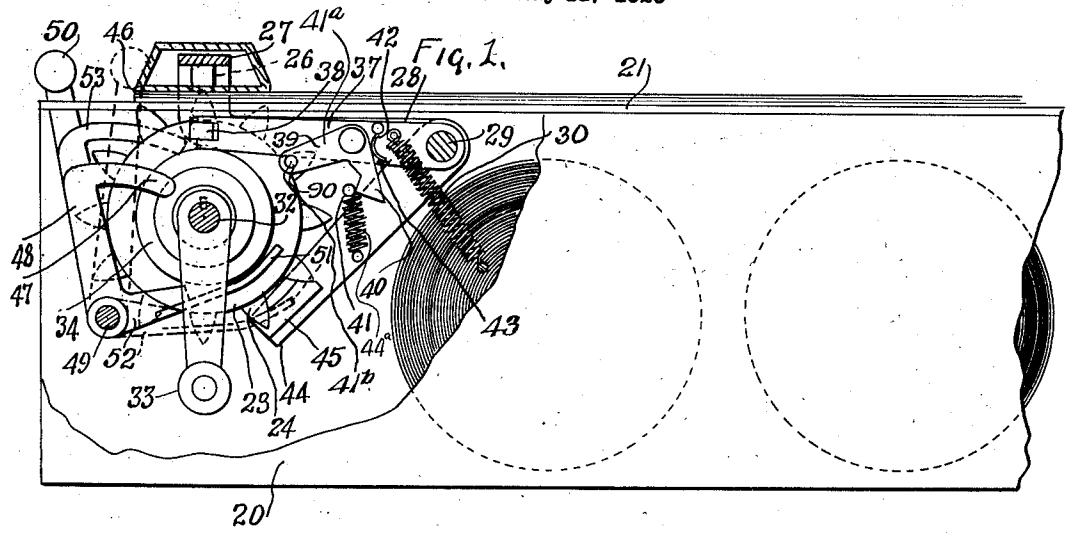


Fig. 2.

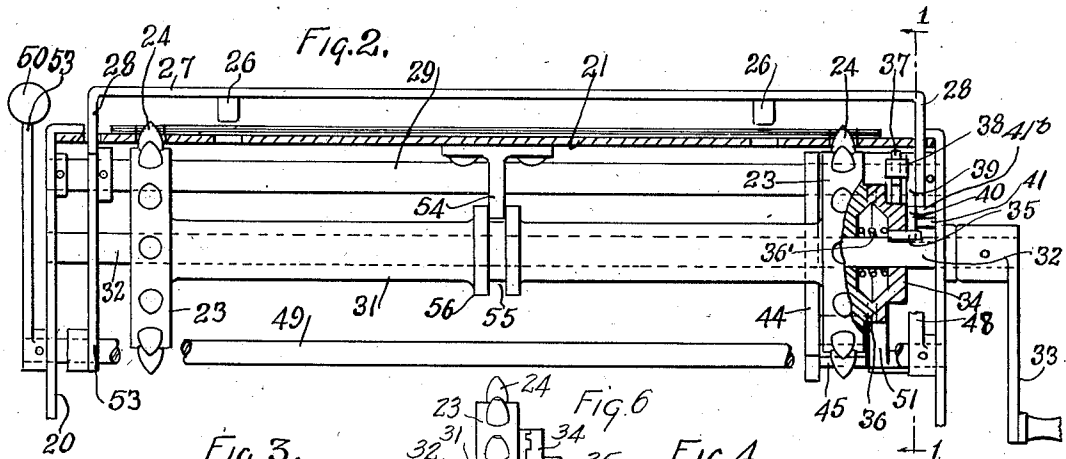


Fig. 3.

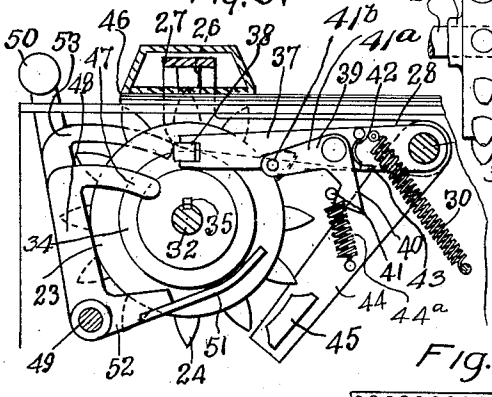


Fig. 6

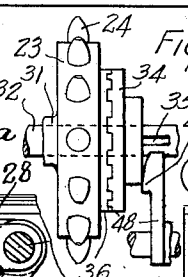


Fig. 4.

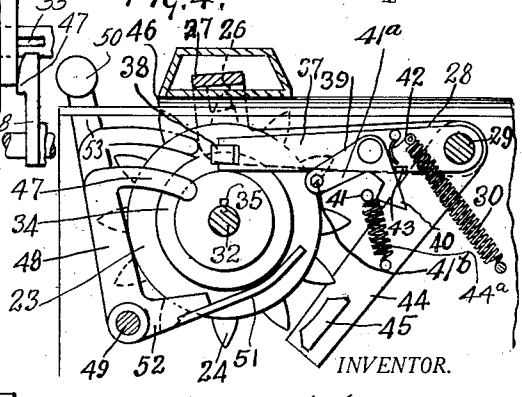
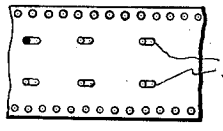


Fig. 5.



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Patented Nov. 15, 1927. 1,649,234

UNITED STATES PATENT OFFICE.

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AUTOGRAPHIC REGISTER.

Application filed May 11, 1923. Serial No. 638,185.

This invention relates to autographic registers and in some of its aspects more particularly to registers of the pin-wheel type, one of the more important features being the provision of means for causing the feeding of "forms" or "tickets" to cease after a predetermined portion of the webs, of which the "forms" constitute a part, has been fed, said means being controlled by perforations or cut-out portions of the webs.

In a more specific aspect, this invention comprises one or more controlling devices adapted during the feeding operation to rest against imperforate portions of the webs and for causing the pin-wheels to be disconnected from the operating means therefor when said devices engage through said perforations in the webs so as to cause the feeding to cease irrespective of further operation of the operating device.

In some forms of the invention the controlling devices by their movement into the perforations cause the pin-wheels to be disconnected from the driving means, while in other forms they position auxiliary means which upon further operation of the pin-wheels cause the disconnection to be effected.

In some embodiments of the invention the controlling devices merely trip another device so that a spring previously energized will function to cause the disconnection.

Also in some embodiments of the invention the controlling devices are permitted to remain in the perforations after the pin-wheels are disconnected, but in at least one embodiment the controlling devices are caused to be withdrawn from the perforations as an incident to the disconnection of the pin-wheels from their driving means.

Preferably, means are provided for holding the pin-wheels against moving out of proper relation to each other when disconnected from the driving means therefor.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a side elevation of a conventional form of autographic register of the pin-wheel type having part of the casing at the delivery side removed and showing my invention as applied thereto, and is taken substantially on the line 1—1 of Fig. 2.

Figure 2 is a front elevation of the feeding mechanism and feed controlling mechanism of the present invention as shown in Fig. 1.

Figure 3 is a side elevation of the mechanism shown in Fig. 1, showing the parts in the positions they occupy during feeding operation.

Figure 4 is a side elevation of the parts shown in Fig. 3 but shows the parts in the positions they occupy after the controlling fingers have passed through the apertures and just before the pin-wheels are disconnected from their driving shaft.

Figure 5 shows the arrangement of the controlling apertures with relation to the web and its marginal perforations.

Figure 6 is a top plan view of the pin wheel and its locking mechanism.

As shown in the accompanying drawings, the autographic register comprises side plates 20 between which is supported a writing bed or platen 21 for receiving free ends of paper webs supplied from rolls journaled in the side plates 20, suitable duplicating material being provided at the platen for making manifold copies of work done manually upon the uppermost web. The webs are usually printed so as to provide a succession of forms or tickets which are separated by a tearing operation after a written form has been delivered from the machine. The register, being of the pin-wheel type, also comprises a pair of pin-wheels 23 at or near the delivery side thereof which have pins 24 projecting through slots in the platen 21 and thence through longitudinally arranged series of marginal perforations formed in the webs. The pins 24 remaining continuously in engagement with the webs, prevent any appreciable relative movement between separate superposed webs, thus preserving correct registration and maintaining the webs properly aligned with respect to the platen and other parts of the register.

It has been the common practice, heretofore, in registers of this type to mount the pin-wheels on a shaft and to rotate this shaft by a suitable crank connected thereto directly, or by gearing and to determine the amount of rotation to be given to the pin-wheels and their shaft for measuring form-lengths by a prearranged stop for the crank or by a prearranged ratio of gearing between the crank and the pin-wheels, when it is

desirable for the crank to have a uniform throw irrespective of the form-length. In such cases it was necessary to especially prepare each register in accordance with the particular form-lengths of the work sheets which in practice requires a large number of extra parts and labor. Moreover, the work had to be fitted to the register, to some extent, because these arrangements did not adapt themselves to fine variations or adjustments.

Now, in a register made in accordance with this invention, the extent of rotation of the crank does not determine the length of the webs fed at each operation. This is controlled by the webs themselves through the medium of apertures 25 arranged therein at predetermined and substantially uniform distances longitudinally of the marginally perforated web, the distances being each equal to a form-length. Mechanically, it is merely necessary that a single series of apertures be provided, but, since it is common practice to provide each ticket with a pair of apertures for receiving the posts of a loose-leaf binder, the webs preferably are provided with two transversely aligned series of apertures 25, as shown in Fig. 5.

For cooperating with the apertures 25 there is provided by this invention a pair of feeler fingers 26 mounted on a transversely arranged bar 27 carried by arms 28 which in turn are secured to a shaft 29 located in rear of the pin-wheels. The bail thus formed by the arms 28, bar 27 and shaft 29 is normally urged downwardly by a spring 30 so that the fingers 26 press against the imperforate portions of the webs between the apertures 25 when the feeding operation is in progress, or move into the apertures 25 when the feeding operation has ceased. The movement of the fingers 26 through the apertures 25 is utilized for causing the disconnection of the pin-wheels 23 from its driving means.

The mechanism for accomplishing the disconnection of the pin-wheels from the driving means will now be described.

The pin-wheels 23 are mounted upon and secured to a sleeve 31 rotatably mounted on a shaft 32 journaled in the side plates 20 instead of being directly secured to the shaft as is customary. The shaft 32 constitutes the driver of the pin-wheels and is preferably provided on one end which protrudes from the register with a crank or handle 33.

The drive shaft 32 is coupled to the pin-wheel during the feeding operations and the means for accomplishing this comprises a clutching disk 34 slidably mounted on the shaft 32 and caused to rotate therewith by means of a spline 35. The clutching disk 34 is preferably provided with similar teeth cooperating with teeth provided on a disk 36 secured to one of the pin-wheels 23 and located at the left side of the register. The clutching disk 34 is normally urged toward disengaged position in which the pin-wheels are free of the shaft 32 and crank 33 by means of a spring 36'.

During feeding operations, that is when the crank is driving the pin-wheels, the disk 34 is held in clutching position (see Fig. 4) by an arm 37 pivoted on the shaft 29 of the controlling finger bail, the forward end of the arm 37 having a roller 38 for directly engaging the disk 34.

In the form of the invention being described, the arm 37 normally tends to move upwardly, as hereinafter set forth, so as to free the clutching disk 34, but is prevented from doing so by a latch 39 pivotally mounted on the arm 37 and provided at the end of one of its arms with a hook 40 which engages with an inwardly projecting pin 41 mounted on one of the side plates 20. The latch 39 has another arm provided with a pin 41^b whose purpose is to project into the downward path of travel of the bail arm 28 of the controlling fingers, whereby the latch is moved against the tension of its spring 42 when the arm 28 moves downwardly as an incident to the movement to the fingers through the apertures in the webs. The position of the parts at this time is shown in Fig. 4. A further movement of the arm 28 causes the latch 39 to be fully released and the arm 37 moves upwardly to release the clutching disk 34 at which the feeding of the webs ceases.

Since the webs are always held by the pins 24 and have no opportunity to become disaligned, there is no need of the fingers 26 remaining in the apertures 25, the fingers are automatically withdrawn from the apertures simultaneously with the movement of the clutching disk 34 to that of pin-wheel releasing position. This is accomplished by limiting the rearward movement of the latch 39 by a stop 43 so that the finger bail 27 is raised by the upward movement of the arm 37 through the engagement of the arm 28 by a pin 41^b of the latch 39.

To prevent accidental movement of the pin-wheels during the time in which the latter are disconnected from the shaft 32, the clutch controlling arm 37 has secured thereto a locking arm 44 having a bent end 45 adapted to engage between two of the pins 24 of one of the pin-wheels as shown in Fig. 1. A spring 44^a tends to hold the locking arm 44 in pin-wheel engaging position and the arm 37 is thus normally urged in its upper position by reason of the arms 44 and 37 being secured together. After the clutching disk has been released, the arm 37 in its upper position rests upon the disk and is prevented from returning so long as the disk is in unclutched position.

The forms which have been fed or de-

livered from the register by the feeding operation are then torn or severed from the webs by a knife 46 placed in advance of the pin-wheels.

For engaging the clutching disk 34 with the cooperating disk 36 on the pin-wheel 23 when it is desired to deliver the next form from the register, there is provided a cam 47 carried by an arm 48 pivoted at 49 and having a handle 50. When the handle 50 is moved to the position shown in dotted lines in Figure 1, the cam 47 engages the disk 34 and shifts the same to clutching position with the member 36 against the tension of the spring 36'. At the same time a yielding member 51, preferably a rather stiff flat spring, carried by an arm 52 secured to the cam arm 48 is moved into engagement with the bent end 45 of the pin-wheel locking arm 44 and tends to move said arm 44 out of locking position and to return the clutch controlling arm 37 secured thereto into position to hold the clutching disk in clutching position and these movements are effected as soon as the clutching disk is in clutching position. When the arm 37 moves downwardly, its latch 39 is moved by its spring into engagement with the pin 41 so that the arm 37 is locked down. The controlling fingers 26 and their arms 28 are held up during the recoupling of the pin-wheels to the shaft by an arm 53 on the cam arm shaft 49 which engages one of the arms 28 at the beginning of the movement of the cam 47 and remains in such engagement during the entire movement of the cam. While the handle 50 is held in operative position shown in dotted lines in Fig. 1, the crank 33 is rotated to start the feed of the webs. After the apertures 25 have passed out of range of the controlling fingers 26, the operator releases the handle 50 and rotates the crank until it is observed that the feeding of the webs has ceased and a form has been delivered.

The pin-wheel sleeve 31 is held in proper position on the shaft 32 against axial movement by means of an arm 54 mounted on the underside of the platen and engaging an annular groove 55 formed by flanges 56 secured to the sleeve 31.

In the form of the invention just described, the power for disconnecting the pin-wheels from their shaft is supplied by the manual operation of the starting handle 50 and is stored in the spring 36' for the clutch controlling arm 37.

Variations may be resorted to within the scope of my invention and portions of the improvements may be used without others.

The mechanism per se shown in Figs. 5 to 10 is reserved for protection by means of divisional applications carved out of the present application, such divisional applications bearing Serial Nos. 691,787 and 691,788 and filing date February 9, 1924.

I claim as my invention:

In an autographic register, the combination of a platen over which webs are fed; pin-wheels for feeding said webs; a driver for said pin-wheels; a clutch for connecting said driver to said pin-wheels, a spring tending to move one member of the clutch out of connection with the pin-wheels; an arm for holding said clutch in clutching position; a spring normally tending to move said arm to ineffective position; a latch for holding said arm in effective position; and a feeler device adapted to enter apertures as arranged at intervals along said web for causing the release of said latch when the feelers enter said apertures.

In testimony whereof, I affix my signature.

ARTHUR A. JOHNSON.