Aug. 13, 1940. H. J. WAECHTER 2,211,304

AUTOGRAPHIC REGISTER

Filed June 1, 1938 4 Sheets-Sheet 1

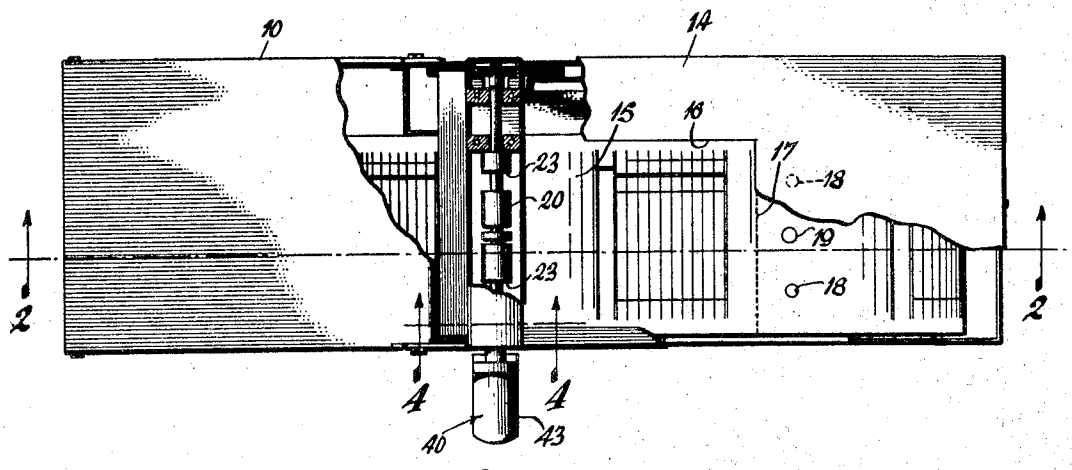


Fig. 1

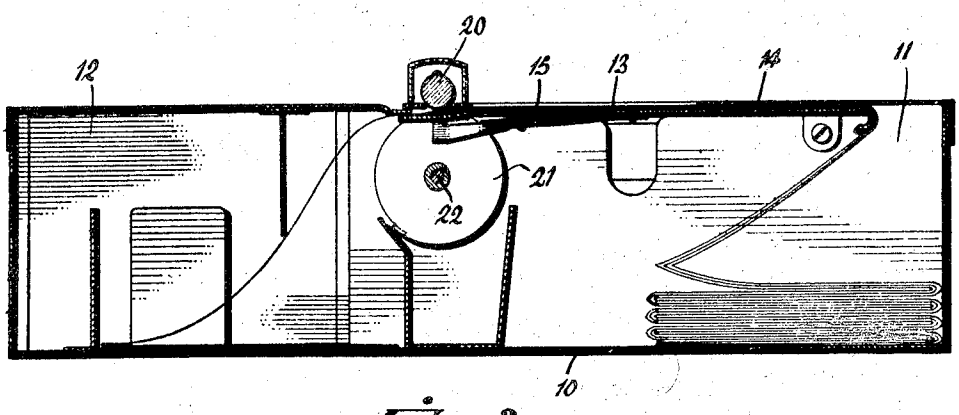


Fig. 2

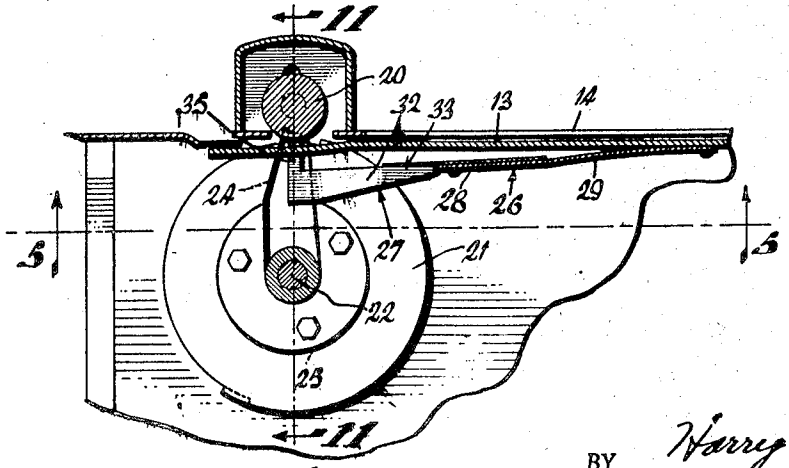


Fig. 3

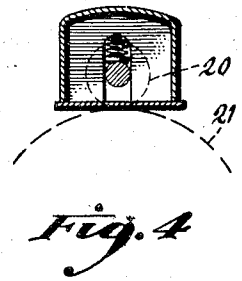


Fig. 4

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AUTOGRAPHIC REGISTER

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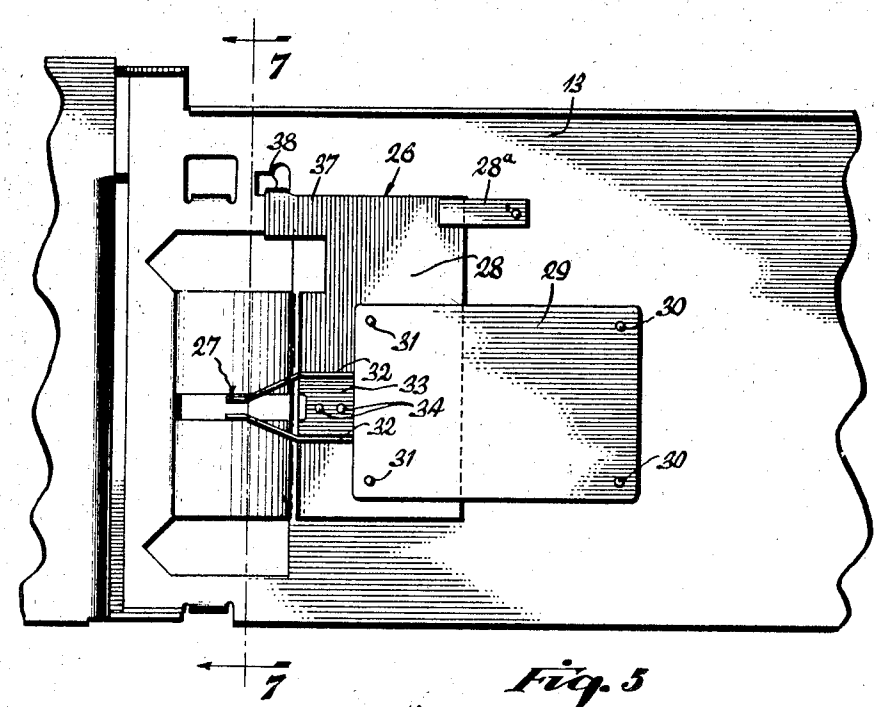


Fig. 5

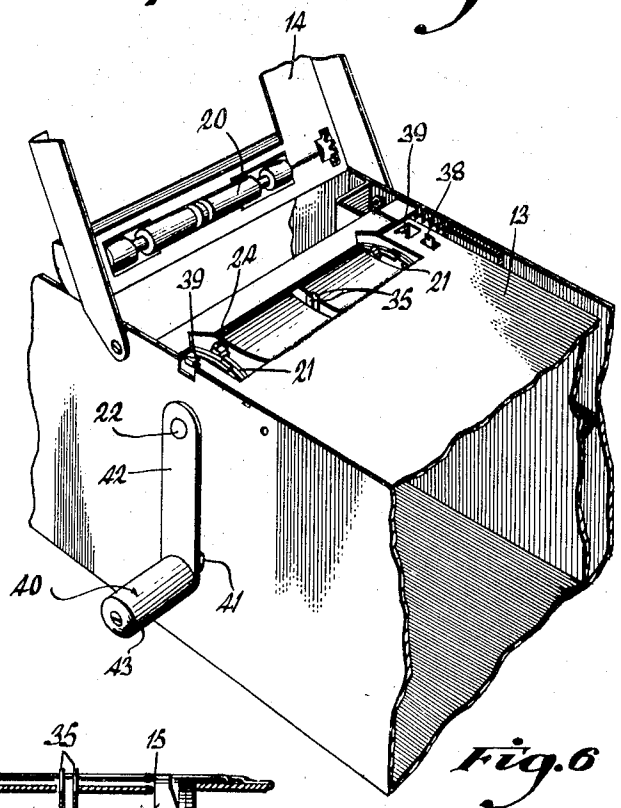


Fig. 6

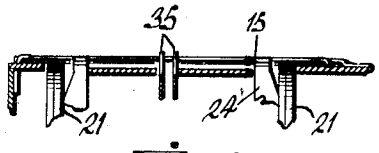


Fig. 7

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AUTOGRAPHIC REGISTER

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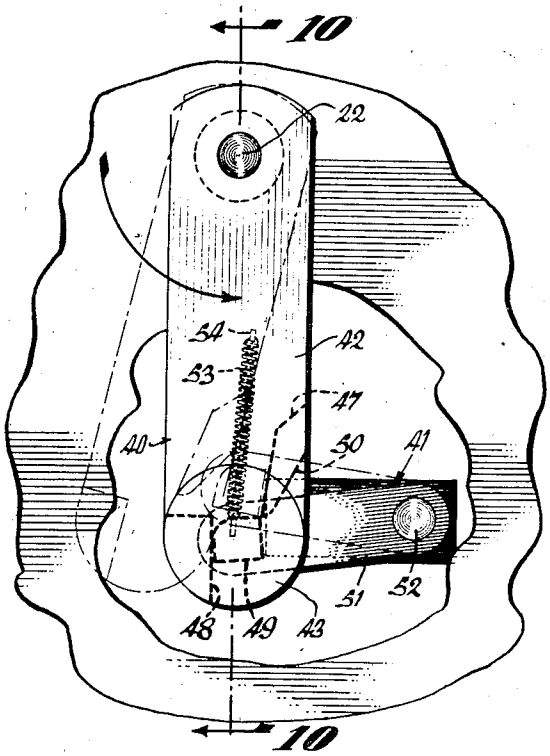


Fig. 8

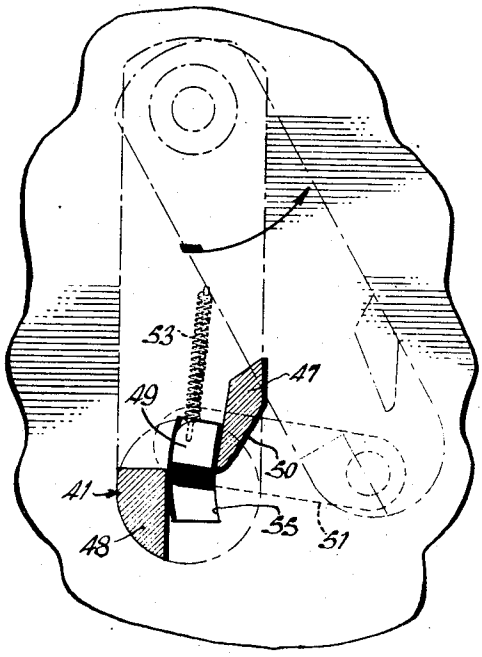


Fig. 9

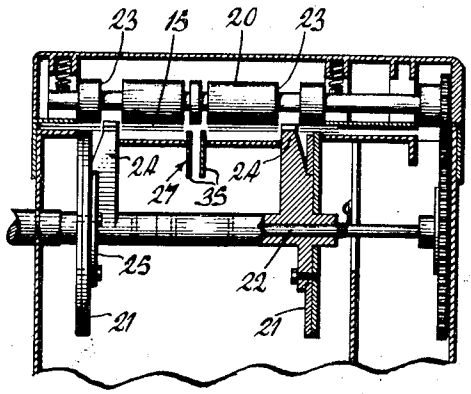


Fig. 11

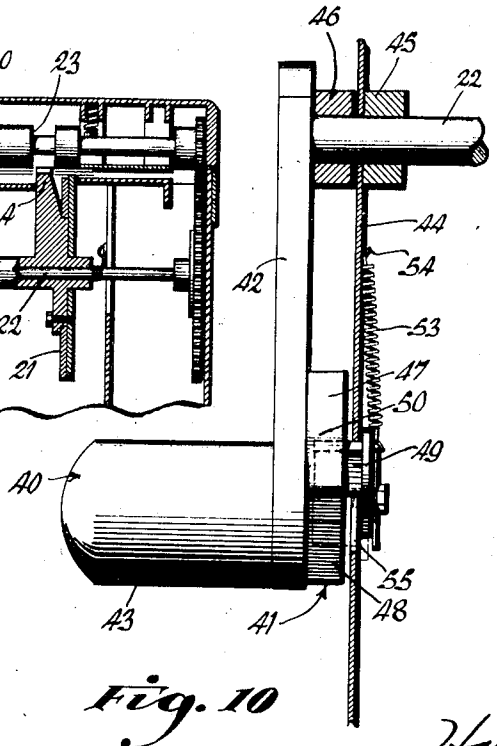


Fig. 10

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AUTOGRAPHIC REGISTER

Filed June 1, 1938 4 Sheets-Sheet 4

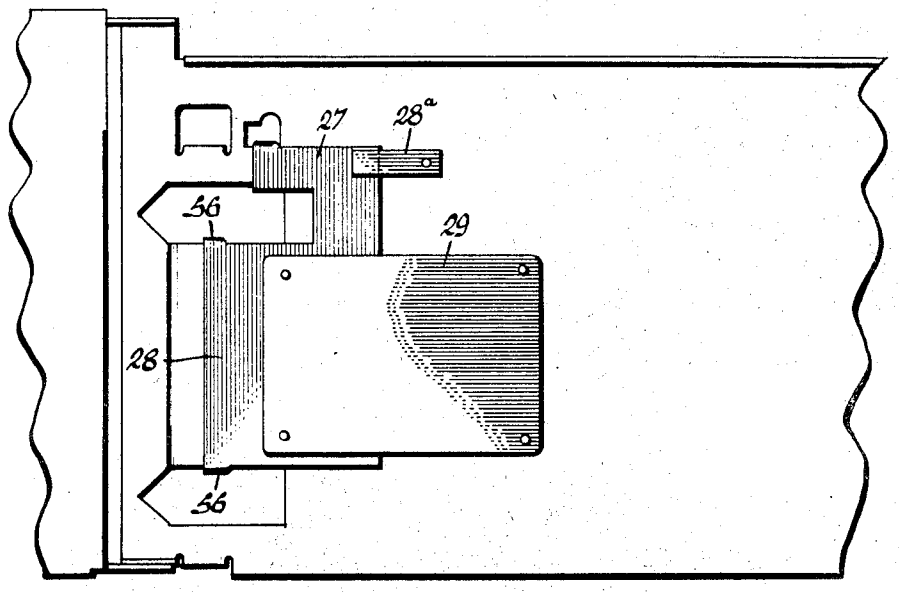


Fig. 12

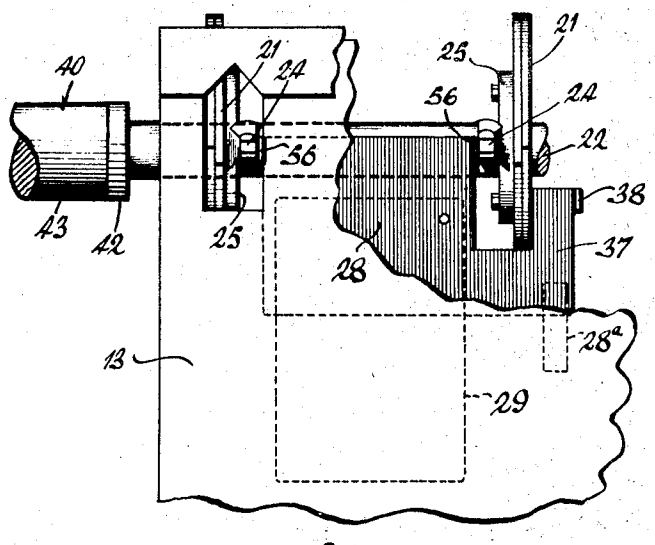


Fig. 13

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Patented Aug. 13, 1940

2,211,304

UNITED STATES PATENT OFFICE

2,211,304

AUTOGRAPHIC REGISTER

Harry J. Waechter, Mount Healthy, Ohio, assignor to Paul Benninghofen and Fritz G. Diesbach, both of Hamilton, Ohio, trustees

Application June 1, 1938, Serial No. 211,203

8 Claims. (Cl. 282—21)

This invention relates to improvements in autographic registers of the type feeding and registering superimposed continuous strips of stationery having apertures between the forms for cooperation with the feeding and registering mechanism of the register. The present invention is particularly directed to mechanism for aligning the continuous stationery form strips relative to the feed mechanism when inserting or starting the strips into the machine.

The machine to which the present improvements are directed may be of a commercial type employing aligning pins in the feeding mechanism for registration with the apertures in the stationery. In loading these machines employing pins for both feeding and aligning, as a part of the feeding mechanism, the usual procedure has been to place the leading edge of the strips of stationery in position with respect to the feed mechanism with the apertures of the strips of stationery in place over the aligning pins of the feed mechanism. This procedure, however, did not insure alignment or positive registration of the apertures when the paper was started through the machine since these conventional aligning pins could not be of a size fitting snugly in the apertures. These pins come up under the paper at an angle as they enter the apertures and engage the forward ends thereof. Of necessity, the pins must enter freely and adequate clearance must prevail around their ends as they come into the apertures. It is evident that if the apertures are at all disaligned, the entrance of a snugly fitting pin would be an impossibility. Accordingly, the ends of the pins must be much smaller than the apertures. Therefore, they have no real practical value in accurately initially starting or loading the paper with the lid raised and no tension on the strips.

The feed mechanism of the register disclosed consists essentially of lower feed discs in cooperating relationship with an upper spring urged roller, the strips being frictionally engaged between the roller and discs. The peripheries of the discs are interrupted and the aligning pins arranged relative to the peripheries whereby the pins take up the feed in its last phase for completing the form advance and aligning the apertures. Preferably, the discs are adjustable for varying the arrangement of their effective peripheries relative to the aligning pins.

Although the present invention has been disclosed in relation to a machine employing pins for feeding and aligning the forms in the last phase of each form feed, it is intended that this shall not limit the invention. The invention is applicable to other types of machines such as those which do not employ aligning pins of the type just mentioned but depend upon the registration of the apertures with the peripheries of the discs for stopping the feed.

It is necessary for the successful operation of the machine that the apertures of the stationery be accurately aligned in the feed mechanism at the time the stationery is originally loaded or placed in feeding position in the machine. If the alignment is off by the amount of clearance of the aligning pins (and this may well be), any subsequent slip in the first form feed will make it impossible for the aligning pins to enter when the apertures come to the pins at the end of this first feed. It is also of importance that the crank utilized in operating the machine be positively stopped after each revolution in order to feed no more than one form length of the stationery to one turn of the crank and to leave the aligning pins in their correct stopping position.

The present invention provides a supplemental aligning device, adapted to cooperate with the usual filing apertures of the stationery strip, which operates independently of the regular feed mechanism of the machine. It is the concept of the present inventor to provide a supplemental aligning pin or pins for use in inserting the strips and initially aligning or anchorage or registering the apertures relative to the feed mechanism of the register when the strips are first inserted in feeding position.

The device embodies a depressable operating pin which is normally held below the plane of the writing platen of the register. The pin projects upwardly of the writing platen to engage in the apertures of the stationery when the marginal lid of the register is raised to place the stationery in feeding position in the register. This anchorage pin fits snugly in the apertures or is located with respect to the apertures so as to engage both the back and front. Thus the apertures must be in absolute alignment when the pins are projected through the strips. After a perforated portion of the stationery has been anchored on the pin and positioned longitudinally in timed relationship to the feed mechanism, the marginal cover is swung downwardly into normal position, over the platen, and the register is ready for use. The anchoring pin or pins are then automatically retracted upon lowering the cover into position and do not interfere with the normal operation of the feed mechanism of the register. These pins are effective regardless of the position

of the normal aligning pins which come into play after the feed has been started. The operating crank incorporated in the present machine includes an automatic interrupting device which functions at the end of each feed cycle to positively halt further rotation of the crank, and automatically releases the crank after it has been brought to a halt to permit feeding of the next successive stationery form. The mechanism of the crank facilities operation of the machine and eliminates the necessity of a hand operated device to release the crank as has been necessary in the past.

It has been an object of the present inventor to provide an improved autographic register having supplemental registry pins for use in initially aligning and anchoring the superposed strips longitudinally in timed relationship with respect to the feed mechanism of the machine regardless of the position of the normal aligning means, which supplemental pins are automatically retracted below the plane of the writing platen when the registry is ready for use.

Further objects and advantages will be more fully set forth in a description of the drawings forming a part of this specification.

Figure 1 is a top plan view of the autographic register with the cover or lid partially broken away to disclose more fully the feed roller.

Figure 2 is a longitudinal sectional view of the register taken on line 2—2, Figure 1 illustrating the starting pins lowered out of use.

Figure 3 is an enlarged fragmentary sectional view detailing the feed roller and discs and the starting alignment device in relation thereto.

Figure 4 is a detailed sectional view taken on line 4—4, Figure 1.

Figure 5 is a sectional view taken on line 5—5 of Figure 3 looking toward the underside of the writing platen of the register showing the supplemental or starting alignment device mounted thereon.

Figure 6 is a fragmentary perspective view of the feed portion of the register with the marginal lid portion raised to illustrate the starting pins in position of use.

Figure 7 is a sectional view taken on line 7—7, Figure 5.

Figure 8 is a fragmentary view illustrating the feed crank and showing the halting device in operation to halt the rotation of the crank momentarily at the end of each feeding stroke.

Figure 9 is a view similar to Figure 8 showing the halting device in released position preliminary to the feeding of the next section of web or strip forms.

Figure 10 is a sectional view taken on line 10—10, Figure 8 further detailing the structure of the crank halting device.

Figure 11 is a sectional view taken on line 11—11, Figure 3 showing the starting pins out of use and the aligning pins in use.

Figure 12 is a view taken similarly to Figure 5 illustrating a modified arrangement of the starting pins.

Figure 13 is a fragmentary top plan view of a machine employing the modified starting pin arrangement.

The feeding mechanism of the register constitutes a pair of rotating annuli or discs having their peripheries frictionally cooperating with the periphery of an upper spring pressed roller. The web passing between the discs and the roller advances with the rotation thereof. The discs are spaced laterally to correspond with the spacing of the apertures located crosswise in the webs. The peripheries of the discs are interrupted whereby the advance of the webs is discontinued or suspended at regular intervals.

Aligning pins are associated with the feeding discs for taking up the feed in the last phase of each form advance and, therefore, aligning the forms.

Referring specifically to the drawings, the register comprises a rectangular body 10 providing compartments 11 and 12 at the respective ends thereof. The compartment 11 constitutes a storage space for the zig-zag folded sheets or webs and the compartment 12 a record compartment or storage space for the carbon copies of the filled-in forms. The housing includes a writing platen 13 having a marginal frame member or lid 14 in place thereover.

The web consists of a number of plies or thicknesses of the continuous form stationery providing the superposed forms 15. These forms are successively brought into registration with the rectangular opening 16 of the marginal frame 14 in which position they may be written upon. The web is continuous in length but is weakened by transverse tear lines 17 at spaced intervals, to determine the tear off length of each successive form. The strips additionally are provided with pairs of apertures 18 on opposite side edges and a central aperture 19 for purposes hereinafter disclosed.

The feed mechanism comprises generally an upper feed roll 20 and a lower set of discs 21 cooperating with the upper roll. The lower feed discs are spaced laterally on a shaft 22 at a distance corresponding to the lateral spacing of the apertures 18 at opposite sides of the form sheets.

The upper feed roll 20 includes circumferential grooves 23 providing clearances for the rotating teeth or pins 24 carried by the main operating shaft 22 for the lower feed discs 21. In the present instance the teeth form radial extensions from the hubs or sleeves 25 which carry the lower feed discs 21 on the shaft.

Feed discs respectively operate upon opposite margins of the strips and provide for a straighter line of feed of the strips. There is more or less of a tendency for the feed rolls, due to several causes, to divert or deflect the feed of the strips from a true or straight line course.

The description of the feeding discs and aligning pins will be in the singular to avoid confusion. Each outer end of the roll 20 peripherally contacts with the tread surface of a lower disc for translating the strip, and when contacting therewith is slightly elevated against the tension of the spring. This also elevates the intervening strips as the contact periphery of the feed discs is slightly above the elevation of the plane of the table or platen. The feed disc 21 extends through an opening in the platen.

The periphery of each feed disc 21 is segmental, having a cutaway or reduced diameter portion non-cooperative with the upper feed roll to produce an idling or paper feed relieving interval in each revolution of the lower feed disc. The normal tread surface of the lower feed disc, which cooperates with the feed roll 20 is of a length slightly short of translating the strip for the full length of the form, and the strip is released from the discs or translating grip for its remaining distance of the translation for strip adjustment and registration.

The tooth 24, either as an integral part of the hub or rigidly fixed thereon, has a peak or ex-

tension disposed slightly beyond the tread surface of the lower disc to traverse the grooves of the upper feed roll 20 when depressed, so that the roll 20 confines the strip against release from the tooth.

Upon commencement of the feeding operation the tread surface of the lower feed disc elevates the upper feed roll, correspondingly elevating the strips within the region of the discs and thereby materially reducing the tooth hold upon the strips in its engagement through an aperture thereof. At the same time the tooth is receding from the strip and under a rolling-like action moves out of the aperture.

The form registry device, indicated generally at 26, is located beneath the writing platen 13. The device consists of a split pin 27 mounted on a plate 28 urged upwardly by a rectangular spring plate 29. The flat spring plate 29 is attached to the writing platen by means of rivets 30, and is attached to the plate 27 by means of rivets 31. The anchorage pin element 27 is made up of a pair of arms 32, integral with a bracket 33, which is riveted to the plate 28 by means of rivets 34. The outer ends of the arms extend to a point directly between the centers of the feed roll 20 and the discs 21 and each includes an angular upwardly extended portion or pin 35. These pins 35 fit snugly in the apertures 19, that is to say, they engage both the back and front edges of the apertures in the superposed strips.

The extended arms normally are retracted below the plane of the writing platen so as not to interfere with the translation of the sheets. For this purpose, the plate 28 is provided with a forwardly extended operating arm 37 adapted to cooperate with the marginal frame member or lid 14 of the machine.

The extended arm has an angular finger 38 at its outer end which extends upwardly in the same manner as the split pin. Normally, with the marginal frame of the machine down in position over the platen, the finger 38 is contacted and depressed by the frame, thereby depressing the plate 28 and the pin 35. The plate 28 is additionally provided with a spring element 28a to stabilize the plate 28 against tilting when the finger 38 is depressed.

The operation of the device is as follows: In loading the machine the zig-zag stack of form strips is placed in the compartment 11 and the leading edge of the pack carried upwardly and across the platen 13 of the register to the feed mechanism of the register. Since the marginal frame member 14 is raised at this time, the split pin will project upwardly through the platen of the machine. The central apertures 19 of the strips will register with the split anchorage pin when the strips are in proper position on the platen.

The platen additionally is provided with a pair of tangs 39 on opposite side edges of the platen and adapted to guide the sheets as they are fed. These tangs engage over the opposite side edges of the web of strips and the web is held by the engagement of the starting pin through the apertures 19 of the web. The frame member is now swung down to its normal position over the platen and upon contact with the projected operating finger 38 will retract the split pin to its normal position below the plane of the platen surface. The machine is then ready for operation in the usual manner.

In operating the machine the strips are fed longitudinally by rotation of a crank 40 which is mounted on the outer end of the shaft 22 to rotate the feed discs in the manner as previously described. In order to halt the translation of the sheets so as to prevent more than one form being fed, the crank is provided with an interrupting device, generally indicated at 41.

Briefly, the device operates in the following manner: At the beginning of the feed cycle, the crank is in position as illustrated in Figure 9 of the drawings. The operator grasps the crank and turns it one complete revolution, and, as shown in Figure 8, upon reaching the end of the revolution, the crank is engaged by a stop-lug which positively halts further rotation of the crank. After the handle is released, however, the stop-lug is automatically retracted to permit the crank again to be rotated, the operation of the device occurring automatically upon release of the crank.

The crank indicated at 42 is affixed on the outer end of the shaft 22 and includes a handle 43. The shaft 22 is extended through the side wall 44 of the register casing which includes bearing bushings 45. The upper end of the crank includes a boss 46 for attachment to the shaft. The face of the crank member adjacent to the side wall 44 incorporates a pair of lugs 47 and 48, adapted to cooperate with a spring-operated lug 49 which is projected outwardly toward the crank from the inside of the housing 44. The forward edge of the lug 47 of the crank presents an inclined or cam surface 50. The lug 48 functions as a positive stop against further rotation of the crank.

The spring-operated lug 49 is mounted on an arm 51 pivoted at 52 on the side wall 44 of the machine frame. A tension spring 53 has its upper end secured over a tang 54 and its lower end secured to the arm 51. This spring normally urges the lug to its upward position in an arcuate slot 55 of the housing as shown in Figure 9.

As the crank approaches the stopping position toward the end of a feed cycle, the cam surface 50 of the lug 47 comes into contact with the upwardly positioned lug 49 and moves the lug downwardly by virtue of the inclined cam surface of the lug 50 against the tension of the spring 53. When the lug 49 reaches its lower position, it is then disposed in the path of movement of the lug 48 and acts as a positive stop against further rotation of the crank. The lug 49 will be held in its downward position by the friction between the two parts as long as pressure on the handle is continued. However, upon releasing the handle, the lug 49 will be carried upwardly by the spring to its position in the upper end of the arcuate slot 55. When the lug is in this position, it is clear of the stop lug 48 of the crank and the crank is free to be rotated for feeding the next set of forms from the machine.

It will be evident from the foregoing that the operation of the crank is automatically halted after each feeding operation. However, the halting is only momentary and the crank is automatically freed upon release of the handle. In this manner the operation of the machine is greatly facilitated since the usual operation of manipulating an extra locking mechanism at the end of the stroke is eliminated, it being necessary only that the operator pause momentarily before feeding the next successive set of forms.

A modified form of the web registry device is illustrated in Figures 12 and 13. In this disclosure the device is provided with a pair of oppo-

site side registry pins 56 instead of the center pin as shown in the preceding form. This arrangement is intended for registration with the apertures 18 located crosswise of the form sheets, or with sheets which are provided with side apertures only. Except for the rearrangement of the pins the device embodies the same structure as the preceding form and operates in the same manner. The spaced pair of pins, however, align the sheets both longitudinally and angularly relative to the platen.

In this instance the pins 56 are integral with the plate 28 and are struck upwardly along the forward opposite side edges of the plate. These pins are disposed closely adjacent the teeth 24 and occupy the same apertures as the teeth. The pins are somewhat greater in width than the teeth in order to snugly fit the apertures and properly align the stationary sheets. Therefore, the sheets are accurately positioned not only longitudinally relative to the teeth, but also are aligned in a straight line relative to the platen so that the sheets are fed across the platen in a true or straight line course.

Having described my invention, I claim:

1. In an autographic register, a frame, a writing platen over which continuous form superposed strips of perforated stationery are advanced, a marginal cover for said platen, a device for positioning the stationery relative to said platen including an anchoring member adapted to engage registering perforations of the superposed strips when the marginal cover is raised above said platen, said member having a movable mounting element, and means on said mounting element adapting the anchoring member to be positioned out of operative engagement with the strips when the marginal cover is lowered in place over said platen.

2. In an autographic register, a casing, a writing platen upon which continuous strips of forms having filing apertures are deposited and advanced, a marginal cover frame for said platen, means for feeding said strips, and a device for longitudinally aligning the strips and locating the same relative to said feeding means, comprising a pin, a resilient mounting element for said pin, said mounting element adapted to position said pin in operating engagement with the registering apertures of said strips when said marginal frame is in open position and means on said mounting element engaged by said marginal frame, whereby said pin is positioned out of engagement with the stationery when said marginal frame is in closed position.

3. In an autographic register a casing, a writing platen over which continuous strips of forms having apertures therein are advanced, a removable marginal frame member for said platen, means for advancing said strips relative to said platen, an anchor pin adapted to engage registering apertures of the strips, said pin projectable above the plane of said platen when the marginal frame member is raised, a spring pressed mounting plate for said pin, said mounting plate secured beneath the platen, an actuating finger on said mounting plate, said finger also projectable above the platen when the marginal frame member is raised and adapted to be contacted by said marginal frame member and depressed when said frame member is lowered, whereby upon lowering of said frame member over said platen, the anchor pin is depressed beneath the plane of said platen.

4. In an autographic register, a casing, a writing platen upon which form strips having filing apertures are advanced, a marginal cover frame for said platen, means for feeding said strips, a depressible anchorage pin engageable within superposed apertures, and means connected with said pin and actuated by said marginal cover frame for lowering said pin out of engagement with the strips when said marginal frame is in closed position.

5. In an autographic register having a platen, spaced feeding discs adapted to advance superposed strips of forms relative to said platen, said strips having spaced apertures between the forms, aligning pins carried by the discs engaging said apertures, a device adapted to facilitate insertion and alignment of the stationery strip relative to said feeding means comprising spaced pins mounted relative to said platen, each of said pins disposed adjacent an aligning pin and adapted to engage the same apertures of said strips as those engaged by the particular aligning pin, and means for retracting said pins into inoperative position and engaging said strips by said feeding means.

6. In an autographic register, a platen, strip feeding means comprising feeding discs and aligning pins engageable with aligning apertures in the strips, anchorage pins mounted adjacent to the feeding discs and the aligning pin and relative to said platen, said pins adapted to engage the apertures of said strips, and means independent of the feeding discs and the aligning pins for retracting said pins into inoperative position and engaging the strip by said feeding means.

7. In an autographic register, a writing platen, a hinged cover plate, feeding mechanism adapted to advance a continuous web of strips of perforated stationery relative to said platen, a spring plate secured to said platen, an anchorage pin on said plate adapted to engage the registered perforations of said stationery strips, said pin fitting snugly in said perforations, said spring plate moving said pin into operative position relative to the platen upon raising of the hinged cover plate adapting the perforated stationery strip to be engaged upon said pin, thereby aligning the strips relative to said feeding means, and means for moving said pin into inoperative position relative to strips when the cover plate is lowered into normal position.

8. In an autographic register, a casing, a platen, a cover plate, a strip feed mechanism, an aligning means engageable with apertures of said strips, an anchor pin adapted to engage aligned apertures of said stationery strip, said pins disposed substantially in alignment with the vertical axis of the feed mechanism and cooperating means associated with said cover plate and pin adapted to move said pin vertically with respect to the platen to retract the pin from engagement with the apertures when the cover plate is in place on the register.

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