Oct. 12, 1943. A. W. METZNER 2,331,336

AUTOGRAPHIC REGISTER

Filed Oct. 1, 1941 2 Sheets-Sheet 1

Fig. 1

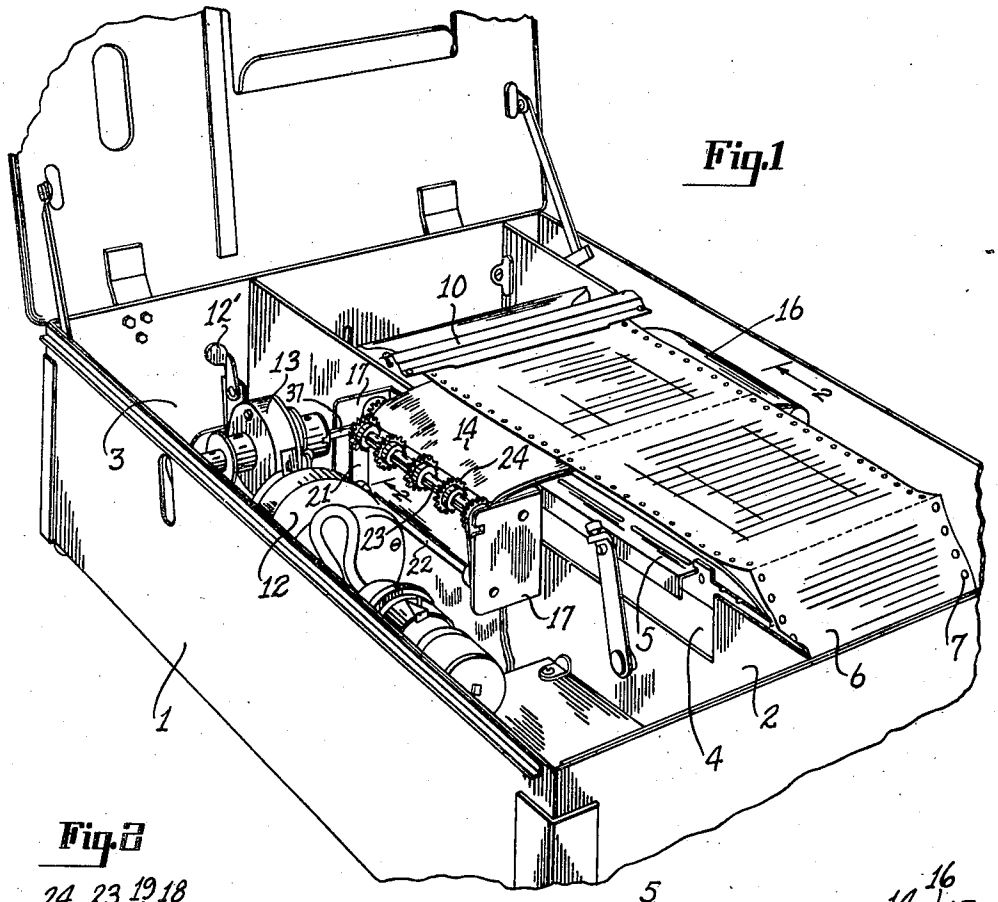


Fig. 2

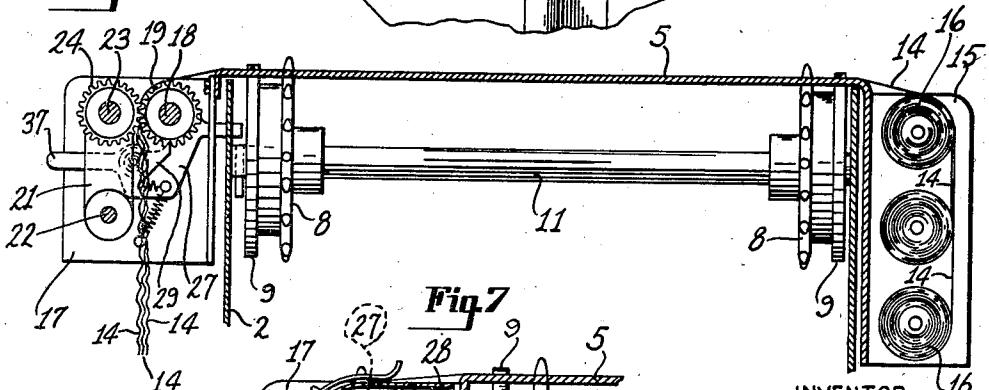
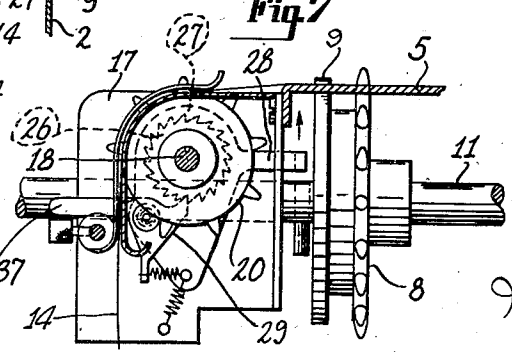


Fig. 7



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AUTOGRAPHIC REGISTER

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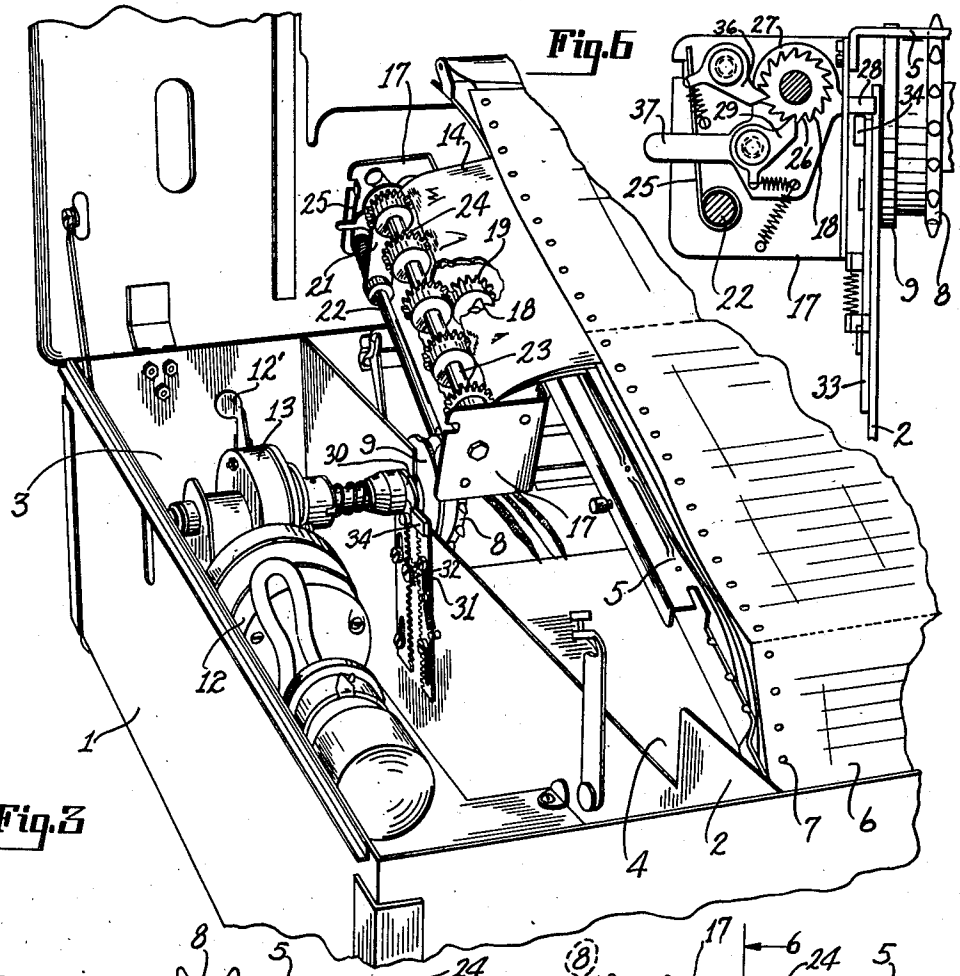


Fig. 3

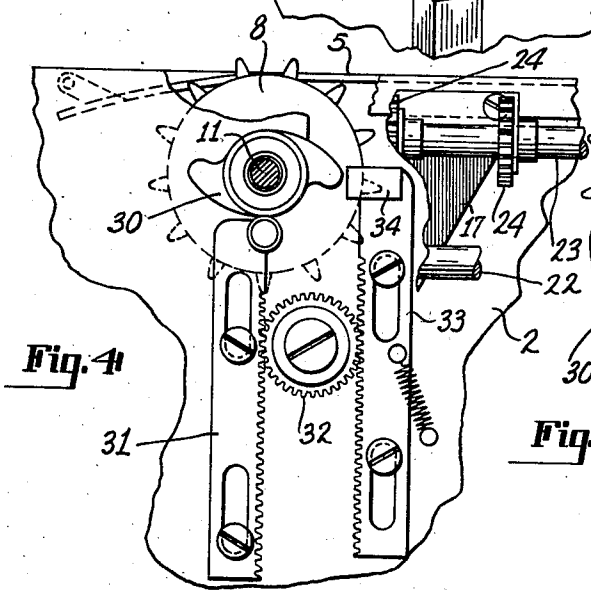


Fig. 4

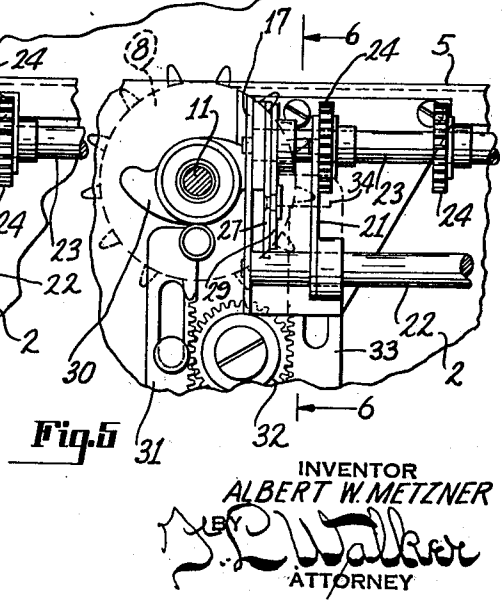


Fig. 5

Fig. 6

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UNITED STATES PATENT OFFICE

2,331,336

AUTOGRAPHIC REGISTER

Albert W. Metzner, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio, a corporation of Ohio

Application October 1, 1941, Serial No. 413,086

4 Claims. (Cl. 282—20)

This invention pertains to dual strip feeding mechanism for recording apparatus, by which superposed strips of material are simultaneously advanced different distances through transverse paths of travel.

While for illustrative purpose, but with no intent to unduly limit the scope or application of the invention, it is herein shown and described as applied to an autographic register for advancing superposed strips of continuous series connected detachable forms one form length at each operation, and simultaneously advancing one or more interleaved strips of carbon or transfer material transversely thereof through a lesser distance to progressively present fresh transfer surfaces at the writing position, it is to be understood that the invention may be applied to other types of writing and imprinting apparatus, including tabulators, addressing and billing machines and analogous mechanisms, to maintain a continuously changing supply of transfer material, and may further be employed in such mechanisms to feed successions of different impression receiving forms through intersecting paths of travel.

Heretofore it has been customary to periodically renew carbon or transfer material used in autographic registers by manually drawing a fresh supply thereof from time to time into transfer position relative to the record material. In the present instance the advancement of the transfer material is automatic and is synchronized with the advancement of the record material past the impression receiving position. During each advancement of the record material a full form length, motion is transmitted to the transfer material feeding means for advancing the latter transversely of the record material through a prescribed step of lesser degree. Obviously, the motion transmitting means and strip feeding devices herein disclosed may be utilized for differentially advancing supplemental record material either transversely or in the same direction as the primary record material, as for example a tally strip or detail record which is advanced line by line while the accompanying primary record strip is advanced a form length at a time. The present motion and strip feeding mechanism is a further development of and improvement upon that disclosed in the application of Sherman and Metzner, Serial No. 536,810, filed May 12, 1931, and in the two copending divisions thereof, Serial Nos. 218,986 and 403,292, filed July 13, 1938, and July 21, 1941, respectively.

The object of the invention is to improve the construction as well as the means and mode of operation of strip feeding mechanisms adapted to simultaneously advance superposed strips of material differentially, which may not only be economically manufactured and installed, but will be efficient in use, automatic in action, uniform in operation, having few operating parts, and unlikely to get out of repair.

A further object of the invention is to provide a strip feeding mechanism for automatically advancing superposed strips of record material differentially through predetermined range of movements.

A further and important object of the invention is to provide a motion transmitting mechanism for actuating one feeding device by operation of another which will be easy to operate and which will minimize the strain and shock incident to such operation.

A further object of the invention is to provide differential strip feeding mechanism having the advantageous structural features and inherent meritorious characteristics and mode of operation herein mentioned.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

In the accompanying drawings, wherein is shown a preferred, but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a perspective view of an assembled motor actuated autographic register in which the present invention is embodied, the lid or cover of the register cabinet being shown raised to disclose the interior thereof.

Fig. 2 is a transverse sectional view showing the respective feeding devices and their interconnection and the supply rolls for the transversely fed carbon or transfer material.

Fig. 3 is a perspective view of the autographic register partially disassembled.

Figs. 4 and 5 are enlarged detail side views of the motion transmitting mechanism, by which one strip feeding device is actuated in synchronism with the other.

Fig. 6 is a further detail view at right angle to those of Figs. 4 and 5 on the line 6—6 of Fig. 5.

Fig. 7 is a detail view of a modification show-

ing a pin wheel for engagement in longitudinally spaced feed holes in the transverse strip in lieu of the toothed gripping wheels shown in other views.

Like parts are indicated by similar characters of reference throughout the several views.

In the drawings there is shown a desk type autographic register, including a cabinet 1 divided by a longitudinal wall 2 into a motor compartment 3 and a supply compartment 4 for a packet of record material. Overlying the supply compartment is a writing tablet 5 over which plural record strips 6 are drawn from the supply compartment and advanced past a writing position. In the present instance the record strips are marginally punched at 7 for engagement of a pin type feeding device, by which the superposed record strips 6 are uniformly advanced and prescribed writing areas thereof are registered with each other and aligned with the record receiving position. Mounted in the forward portion of the compartment 4 and projecting through corresponding slots in the writing tablet 5 is a pair of revoluble pin wheels 8, the spaced radial pins of which progressively engage in the marginal holes 7 of the several strips to advance the strips in unison with rotation of the pin wheels.

Adjacent to the pin wheels 8 are peripherally notched discs 9 yieldingly engaged by detent rollers to limit the movement of the pin wheels to one complete rotation at each actuation. Overlying the strips 6 is a hold-down bar and tear-off knife 10 as is usual in such assemblies. The pin wheels are actuated by a single cycle electric motor 12, operation of which is initiated by a manually operated trip lever 12'. The motor 12 is connected with the pin wheel shaft 11 through a speed reduction unit 13 and is adapted to operate through a prescribed cycle sufficient to drive the pin wheels through one complete rotation, at the end of which the motor automatically comes to rest.

For the purpose of providing manifold copies upon underlying record strips 6, strips 14 of transfer material are transversely interleaved between the record strips 6. Obviously, additional record strips may be transversely arranged between the primary record strips and differentially advanced in unison therewith in lieu of the transfer strips 14.

The writing tablet 5 is provided at one side with brackets 15, in which are journaled shafts carrying supply rolls 16 of transfer material, or of additional record material as the case may be. There is a separate supply roll for each transversely advanced strip, in order that the strips may be uniformly tensioned, which would not be so if all the strips were wound upon a single supply roll 16. The feeding means for the transverse strips is located at the opposite side of the writing tablet 5. Mounted in spaced brackets 17 is a shaft 18 upon which are secured a plurality of relatively spaced toothed pinions 19. In the event additional record material is to be fed transversely of the primary strips 6, pin wheels 20 engageable in marginally punched holes in the transverse strips may be substituted for the toothed wheels 19, as shown in Fig. 7.

Mounted in swinging arms 21 pivoted at 22 near the bottom of the brackets 17 is a second shaft 23 extending parallel with the shaft 18. The shaft 23 carries a plurality of toothed wheels 24 which mesh with the toothed wheels 19, into engagement with which they are urged by springs 25 acting upon the swinging arms 21.

The advance ends of the transverse transfer strips 14 are inserted between the intermeshing pinions 19 and 24, by retracting the arms 21 against the tension of their springs and are gripped by reengagement of the toothed pinions. As the shaft 18 is rotated the pinions rotate therewith to advance the strips. If only transfer material strips are thus fed, the effective surface of which will have been exhausted before reaching the pinions, the material engaged by the pinions is only waste and the crimping of the passing strips is immaterial. Obviously, in lieu of gripping wheels 19 and 24, friction rollers may be employed to draw the transfer material across the writing tablet intermediate the record strips 6.

As a single but effective means for transmitting motion to the shaft 18 and the feeding wheels, whether toothed, pin type or frictional, a ratchet wheel 26 is mounted on said shaft. Also pivoted on the shaft 18 concentric with the ratchet wheel 26 is an oscillatory lever 27 which carries a spring pressed pawl 29, having engagement with the ratchet wheel to advance the latter and with it the shaft and feeding wheels through a partial rotation at each oscillation of the lever. For actuating the pawl lever in synchronism with the rotation of the pin wheels, there is mounted upon the pin wheel shaft 11 a cam 30. In the drawings, the cam 30 is shown as of double lobe formation. However, a single cam or one having a greater number of contact engagements during each rotation may be employed. Mounted on the cabinet wall 2 beneath the shaft 11 is a vertically reciprocatory rack bar 31, the head of which projects into the path of rotation of the cam 30. The rack bar 31 intermeshes with an idler gear 32, which in turn meshes with a second vertical reciprocatory rack bar 33 having a head 34 into the path of which the extension 28 of the pawl lever 27 projects. At each rotation of the pin wheel shaft 11 under influence of the actuating motor the rack bar 31 is engaged one or more times by the cam 30 and depressed thereby. The depressive impulses received by the rack bar 31 are transmitted by the idler gear to the second rack bar 33, which is simultaneously projected upwardly against the extension 28 of the lever 27 to oscillate the latter and advance the ratchet wheel 26 and with it the shaft 18 and toothed feeding pinions. The racks are actuated by the cam 30 against the tension of a retracting spring 35. Instead of transmitting the movement from the primary feeding device to the second feeding mechanism by one abrupt operating stroke, the present arrangement affords a succession of relatively small impulses successively transmitted thereto.

Likewise, instead of operating the lever 27 and pawl 29 through an extended range of movement to effect sufficient advancement of the transverse strips repetitious short range movements are transmitted to the feeding devices with less strain and with minimum shock and effort. A detent pawl 36 engages the ratchet wheel 26 to prevent retrograde movement. To enable manual actuation of the strip feeding means, an arm 37 is provided upon the pawl lever 27 by which it may be manually oscillated to advance the transverse strip independently of the advancement of the primary record strips.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desir-

able, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. In a recording apparatus, wherein plural strips of material are progressively advanced past a recording position in transverse paths of travel, dual strip feeding devices and motion transmitting means for actuating one strip feeding device in synchronism with the other strip feeding device to advance the respective strips prescribed distances, including a cam member actuated by the operation of one strip feeding device, a pair of reciprocatory rack members, one end of one of which projects into the path of the cam member and is engaged thereby to move the rack member, a gear pinion common to the pair of rack members and operative to transform reciprocatory motion of one rack member into reciprocatory motion of the other rack member, a pawl and ratchet actuating mechanism for the second strip feeding device, including a pawl lever extending into the path of the second rack member and operated by the reciprocation thereof to energize said second strip feeding device.

2. In a recording apparatus, wherein plural strips of material are progressively advanced in timed relation through transverse paths of travel, dual strip feeding devices, motion transmitting means for actuating one of the strip feeding devices in synchronism with the operation of the other, including a reciprocatory plunger, an actuator operative in unison with one of the strip feeding devices for imparting repetitious reciprocatory movement to the plunger during each strip feeding operation of said strip feeding device, and a reciprocatory plunger for the other strip feeding device energized by the reciprocation of said first plunger to impart repetitious actuating impulses to said second strip feeding device.

3. A recording apparatus, wherein plural strips of material are differentially advanced past a recording position, separate strip feeding devices, each operative to advance different strips of the plurality, common actuating means therefor, and motion transmitting means including a pair of reciprocatory plungers, one of which is actuated by the operation of one strip feeding device and the other of which is operative to actuate the other strip feeding device, and an interconnection by which said plungers are actuated in unison.

4. A recording apparatus, wherein plural strips of material are differentially advanced past a recording position, separate strip feeding devices, each operative to advance different strips of the plurality, common actuating means therefor, and a pair of alternating reciprocatory plungers, one of which is actuated by operation of one strip feeding device and the other of which is operative to actuate the other strip feeding device, and a coupling device by which the plungers are simultaneously actuated reversely of each other.

ALBERT W. METZNER.