Jan. 4, 1949. J. T. DAVIDSON ET AL 2,457,807

AUTOGRAPHIC REGISTER

Filed May 21, 1942 4 Sheets-Sheet 1

Fig. 1

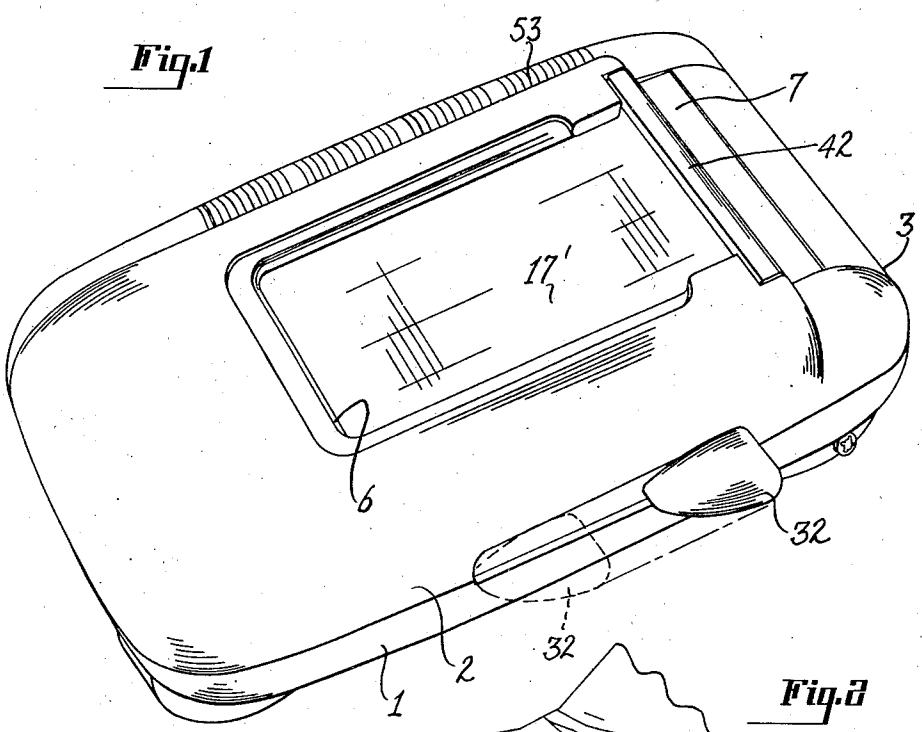
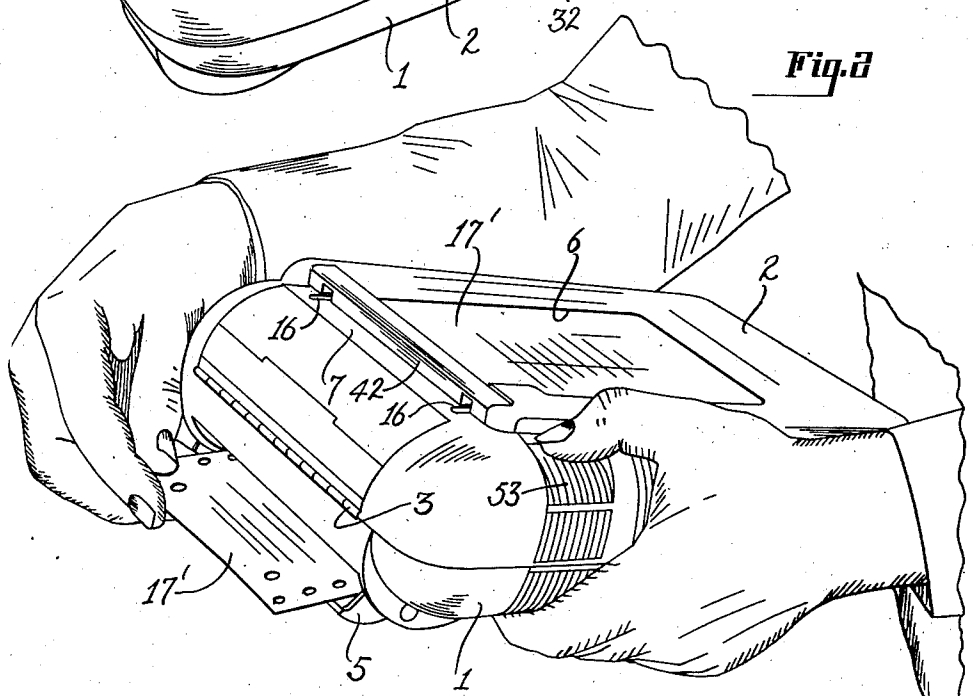


Fig. 2



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4 Sheets-Sheet 2

Fig. 9

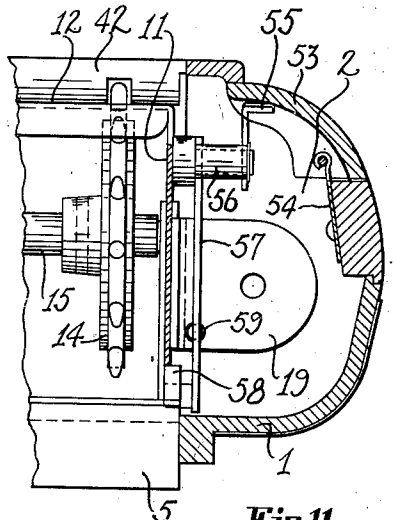


Fig. 11

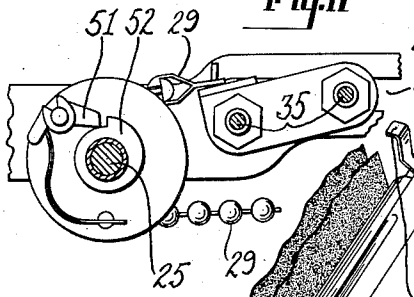


Fig. 3

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AUTOGRAPHIC REGISTER

Filed May 21, 1942 4 Sheets-Sheet 3

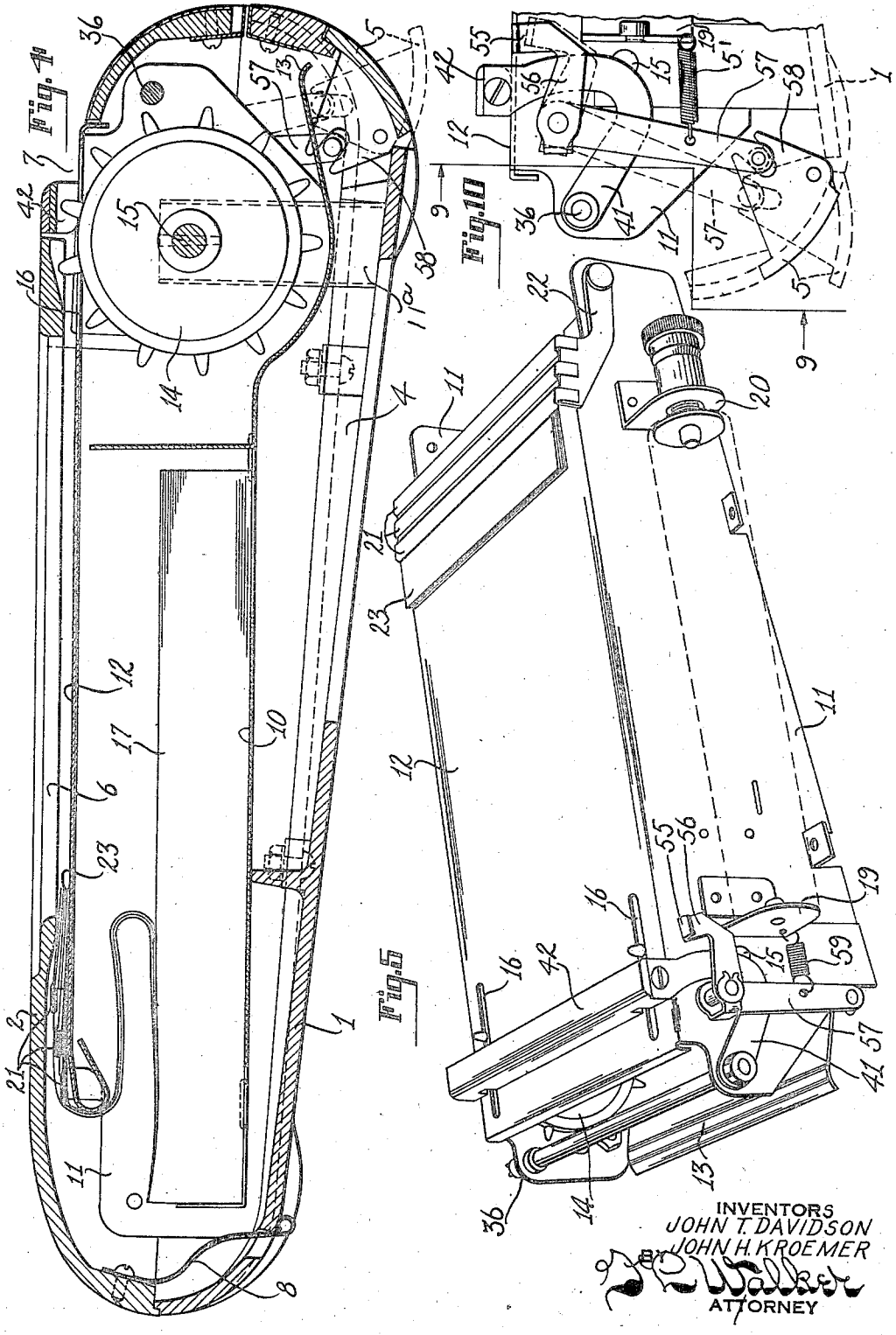


Fig. 4

Fig. 10

Fig. 5

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4 Sheets-Sheet 4

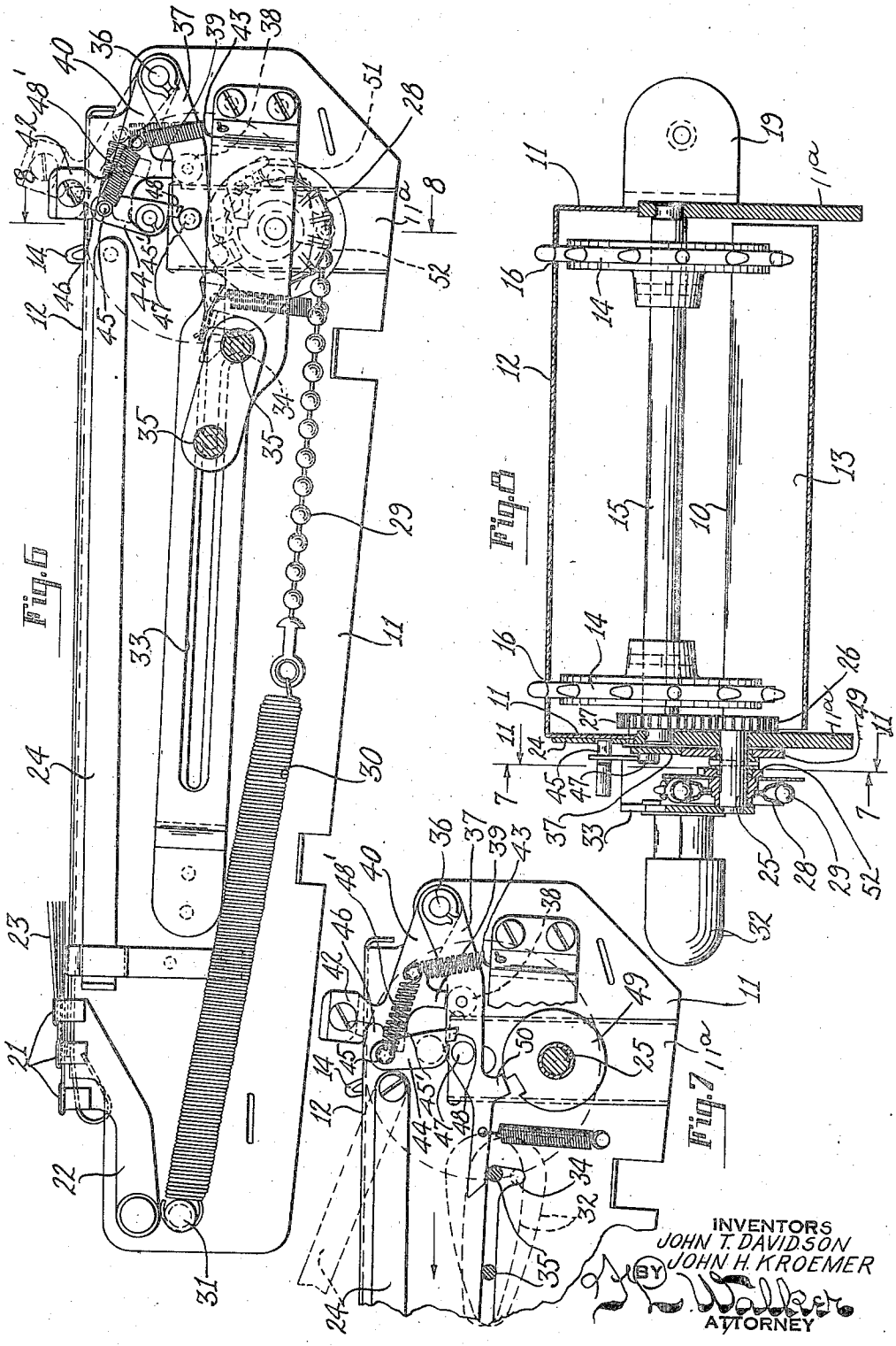


Fig. 6

Fig. 8

Fig. 7

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2,457,807

UNITED STATES PATENT OFFICE

2,457,807

AUTOGRAPHIC REGISTER

John T. Davidson and John H. Kroemer, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio, a corporation of Ohio

Application May 21, 1942, Serial No. 443,944

10 Claims. (Cl. 282—18)

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This invention pertains to manifolding, and more particularly to an autographic register of the portable type employing continuous series connected detachable form stationery.

The registering and strip feeding mechanism herein disclosed is preferably, but not necessarily, enclosed in a housing or cabinet of molded plastic or pulp material, having therein a compartment for detached record sheets provided with a closure and pressure operating means therefor. The strip feeding or ejecting means illustrated is of the pin wheel type, but obviously frictional or other feeding means may be substituted therefor.

The strip feeding devices may be of the positive traveling pin type, conventional friction rollers, or of other form, the former being herein shown and described. The feeding devices are actuated to advance the record strips one form length at each operation by a pull stroke or sliding actuator, the initial movement of which serves to release the normally locked strip feeding devices and to temporarily raise during the strip feeding period a clamp bar and tear-off knife which is automatically returned into clamping engagement with the strips, at the end of the strip feeding movement, preparatory to the succeeding operation.

The primary object of the invention is to improve the construction as well as the means and mode of operation of autographic registers, whereby they may not only be economically constructed, but will be more efficient in use, automatic in operation, uniform in action, have but few moving parts, and be unlikely to get out of repair.

A further object of the invention is to provide a portable register of light weight and compact form, convenient shape and well balanced construction.

A further object of the invention is to provide an improved actuating means for the strip feeding or ejecting devices.

A further object of the invention is to provide a normally locked, easily released actuating means.

A further object of the invention is to provide a pull stroke operating means for the strip feeding devices.

A further object of the invention is to provide automatic locking means for the strip feeding devices releasable by the initial movement of the actuating device.

A further object of the invention is to provide means for automatically raising the clamp bar and tear-off knife by the movement of the strip feed actuating device.

A further object of the invention is to provide an autographic register having the advantageous structural features and the inherent meritorious

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characteristics and mode of operation herein described.

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

Fig. 1 is a perspective view of an assembled autographic register embodying the present invention.

Fig. 2 is a reverse perspective view thereof showing the cabinet storage compartment open and receiving a detached record sheet.

Fig. 3 is a perspective view of the assembled register with the lid of the cabinet raised to expose the enclosed unit.

Fig. 4 is a longitudinal sectional view.

Fig. 5 is a perspective view of the register unit removed from the cabinet.

Fig. 6 is a side elevation of the register unit removed from the cabinet, with the operating parts in their normal or home position.

Fig. 7 is a fragmentary side elevation corresponding to a part of Fig. 6, showing the parts in operated position.

Fig. 8 is a transverse sectional view on line 8—8 of Fig. 6.

Fig. 9 is a detail sectional view illustrating the depressible storage compartment door operator.

Fig. 10 is a detail view of the operating mechanism for the storage compartment door.

Fig. 11 is a detail view of the drive coupling for the actuating and ejector mechanisms.

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

The autographic register illustrated in the drawing comprises a complete operating unit which is normally enclosed in and bodily removable from the cabinet or housing. The latter is of ornamental design, the shape and appearance of which may be widely varied without interfering with the enclosed operating unit. While illustrated and described as a portable register, the same or analogous construction may be embodied in a stationary counter or desk register.

The housing or cabinet is divided on a medial plane into a lower pan-like section 1, in which the operating unit is mounted, and an upper lid section 2, hinged at 3 to the lower section 1. The cabinet is preferably molded from a plastic or pulp material, but may be stamped from sheet metal. The operating unit is mounted in elevated relation within the lower section 1 to afford therebeneath a storage compartment 4, to

which access is had through a flap door 5 in the front end of the cabinet. The upper or lid section has therein an opening 6 which overlies the top or writing tablet of the operating unit through which indicia may be inscribed on the record material strips disposed upon the writing tablet. The forward portion of the opening 6 is enlarged at 7 to afford an exit opening for the inscribed forms and to accommodate a clamp bar and tear-off knife therefor. At the rear end of the cabinet a spring latch 8 accessible from the under side thereof releasably locks the cabinet sections 1 and 2 in closed relation.

The operating unit comprises a box-like body, having a bottom 10, vertical side walls 11, and a flat top 12 which serves as a writing tablet. The unit is open at its opposite ends. The rear extremity of the bottom 10 is formed with an upturned flange 13. At its forward end the unit is provided with strip feeding and ejecting devices.

For illustrative purposes, but without intent to unduly limit the invention thereto, the feeding means illustrated comprises a pair of revoluble pin wheels 14 mounted on a transverse shaft 15, which is journaled in the side walls 11 of the unit. The peripheries of the pin wheels 14 project through slots 16 in the forward end of the writing tablet 12 into feeding engagement with marginally punched holes in the record strips. A packet 17 of zigzag folded superposed continuous record strips is placed in the supply compartment within the unit and the strips are fed therefrom through the rear open end of the unit and thence over the top of the writing tablet 12 to the projecting pins of the pin wheels 14 which extend through the slots 16 at the front of the writing tablet. Overlying the writing tablet are a plurality of strips of transfer or record material 18 supplied from a roll mounted in the brackets 19 and 20 on the side of the unit, and transversely interleaved between the portions of the superposed record strips 17' disposed over the writing tablet.

At the side of the unit opposite the transfer material supply roll, the extended ends of the transfer material are held by a clamp bar 24, upon release of which the used areas of the transfer material may be withdrawn to present fresh areas in manifolding position, and the exhausted portions thereof are torn off. At the rear end of the writing tablet the record strips 17' are directed between spaced guide bars 21 of a swinging rack 22, pivoted to the sides 11 of the unit. The guide bars 21 carry short fabric shields 23 which overlap the margins of the interleaved transfer strips to prevent interference and mutilation by the relatively moving record strips.

For driving the pin wheels 14 or other strip feeding and ejecting devices through a prescribed range necessary to advance the record strips 17' one form length at each operation there is journaled in a side wall 11 of the unit a stub shaft 25 carrying a gear pinion 26 meshing with a gear 27 on the pin wheel shaft 15. At its outer end the shaft 25 carries loosely journaled thereon a grooved pulley 28, about which is disposed a bight of a bead chain 29. Obviously, other forms of actuating chain or a cord may be substituted. The pulley is coupled with the shaft 25 for one way rotation of the latter by a pawl and ratchet connection (Fig. 11). One end of the actuator chain is attached to an end of a retractile spring 30 the opposite end of which is anchored at 31 to the side of the unit. The free end of the actuator chain is attached to a side button or handle 32 which projects beyond the cabinet and is mounted for to and fro sliding motion in a slotted guide track 33 secured in spaced relation to the side of the register unit. The guide slot in the track bar 33 has a notch or depression 34 at the forward end of its lower margin. The operator slide 32 is provided with two spaced studs 35 which ride in the guide slot, one of which is depressed into the notch 34 at the forward limit of its range of travel. The retractive influence of the chain is exerted upon the slide sufficiently above the level of the guide slot and in a downwardly inclined relation to urge the forward track engaging stud 35 of the slide into the notch as the slide is returned after each operation.

The manual retraction of the slide handle 32 retracts the bead chain 29 against the tension of the spring 30 and by drawing the chain about the grooved pulley 28, the shaft 25 and gears 26—27 are rotated sufficiently to actuate the pin wheel shaft 15 and pin wheels 14 through one complete rotation.

Pivoted at 36 to the side of the unit is an oscillatory lever 37, the forward end of which is beveled and overlies the foremost stud 35 of the slide handle when the latter is in its normal or home position when such stud is in the notch or depression 34. The notch 34 is sufficiently abrupt to lock the slide in its retracted position, and to necessitate an initial rocking motion by which the stud is lifted from the notch preparatory to retraction of the slide handle. Such locking engagement prevents accidental movement of the handle and feed devices.

The necessary unlocking rocking motion of the slide handle lifts the lever 37. The latter carries a stud or roller 38 with which engages a dependent portion 39 of a rock arm 40 also pivoted at 36 concentrically with the lever 37. At the opposite side of the unit is a corresponding rock arm 41 of somewhat different shape, but pivoted on the same tranverse shaft 36 and movable in unison with the rock arm 40 and with the lever 37. Connecting the rock arms 40 and 41 across the top of the writing tablet slightly in advance of the pin wheels 14 is a duofunctional clamp bar and tear-off knife 42 which presses downwardly under influence of a spring 43 upon the forward end of the record strips 17' while they are being inscribed, and securely holds the strips against relative shifting motion. The bar 42 is notched for passage of the feeding pins of the pin wheels 14 and retains the strips 17' in feeding engagement therewith.

However, the unlocking rotation of the slide handle which lifts the lever 37 thereby rocks the arms 40 and 41 against the yielding resistance of the retractile spring 43 to slightly lift the clamp bar and tear-off knife 42 and thereby release the record strips for advancement. The bar 42 is normally locked in its depressed position by a spring actuated pivoted detent 44 having a stud 45 which engages in a notch 46 in the rock arm 40. The arm 37 carries a stud 47 which engages a cam end 48 of the detent to rock the latter out of engagement with the arm 40, against the tension of a retracting spring 48'. The engagement of the stud 47 with the tail 48 of the detent 44 occurs slightly in advance of the engagement of the roller 38 with the dependent portion 39 of the clamp bar arm 40. Secured to the shaft 25 is a notched disc 49, within the notch of which a tooth 50 on the under margin of the lever 37 normally engages to lock

the feed devices. The elevation of the lever 37 lifts the tooth 50 out of the disc notch to unlock the strip feeding devices simultaneously with the elevation of the clamp bar. The initial pull upon the bead chain 29 incident to the unlocking operation of the slide handle imparts an advance rotary motion to the grooved pulley 28 and shaft 25 and with them the notched disc 49. The initial advancement of the pulley and shaft moves the periphery of the disc 49 under the tooth 50 to hold the lever 37 elevated and with it the clamp bar 42, until the feed devices have completed a full cycle of operation and the notch in the disc 49 is returned to position to receive the tooth 50. This occurs as the slide handle reaches the limit of its pull stroke, which movement ejects the inscribed portion of the strip and advances a succeeding form length into writing position. The advancement of the slide handle rotates the grooved pulley 28 which carries a spring pressed driving pawl 51 having engagement with a shouldered disc or one tooth ratchet wheel 52 secured to the shaft 25 to thereby drive the strip feeding devices. During return of the slide handle to its normal or starting position, the grooved pulley 28 rotates idly on the shaft 25, and the pawl 51 rides idly over the shouldered disc 52 until it drops back of the shoulder thereof preparatory to another feeding operation. The descent of the lever 37 as the tooth 50 drops into the notch of the disc 49 at the end of the feeding operation permits the clamp bar and tear-off blade 42 to drop onto the advanced portion of the record strips under influence of the spring 43 and holds the strips under pressure until the next feeding operation. The advanced inscribed portions of the strips beyond the clamp bar 42 are then torn off against the said bar, which also serves as a tear-off knife.

One or more of the detached inscribed record sheets may be stored within the compartment 4. The flap door 5 of the storage compartment may be controlled by a push button, lever, or other device, but in the present instance a limited depressible section 53 of the cabinet lid 2 is utilized for this purpose. The door operator section 53 is pivoted to a bracket 54, as shown in Fig. 9, and overhangs the outturned end 55 of one arm 56 of a bell crank lever, the other arm 57 of which engages in a bifurcated plate 58 secured to the flap door 5. The depressible cabinet section 53 is conveniently positioned beneath the operator's thumb when grapsing the cabinet in the usual manner, as shown in Fig. 2. By squeezing the cabinet upon the area 53, the flap door 5 is opened to receive the detached sheets. A retracing spring 5' serves to close the door 5 and to restore the depressed section 53.

In Fig. 6 the clamp and tear-off bar is shown by dotted lines elevated to an extereme position to enable the register to be more conveniently loaded, and the record strips initially engaged with the pin wheels. The bar 42 is temporarily held in such position by engagement of the stud 45 of the oscillatory detent 44 beneath the offset 45' of the arm 40. To prevent the register cover being closed while the bar 42 is in such elevated position, a finger 59 is secured to the interior of the register lid, which in the closing movement will contact the detent stud 45 and disengage it from the swinging arm 40, which is then retracted by its spring 43. It is thus impossible to close the lid with the clam and tear-off bar in elevated position.

To provide clearance for the moving feeding

pins of the pin wheels 14, the margin of the opening 7 in the lid 2 is notched at 60 on its inner side. The projection of the lid at opposite sides of the notches 60 below the ends of the passing pins maintains the marginally punched strips in feeding engagement with the pin wheels and restrains them from jumping off during operation.

While the pin wheel shaft 15 and the transmission shaft 25 may be journaled directly in the sides 11 of the register unit, they are preferably journaled in a molded plastic panel 11a, the sides of which are grooved for removable engagement in a corresponding slot or recess in the metal side walls 11 of the register unit.

This construction enables the pin wheels and the motion transmitting mechanism, including the driving gears 26 and 27, the pulley 28 and locking disc 49 to be easily removed and replaced as a unit or sub-assembly without dismantling the register unit.

The construction is such that the initial rocking motion of the operator knob 32 which unlocks the register by lifting the stop 50 out of the notch in the disc 49 also exerts sufficient tension of the actuating cable to advance the notched disc sufficiently to advance the disc beneath the stop and prevent its return until the disc 49 and the associated parts have completed a full cycle of operation.

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 desirable, 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 our invention, we claim:

1. Strip feeding apparatus for an autographic register wherein strip feeding devices are operative to intermittently advance a continuous strip of record material past a recording position, including a revoluble pulley, a reciprocatory belt engaging the pulley, a retractory spring to which one end of the belt is attached, a reciprocatory slide to which the other end of the belt is attached by alternation of which rotary motion is transmitted to the pulley, a guide way for the reciprocatory slide having therein a configuration with which the slide is releasably engageable at such point in its path of travel to temporarily lock the strip feeding devices, and from which the slide is manually releasable preparatory to subsequent operation of the strip feeding devices, and a driving coupling between the pulley and the strip feeding devices effective to actuate the feeding devices during rotation of the pulley in one direction but enabling idle rotation of the pulley in the opposite direction under influence of the belt.

2. Strip feeding apparatus for an autographic register wherein continuous strips of record material are progressively advanced past a recording

position including strip feeding devices engaging the strips, a reciprocatory actuator therefor capable of limited rocking motion additional to its reciprocatory motion, means with which the reciprocatory actuator is engageable to lock the actuator against motion and from which it is disengaged by an initial rocking motion preparatory to reciprocatory motion and motion transmitting means by which the motion of the reciprocatory actuator in one direction is transmitted to the strip feeding devices.

3. An autographic register wherein continuous strips of record material are progressively advanced past a recording position predetermined distances at each operation, including a strip feeding mechanism therefor, a locking device normally holding the feeding mechanism inoperative, a clamp bar normally holding the record strips against movement, an actuator capable of rocking and sliding motion, and means for unlocking the strip feeding mechanism and raising the clamp bar by the rocking motion of the actuator and for actuating the strip feeding mechanism to advance the strips a predetermined distance by the subsequent sliding motion of the actuator.

4. An autographic register wherein continuous strips of record material are progressively advanced predetermined distances past a recording position, including strip feeding mechanism, an actuator therefor capable of rocking and sliding motion, detent means for releasably holding the actuator in its retracted home position from which it is released by an initial rocking motion, and motion transmitting devices by which subsequent sliding motion of the actuator is transmitted to the strip feeding mechanism to advance the record strips.

5. An autographic register wherein continuous strips of record material are progressively advanced predetermined distances past a recording position, including strip feeding mechanism, a sliding actuator therefor, a slotted guide in which the actuator is engaged for to and fro motion, said slot having therein a notch, a stud carried by the sliding actuator engageable in said notch by a rocking motion of the sliding actuator at the limit of its range of travel, and from which it is disengaged preparatory to sliding motion by reverse rocking motion, and motion transmitting devices by which the sliding motion of the actuator is transmitted to the strip feeding mechanism.

6. A portable autographic register wherein continuous strips of record material are progressively advanced predetermined distances past a recording position, including strip feeding mechanism, a rotary drive shaft therefor, detent means locking the shaft in a fixed position, a pulley mounted on said shaft, a one way coupling device interconnecting the pulley and shaft for independent rotation in one direction and unison rotation in the other direction, a belt forming a bight within which the pulley is engaged, a retractile spring connected to one end of the belt, a reciprocatory operator handle having fore and aft straight line movement in a plane intermediate the top and bottom of the register connected to the other end of the belt, and detent release means actuated thereby, the construction and arrangement being such that the to and fro motion of the handle is transmitted by the belt to the pulley, and the motion of the latter in one direction only is transmitted to the strip feeding mechanism by said one way coupling.

7. A portable autographic register wherein continuous strips of record material are progressively

advanced predetermined distances past a recording position, including strip locating means, a strip feeding mechanism, a drive pulley with which the strip feeding mechanism is connected for unison rotation in one direction but independently of which the pulley is reversely revoluble a pull belt formed into a U shaped bight engaging the pulley and longitudinally movable thereabout under manual pulling effort applied to one end of the belt, a reciprocatory fore and aft manually operable slide to which the end of the belt is connected and a retractile spring attached to the other end of the belt against the yielding resistance of which the belt is longitudinally movable to rotate the pulley under manual pulling effort applied to the first mentioned end of the belt, and an interlock preventing movement of the belt until after release of the strip locking means.

8. A portable autographic register wherein continuous strips of record material are progressively advanced predetermined distances past a recording position, including strip feeding mechanism, dual detents therefor, actuating means therefor including a drive shaft, a pulley loose upon the shaft for rotation in one direction, a pawl and ratchet connection operatively engageable upon rotation of the pulley in the opposite direction for rotating the drive shaft in unison therewith, a longitudinally movable belt including a U shaped bight thereof engaged about the pulley, a retractile spring attached to one end of the belt, against the yielding resistance of which the belt is longitudinally movable, a reciprocatory slide handle to which the other end of the belt is attached, and detent release means operative upon movement of the slide handle, the construction and arrangement being such that manual movement of the slide handle exerts a pulling effort upon the belt against the tension of the retracting spring to effect rotation of the pulley in one direction, the return rotation thereof and retraction of the belt being effected by reaction of the spring.

9. An autographic register wherein continuous strips of record material are progressively advanced predetermined distances past a recording position, including strip feeding mechanism, a movable clamp bar for holding the record strips in their advanced position, and actuator for the strip feeding mechanism capable of rocking and sliding movements which by its rocking motion elevates the clamp bar to release the record strips for advancement and by its sliding movement actuates the strip feeding mechanism to advance the record strips.

10. An autographic register wherein continuous record strips are progressively advanced from a supply packet thereof within the register, including strip feeding mechanism for progressively advancing the record strips predetermined distances past a recording position, a sliding actuator therefor, a guide track on the register along which the sliding actuator is movable, detent means with which the actuator is releasably engageable at one limit of its range of movement and from which it is disengaged by a bodily tipping motion, and motion transmitting devices for actuating the strip feeding mechanism by the sliding motion of the actuator.

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JOHN H. KROEMER.

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Certificate of Correction

Patent No. 2,457,807. January 4, 1949.

JOHN T. DAVIDSON ET AL.

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 5, line 57, for the word "retracing" read *retracting*; line 60, for "extereme" read *extreme*; column 8, line 2, for "locating" read *locking*;

and that the said letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of June, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.