March 15, 1927. R. T. MANNHARDT ET AL 1,621,265

ALIGNING AND REGISTERING DEVICE FOR BILLING MACHINES

Filed Aug. 22, 1925 2 Sheets-Sheet 1

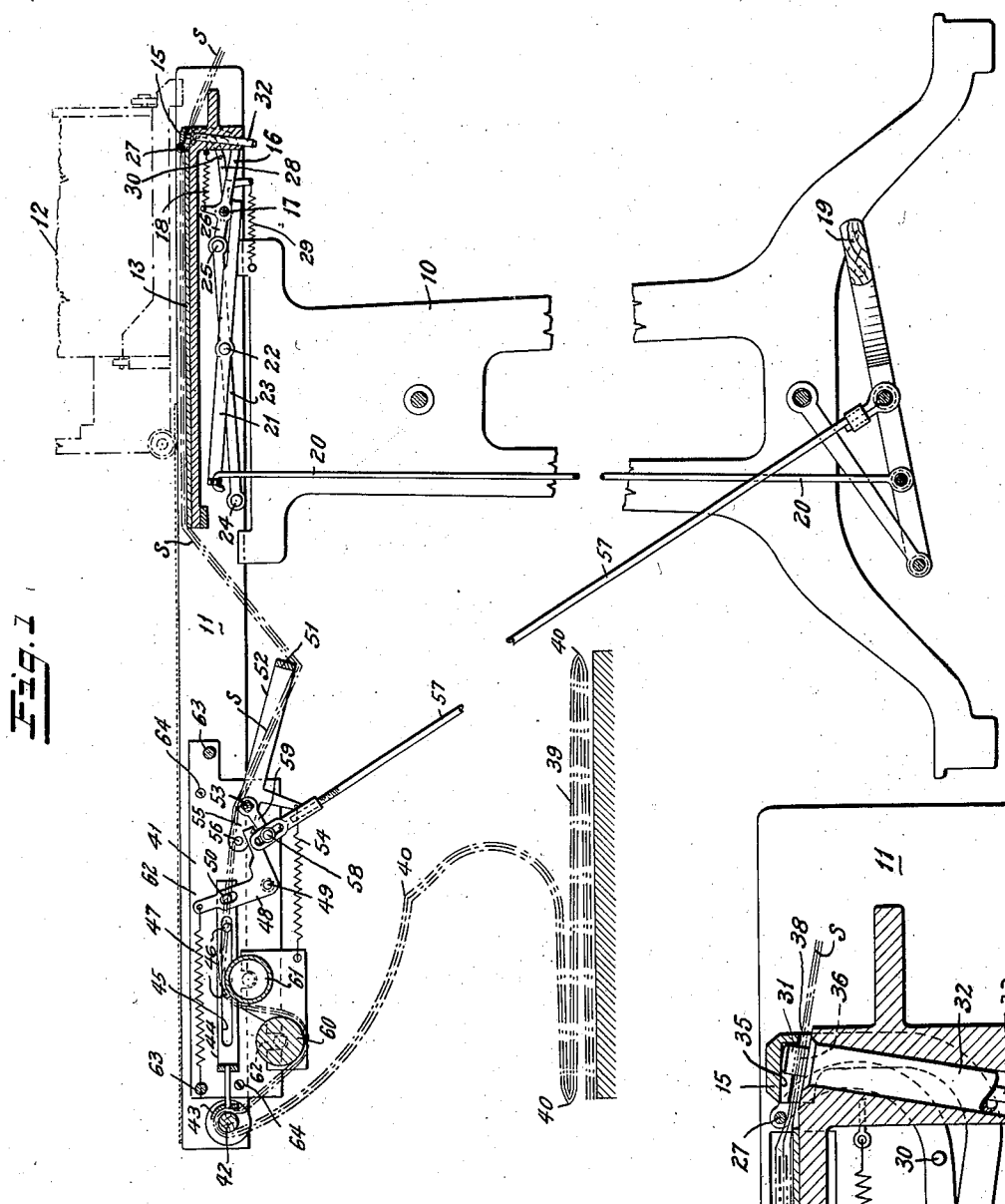


Fig. 1

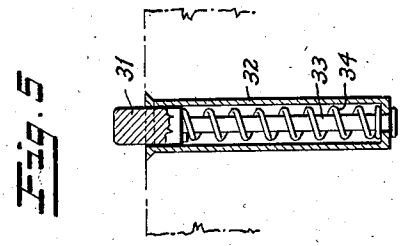


Fig. 5

Fig. 4

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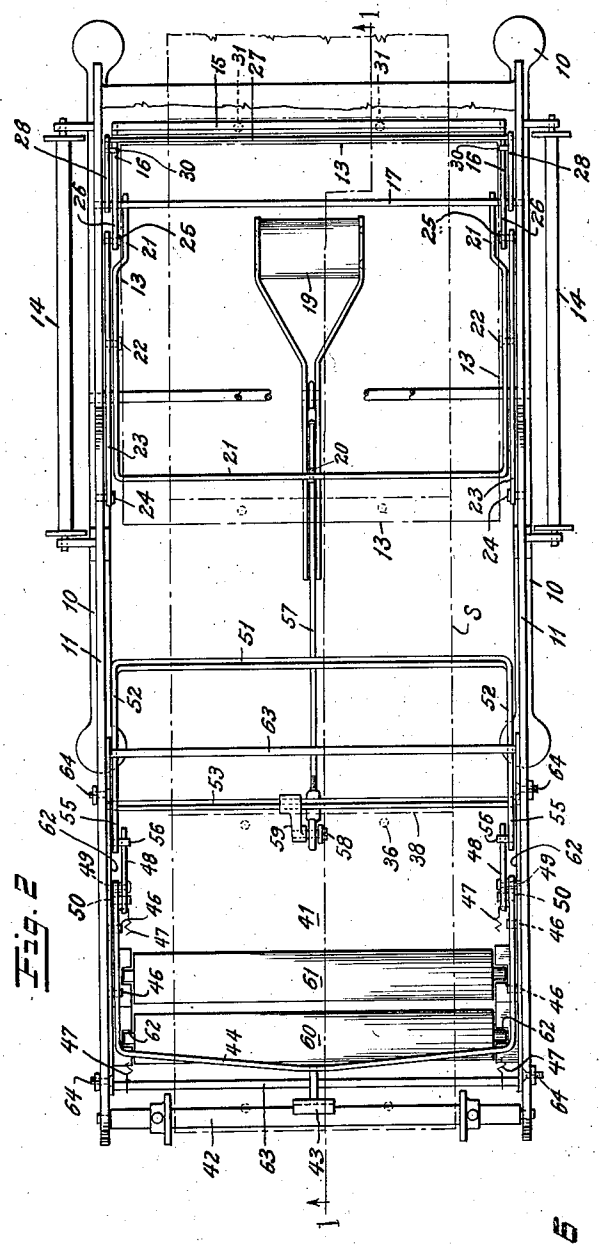


Fig. 2

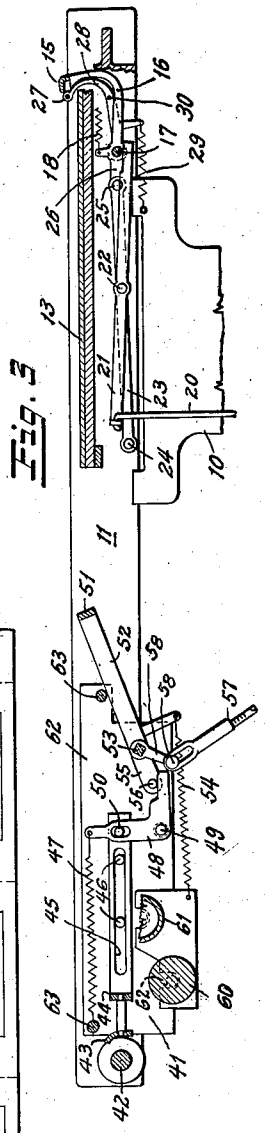


Fig. 3

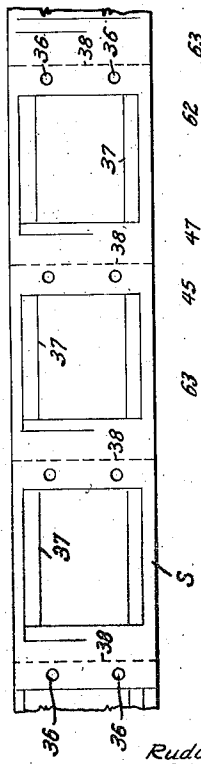


Fig. 5

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UNITED STATES PATENT OFFICE.

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ALIGNING AND REGISTERING DEVICE FOR BILLING MACHINES.

Application filed August 22, 1925. Serial No. 51,808.

This invention relates to improvements in manifolding machines, and more particularly in some of its details it relates to improvements in the type of machine ordinarily employing typewriting mechanism for writing simultaneously on one or a plurality of record sheets or strips and often employed in making out bills or recording similar memoranda. The invention deals more particularly with an improved mechanism for smoothing, aligning and otherwise correctly positioning the record strips for entry of the records thereon.

It is a general object of the invention to improve and perfect machines of the class mentioned whereby the writing operation may be performed in a more satisfactory manner and the record entered in clear and legible form, and in correct position on all the record strips.

A further object is to provide in a machine of the class mentioned, an improved means for smoothing and positioning one or more record strips or sheets over the writing platen so the writing may be accomplished in an expeditious and satisfactory manner.

Still another object is to provide in a machine of the class mentioned, improved means for smoothing a plurality of superposed record strips over a writing platen so the strips may lie close to each other at the parts to be written upon, and in contact with the interposed transfer or carbon sheets, whereby the sheets lie in smooth flat condition on the platen so as to avoid wrinkles, folds or air spaces between them, thus enabling a clear, legible and perfect impression to be made on all of the record strips.

Another object is to provide in a machine of the class mentioned, improved means for aligning several superposed record strips which may have blank forms printed thereon, so as to bring the forms into correct superposition or registry with each other and the writing thus simultaneously entered on all the forms.

Another object is to provide in a machine of the class mentioned an improved means for feeding one or more record strips reversely over the writing platen in case the strips are fed forwardly too far.

Another object is to provide in a machine of the class mentioned, an improved smoothing or ironing device which effectively irons or smooths out wrinkles, folds, creases or like irregularities in the record strips, such for example as transverse creases formed by the folds of a zigzag supply pad, such as is often used for the supply in machines similar to the type mentioned.

Other objects will be in part pointed out in the following detailed description and will be in part obvious in connection therewith.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a complete understanding of the nature and objects of the invention, reference is had to the following detailed description of an illustrative but preferred embodiment of the invention, and to the accompanying drawings, in which:

Figure 1 is a vertical longitudinal section through a typewriting machine embodying the invention, the section being taken substantially on the line 1—1 of Fig. 2;

Fig. 2 is a top plan view thereof, the platen being indicated in dot and dash outline, and other parts being removed to facilitate disclosure;

Fig. 3 is a fragmentary vertical sectional view similar to that of Fig. 1 but showing the strip positioning mechanism in a different position;

Fig. 4 is an enlarged sectional view on the plane of the forward part of Fig. 1 showing the arrangement of the aligning pins and the strip presser and cutter bars;

Fig. 5 is a detailed section of one of the strip aligning pins; and

Fig. 6 is a plan of part of a record strip such as may be employed in the improved machine.

Referring to the drawing for a detailed description of the embodiment there shown, the base or supporting framework is indicated generally at 10, and at the upper part thereof is supported the track frame 11 comprising two parallel supporting rails upon which the typewriter 12 is mounted for forward and backward travel over the flat writ-

ing table or platen 13. By means of this arrangement the type of the typewriting machine is enabled to strike upon the surface of the record strip or work sheet S which may be led into writing position upon the surface of the platen. The impression is thus written upon the record strip, or in case more than one copy is desired, as is usually the case, the impression is simultaneously made upon the additional strips by means of interposed transfer material such as the interleaved carbon sheets C, shown in Fig. 4. As many of the record strips may be superposed one upon another as desired to provide the required number of copies.

The carbon sheets may be supported in any preferred manner so the extended or active reaches thereof can be interleaved with the record strips in position over the platen 13. For this purpose rolls of carbon paper may be supported by spools 14 mounted at opposite sides of the platen 13, as shown in Fig. 2 and arranged to feed fresh portions of the carbon sheets into active position as the used parts become exhausted.

At the leading end of the platen 13, that is, the end thereof adjacent the front of the machine which is at the right in Fig. 1, a combined presser and cutter bar 15 is positioned extending transversely across the path of the strips. This bar is mounted to be raised to permit free passage and feed of the record strips therebeneath or to be lowered to clamp the strips and secure them against the bed or forward edge of the platen. The bar 15 is carried by spaced arms 16 pivotally mountd by means of a shaft or rod 17 supported in the track frame 11 and extending transversely thereof. The arms 16 are biased by means of springs 18 to hold the bar 15 in clamping position. The arms 16 may be operated in any convenient manner from an operating pedal 19 mounted for swinging movement in the lower part of the framework of the machine, the operating connections shown including a link 20 connected at one end to the pedal and at the other end to the bow of a U-shaped lever 21 having forwardly extending arms underlying the transverse rods 17 at their forward ends. The arms of the lever 21 are pivotally connected as at 22 to links 23 pivoted at one end as at 24 to the track frame 11, the other ends being pivoted as at 25 to extensions 26 of the bar supporting arms 16. The pivotal connection 25 between levers 23 and 26 may be sufficiently loose to permit the necessary swinging movement of the bar supporting arms 16 and the links 23. It will thus be seen that depression of the pedal 19 will through the connections described raise the cutter bar 15 above the surface of the platen.

An auxiliary presser bar or bail 27 is disposed alongside the bar 15 extending entirely across the path of the record strips and supported at its opposite extremities by arms 28 pivotally mounted on the transverse shafts 17. These arms are normally held in depressed position by means of tension springs 29 connected to lugs upon the arms. Each of the arms 28 is mounted adjacent one of the arms 16 and has a lug or stud 30 lying in the path of movement of the arm 16. The studs 30 are, however, positioned some distance from the points of contact with the bars 16, when both bars 15 and 27 are in lowered or strip clamping positions, so that the bar 15 when raised moves some distance to release the free ends of the strips gripped thereunder before the arms 28 are picked up by movement of the arms 16 to raise the auxiliary clamping bar 27. Thus the operator may grasp the free ends of the strips while said strips are still retained by the auxiliary presser bar so accidental disalignment or misplacement of the strips is avoided. Continued upward movement of the bar 15 and its supporting arms 16 results in raising the auxiliary bar from its strip securing position entirely releasing the strips from the grip of both of these presser bars. When pressure on the pedal is released, both the cutter bar and auxiliary presser bar are returned to clamping position by operation of the springs 18 and 29.

As best shown in Figs. 4 and 5, one or more strip aligning and holding pins 31, preferably two, underlie the cutter bar 15 in position so their protruding ends transect the path of the record strips. These pins are preferably mounted for projection into the strip path or retraction therefrom, being for this purpose mounted in a supporting casing 32 inserted into seats or sockets formed in the framework of the machine. Each pin is provided with a guiding and retaining rod 33 secured thereto and extending through the lower head of the socket and provided at its lower end with a head or lug to limit upward movement of the pin. The rod 33 is surrounded by a compression spring 34 tending always to project the pin into operative position but permitting retraction thereof when the outer end of the pin is pressed by the strips or cutter bar 15. These pins when projected extend through openings in the several record strips and in order to permit this engagement to take place when the bar 15 is down against the strips, the underside of the bar is recessed as shown at 35 opposite each pin. This permits the pins to extend entirely through the strips when the cutter bar is down so the strips are held against retraction or disalignment.

As shown in Fig. 6, the strips are formed with apertures 36 for receiving the pins 31, these apertures being similarly positioned in all of the strips with reference to blank forms 37 which are preferably placed upon

each sheet. That portion of the strip including a pair of apertures 36 and a blank form may be regarded as a record leaf or unit which may form one individual bill or similar memorandum. The apertures 36 will therefore be similarly positioned in each leaf whether or not the blank form is used. The adjacent leaves may be separated by weakened lines 38 as by perforation. It is convenient to store these strips in zigzag supply pads or packs 39 (Fig. 1), the folds or creases 40 of the strips at the ends of the pack being preferably coincident with the weakened lines 38. Several superposed strips may be folded together in each supply pack providing for as many copies as desired. The superposed strips may be detachably secured together at their longitudinal edges in the well known fanfold form, but in such case a modification of the carbon sheet holder will be necessary.

At the rear or controlling end of the track frame 11 and preferably positioned at some distance from the following end of the platen 13, is a strip manipulating mechanism or unit indicated generally at 41. This unit includes a strip securing device or gripper and an oscillatory tension bar. The strip securing device includes a transverse bar or rod 42, which may form a permanent frame member of the track frame 11, and a cooperating presser shoe or gripper jaw 43 supported by a carriage frame or slide 44 slidably mounted through slots 45 for longitudinal reciprocation upon supporting pins or studs 46 carried by the unit. The carriage frame 44 is normally urged into strip gripping position by tension springs 47 connected to operating bell crank levers 48 pivotally mounted at 49 to the unit frame, the bell crank levers being connected to the respective sides of the carriage frame by pin and slot connections 50.

An oscillatory tension bar 51 is mounted on the supporting frame of the unit 41, being positioned to overlie the strips S and being carried by arms 52 non-rotatably supported by a rock shaft 53. The tension bar 51 is biased resiliently to strip contacting and tensioning position by means of a tension spring 54 attached to lugs upon the supporting arms 52. The arms 52 are extended beyond the rock shaft 53 as at 55 and these extensions are provided with contact lugs 56 lying in position to contact with the adjacent arms of the bell crank levers 48 so as to rock said bell crank levers and operate the gripper jaw 43. This connection provides for a lost motion between the presser bar and the gripper jaw so the bar may swing through a considerable arc without effecting operation of the jaw. The purpose of this arrangement is more fully described below.

The rock shaft 53 is rocked from the pedal 19 to operate the mechanism described through operative connections including a link 57, a pin and slot connection 58 and a crank 59 fixed to the rock shaft. The pin and slot connection 58 enables the presser bar 51 to assume different positions, dependent upon conditions of strip tension, without disturbing the normally inoperative position of the pedal 19. The operating connections from the pedal 19 are so proportioned that the proper coordination is secured in the sequence of operations of the various strip controlling mechanisms described. That is, when the pedal is depressed from the normally inoperative position as shown in Fig. 1, the presser and cutter bar 15 is first raised to release the free ends of the strips so they may be grasped by the operator. The tension bar 51 is next raised from contact with the strip, the release of the tension bar being substantially simultaneous with or just after release of the cutter bar 15. Finally the gripper jaw 43 is retracted to release its grip upon the strips and then the auxiliary presser bar 27 is raised. The strips are now free to be pulled forwardly by the operator to introduce a fresh set of blanks over the platen 13. It will be noted that the pressure exerted by the tension bar upon the strips is released before the strips are released by the strip securing devices 27 and 43. There is consequently no tendency to displace the strips.

Smoothing rolls 60 and 61 may also be mounted upon the unit 41, being preferably positioned out of alignment with each other so as to form rather sharp bights in the strips passing thereover as shown at the left end of Fig. 1. The leading roll 60 may be mounted for yielding movement laterally of its axis so as to yield slightly to relieve the strip tension when it exceeds a predetermined value. This may be accomplished as shown by constructing the roll 60 of sufficient weight to impose the desired tension, and mounting said roll in bearings having upwardly directed openings 62 as shown in Fig. 1. This permits the roll 60 to yield or be lifted upwardly when the strip tension reaches a predetermined value, thus preventing excessive strip tension and avoiding tearing out of the strip apertures 36 in engagement with the pins 31 and also avoiding tearing or other injury to the strips.

One or the other of the rolls 60 or 61 may be positioned so the creases 40 in the strips register therewith when the strips are being gripped, and the tension bar 51 is exerting tensioning effect upon the strips so as to smooth out the said creases. Also the movement of the strips in sharp bights around the rolls has a smoothing effect to iron out the creases. This is a distinct advantage as it permits the strips to lie

smoother and flatter over the platen and avoids injury to the forward edges of the carbon strips by the creases in the record strips advancing thereagainst as the strips are fed forwardly. Since the strip tension reacts directly against the smoothing surface of the roll the creases are smoothed out by contact of one side only of the strip with the smooth surface, and it is therefore unnecessary to provide an opposing presser surface to press the crease against the smoothing surface of the roll.

The strip gripping mechanism, the strip ironing or smoothing mechanism, and the strip tensioning mechanism, including the tension bar 51, as above described, are mounted together to form the strip manipulating unit 41 mentioned, this unitary assembly being accomplished by means of a supporting frame including side supporting members 62 with cross tie rods 63. A unitary assemblage is thus provided which may be placed as a unit in operative position as shown in Fig. 1, and it may be also removed as a unit. When placed in position, the unit is supported by means of removable securing means such as bolts 64 mounted in the side frame members of the track frame 11. This arrangement permits the unit to be supplied as an attachment to existing machines with very little alteration thereof and with very little trouble or expense.

The operation of the improved mechanism which will now be clear from the foregoing disclosure may be summarized as follows.

Assuming the machine is to be loaded with record strips, the pedal 19 is depressed causing the operative parts to assume the position shown in Fig. 3. The presser bars 15 and 27 and the tension bar 51 being raised and the gripper jaw 43 retracted, the continuous strip may be threaded in the machine into the position shown in Fig. 1 being interleaved with the carbon sheets C, Fig. 4. The free ends of the strip are impaled upon the pins 31 bringing all the sheets into longitudinal and lateral alignment. Upon lowering the presser bar 15, any projecting ends of the strips may be torn off across the bar. When the pressure upon the pedal is released, bars 15 and 27 are returned to strip clamping and securing position by operation in the springs 18 and 29, the clamping jaw 43 is closed by its spring 47, and the tension bar 51 then moves into yielding contact with the strips under the influence of its spring 54. The tension or presser bar 51 does not become active to press upon the strips until said strips are firmly secured at both leading trailing ends of the platen, when it exerts a yielding pressure transversely upon the top face of the strips placing them under tension and smoothing out the wrinkles, creases and other irregularities in the several strips over the platen 13. The strips are thus caused to lie closely against each other and against the platen, avoiding spaces interposed therebetween and enabling the writing to be done in a more satisfactory manner, and a clear, full and legible impression to be made on all of the strips. This tensioning also has a tendency to align the strips by pulling the walls of the openings 36 against the pins 31. In case the strips are pulled slightly too far forwardly, reverse feed of the strips into correct position over the platen and under the cutter bar 15 and presser bar 27 may be effected by operation of the tension bar 51, the pins 31 entering the strip openings 36 when the strips reach correct position. When the pins 31 have entered the strip apertures, the strips are then held against further reverse feed by the combined action of the pins and the presser bar 27 and cutter bar 15. The principal function of the presser bar 27 is to clamp the ends of the strips against the bed or platen and to hold them securely in engagement with the pins 31 when the bar 15 is raised. This is desirable since as stated above, it will be observed that the bar 15 is raised as soon as the pedal begins to move downwardly. By means of the auxiliary bar 27 however, the strips are clamped down and held in engagement with pins 31 until after release of the tension bar 51.

In order to accentuate the strip smoothing, aligning and reverse feed operations, and to render such operations more effective and positive, the tension bar may be oscillated by swinging the pedal through a small part of its normal range. During such oscillation the tension bar 51 is raised to a distance above the upper surface of the strips and then permitted to strike or tap against the surface of the strips under the influence of spring 54. This operation has the effect of jogging or starting the several strips into correct position, the tapping operation of the tension bar having a tendency to move the sheets suddenly, overcoming static friction, and effectually smoothing and tensioning the strips. During this oscillatory movement of the tension bar, it will be understood that the strips remain clamped or secured at their leading ends by the presser bar 27 which holds the strips in engagement with pins 31, and at the trailing end by the gripper jaw 43. This is true because the presser bar 27 and the gripper jaw 43 are not affected by this limited movement of the pedal, by virtue of the operating connections described. In case there is a tendency to create too great a tension on the strips by this oscillation of the tension bar 51, such excessive tension will nevertheless be prevented by operation of the tension relief mechanism embodied in the yielding roll 60 as above described. Also the tension of the

springs 54 may be so adjusted as to permit the strips to slip slightly under clamping jaw 43.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a machine of the character described, in combination, a writing platen upon which a record strip may be led and supported in writing position, a main strip-clamping presser bar for clamping the strip in writing position, an auxiliary strip-clamping presser bar, mechanism for exerting a pull upon said strip to tension, smooth and align it upon said platen and unitary operating mechanism for said presser bars and said exerting mechanism for releasing said main presser bar and controlling said exerting mechanism to exert an aligning pull upon the strip while the auxiliary presser bar remains in strip clamping position.

2. In a machine of the character described, in combination, a flat writing platen upon which a record strip may be positioned for the reception of an impression, means for securing the strip at longitudinally-spaced parts thereof, both forwardly and rearwardly of said platen, and means cooperating with the strip rearwardly of said platen and intermediate the spaced parts thereof secured by said securing means for tensioning and smoothing said strip over the platen.

3. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said writing platen, means for securing the strip at longitudinally spaced parts thereof against feeding movement, means for operating upon the strip intermediate said securing means for tensioning and smoothing it over the platen when it is held against feeding movement by said securing means, and manually operable mechanism for releasing said strip securing means to free the strip to feeding movement.

4. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said writing platen, means for securing the strip at longitudinally spaced parts thereof, means operating independently of strip feed for tensioning and smoothing said strip over the platen while it is held by said securing means, and a common manual means for operating, in coordination, said tensioning and smoothing means and said strip securing means.

5. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said writing platen, means for securing the strip at longitudinally spaced parts thereof, means for operating upon said strip intermediate said securing means for tensioning and smoothing it over the platen while it is held by said securing means, and common manual means for operating, in coordination, said tensioning and smoothing means and said strip securing means.

6. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said writing platen, mechanisms for securing the strip at longitudinally spaced parts thereof, means for pressing upon the strip intermediate said securing means and at one end of said platen for tensioning and smoothing the strip over the platen, and a unitary manual operating mechanism to release said strip-securing mechanisms.

7. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said writing platen, means for clamping the record strip at one side of said platen, pin means disposed at the other side of said platen and adapted to enter apertures in the record strip, means for exerting reverse tension on the strip tending to move it rearwardly when held by said clamping means and by said pin means to position and smooth the strip upon the platen, and mechanism for releasing said clamping means to free the strips to feeding movement.

8. In a machine of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips over said writing platen, said strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective blank forms, aligning pins disposed forwardly of said platen, strip-securing means spaced from said pins for securing the strips against feeding movement and an oscillatory strip-tensioning bar adapted to exert an intermittent transverse pressure upon the face of the strip intermediate said pins and said strip-securing means.

9. In a machine of the character described, in combiantion, a writing platen, means for guiding a plurality of superposed record strips over said writing platen, said strips having similar blank forms thereon and apertures therein bearing a definite relation

to the respective blank forms, aligning pins disposed forwardly of said platen, means spaced from said pins for securing the strips against feeding movement, strip positioning means adapted to exert a reverse pull upon said record strips tending to move them rearwardly to tension and align them when said pins are in engagement with said apertures, and mechanism for releasing said securing means to free the strips to feeding movement.

10. In a machine of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips over said writing platen, said strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective blank forms, aligning pins disposed forwardly of said platen, means spaced from said pins for securing the strips against feeding movement, and means to exert a transverse pressure upon the face of the strips to tension and smooth them over the platen when secured by said pin and said strip securing means.

11. In a machine of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips over said writing platen, said strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective blank forms, aligning pins disposed forwardly of said platen, means spaced from said pins for securing the strips against feeding movement, means to exert a transverse pressure upon the face of the strips to tension and smooth them over the platen when secured by said pin and said strip securing means, and a single manual means to operate said strip securing means and said strip pressing means.

12. In a machine of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips over said writing platen, said strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective blank forms, aligning pins disposed forwardly of said platen, means spaced from said pins for securing the strips against feeding movement, means to exert a transverse pressure upon the face of the strips to tension and smooth them over the platen when secured by said pin and said strip securing means, a single manual means to operate said strip securing means and said strip pressing means, and means whereby said manual operating means may operate said strip pressing means to exert intermittent pressure upon said strips while maintaining strip securing position of said strip securing means.

13. In a machine of the character described, in combination. a writing platen, means for guiding a plurality of superposed record strips over said platen, said record strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective forms, securing means at both ends of said platen for securing said strips, means to exert a transverse pressure upon the face of the strips to tension and smooth them over the platen when secured by said strip securing means, and a single manual means to operate said strip securing means and said strip pressing means.

14. In a machine of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips over said platen, said record strips having similar blank forms thereon and apertures therein bearing a definite relation to the respective forms, securing means at both ends of said platen for securing said strips, means to exert a transverse pressure upon the face of the strips to tension and smooth them over the platen when secured by said strip securing means, a single manual means to operate said strip securing means and said strip pressing means, and means whereby said manual operating means may operate said strip pressing means to exert intermittent pressure on said strips while the strips are secured by both of said securing means.

15. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, mechanism to control said strip-securing means either to secure or to release the strip at both the leading and following ends of the platen, and a tension bar disposed between said securing means and adapted to press upon the surface of the strip when held by said securing means.

16. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, an oscillatory tension bar disposed between said securing means adapted to press upon the surface of the strip, and means for oscillating said tension bar while the strip is secured by said securing means.

17. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, an oscillatory tension bar disposed between said securing means and adapted to press upon the surface of the strip, a manual operating member, and operating connections between said operating

member and said strip securing means and tension bar.

18. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, an oscillatory tension bar disposed between said securing means and adapted to press upon the surface of the strip, and a treadle for operating said strip securing means and sequentially operating said tension bar.

19. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, an oscillatory tension bar disposed between said securing means and adapted to press upon the surface of the strip, and a treadle for operating said strip-securing means and oscillating said tension bar to press intermittently upon the surface of the strip when the latter is secured by said securing means.

20. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a plurality of securing means for securing said strip at leading and following ends of the platen, an oscillatory tension bar disposed between said securing means and adapted to press upon the surface of the strip, springs for normally holding said securing means in strip securing position, and unitary operating means for releasing said securing means and operating said presser bar.

21. In a device of the character described, in combination, a platen, means for guiding a plurality of superposed record strips into position over said platen, and means for exerting an intermittent transverse pressure upon the face of the strips to effect tensioning and smoothing thereof over the platen.

22. In a device of the character described, in combination, a platen, means for guiding a plurality of superposed record strips into position over said platen, jogging mechanism for intermittently jogging the strips to effect reverse feed thereof, and means for engaging the strips to stop them in correct writing position with reference to said platen.

23. In a device of the character described, in combination, a platen, means for guiding a plurality of superposed record strips into position over the platen, said strips having apertures spaced therealong, pins for engagement in said apertures, and jogging mechanism for intermittently jogging the strips to effect a reverse pull upon the strips tending to move them reversely when the pins are engaged in the apertures so as to smooth said strips over the platen.

24. In a device of the character described, in combination, a platen, means for guiding a plurality of superposed record strips into position over the platen, releasable means for gripping the strips at the rear of forwardly fed portions thereof, means for operating said gripping means, and means for jogging the strips while gripped by said gripping means to effect a reverse tensioning effect upon said strips.

25. In a device of the character described, in combination, a platen, means for guiding a plurality of superposed record strips into position over the platen, and tapping mechanism for tapping the strips upon the face thereof to effect tensioning of the strips.

26. In a device of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips into position over the writing platen, holding means engaging the strips at longitudinally spaced parts thereof for supporting the strips against feeding movement, means for operating said holding means, means for tapping the reach of record strip between said holding means to effect tensioning thereof, and unitary operating means for coordinating operation of said holding means and said tapping means.

27. In a device of the character described, in combination, a writing platen, means for guiding a plurality of superposed record strips into position over the writing platen, holding means engaging the strips at longitudinally spaced parts thereof for supporting the strips against feeding movement, means for operating said holding means, means for tapping the reach of record strip between said holding means to effect tensioning thereof, and operating means for oscillating said tapping means to exert an intermittent tensioning effect upon the strips so as to smooth them over the platen.

28. In a device of the character described, in combination, a writing platen, means for tensioning a record strip, manual mechanism for operating said strip-tensioning means to tension the strip, and separate means for limiting to a predetermined value the tension imposed by said tensioning means.

29. In a device of the character described, in combination, a writing platen, means for securing a strip against traveling movement at spaced parts thereof, means for tensioning said strip when held by said securing means, and separate means for limiting to a predetermined value the tension imposed by said tensioning means.

30. In a device of the character described, in combination, a writing platen, means for securing a strip against traveling movement at spaced parts thereof, means for tensioning said strip when held by said securing means, manual mechanism for operating said strip-tensioning means to tension

the strip, and a yieldable limiting member bearing upon a bight in said strip for limiting to a predetermined value the tension imposed by said tensioning means.

31. In a device of the character described, in combination, a writing platen, means for securing a strip at spaced parts thereof, an oscillatory tensioning bar adapted to press transversely upon said strip when held by said securing means, manual mechanism for oscillating said tensioning bar to tension the strip, and separate means for limiting to a predetermined value the tension imposed by said tensioning means.

32. In a device of the character described, in combination, a writing platen, means for securing a strip at spaced parts thereof, an oscillatory tensioning bar adapted to press transversely upon said strip when held by said securing means, manual mechanism for oscillating said strip-tensioning bar and a floating roller bearing upon a bight in said strip for limiting to a predetermined value the tension imposed by said tensioning bar.

33. In a machine of the character described, in combination, a writing platen onto which a record strip having fold creases therein may pass from a strip supply, a smoothing surface over which the strip passes to the platen, mechainsm for restraining the strip against longitudinal feeding movement, manually controlled mechanism for tensioning the strip when restrained by said restraining mechanism, so as to increase strip tension which reacts directly to force a crease into close contact with said smoothing surface so as to smooth out the strip crease.

34. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, a combined presser and cutter bar for holding the forward end of the record strip, an auxiliary presser bar for the forward end of the record strip disposed adjacent to and rearwardly of said first mentioned bar, and means to release said first mentioned bar to expose the free end of the record strip and subsequently to release said auxiliary bar.

35. In a machine of the character described, in combination, a writing platen, means for guiding a record strip to said platen, a combined presser and cutter bar for holding the forward end of the record strip, an auxiliary presser bar disposed rearwardly of the said first mentioned bar, means to release said first mentioned bar to expose the free end of the record strip and subsequently to release said auxiliary bar, and aligning pins resiliently urged toward said first mentioned presser bar.

36. In a machine of the character described, in combination, a writing platen upon which a record strip may be led and supported in writing position, a main strip-clamping presser bar for clamping the strip in writing position, an auxiliary strip-clamping presser bar, mechainsm for exerting a tensioning and smoothing pull upon said strip operating mechainsm for said presser bars and said tensioning and smoothing mechanism for releasing said main presser bar and exerting a pull upon the strip while the auxiliary presser bar remains in strip-clamping position to align the strip, and strip aligning pins adjacent said main presser bar and cooperating with apertures in the strip to check said strip in aligned position.

37. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, retractable strip aligning pins for engaging the strip through apertures therein, means for resiliently urging said pins into strip engaging position, a strip clamping presser bar overlying said aligning pins and having a recessed underface to receive the aligning pins, said presser bar being mounted for movement to strip clamping position so as to bind the strip with the pins in engagement with the strip apertures, or for movement from strip clamping position to permit free engagement or disengagement of the strip with said aligning pins and a unitary operating mechanism for sequential operation of said presser bars.

38. In a machine of the character described, in combination, a writing platen, means for guiding a record strip over said platen, retractable strip aligning pins for engaging the strip through apertures therein, means for resiliently urging said pins into strip engaging position, a strip clamping presser bar overlying said aligning pins and having a recessed underface to receive the aligning pins, said presser bar being mounted for movement to strip clamping position so as to bind the strip with the pins in engagement with the strip apertures, or for movement from strip clamping position to permit free engagement or disengagement of the strip with said aligning pins, an auxiliary presser bar extending from edge to edge of the record strip for holding the latter when said first mentioned presser bar has been released, and a unitary operating mechanism for sequential operation of said presser bars.

39. In a machine of the character described, in combination, a track frame, a writing platen, a strip guiding and aligning mechanism, and a unitary supporting frame for supporting said mechanism in an assembled unit, placeable as a unit in operating position upon said track frame and similarly removable therefrom.

40. In a machine of the character described, in combination, a track frame, a writing platen, a strip guiding and manipulating mechanism including a strip gripper and an oscillatable tensioning bar, and a unitary supporting frame for supporting said mechanism in an assembled unit, placeable as a unit in operating position upon said track frame and similarly removable therefrom.

In testimony whereof we affix our signatures.

RUDOLF T. MANNHARDT.
ALDRO B. HITZEL.