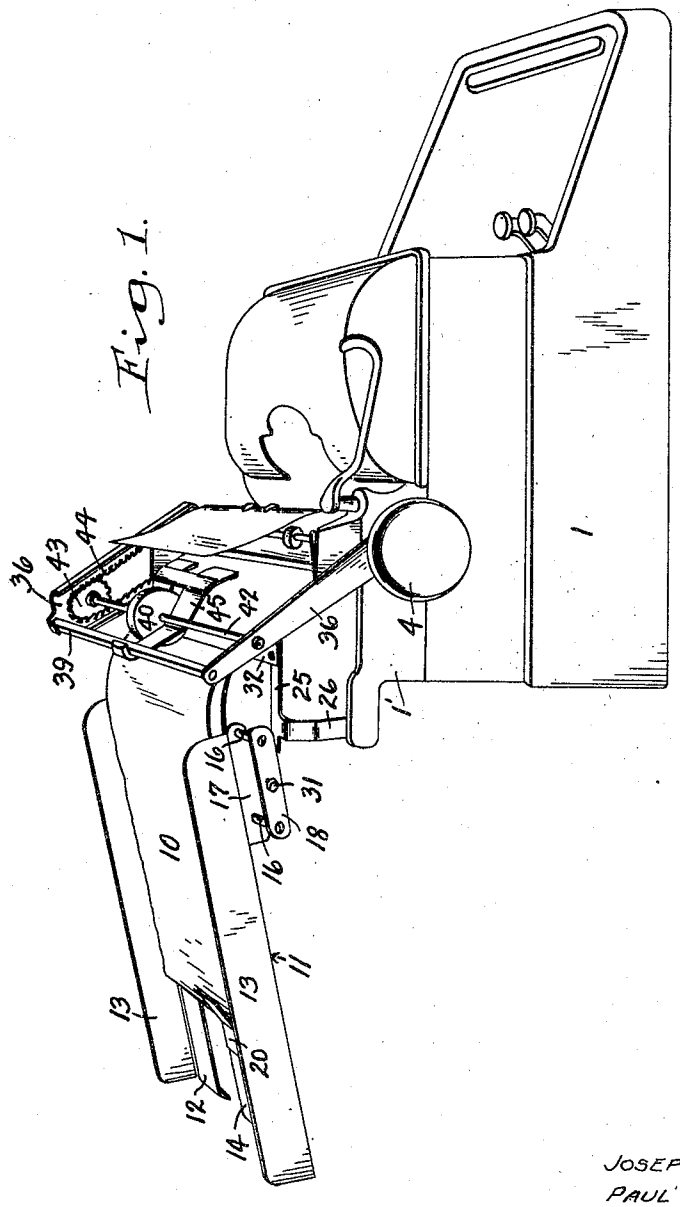
Oct. 12, 1948. J. A. GILBERT ET AL 2,451,330

SHEET FEED FOR WRITING MACHINES

Filed Aug. 23, 1945 3 Sheets-Sheet 1

Fig. 1.



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SHEET FEED FOR WRITING MACHINES

Filed Aug. 23, 1945 3 Sheets-Sheet 2

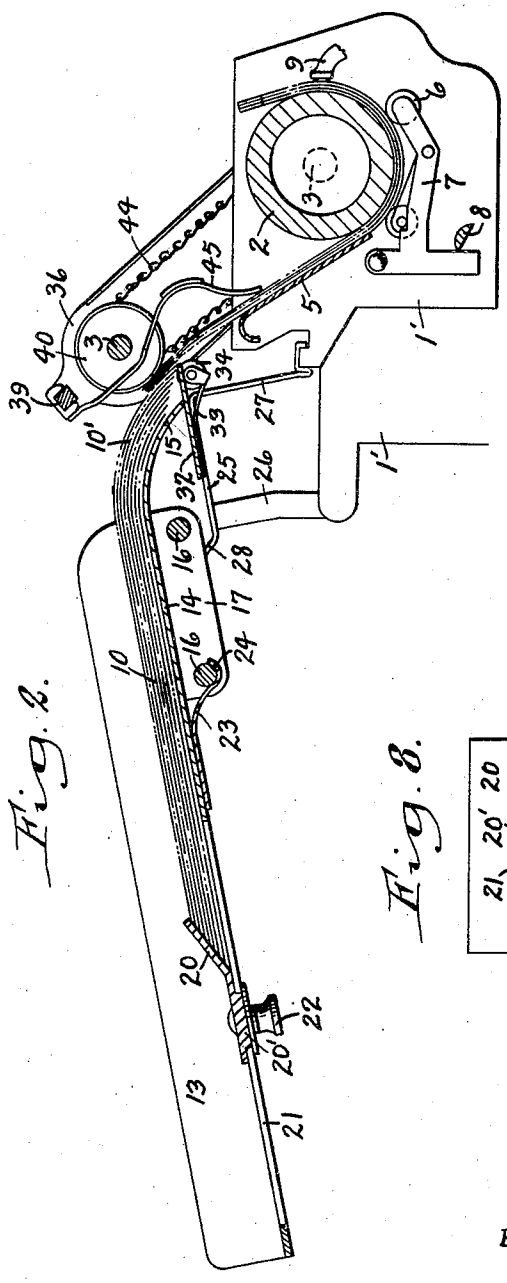

Fig. 2.

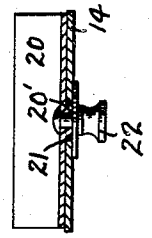

Fig. 8.

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Fig. 3.

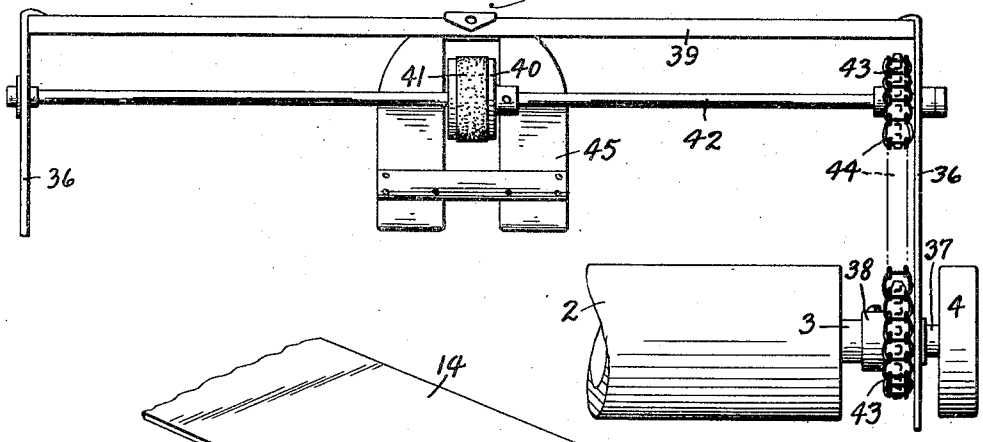


Fig. 4.

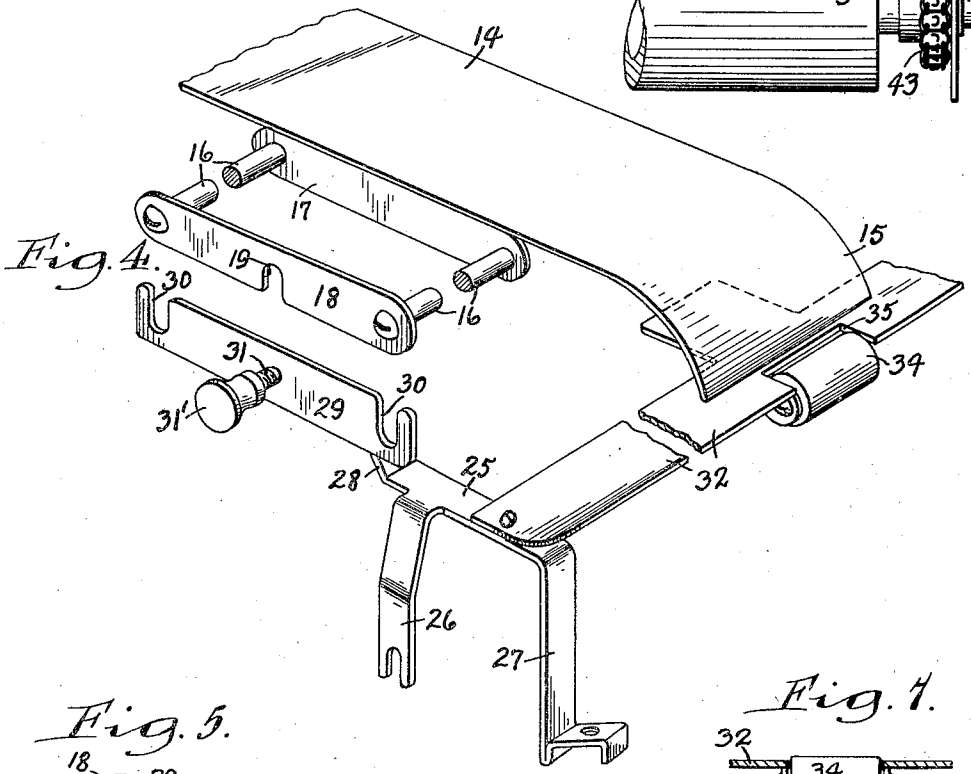


Fig. 5.

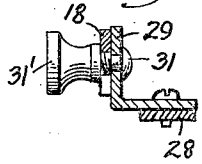
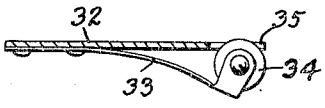


Fig. 7.

Fig. 6.



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UNITED STATES PATENT OFFICE

2,451,330

SHEET FEED FOR WRITING MACHINES

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Application August 23, 1945, Serial No. 612,200

5 Claims. (Cl. 197—130)

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This invention relates to improvements in feeding mechanisms for use in connection with various forms of writing machines, such as typewriters, tabulators and the like, and more particularly to feeding devices of this type especially adapted for starting or initiating the feed of record units individually one at a time, such as, record sheets, letterheads or unitary assemblies of record and transfer sheets, from a supply pack or stack of such units supported in a supply magazine on or adjacent to the writing machine.

It is a general object of the invention to provide for machines of the class mentioned, an improved feed starting or initiating mechanism for initiating the feed of the record units one at a time from a supply pack and avoiding the starting or moving of more than one of the record units at a time from the supply pack, or otherwise disturbing the other record units of the supply pack.

Another and more particular object of the invention is to provide for machines of the class mentioned, an improved feed initiating mechanism for the record units embodying an improved control step positioned adjacent to the forward end of the supply pack of the record units, and positioned relatively to the starting or initiating feed member so as to assure the starting of only one record unit at a time from the supply pack, and for delivering the units thus started sequentially one at a time into writing position on the writing machine.

Another object of the invention is to provide a feed initiating device for machines of the class mentioned, an improved arrangement of a rotary feed initiating roll or member arranged to have a peripheral speed substantially the same as the peripheral speed of the rotary platen, either by having the feed initiating roll substantially the same in diameter as that of the platen and driven at the same rotary speed, or having it of a different diameter and operatively geared to the platen so as to travel at the same peripheral speed as the platen.

Still another object of the invention is to provide for machines of the class mentioned, an improved supporting magazine for the supply pack of record units constructed and arranged for quick and easy installation on different types of writing machines without structural alteration or modification of the writing machine and arranged for supporting the record units in an advantageous position for being fed or started one at a time for delivery into writing position in the writing machine. Also, the supporting magazine is constructed and arranged for adjustment

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thereof to accommodate different lengths and widths of record units or forms.

A further object of the invention is to provide an improved supporting magazine and feed starting mechanism for record units, adapted for installation on different makes or different models of writing machines without necessitating structural modification of either the machine or the magazine, and only requiring different designs of brackets or attaching devices for attachment to the various forms of writing machines.

Other objects of the invention will be in part pointed out in the following detailed disclosure of an illustrative but preferred embodiment of the invention, and will be in part obvious as the disclosure proceeds.

The invention accordingly comprises the features of construction, combination 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 more comprehensive disclosure of the nature, objects and advantages of the invention, reference is had to the following detailed description of the illustrative embodiment thereof and to the accompanying drawings in which:

Fig. 1 is a partially diagrammatic, perspective side view of a well-known type of writing machine equipped with the invention;

Fig. 2 is a partially diagrammatic, longitudinal vertical section of the platen carriage of the writing machine shown in Fig. 1, parts being shown in elevation;

Fig. 3 is a fragmentary elevational view of the feed starting mechanism showing its operative connection with the writing platen of the writing machine;

Fig. 4 is an enlarged fragmentary perspective view showing the construction and attachment of the supporting mechanism of the supply magazine, and showing the improved controlling step structure for assuring the starting of the record units only one at a time from the supply pack;

Fig. 5 is a detail sectional view of the attachment of the supply magazine;

Fig. 6 is a detail section and side elevation of the improved controlling step showing the auxiliary controlling roller;

Fig. 7 is a fragmentary section and front elevation showing the controlling step and auxiliary controlling roller; and

Fig. 8 is a detail transverse sectional view showing the attachment of the adjustable rear supporting bracket for the record units.

Referring to the drawing for a detailed description of the illustrative embodiment of the invention there shown, it will be noted that the improved feed initiating device is applied to a typewriter of known construction having a body or frame 1 and being equipped with a rotary platen 2 rotatably mounted in a shiftable carriage 1' which is supported in well-known manner for letter spacing movements transversely of the typewriter frame 1. The platen 2 is provided with a supporting shaft or spindle 3 provided with operating knobs 4 at opposite extremities whereby the platen can be manually rotated step by step for line spacing in the well-known manner. The typewriter may also be equipped with a paper table 5 and pressure rollers 6 mounted upon a supporting arm 7 and controlled by means of a manually operated control member 8, all as well known in the art. Type bars 9 are operated by known mechanism for inscribing the data upon the record forms or units supported against the platen 2.

Although the improved feed initiating means is disclosed as applied to a well-known form of writing machine, it will be understood that it is especially adapted for application to different forms of writing machines of various different manufacturers, or to different types of machines made by the same manufacturer. For supporting a supply pack 10 of record forms in position to be introduced into writing position on the platen 2 of the writing machine, a support or magazine 11 is provided. This magazine has a bottom providing a support for the supply pack 10. As shown, this bottom includes opposite side plates 12 having opposed longitudinal upright guiding flanges 13 for guiding the edges of the record units, and also an intermediate supporting plate 14. At their forward ends the bottom plates 12 and 14 are curved downwardly as indicated at 15 so as to present an upwardly convexed supporting surface causing the forward ends of the record units to assume also an upwardly or outwardly convexed position 10' at the forward ends of the units. It will be understood that the record units contained in the supply pack 10 may assume any well-known form of record material for receiving inscriptions such as record sheets with letterheads and the like, or record units embodying a plurality of record sheets and interleaved transfer sheets arranged in transfer relation with the record sheets and bound together in units as disclosed, for example, in the Stevens Patent 2,120,161. The purpose of arranging the record units with the upwardly or outwardly convexed end portions is fully described below.

Transverse supporting rods or bars 16 extend transversely of the magazine beneath the bottom plates 12 and 14, being connected to the latter in any desired manner as by means of attaching plates 17 connected in any desired manner to the bottom plates, as for example, by means of integral attaching lugs or flanges (not shown) along the upper edges of the attaching plates and welded or riveted to the respective bottom plates 12 and 14. These attaching plates 17 are apertured at opposite ends thereof as shown in Fig. 4 for receiving the respective supporting bars 16 for lateral sliding adjustment along said bars. Also, the supporting bars 16 are connected at their opposite ends by means of longitudinal connecting members or plates 18 attached to the ends of the bars by screws as shown or in any other preferred manner. The undersides of these connecting members are formed with slots or seats 19 for receiving the attaching device later described.

As best shown in Fig. 2 a longitudinally adjustable bracket or supporting plate 20 is provided for supporting engagement with the rear end of the record supply pack 10, having on its underside a guiding and supporting rib 20' adjustable longitudinally in a longitudinal slot 21 formed in the bottom plate 14 and held in adjusted position by means of a thumb screw 22. The forward or supporting part of this bracket 20 is preferably inclined forwardly as shown so as to cause the record units of the supply pack 10 to be fanned or arranged in stepped relation as shown and may be bent or adjusted to different inclinations. This disposition places the record units in advantageous position for feeding one at a time from the supply pack as later described. The longitudinal adjustment of the supporting plate 20 enables supply packs of different lengths to be supported in operative position in the magazine.

Also, the magazine is adjustable for width so as to accommodate supply packs of different widths. This is accomplished by supporting the side and intermediate sections with end bottom plates 12 and 14 for lateral adjustment toward and away from each other along the transverse supporting rods 16. As above mentioned, the attaching plates or flanges 17 are formed with apertures receiving the supporting rods so that the different sections of the magazine can be adjusted relatively to each other to vary the width of the magazine and to vary the spacing of the guide flanges 13 in accordance with the width of the supply pack 10. As shown in Fig. 2, these sections of the supporting magazines are retained frictionally in adjusted position by means of the spring friction clamps 23, one of which is shown in detail in Fig. 2. It will be understood that the other bottom plates 12 are similarly equipped with these spring friction clamps. Each clamp in the embodiment shown has a leaf spring attached to the underside of the corresponding bottom plate and is deflected downwardly at its forward end and placed under stress so that the curved forward end portion 24 thereof is urged frictionally against the underside of the supporting rod 16 with which it conforms.

For supporting the improved feed initiating device and supply magazine in position on a writing machine, supporting brackets 25 are provided, as best shown in detail in Fig. 4. There will ordinarily be two supporting brackets 25, one at each of the opposite sides of the feed initiating mechanism. Each supporting bracket, as shown, is provided with a plurality of attaching members or extensions 26 and 27 which may be especially variantly formed and proportioned in order that the improved mechanism may be attached to different types or models of writing machines, those shown being adapted for attachment to a typewriter such as shown in Fig. 1. Each attaching bracket 25 is formed at its rear with an attaching extension 28, to which is detachably connected by means of a screw or the like, a supporting member or plate 29 preferably in the form an angle bar as shown in Fig. 5 and provided with supporting seats 30 adjacent to its opposite ends for the reception in supporting relation of the transverse supporting bars 16. An attaching screw 31 connected to the supporting angle plate 29 and a thumb nut 31' provide a clamping device for attaching the supporting members 18 and 29 in assembled relation, as shown in Fig. 5. It will be understood that the

magazine may be readily assembled and supported in operative position merely by lowering the supporting rods 16 into supported position in the seats 30 with the longiutdinal connecting plates 18 positioned outside of and in substantially parallel contacting relation with the upright flange of the angle member 29 and the slot 19 in engagement with the shank of the threaded attaching member 31. When the thumb screw 31' is set into tight position, the magazine will be firmly attached in operative position to the supporting bracket 25.

Also detachably connected to the supporting brackets 25 is a transversely disposed supporting plate 32 arranged adjacent to the forwardly disposed curved ends of the bottom plates 12 and 14 of the magazine and providing a control step cooperating with the forward ends of the record units in the supply pack for assuring the separation of the units one at a time from the pack and preventing more than one unit to be separated at any one time. As shown, this control step forms a supporting surface or plate disposed at an angle to the outwardly convexed supporting surface of the bottom plates 12 and 14. Although this angle between these supporting surfaces may vary somewhat, depending upon conditions such as the quality of the material in the record units, it is shown as an obtuse angle which is well adapted for the accomplishment of the desired separating function mentioned. Also attached to the underside of the control step 32 by means of a leaf spring 33 is a friction eliminating and feed controlling roller 34 preferably engaging in a slot or opening 35 in the control plate or step. By means of this arrangement the control roller 34 can engage with the ends of the record units, being separated and fed forwardly so as to control the separation more effectively; also it engages with the feed initiating roller 40 to eliminate friction or binding, as later described.

Swinging supporting arms 36 are pivotally connected at their lower ends to the platen shaft 3, the arm at the right in Figs. 1 and 3 being connected to the extension 37 thereof which is detachably connected by means of a coupling 38 to the adjacent end of the platen shaft as shown in Fig. 3 while the left arm 36 may be connected directly to the platen shaft 3. At their upper ends these swinging arms 36 are connected by a connecting and supporting bar 39 so as to provide a swinging feeder frame for mounting the feed initiating roller 40 for swinging movement toward and away from the adjacent outwardly convexed ends of the supply pack 10. This feed initiating roller or member 40 is preferably faced around its periphery with rubber 41 or similar friction material for more effective frictional cooperation in feeding relation with the record units. The roller 40 is mounted for rotation with a rotary supporting shaft 42 driven in unison with rotation of the platen 2 by means of sprockets 43 mounted respectively upon the extension 37 of the platen shaft and upon the supporting shaft 42 and connected by a driving sprocket chain 44.

Carried by the supporting bar 39 of the feeder frame is a guiding member or plate 45 adjacent to the feed initiating roll 40 and adapted to engage with the record units as they are successively separated from the supply pack to guide them to the paper table 5 and into writing position on the platen 2.

As above mentioned, the improved sheet feeding device is adapted for installation and operation upon various makes and models of writing

machines. It is necessary only to use different forms of supporting brackets 25 for attachment of the improved feed initiating unit to different models of writing machines. Supporting brackets 25 may be especially designed for each different model of writing machine to which the feeding mechanism is to be supplied, and a pair of such supporting brackets may be supplied with each feed mechanism adapted for installations on the customer's particular form of writing machine. Only the attaching members 26 and 27 need to be modified for different models of writing machines, the other parts of the supporting brackets being standard for attachment thereto of the supporting plates 29 and the control step 32.

When the improved sheet feeder constructed as above described is supplied to a writing machine as disclosed and a pack or assembly 10 of record forms is loaded into the magazine as particularly shown in Figs. 1 and 2, the forward ends of the record forms are downturned and outwardly convexed as shown with the adjacent ends of the forms resting upon the control step or plate 32. It will be noted that the end of the supply pack adjacent its convexed portion is received within the obtuse angle between the control step 32 and the adjacent downwardly curved ends 15 of the bottom supporting plates 12 and 14. The adjacent ends of the record units may be somewhat fanned as shown in Fig. 2 with the top-most and each succeeding record unit projecting very slightly beyond the underlying record units, or the rear supporting bracket 20 may be adjusted in such inclined position that all of the forward ends of the record units will lie substantially in contacting relation with the control step 32.

When the supply pack 10 is loaded into the magazine and adjusted therein as described, the feeder unit or frame is swung rearwardly on the swinging supporting arms 36 of the feeder frame so that the feed initiating roll or wheel 40 engages at its friction peripheral surface 41 with the outwardly presented surface of the adjacent ends of the record units. As shown in Fig. 2, it is preferable that the feed initiating roll 40 engage with the outer record unit of the supply pack near to the extremity of the adjacent convexed end portion thereof, and near to but slightly above the feed control step 32. When the feeder frame is in this position the guide plate or member 45 will be disposed adjacent to the paper table 5 of the writing machine. This guide can be adjusted by bending it one way or another to bring it into the proper guiding relation with reference to the paper table of different models of typewriting machines. It will be understood that the record units in the supply pack 10 may be of different forms, such for example, as single record sheets or letterheads, or assemblies of two or more such record sheets with intervening transfer sheets all attached together in a unitary assembly.

Rotation of the writing platen 2 when the parts are assembled and adjusted as just described, will effect rotation of the feed starting roll 40 so as to initiate forward movement of the top record unit of the supply pack. During this initial movement of the top record unit, its forward end will be caused by the feeding effort of the roll 40 to slide over the adjacent edge of the control step 32, but the next succeeding record unit will be restrained against forward movement by engagement of the adjacent end thereof with the control step. Also, as the starting movement of

the top record unit proceeds, its forward movement and separation from the supply pack will be aided by the adjacent control roller **34** engaging with the underside of the record unit adjacent to the starting roll **40**. This control roller has a yielding engagement with the advancing record unit due to its mounting by means of the leaf spring **33**, the control roller being freely rotatable in its bearings. As rotation of the platen and the starting roll continues, the record unit being forwardly fed is delivered to the paper table **5** beneath the guiding member **45** into the grip of the platen **2** between said platen and the pressure rolls **6**, whereupon the advancement of the record unit is continued into writing position by the feeding action of the platen, and subsequent feeding of the record unit for line spacing is then continued in the usual manner when the record unit has passed beyond the feed initiating roll **40**. Also when there are no record forms or supply pack in the magazine, or no record unit is being separated from the pack, the roller **34** contacts directly with the starting roll **40** in such a way as to prevent undue friction or binding to the rotary movement of the starting roll. As above mentioned, it will be noted that the peripheral feeding speed of the initiating roll **40** is substantially the same as that of the platen **2**, this result being effected either by making the initiating roll the same diameter as the platen **2** and driving it at the same speed, or making it of a different diameter from the platen roll and using a ratio of driving and driven sprockets **43** for driving it at such a rotative speed that the peripheral speed will be substantially the same as that of the platen.

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.

The invention having thus been fully described, the following is claimed:

1. In a device of the character described in combination, a writing platen, a supply magazine having a supporting surface for receiving a supply of record units at one side of said platen, feed initiating means including a friction member positioned for engagement with the record units in said magazine and operatively connected for operation in unison with said platen for initiating feed of the record units one at a time from said magazine toward said platen, a control step positioned adjacent to the forward ends of the record units in said supply and having a supporting surface angularly disposed to the forward part of the magazine supporting surface and adjacent to said friction member so as to prevent the starting by said friction member of more than one of said record units at a time, and a controlling roller positioned adjacent to said angularly disposed control step and in adjacent cooperative relation with said feed initiating friction member in controlling engagement with the opposite sides of the record units from the sides thereof engaged by said friction member.

2. In a device of the character described in combination, a supporting magazine for a supply of record units, said magazine having a plurality of normally spaced supporting members for said record units, a plurality of longitudinally spaced transverse supporting bars for said supporting members, longitudinal connecting members connected to said supporting bars, spaced supporting brackets adapted for connection to a writing machine and having longitudinal supporting members respectively positioned in substantially parallel contacting relation with said longitudinal connecting members, and detachable connecting means for detachably connecting said longitudinal connecting members to said longitudinal supporting members of said supporting brackets.

3. In a device of the character described in combination, a supporting magazine for a supply of record units, said magazine having a plurality of normally laterally spaced supporting members for said record units, a plurality of longitudinally spaced transverse supporting bars for said supporting members, longitudinal connecting members connected to said supporting bars, spaced supporting brackets adapted for connection to a writing machine and each having a plurality of seats for respectively receiving and supporting said transverse supporting bars when said longitudinal connecting members are engaged respectively outside of said supporting brackets, and detachable securing means for removably attaching said longitudinal connecting members to said supporting brackets.

4. In a device of the character described in combination, a supply magazine for supporting a supply of record units and having a curved supporting surface for supporting the forward end portions of the record units in outwardly convexed position, feed initiating means including a friction member positioned for engagement with the outwardly convexed end portions of the record units in said magazine, said friction member being mounted for movements toward and away from said record units, a control step positioned adjacent to and forwardly of the forward outwardly convexed end portions of said record units and having a supporting surface positioned forwardly of said outwardly convex end portions of the record units in the supply magazine and being angularly disposed to said curved part of the magazine supporting surface so as to prevent initiating movement by said friction member of more than one of said record units at a time, and a yieldably mounted controlling member positioned adjacent to said angularly disposed control step and in adjacent cooperative relation with said feed initiating member in yielding controlling engagement with the opposite sides of said record units from the sides thereof engaged by said friction member.

5. In a device of the character described in combination, a supply magazine for supporting a supply of record units and having a curved supporting surface for supporting the forward end portions of the record units in outwardly convexed position, feed initiating means including a friction member positioned for engagement with the outwardly convexed end portions of the record units in said magazine, a control step positioned adjacent to and forwardly of the forward outwardly convexed end portions of said record units and having a supporting surface positioned forwardly of said outwardly convexed end portions of the record units in the supply magazine and being angularly disposed to said curved part of the magazine supporting surface so as to prevent initiating movement by said friction member of more than one of said record units at a time, and a controlling roller positioned adjacent to said angularly disposed control step and

in adjacent cooperative relation with said feed initiating friction member in controlling engagement with the opposite sides of the record units from the sides thereof engaged by said friction member.

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