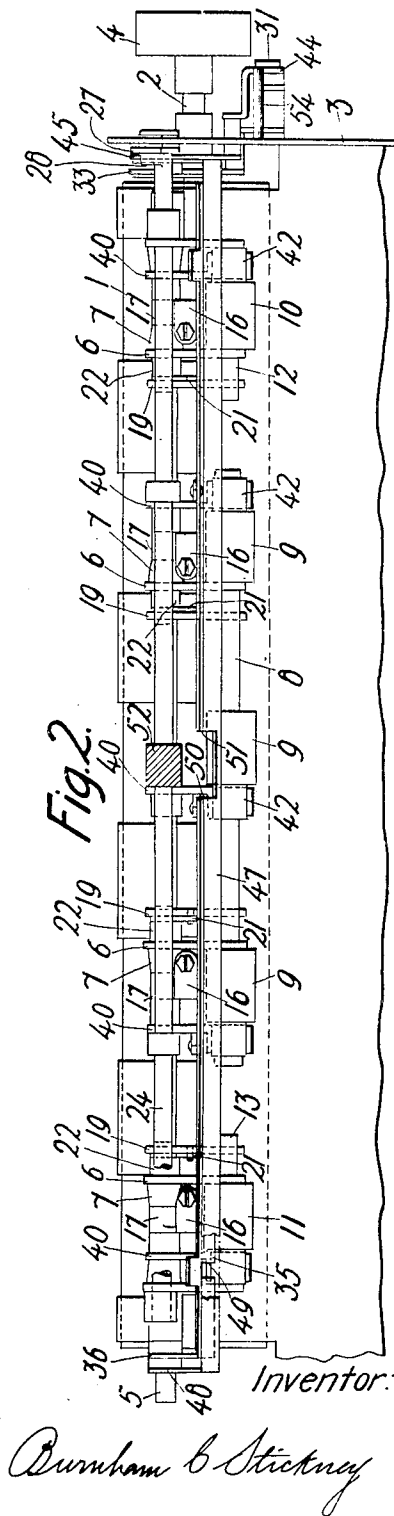
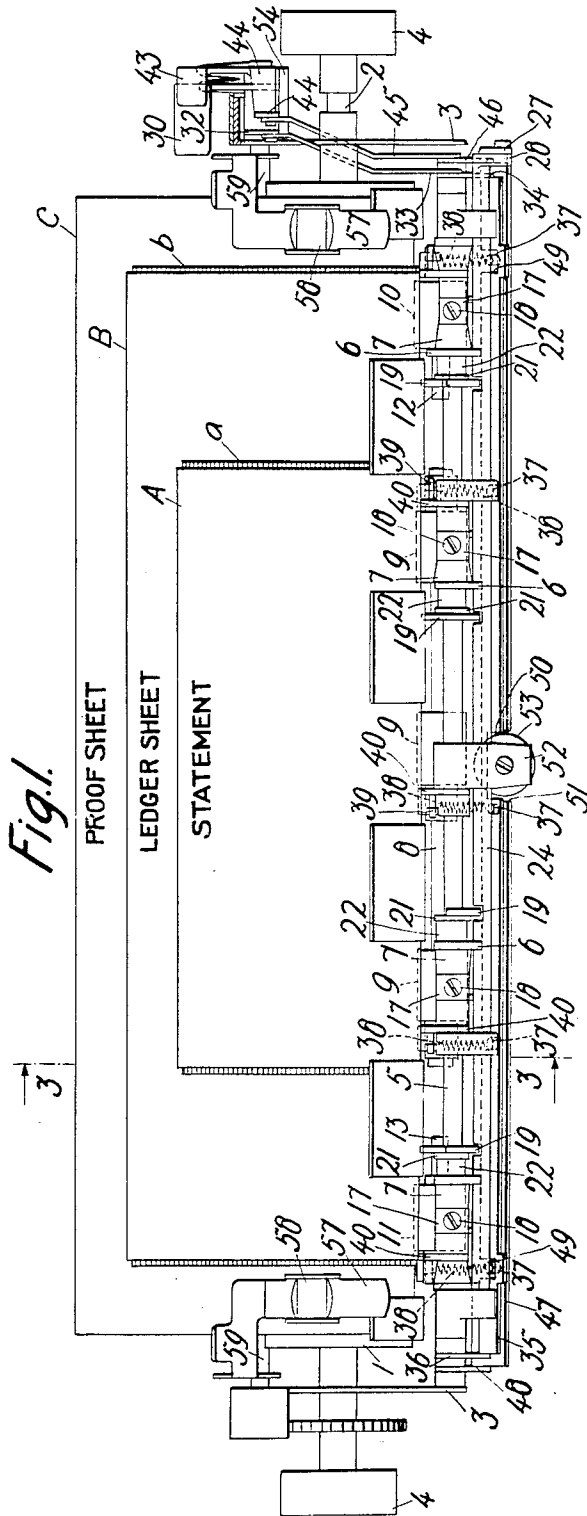


1,398,048.

Patented Nov. 22, 1921.

3 SHEETS—SHEET 1.

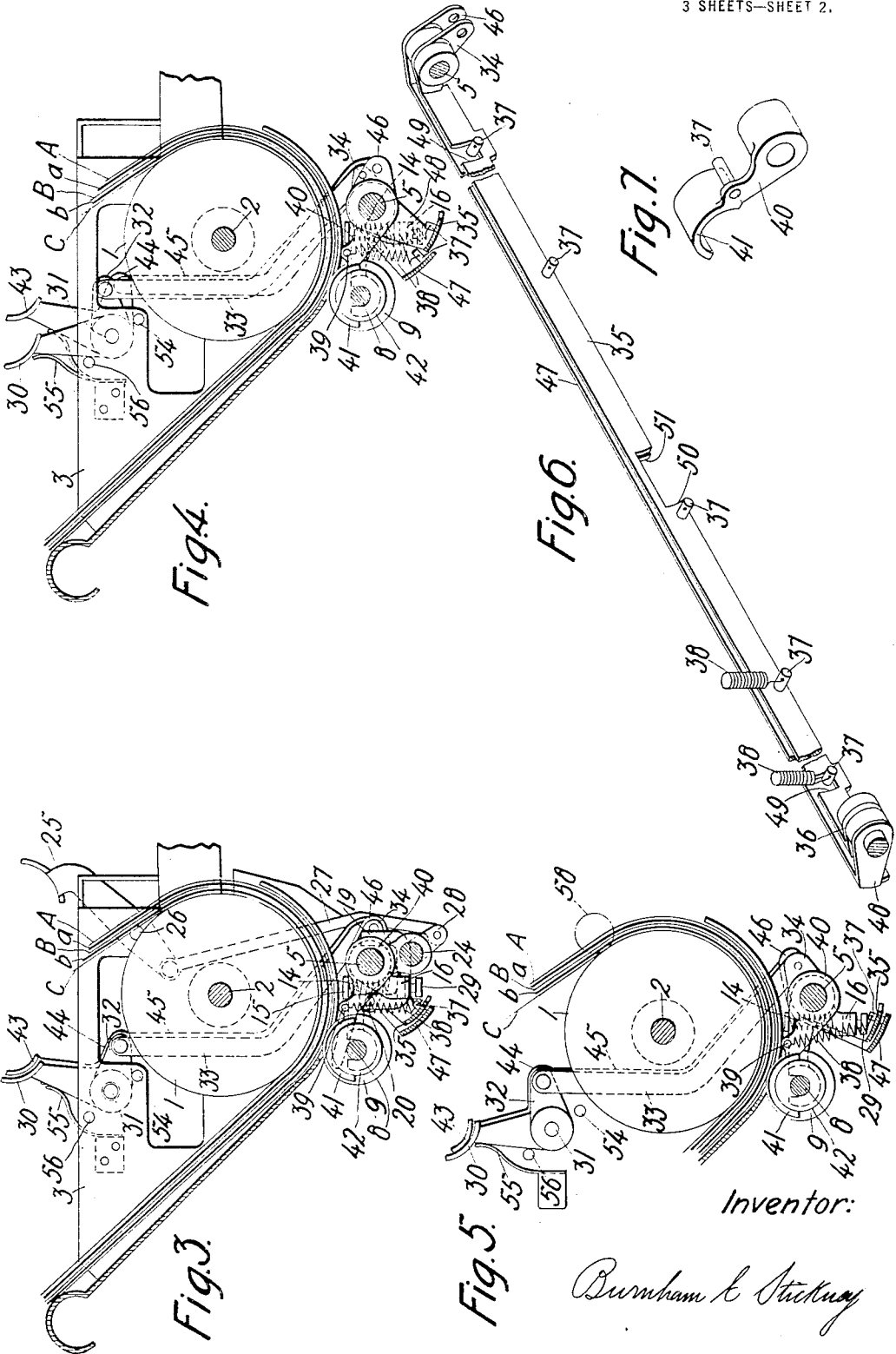


B. C. STICKNEY,  
 TYPEWRITING MACHINE.  
 APPLICATION FILED OCT. 22, 1919.

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3 SHEETS—SHEET 2.



Inventor:

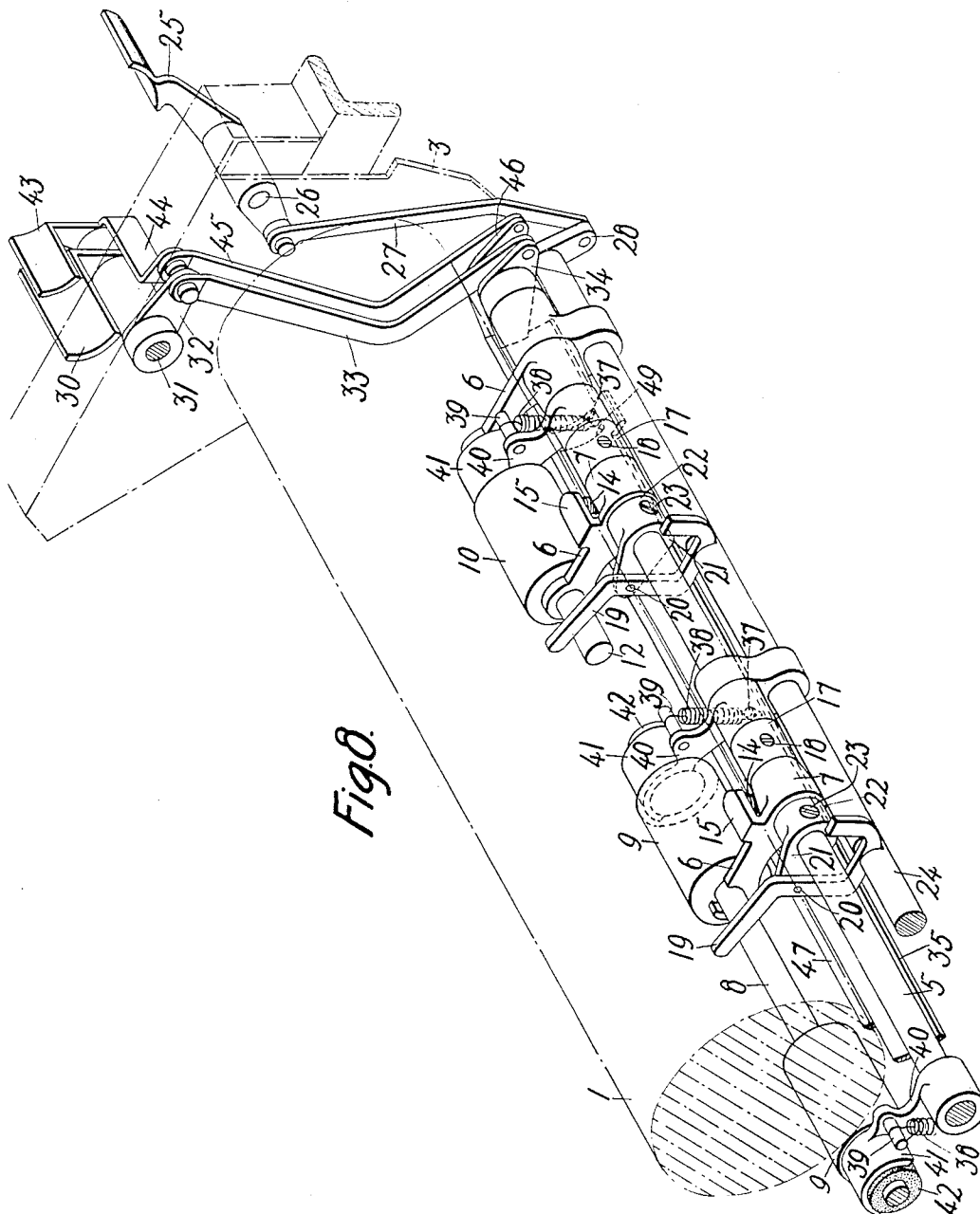
*Burnham C. Stickney*

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TYPEWRITING MACHINE,  
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3 SHEETS—SHEET 3.



*Fig. 0.*

Inventor:

*Burnham C. Stickney*

# UNITED STATES PATENT OFFICE.

BURNHAM C. STICKNEY, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

## TYPEWRITING-MACHINE.

1,398,048.

Specification of Letters Patent.

Patented Nov. 22, 1921.

Application filed October 22, 1919. Serial No. 332,472.

*To all whom it may concern:*

Be it known that I, BURNHAM C. STICKNEY, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Typewriting-Machines, of which the following is a specification.

My invention relates to typewriting machines, and more particularly to paper-feeding and controlling devices by means of which work-sheets may be collated after insertion in the machine.

In conducting bookkeeping, in which the items are typewritten on loose leaves by means of a typewriting machine or a combined typewriting and computing machine, it is desirable to print items simultaneously, with the aid of carbon paper, upon a bill or monthly statement of the customer's account, upon the customer's loose-leaf ledger-sheet, and upon a proof-sheet. The lines along which typewriting is to be effected may be and usually are at different heights upon the various sheets, and it is necessary, therefore, to assemble the sheets on the platen with the proper portion of each of the sheets at the writing line of the machine. The adjustments necessary to properly assemble the sheets in the machine have been found to be troublesome and time-consuming, and it is a desideratum to obtain simple and efficient means whereby the sheets may be fed to the platen and subsequently adjusted with reference to each other. Mechanisms for this purpose have been developed.

In such mechanisms, provision has been made of feed-rolls to engage the statement-sheet and press the same against the platen, and of feed-rolls to engage the margins of the ledger-sheet, which underlies and is wider than the statement-sheet, the proof-sheet underlying the ledger-sheet and being of greater width.

According to the present invention, the feed-rolls engaging the margins of the ledger-sheet are mounted independently of those engaging the statement-sheet, and all of the rolls are pressed against the platen. In order to facilitate insertion of the work-sheets and interleaved carbons, all of the feed-rolls may be withdrawn from the

platen simultaneously by any suitable means, the feed-rolls being permitted to return to their effective positions after such insertion. It may then be necessary to adjust the various work-sheets relatively to each other, in order to bring the proper portion of each of the sheets to the writing line of the machine. To this end, provision is made of means to hold certain feed-rolls against rotation, so that the work-sheet or work-sheets engaged thereby will be held against movement when the underlying work-sheet or work-sheets are fed in either direction by rotating the platen, and, at the same time, to decrease the pressure against the platen of the feed-rolls which are held against rotation, so that smudging of the work-sheets by the carbons may be avoided.

In order to obtain such results, the shafts, on which the feed-rolls are mounted, may be carried by pivoted arms urged by suitable means, such as springs, so as to press the feed-rolls against the platen; and provision may also be made of pivoted brake-arms, including shoes engaging reduced portions of the feed-rolls and extending between said feed-rolls and the platen. It will be evident that movement of the brake-arms outwardly from said platen will tend to hold said feed-rolls against rotation and also tend to withdraw them from the platen, or reduce their pressure against the platen.

In order to actuate the brake-arms, provision may be made of suitable means, including springs of such strength and so arranged that, when tensioned to increase the pressure of the brake-members against the feed-rolls and to decrease the pressure of the feed-rolls on the platen, such tensioning will be ineffective to withdraw said feed-rolls from said platen.

The brake-arm-actuating springs corresponding to the feed-rolls for the statement-sheet may be connected to the inner of two nested bails, and those corresponding to the ledger-sheet feed-rolls may be connected to the outer bail. Finger-pieces may be connected with each of the bails, and the finger-piece connected with the outer bail may be provided with a portion overlapping the other finger-piece, whereby actuation of the finger-piece for the outer bail will effect actuation of the inner bail.

It will be seen that, according to the present invention, the sheets may readily be collated after insertion in the machine, and that smudging of the work-sheets by the carbons will be avoided.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a front view, showing my invention applied to a platen-frame of the type used in the Underwood typewriting machine.

Fig. 2 is a view, showing the platen-frame in inverted position.

Fig. 3 is a section, taken along the line 3—3 of Fig. 1, showing the parts in normal position.

Fig. 4 is a view similar to Fig. 3, but showing the parts in position to enable feeding of the proof and ledger sheets with reference to the statement-sheet.

Fig. 5 is a view similar to Figs. 3 and 4, but showing the parts in position to enable feeding of the proof-sheet with reference to the ledger and statement-sheets.

Fig. 6 is a perspective view, showing the bails in assembled position, and the position of the pins thereon.

Fig. 7 is a perspective view of one of the braking members.

Fig. 8 is a fragmentary perspective of the parts involved in my invention, with the platen and platen-frame indicated in dot-and-dash lines.

The platen 1, of the usual cylindrical form, is carried by an axle 2, journaled in end frames 3 upon the platen-frame, and may be actuated by finger-wheels 4 on the ends of axle 2, or by other suitable means.

Mounted on a rod 5, connecting the end frames 3 of the platen-frame, are arms 6 which are provided with hubs 7 to give a suitable bearing for said arms 6 on the rod 5. Supported by certain of these arms 6 is a shaft 8, carrying feed-rolls 9 for engagement with the statement-sheet. Other feed-rolls 10 and 11 are provided to engage the right and left-hand margins, respectively, of the ledger-sheet, said feed-rolls 10 and 11 being supported by shafts 12 and 13, respectively, on certain of said arms 6. Preferably, shaft 8 is supported in open bearings in the associated arms 6, and shafts 12 and 13 are supported in closed bearings in corresponding arms 6. The feed-rolls may be yieldingly pressed against the platen 1 by means of springs 14, engaging the under sides of lugs 15, offset from arms 6 and supported upon brackets 16, having hubs 17 fixed on rod 5 by suitable means, such as set screws 18. It will be noted that both arms 6 supporting shaft 8 are spring-pressed upwardly, whereas only one of the arms 6 supporting each of shafts 12 and 13, is spring-pressed upwardly, thus

necessitating the use of closed bearings, or other suitable means, so as to connect the arms 6 for movement together.

For the purpose of withdrawing the feed-rolls to enable insertion of work-sheets, provision is made of levers 19, pivoted at 20 on brackets 21, having hubs 22 fixed on rod 5 by means of set screws 23, one arm of each of said levers overlying one of the feed-roll shafts, and the other arm engaging a cam, which may be formed by cutting away a portion of a feed-roll-release shaft 24, the cross-section of which is in the form of a segment of a circle. It will be seen that rocking of said shaft 24 from its normal position (Fig. 8) will tend to force the lever arms cooperating therewith from the axis of said shaft toward the outer surface thereof, and thereby effect a withdrawal of all of said feed-rolls. Actuation of shaft 24 may be effected by means of a finger-piece 25, pivoted on the platen-frame 26 and connected with shaft 24 by means of a link 27 and an arm 28 fixed on said shaft 24.

The feed-roll-release mechanism is similar in general to that disclosed in the patent to William F. Helmond, No. 1,058,672, dated April 8, 1913. Adjustment of the pressure of the feed-rolls against the platen may be effected by means of screws 29 in the manner disclosed in said patent.

After placing the statement-sheet A, ledger-sheet B, and proof-sheet C, with the interleaved carbons *a* and *b*, in the machine, it may be necessary to effect a relative adjustment between the different sheets. When it is desired to effect an adjustment between the statement-sheet and the other two sheets, a finger-piece 30 is rocked about its pivot 31, and this motion is transmitted by means of an arm 32 and a bent link 33, extending through an end frame 3 of the platen-frame, to an arm 34 forming part of a bail 35 pivotally supported on rod 5, by means of said arm 34 and an arm 36. Pins 37 supported on said bail provide means for attachment of springs 38, which are attached at their upper ends to pins 39, carried by brake-arms 40, having shoes 41 engaging reduced portions 42 of the feed-rolls cooperating with the statement-sheet.

Movement of the bail 35 by the finger-piece 30 will effect a tensioning of the springs 38, attached thereto, and serve to increase the pressure of the brake-shoes 41 against the reduced portions or hubs 42 of the feed-rolls 9, and, by virtue of the fact that the brake-shoes lie between the rolls and the platen, the increase in pressure of the brake-shoes 41 against the reduced portions or hubs 42 will be accompanied by diminution of the pressure of the feed-rolls 9 on the platen. It should be understood that the springs 38 may be insufficient in strength to overcome the action of springs

14 to draw the feed-rolls 9 from the platen, or that the arrangement of parts may be such that springs 38 are unable to overcome springs 14, irrespective of the strength of the various springs, so that, in either case, the feed-rolls 9 will not be withdrawn from the platen by the tensioning of said springs 38, due to actuation of finger-piece 30:

If then the platen 1 is rotated by means of the finger-wheels 4, or other suitable means, the ledger and proof-sheets will be fed relatively to the statement-sheet, which will be held against movement by the feed-rolls 9, which are prevented from turning as a consequence of the increased pressure of the brake-shoes 41 thereagainst. As will be understood, the outer face of the carbon *a*, overlying the ledger-sheet, is smooth, whereby little resistance is offered to a sliding of said carbon and the statement-sheet upon each other. While a relative shifting of the statement-sheet and the other two sheets may be effected without relieving the pressure of rolls 9 on the platen, such relief of pressure is beneficial, in that it tends to prevent smudging of the work-sheets by the carbon, which is liable to occur in case the feed-rolls 9 engage the statement-sheet with the usual pressure.

The necessity may also arise of effecting relative adjustment between the proof-sheet and the other two sheets. It will then become necessary also to prevent turning of feed-rolls 10 and 11, and to relieve the pressure of said feed-rolls 10 and 11 on the platen. This result may be obtained by pressing to the rear a finger-piece 43 to rock the same about its pivot 31, the motion of said finger-piece 43 being transmitted by means of an arm 44 and a link 45 to an arm 46, forming part of a bail 47, pivotally mounted on rod 5 by means of said arm 46 and an arm 48. The bail 47 is provided with pins 37, which are connected by springs 38 to brake-arms 40. By means of this structure, braking of rolls 10 and 11, and relief of pressure of said rolls against the platen, may be effected in the same way as for feed-rolls 9.

In order that actuation of finger-piece 43 may effect actuation of finger-piece 30, these finger-pieces are constructed and arranged to overlap in such manner that finger-piece 30 may be actuated independently of finger-piece 43, but actuation of the latter will necessarily effect actuation of the former.

Bails 35 and 47 are nested together in a well-known manner, and, in order that they may assume substantially the same radial positions relative to rod 5, bail 35 is cut away to form recesses 49 for the reception of pins 37 on bail 47. It will be evident that this arrangement will also insure actuation of the inner bail when the outer bail is ac-

tuated, for pins 37 on the outer bail will engage the bottoms of recesses 49 and cause bail 35 to move with bail 47. Bails 35 and 47 are also provided with recesses 50 and 51, respectively, to receive a bracket 52, carrying a roll 53 which rests on the front rail of the usual shift-frame, not shown.

Upon release of the finger-pieces 30 and 43, springs 38 tend to return bails 35 and 47 and finger-pieces 30 and 43 to their normal positions. For the purpose of normally maintaining said finger-pieces 30 and 43 in their ineffective positions determined by a stop 54, provision is made of leaf springs 55, which may be entirely independent, or may be parts of a forked plate. Movement of finger-pieces 30 and 43 away from their normal positions may be limited by means of a stop 56. It will be seen that springs 55 serve to hold said finger-pieces 30 and 43 in their normal positions, and also to return said finger-pieces to their normal positions when the same are released after manual actuation thereof.

In practice, the statement, ledger and proof-sheets, with interleaved carbons, are placed in the machine, the feed-rolls having been withdrawn from the platen by actuation of finger-piece 25 to permit ready insertion of the work, and permitted to return to their normal positions as soon as such insertion is completed. In case the ledger and proof-sheets are to be adjusted with reference to the statement-sheet, the finger-piece 30 is moved to its limiting rearward position to effect an increased braking action on feed-rolls 9 and to diminish their pressure on the platen. If then the platen is actuated by finger-wheels 4, or any other suitable means, the statement, sheet will be retained in position by frictional contact with rolls 9, which are held against movement as a result of the increased pressure of the brake-shoes thereon, and the ledger and proof-sheets will be shifted with reference to the statement-sheet. Due to the fact that the rough side of the carbon, positioned between the statement and ledger-sheets, is in contact with the latter, and the smooth side is in contact with the former, this carbon will move with the ledger-sheet. The partial relief of pressure of said rolls facilitates the relative movement of the sheets and decreases the tendency to smudge, due to shifting of the carbon on an underlying sheet.

When it is desired to shift the proof-sheet with reference to the ledger and statement-sheets, finger-piece 43 is shifted to the rear, and, due to the shape and relative position of the parts, this will also effect actuation of finger-piece 43, thus exerting a braking action on rolls 9, 10 and 11, and relieving the pressure of these rolls on the platen. Rotation of the platen will then feed the

proof-sheet with reference to the others, which are detained by frictional engagement with the feed-rolls.

In order to permit the withdrawal of the statement and ledger-sheets and the carbons associated therewith without disturbing the proof-sheet, any suitable means may be employed, as for example, spring-pressed paper-fingers 57 provided with rolls 58. The fingers 57 may be adjustable longitudinally of a rod 59, and in use are positioned so that the rolls 58 bear upon the side-edge portions of the proof-sheet.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, in combination with a platen; a pressure feed-roll normally revoluble with the platen; a brake for the feed-roll; and means for applying the brake by hand pressure, counter to the normal pressure of the roll, to hold the roll against rotation while the platen is moved.

2. In a typewriting machine, in combination with a platen; a pressure feed-roll normally revoluble with the platen; a brake for the feed-roll; and means for applying the brake by hand pressure, counter to the normal pressure of the roll, and without moving the roll sufficiently to disengage its grip on the work-sheet, to hold the roll against rotation while the platen is moved.

3. In a typewriting machine, in combination, a platen, a feed-roll to cooperate therewith, a spring connected to said roll to press the same against said platen, a device adapted to brake said feed-roll and to draw it away from the platen, a spring, weaker than the first-named spring, connected with said device, and means to tension said weaker spring, and thereby render said braking device effective and diminish the pressure of said roll on said platen.

4. In a typewriting machine, in combination, a platen, a feed-roll yieldingly pressed thereagainst, a brake-member normally in contact with said roll, and means to increase the pressure of said brake-member on said roll, and diminish the pressure of said roll on said platen.

5. In a typewriting machine, in combination, a platen, a yieldingly-supported feed-roll to cooperate with a work-sheet on the platen, a brake for said feed-roll, and means adapted to render said brake effective and to urge said roll away from said platen without urging the roll sufficiently to disengage its grip on the work-sheet.

6. In a typewriting machine, in combination, a platen, a feed-roll yieldably pressed thereagainst, a brake for said roll effective when thrown into action to relieve the pressure of said roll on said platen, and man-

ually operable yielding means for operating said brake, the strength of said yielding means being insufficient to entirely relieve the pressure of said roll on said platen.

7. In a typewriting machine, in combination, a platen, feed-rolls yieldably pressed thereagainst, a yielding device for each of said feed-rolls adapted to reduce the pressure of the associated roll against said platen, but incapable of withdrawing it therefrom, and means whereby actuation of one of said devices will effect actuation of the other.

8. In a typewriting machine, in combination, a platen, a feed-roll having a reduced end, means, including a spring, for yieldably pressing said roll against said platen, a brake-member engaging the reduced portion of said roll between the same and said platen, and a second spring, weaker than the first, connected with said brake-member, the tensioning of said second spring being effective to increase the pressure of said brake-member on said roll, and to decrease the pressure of the latter on the platen.

9. In a typewriting machine, in combination, a platen, a platen-frame in which said platen is revolubly supported, two feed-rolls in said frame yieldably pressed against said platen, a brake for each of said feed-rolls adapted to urge the feed-roll from the platen when actuated, and a manually-operable yieldable device for each of said brakes adapted to render the brake effective on the corresponding feed-roll, and diminish the pressure of the latter against the platen, said yieldable device being of insufficient strength to withdraw the feed-roll from the platen.

10. In a typewriting machine, in combination, a platen, a platen-frame in which said platen is revolubly supported, two feed-rolls in said frame yieldably pressed against said platen, a manually-operable device for each of said feed-rolls to brake the corresponding feed-roll, and diminish the pressure thereof against the platen, and means whereby the actuation of one of said manually-operable devices will effect actuation of the other.

11. In a typewriting machine, in combination, a platen, a platen-frame in which said platen is revolubly supported, two feed-rolls in said frame yieldably pressed against said platen, a manually-operable device for each of said feed-rolls to brake the corresponding feed-roll, and diminish the pressure thereof against the platen, means whereby the actuation of one of said manually-operable devices will effect actuation of the other, and means for withdrawing said rolls from said platen simultaneously.

12. In a typewriting machine, in combination, a platen, a platen-frame in which said platen is revolubly mounted, a rod parallel to said platen, feed-rolls for cooperation

with said platen, pairs of feed-roll-supporting arms loosely mounted on said rod, a spring associated with each pair of arms for pressing the corresponding feed-roll against the platen, a braking arm for each feed-roll loosely mounted on said rod, and extending between the feed-roll and the platen, and a spring attached to said braking arm to act in opposition to the spring associated with the feed-roll.

13. A printing machine having, in combination, a rotatable platen to receive a plurality of superposed sheets, the outermost sheet being narrower than the sheet immediately thereunder, a rotatable feed-roll yieldingly pressed against the narrower sheet, a rotatable feed-roll yieldingly pressed against the sheet immediately thereunder, a device associated with each of the feed-rolls and adapted to prevent rotation thereof, and to concomitantly decrease the pressure of the same against the platen, and means to selectively render one or both of said devices effective.

14. A printing machine having, in combination, a rotatable platen to receive a plurality of sheets, a feed-roll to press one of the sheets against the platen, a feed-roll to press another of the sheets against the platen, a device for each feed-roll adapted to prevent rotation thereof, and means for selectively rendering said devices effective, and decreasing the pressure of the selected rolls on said platen.

15. A paper-feeding and controlling device comprising, in combination, a revoluble platen for feeding a plurality of sheets, including an outer sheet and a wider one thereunder, a feed-roll to engage said outer sheet, a feed-roll to engage said wider sheet at one side of said outer sheet, supporting means for said rolls, including a pair of arms for each of said rolls, a rod on which said arms are mounted, a spring acting on one arm of each pair to yieldingly maintain said rolls against said platen, a brake-arm for each roll pivotally mounted on said rod and acting on a reduced part of the roll between the same and said platen, a spring of less strength than the first-mentioned springs attached to each of said brake-arms, two bails mounted on said rod, each having one of said weaker springs attached thereto, and means to actuate each of said bails.

16. A work-feeding and controlling device comprising, in combination, a revoluble platen, a plurality of rolls to engage said platen, a shaft upon which said rolls are mounted, a pair of members for supporting said shaft, a spring acting on each of said members to press said rolls against said platen, a brake-device acting on each of said rolls and adapted when operated to urge the roll away from the platen, and a spring attached to each of said brake-devices to actu-

ate the same, the aggregate strength of the brake-actuating springs being less than that of the first-mentioned springs, whereby tensioning of said brake-actuating springs will operate said brake-devices to prevent rotation of said feed-rolls and to decrease the pressure of said feed-rolls against said platen, in accordance with the degree of tensioning of said brake-actuating springs.

17. The combination with a revoluble platen, of means, including an intermediate feed-roll, for engaging a sheet carried by said platen, outer feed-rolls for engagement with the margins of a wider sheet underlying the first, springs for pressing said rolls against said platen, a braking-device for each roll adapted when operated to urge the rolls away from the platen, an inner pivoted bail, an operating spring connecting said bail with the braking-device for said intermediate roll, an outer bail, operating springs connecting said outer bail with the braking-devices for said outer feed-rolls, said operating springs being of sufficient strength to operate said braking-devices, but insufficient to withdraw said feed-rolls from said platen, and manually operable means for actuating said bails and consequently said braking-devices.

18. In a typewriting machine, in combination, a platen for supporting and feeding work-sheets, a feed-roll cooperating therewith, means to yieldably urge said feed-roll against said platen, and manually operable means effective, when operated, to yieldably urge said feed-roll away from said platen, said second-mentioned urging means being of less strength than the first and, therefore, capable of only partially counteracting the effect of said first-mentioned urging means.

19. In a typewriting machine, in combination, a platen, a feed-roll to cooperate therewith, means yieldably urging said feed-roll against said platen, a device adapted to brake said feed-roll and draw the same away from the platen, and a yieldable device for actuating said brake-device, said yieldable device being incapable of effecting a withdrawal of said feed-roll when operated to actuate said brake-device.

20. In a typewriting machine, in combination, a platen, a feed-roll having a reduced portion, means, including a spring, for yieldably pressing said roll against the platen, a brake-member engaging the reduced portion of said roll and extending between the same and said platen, and means, including a spring, effective, when its spring is tensioned, to increase the pressure of said brake-member on said roll and to decrease the pressure of the latter upon the platen, the strength of the springs and the arrangement of parts being such that tensioning of the second-mentioned spring will be ineffective to withdraw said roll from the platen.



21. In a typewriting machine, in combination, a revoluble platen for feeding a plurality of sheets, including an outer sheet and a wider one, thereunder, a feed-roll to engage said outer sheet, a feed-roll to engage each edge portion of said wider sheet, a brake-device for each of said rolls, two nested bails on the same axis, an actuating connection between the brake-device for the first-mentioned feed-roll and the inner bail, an actuating connection between the brake-device for each of the other feed-rolls and the outer bail, and means whereby actuation of the outer bail will effect actuation of the inner bail.

22. In a typewriting machine, in combination, a revoluble platen, a plurality of rolls to engage the middle portion of said platen, a shaft upon which said rolls are mounted, a pair of members for supporting said shaft, a spring-device acting on each of said members to press said rolls against the platen, a brake-device for each of said rolls adapted, when operated, to urge the roll away from the platen, and a spring-device connected with each of said brake-devices to actuate the same, the construction and arrangement of the parts being such that the aggregate effect of the brake-actuat-

ing spring-devices is less than that of the first-mentioned spring-devices, whereby actuation of said brake-actuating spring-devices will operate said brake-devices to prevent rotation of said feed-rolls and to decrease the pressure of said feed-rolls against the platen, in accordance with the degree of tensioning of said brake-actuating spring-devices.

23. In a typewriting machine, in combination with a platen; a feed-roll; means for pressing the roll against a work-sheet on the platen; a part fast to the roll having a brake surface for the roll; a brake-shoe between the platen and said brake surface; and means for applying the brake-shoe by hand pressure to the brake surface without disengaging the roll from the work-sheet on the platen; whereby the roll is held against rotation to cause the work-sheet, by contact therewith, to be held stationary, and the normal pressure of the roll on the platen partly relieved by the brake pressure to permit the platen to move relatively to the work-sheet thus held.

BURNHAM C. STICKNEY.

Witnesses:

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EDITH B. LIBBEY.