May 15, 1951 G. BABICZ 2,553,399

DEVICE FOR SEPARATING PRINTING ROLLERS
IN THE ABSENCE OF A PAPER SHEET

Filed Jan. 28, 1946 3 Sheets-Sheet 1

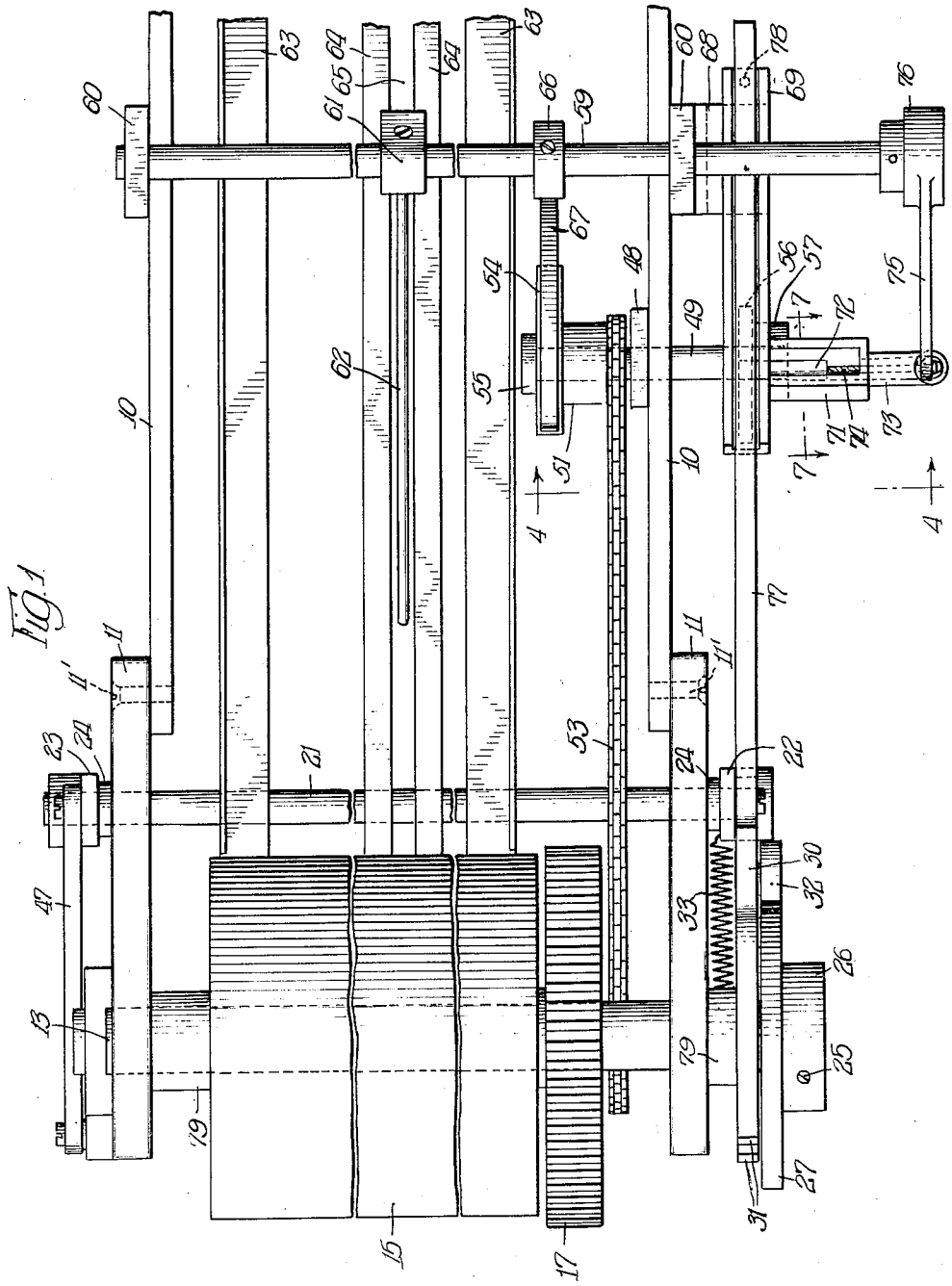


Fig. 1

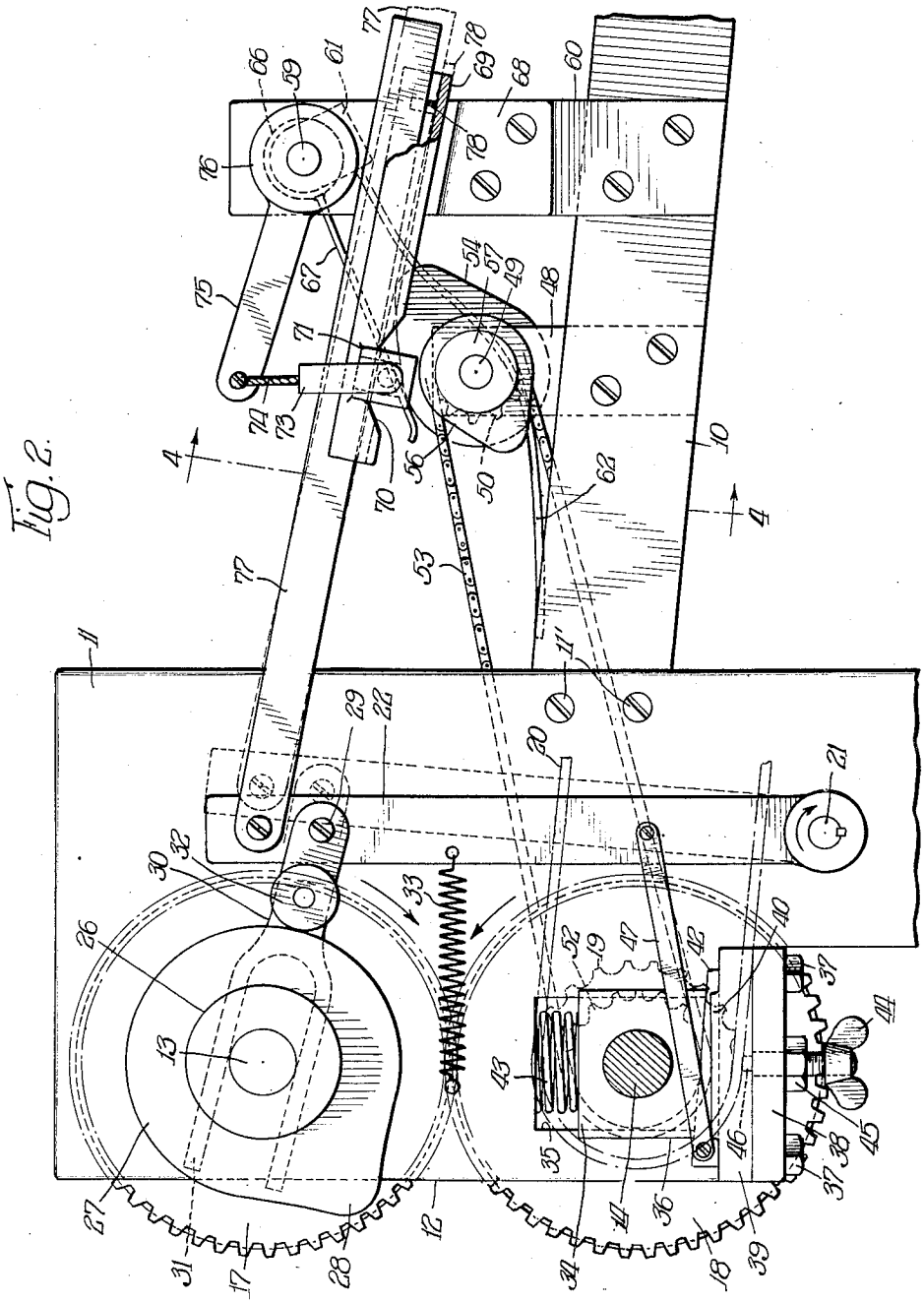
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DEVICE FOR SEPARATING PRINTING ROLLERS IN THE ABSENCE OF A PAPER SHEET

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Fig. 2.



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Filed Jan. 28, 1946 3 Sheets-Sheet 3

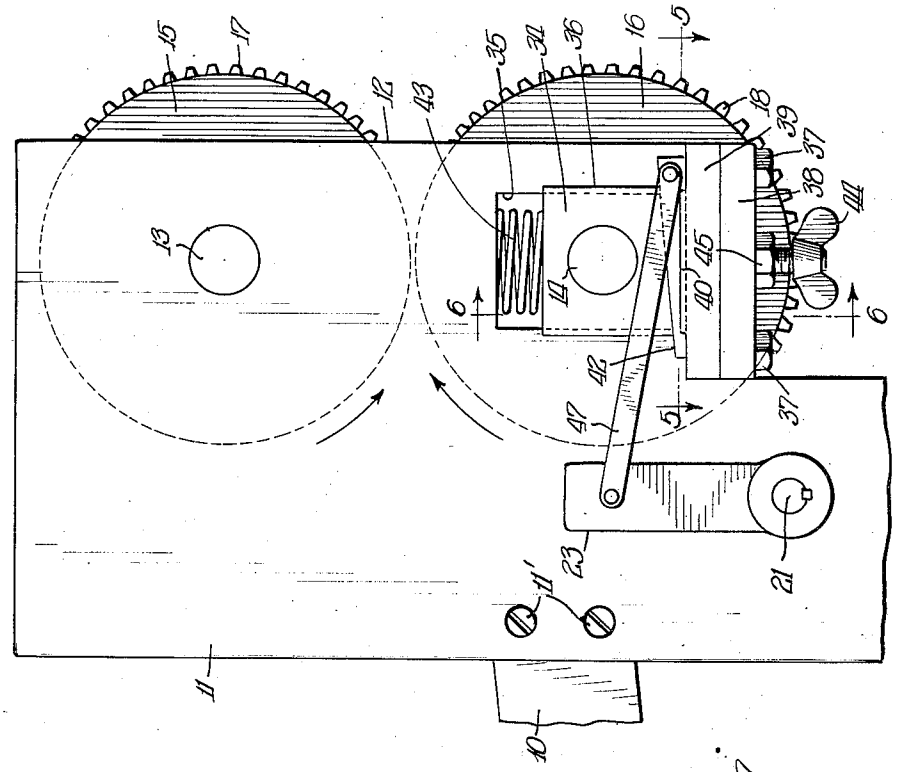


Fig. 3

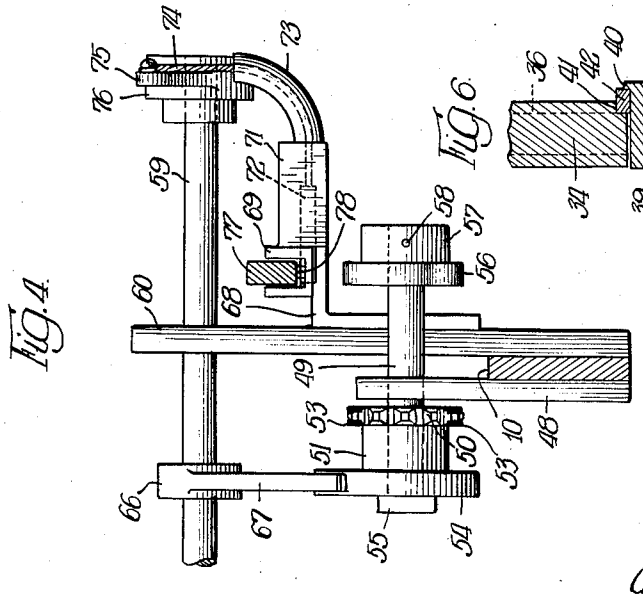


Fig. 4

Fig. 6



Fig. 7

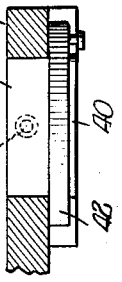


Fig. 5

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UNITED STATES PATENT OFFICE

2,553,399

DEVICE FOR SEPARATING PRINTING ROLLERS IN THE ABSENCE OF A PAPER SHEET

George Babicz, Chicago, Ill.

Application January 28, 1946, Serial No. 643,875

7 Claims. (Cl. 101—233)

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In my co-pending patent application for a device for separating printing rollers in the absence of paper sheet, which has matured into Patent No. 2,432,133, dated December 9, 1947, I have disclosed an electrically actuated mechanism for separating printing rollers when paper ceases to be fed therebetween for taking print impressions. The principal objects of the present invention are identical with those mentioned in said patent, except that the means for separating rollers in this application is accomplished entirely mechanically.

Another object of the present invention is the provision in a printing machine of a suitable feeler in contact with the paper as the same is fed in the usual manner to the printing rollers, and which is capable of actuating the mechanism for separating the printing rollers instantly when the paper ceases to be fed, and which is capable of actuating mechanism for bringing the printing rollers into a mutual contacting operative position when paper commences to be fed anew.

Another object of the present device is the provision of a pair of bearings within which a shaft carrying one of the printing rollers is journaled, with means associated with said bearings for mechanically shifting them in a vertical direction, for bodily moving one of the said rollers to or away from the other of said rollers, and for separating the two in the absence of paper fed towards said rollers.

A still further object of the present invention is the provision, in association with said bearings, of wedges, with means to shift the latter into one or opposite direction for shifting one of the printing rollers to or away from the other roller, the shifting means of said wedges being actuated by suitable mechanism, the operation of which is induced either by presence or absence of paper sheet normally fed towards the printing rollers.

A still further object of the present invention is the provision of suitable adjusting means for bringing one of the rollers in any machine to or away from the other normally contacting roller, for increasing or decreasing the pressure therebetween.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawings forming a part of this application and in which like designating characters

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refer to corresponding parts throughout the several views;

Fig. 1 is a top elevational view of the end of the printing machine at which the printing rollers are positioned and to which paper is fed for taking printing impressions:

Fig. 2 is a side elevational view thereof;

Fig. 3 is a side elevational view of the printing machine from the opposite side;

Fig. 4 is a cross-sectional view on line 4—4 of Figs. 1 and 2;

Fig. 5 is a cross-sectional view on line 5—5 of Fig. 3;

Fig. 6 is a cross-sectional view on line 6—6 of Fig. 3; and

Fig. 7 is a cross-sectional view on line 7—7 of Fig. 1.

Referring in detail to the present drawings, there is shown therein a pair of spaced frame bars 10, which are at an incline, the elevated ends of which are in any suitable manner supported by and within a pair of standards 11 such as by screws or rivets 11'. A pair of similar standards, not shown, support the opposite ends of said frame bars 10, and all of said standards support the entire printing machine.

Each of said standards 11 which is shown in the present drawings, is provided with an integrally formed off-set 12, for supporting therewithin upper shaft 13 and lower shaft 14. Said shaft 13 carries a printing roller 15 and shaft 14 carries compression roller 16, which normally are in contact during the printing operation when paper is fed therebetween. If desired roller 16 may be the printing roller while roller 15 may be the compression roller. Keyed to shaft 13 is gear 17 and keyed to shaft 14 is a similar gear 18. Said gears 17 and 18 are constantly in mesh regardless if rollers 15 and 16 are in contact during the printing operation or separated when paper ceases to be fed therebetween.

Keyed to one end of shaft 14 and outwardly of the adjacent standard 11 is sprocket wheel 19, over which sprocket chain 20 passes and connects with any source of motive power to impart rotation to said wheel 19 as well as to said shaft 14 for rotating roller 16 and gear 18. Through teeth in gears 17 and 18 rotary movement is transmitted from gear 18 to gear 17 and through it to shaft 13 and roller 15, so as to cause rotation of said rollers 15 and 16 into the direction indicated by arrows in Figs. 2 and 3.

Journaled for rocking movement within standards 11, and below frame bars 10, is shaft 21.

to one end of which rocking arm 22 is affixed by its lower end, while the opposite end of said shaft 21 carries a shorter rocking arm 23, for the purpose hereinafter described. Spacers 24 set upon shaft 21 maintain said rocking arms 22 and 23 in spaced relation with the adjacent standards 11.

Affixed to one end of shaft 13 by means of screw 25 is collar 26, having at its inner end an integrally formed cam 27, including rise 28. Pivotally connected to rocking arm 22 upon pivot 29 is arm 30, the opposite end of which is bifurcated to effect a pair of tines 31, which receive said shaft 13. To one face of said arm 30 idler 32 is journaled, which normally remains in contact with the rim of said cam 27, by virtue of the tensioning action of coil spring 33 affixed by one of its ends to said rocking arm 22 and by the other to off-set 12 of standard 11, thereby urging said rocking arm 22 and idler 32 towards cam 27.

Shaft 14 is journaled for rotary movement within bearings 34 each positioned within recess 35 made at the lower end of each off-set 12. Each of said bearings 34 at its vertical lateral edges is provided with a pair of flanges 36 which overlap the faces of said off-sets 12 for maintaining said bearings in position within recesses 35 and for preventing movement thereof in all directions, except the vertical direction.

Rigidly affixed by means of a pair of bolts 37 to the end of each off-set 12, and in a transverse relation with recess 35, closing the lower end thereof completely, is supporting plate 38, above which block 39 is positioned. Said block 39 has a reduced central portion entering recess 35, for normally supporting therein the lower end of bearing 34, as is clearly seen in Figs. 5 and 6. The outer edges of said plate 38 and block 39 extend beyond the adjacent faces of standards 11 and off-sets 12, and said block 39, at its outer face is provided with an upwardly extending flange 40. Each of said bearings 34 adjacent its lower end, and at the portion thereof which extends beyond the outer face of off-set 12, including flanges 36 thereof, is provided with recess 41, the upper face whereof is at an incline, for receiving therewithin wedge 42. Said wedge 42 rests upon block 39 for longitudinal shifting movement. Flange 40, contacting with the outer face of said wedge 42 prevents its lateral shifting and disengagement thereof with bearing 34. The upper face of said wedge 42 is at an incline corresponding to the incline of the upper face of said recess 41. When said wedge 42 is shifted outwardly, that is towards the adjacent free end of the printing machine, bearing 34 will shift downwardly within recess 35, the shifting movement thereof being facilitated by coil spring 43 positioned within the upper end of recess 35 and interposed between the adjacent body portion of off-set 12 and the upper end of bearing 34. When however wedge 42 is shifted into the opposite direction bearing 34 will be forced to shift into an upward direction against the tensioning action of said spring 43. The operation of said wedges 42 and the mechanism for shifting the same into one or opposite direction will be later more fully described. When wedge 42 is shifted into the direction of the center of the machine bearing 34 is shifted upwardly and away from block 39, the two being spaced as is seen in Fig. 6. When however wedge 42 is shifted into the opposite direction, as far as it will be permitted to go, bearing 34 will shift downwardly, and

will contact with and rest upon the upper face of said block 39.

Substantially centrally of each plate 38 wing screw 44 is passed for bearing against block 39. The shank of said screw 44 is threaded for receiving thereon in a threaded engagement adjusting nut 45. The inner reduced end of screw 44 enters socket 46 made at the lower face of block 39. When said screw 44 is driven block 39, wedge 42 and bearing 34 are all shifted upwardly against the tension of coil spring 43 and away from plate 38. Conversely when screw 44 is turned into the opposite direction block 39, wedge 42 and bearing 34 are all shifted towards plate 38, until said block 39 comes in contact with plate 38, as is seen in Figs. 2, 3 and 6. The purpose of said screw 44 is to make a proper adjustment of two rollers 15 and 16, by shifting one to or away from the other roller, for increasing or decreasing the pressure therebetween. This adjusting means for the two rollers, if desired, may be used wholly independently of the device for automatically separating the rollers when the paper ceases to be fed thereinbetween. When bearings 34 have been properly adjusted within their recesses 35 by screws 44, as aforesaid, nuts 45 are shifted until the same contact the lower faces of plates 38 for maintaining screws 44 in their adjusted position.

On each side of the machine connecting rods 47 pivotally connect with the outer, wider end of each wedge 42 and rocking arms 22 and 23, respectively.

Towards the center of the machine support 48 is rigidly affixed to one of the frame bars 10, and upwardly extending therefrom. Journaled within said support 48, above said frame bar 10, and in a transverse relation with the machine is shaft 49, which has sprocket wheel 50 including hub 51 keyed thereto. Similar sprocket wheel 52 is rigidly carried by shaft 14. Both said sprocket wheels 50 and 52 are connected by a sprocket chain 53, for imparting rotary movement to said shaft 49 from shaft 14.

Carried by the inner termination of said shaft 49 is a heart-shaped cam 54, which has integrally formed therewith cap bearing 55 fitting over the inner end of said shaft 49. The outer end of said shaft 49 carries smaller heart-shaped cam 56, including a rigidly formed collar 57 which is keyed to said shaft 49 by means of screw 58. The operative points of cams 54 and 56 are disposed in substantially opposite directions, as is seen in Fig. 2.

Further towards the center of the machine transverse shaft 59 is positioned, and journaled within a pair of supports 60, which extend above support 48, so that said shaft 59 is on a plane above shaft 49. Said supports 60 are rigidly affixed to frame bars 10.

Intermittently of said frame bars 10 said shaft 59 has a rigidly affixed collar 61, which carries downwardly depending feeler bar 62, the lower end of which is in a substantial alinement with the track on and over which paper is shifted by known means towards said rollers 15 and 16, and which said track includes a pair of lateral guiding bars 63 and a pair of centrally positioned supporting bars 64, and which latter supporting bars 64 are spaced for defining slot 65 therebetween, and within which slot said feeler bar 62 is adapted for oscillating movement on a vertical plane, as will be later apparent.

Said shaft 59 rigidly carries collar 66 with an integrally formed finger 67, which slants down-

wardly towards cam 54 and overhangs the latter, as is clearly seen in Fig. 4.

Support 60 which is oppositely disposed of shaft 49 has a substantially L-shaped bracket 68 affixed thereto for rigidly supporting upon its upper, horizontal end U-shaped guiding track 69, by one end of the latter, while the opposite end of which extends above shaft 49 and overhangs cam 56. At that latter end said guiding track 69 has an open, substantially V-shaped recess 70. Rigidly affixed to one side wall of said guiding track 69, in transverse relation with the latter, and extending laterally therefrom and in the direction outwardly of the machine, and at the apex of said recess 70 is an oblong housing 71, within which plunger rod 72 is positioned, and is supported by the bottom wall of said housing 71, and is guided therewithin for longitudinal sliding movement into and out of recess 70 and in a transverse relation with said guiding track 69. Said housing 71 is comparatively deep, and its upper side is open, for permitting upright shifting movement of said plunger rod 72 therewithin for the purpose which will be later apparent. Only the upper portion of said housing 71 and adjacent the inner end thereof is in rigid engagement with the adjacent side wall of said track 69, so that the lower portion of said housing 71 downwardly depends therefrom and the inner end of said housing 71 is on a plane with the outer face of the adjacent side wall of said track 69, for permitting unimpeded shifting movement of said plunger rod 72 transversely of said track 69, as is clearly seen in Fig. 4.

Integrally formed with the outer end of said housing 71 is an arcuate, upwardly directed sheath 73, through which flexible shaft 74 is extended. The inner end of said flexible shaft 74 rigidly connects with said plunger rod 72, while the upper end thereof is affixed to arm 75. Said arm 75 is integrally formed with head 76 rigidly carried by the adjacent outer end of said shaft 59.

Bar 77 is pivotally connected with the upper end of rocking arm 22, while the opposite end is guided by track 69 within which the former is positioned for longitudinal shifting. Said opposite end of said bar 77 is provided with a downwardly depending pin 78.

A pair of spacing rollers 79 keyed to shafts 13 and 14 prevent said shafts from making longitudinal shifting movement.

Teeth upon gears 17 and 18 are sufficiently deep to prevent the disconnection of said gears 17 and 18 when roller 16 is shifted away from roller 15, said latter shifting movement is to the extent of a fraction of an inch.

As to the operation of the device if it is assumed that paper is normally fed by suitable conveyor upon track 63—64, the lower operative end of feeler bar 62 will rest upon the paper as the same is fed towards rollers 15 and 16. The shifting paper is interposed between bars 64 upon which the same is supported from below, and feeler bar 62 thereabove. In that position the lower operative end of feeler bar 62 is elevated above the plane of the upper surface of said supporting bars 64. This latter position of the lower end of feeler bar 62 causes the corresponding elevation of finger 67 above cam 54 so that said latter cam does not contact it and the cam remains idle during its rotary movement. The position of the lower end of said feeler bar 62 just mentioned maintains arm 75 in an elevated position with flexible shaft 74 shifted upwardly, with the consequent withdrawal of plunger rod 72 out of the path of track 69. That latter, inoperative, withdrawn position of said plunger rod 72 makes cam 56 inoperative. The same rotates below recess 70, but does not at any time come in contact with said plunger rod 72. In that latter position of feeler bar 62, bar 77 is in engagement with the outer end of track 69, pin 78 engaging the end of the bottom wall of said track 69, as is indicated by dotted lines in Fig. 2. Said bar 77 was brought to that latter position by the shifting thereof by rocking arm 22 by the action of rise 28 of cam 27 upon idler 32 and against the tensioning action of spring 33. That latter position of rocking arm 22 is shown by dotted lines in Fig. 2. In that latter position of said rocking arm 22 as well as of the shorter rocking arm 23 rods 47 have been shifted therewith towards the center of the machine causing shifting of wedges 42 in the same direction, thereby causing shifting of bearings 34 upwardly, against the tension of spring 43, as already described, for shifting shaft 14 upwardly for maintaining roller 16 in an operative contact with roller 15. When bar 77 has been shifted towards the center of the machine by the action of cam 27 upon idler 32, as aforesaid, and pin 78 has cleared the adjacent end of track 69, the same drops down due to its gravity, with pin 78 in a transverse relation with the end of bottom wall of said track 69, as seen in dotted lines in Fig. 2, and the engagement between said pin 78 and track 69 is maintained due to the pulling action of coil spring 33 upon rocking arm 22. Otherwise said bar 77 is in an elevated position with pin 78 resting upon the bottom wall of said track 69, as is seen in full lines in Fig. 2.

If paper ceases to travel upon track 63—64, feeler bar 62 shifts by its lower end, due to gravity, into slot 65, thereby imparting rotary shifting movement to shaft 59 into a counterclockwise direction, as viewed from the end of said shaft 59 shown in Fig. 2, thereby causing downward shifting of finger 67 in contact with cam 54. The latter shifting movement of said shaft 59 also causes the downward shifting of arm 75 for shifting flexible shaft 74 downwardly for actuating plunger rod 72 for shifting the latter transversely of track 69, within recess 70 and in the path of bar 77, as is seen in Fig. 4. As soon as said plunger rod 72 has been shifted transversely and in the path of said bar 77, cam 56 striking the same by its point raises said plunger rod 72 upwardly. This action of cam 56 upon said plunger rod 72 causes said plunger rod 72 to strike said bar 77 for shifting the latter in said track 69 in a vertical direction until pin 78 is out of engagement with the adjacent outer end of said track 69. This operation elevates said pin 78 until the same is above the bottom wall of said track 69. When this is accomplished, action of coil spring 33 causes shifting of rocking arms 23 and 22 towards shafts 13 and 14, position shown in full lines in Fig. 2, for shifting rods 47 and wedges 42 in the same direction. Thus shifting of wedges 42 causes the downward shifting of bearings 34 for separating roller 16 from roller 15, as already described. This downward shifting of roller 16 away from roller 15 separates the two rollers, but does not separate the engagement of the teeth in gears 17 and 18. Thereby shafts 13 and 14, gears 17 and 18, as well as rollers 15 and 16 are permitted to continue their usual rotary movement with rollers 15 and 16 separated, thereby in the absence of paper therebetween preventing transfer of ink

from one roller to the other and consequent smearing.

When rollers 15 and 16 are continued to be separated in the absence of paper as aforesaid, cam 27 by its rise 28 continues to intermittently strike idler 32 for intermittently imparting rocking motion to rocking arm 22 and through shaft 21 to rocking arm 23, once during each revolution of shafts 13 and 14 in order to bring a contact of roller 16 with roller 15 once during each revolution of said rollers so as to be ready to pick up the paper as it commences anew to shift towards the rollers. By the action of rocking arms 22 and 23 as the same are actuated by the action of cam 27 upon idler 32 wedges 42 are shifted towards the center of the machine once during each revolution of said rollers 15 and 16.

During that last described action of cam 27 on idler 32 for rocking arms 22 and 23, bar 77 likewise intermittently shifts, but the interlocking of said bar 77 with track 69 through the medium of pin 78 is impossible due to the fact that when the lower end of feeler bar 62 remains within slot 65 by virtue of the absence of paper upon supporting bars 64, arm 75 is in a downward shifted position, as shown in Figs. 2 and 4, with plunger rod 72 in the path of said bar 77, and the action upon said plunger rod 72 by cam 56. This latter action of cam 56 intermittently striking plunger rod 72, once during each revolution of shafts 13 and 14 and at the instant when said bar 77 is shifted to the outermost extent, due to the timed operation of said cam 56 upon said plunger rod 72, said bar 77 is prevented from interlocking with track 69 through the medium of pin 78 as aforesaid, and thereby rocking arms 22 and 23 are prevented to assume permanent operative position, as is indicated by dotted lines in Fig. 2, and thereby further preventing permanent contact between rollers 15 and 16.

Once paper commences to be fed anew upon track 63—64 towards said rollers 15 and 16 feeler bar 62 becomes elevated by the action of paper thereon, and due to the upwardly shifted position of said feeler bar 62 in the presence and by the action of the paper thereupon, shaft 59 is forced to make a rotary shifting movement into the clockwise direction as viewed in Fig. 2, for upwardly shifting arm 75 for withdrawing plunger rod 72 from the path of said bar 77, and when said plunger rod 72 is thus withdrawn, next shifting of rocking arm 22 towards the center of the machine, and by the action of cam 27 upon idler 32, said bar 77 instantaneously becomes interlocked with track 69 through the medium of said pin 78 for permanently maintaining said bar 77 in its interlocked position with said track 69 and against the tension of spring 33 for permanently maintaining wedges 42 in their operative position with two rollers 15 and 16 in a permanent contact as long as paper is shifted towards them.

The operation of cam 54 and finger 67 have no connection with the mechanism for shifting wedges 42 into the operative or inoperative position for contacting or disconnecting rollers 15 and 16. The only object of said cam 54 and finger 67 is to intermittently impart rotary shifting movement to shaft 59 into the clockwise direction, as viewed in Fig. 2, for intermittently imparting upward shifting movement of the lower end of feeler bar 62 so that paper may be received between supporting bars 64 and said feeler bar 62 without undue strain thereon so as to

prevent the tearing or crinkling thereof at its forward edge. This intermittent action of cam 54 upon finger 67 is so timed as to not coincide with the action of cam 27 upon idler 32. The shifting of said finger 67 by cam 54, and consequent rotary shifting movement of shaft 59, is not sufficient however to raise arm 75 to a sufficient degree to withdraw plunger rod 72 from the path of bar 77.

Feeler bar 62 has another object in view, namely to maintain the fed paper in contact with the pins upon the conveyor (not shown) which are in contact with the rear edge of the paper, thereby tending to cause the reception of the paper within rollers 15 and 16 evenly.

It is observed that housing 71 remains at an incline with relation to its transverse axis, but in a perpendicular relation with track 69. The channel of said housing 71 is a fraction wider on transverse, horizontal plane thereof, than the diameter of said plunger rod 72, for permitting free upright as well as longitudinal shifting movement of said plunger rod 72 within said housing 71.

Tines 31 constitute a fork which embraces shaft 13, and upon which said tines 31 are permitted to make longitudinal shifting movement, without interference with the rotation of said shaft 13, when cam 27 causes shifting of arm 30 due to its action upon idler 32.

It is further observed that the body portion of feeler bar 62, adjacent the free end thereof remains at an extremely sharp angle with relation to track 63—64 so that paper of normal thickness fed upon said track shifting below the outer end of said feeler bar 62 will encounter no obstacle to raise the outer end of said feeler bar 62 from slot 65. When very thin paper is shifted towards rollers 15 and 16, intermittent upward shifting movement of feeler bar 62 by action of cam 54 upon finger 67 will facilitate the entrance of such paper below said feeler bar 62 for maintaining the latter in an elevated position and in contact with the paper but above the plane of track 63—64.

As already indicated, when feeler bar 62 is in an elevated position by the paper therebelow as the same shifts towards rollers 15 and 16, finger 67 remains above cam 54 so that the latter does not come in contact therewith. It is only when the paper ceases to be fed, and feeler bar 62 by its lowermost end remains within slot 65, that there is contact between cam 54 and finger 67 for intermittently, once during each revolution of rollers 15 and 16, raising finger 67 and thereby feeler bar 62 partially out of slot 65 for the purposes hereinabove indicated. The shifting of finger 67 by cam 54 is not to a sufficient degree to shift shaft 59 and through it arm 75 to withdraw completely plunger rod 72 from the path of cam 56 and bar 77. Said plunger rod 72 is withdrawn completely from the path of cam 56 only when the paper continues to be fed towards the printing rollers, and when the same are in contact, and when bar 77 is interlocked with track 69 through pin 78.

While there is described herein a preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, and a track support-

ing the paper as it is fed, said track having a slot, a device for separating said rollers when paper ceases to be fed thereto comprising supporting members within which one of said rollers is journaled, means including cyclically operable cam and spring means for shifting said supporting members with said last named roller to or away from the other of said rollers, means for maintaining said supporting members in the two shifted positions, a feeler member disposed over said track in contact with the paper upon said track and in alinement with said slot as the paper continues to be fed, said feeler member when in said last named position actuating said first named means for shifting said supporting members with said first named roller toward the other of said rollers and inducing the operation of said second named means, in the absence of paper upon said track said feeler member shifting within said slot and actuating said first named means for shifting said supporting members with said first named roller in the opposite direction and inducing the operation of said second means, said cam and spring means being effective for shifting said supporting members with said first named roller toward said second named roller for bringing the two in contact for a brief interval at least once during each revolution of said rollers when said feeler member is in said slot for conditioning said rollers to pick up the paper as the same commences to be fed anew upon said track, said last named means being operable counter to the action of said second named means and independently of said feeler member.

2. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, a shaft upon which each of said rollers is mounted, a pair of bearings within which one of said shafts is journaled for rotary movement, a track supporting the paper as it is fed, said track having a slot, a device for maintaining said rollers in an operative contactual relation as the paper is fed thereto and for separating said rollers as the paper ceases to be fed comprising supports for said bearings, wedge members resting upon said supports and in contact with said bearings, a rockshaft, a pair of rocking arms rigidly connected to said rockshaft, a rod connecting each of said rocking arms with one of said wedge members, said rocking arms being adapted for shifting to or away from said bearings for shifting said wedge members in opposite directions, whereby said bearings and said first roller are moved toward and away from the other of said rollers, means maintaining said rocking arms locked in their outwardly shifted position for maintaining the two rollers in an operative contactual relation as the paper is fed, a feeler bar overhanging said track and contacting the paper thereon as the same is fed, said feeler bar being in alinement with said slot, and when paper ceases to be fed upon said track said feeler bar being within said slot to actuate said means to move said rocking arms to a second position to maintain said rollers locked in their inoperative position means for shifting said rocking arms at least once during each revolution of said rollers while said rollers are rendered inoperative for contacting said rollers to condition the same to receive paper as it is fed anew, and means for rendering said first named means inoperative as said rocking arms are shifted to said first position by said second named means, said last named means being actuated by said feeler bar as the same is shifted away from said slot as the paper commences to be fed anew upon said track.

3. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, a shaft upon which each of said rollers is mounted, shiftable bearings in which one of said shafts is journaled, and a track supporting the paper as the same is fed, a device for maintaining said rollers in contactual relation as the paper is fed thereto and for separating said rollers as the paper ceases to be fed comprising shiftable supporting members associated with said bearings, an arm connected to said supporting members, said arm being adapted for swinging movement for shifting said supporting members into operative or inoperative position for separating said rollers or for bringing the same in mutual contacting position, tensioning means for maintaining said arm in an operative position for maintaining said rollers in separated position, a bar connecting with said arm, locking means engaging said bar for maintaining said arm in an inoperative swung position for maintaining said rollers in contacting position, and means for actuating said bar out of engagement with said locking means for freeing said bar and inducing the operation of said tensioning means, the operation of said last named means being induced by the absence of paper upon said track.

4. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, a shaft upon which each of said rollers is mounted, shiftable bearings in which one of said shafts is journaled, and a track supporting the paper as the same is fed, said track being provided with a slot, a device for maintaining said rollers in contactual relation as the paper is fed thereto and for separating said rollers as the paper ceases to be fed comprising shiftable supporting members associated with said bearings, an arm connected to said supporting members, said arm being adapted for swinging movement for shifting said supporting members into operative or inoperative position for separating said rollers or for bringing the same in mutual contacting position, tensioning means for maintaining said arm in an operative positon for maintaining said rollers in separated position, a bar connecting with said arm, locking means engaging said bar for maintaining said arm in an inoperative swung position for maintaining said rollers in contacting position, a feeler bar in alinement with said slot, said feeler bar being supported by the paper as the same is fed upon said track, a plunger rod supported for shifting movement into and out of the path of said bar, said plunger rod being operatively connected with by said feeler bar and actuated thereby for maintaining the former out of the path of said bar when paper continues to be fed upon said track, when paper ceases to be fed upon said track said feeler bar being adapted to shift into said slot, the shifting of said feeler bar into said slot actuating said plunger rod in the path of said bar, and means for striking said plunger rod when the same remains in the path of said bar, for bringing said bar out of engagement with said locking means for freeing said bar and inducing the operation of said tensioning means for separating said rollers.

5. In a printing machine including a pair of rollers, the combination with a mechanism for maintaining said rollers in contactual relation as the paper is fed thereto and for separating said

rollers as the paper ceases to be fed, a track supporting the paper as the same is fed, said track being provided with a slot, a rockshaft, and a feeler bar for actuating said mechanism, said feeler bar being adapted to overlie and contact the paper upon said track as the same is fed and to shift within said slot in the absence of paper upon said track, said feeler bar being rigidly connected to said rockshaft, of a device for intermittently actuating said feeler bar out of said slot in the absence of paper upon said track for facilitating reception of paper between said track and said feeler bar, as the paper commences to be fed anew upon said track, comprising a finger rigidly connecting with said rockshaft, and a cam in operative relation with said finger for intermittently shifting the latter for imparting rocking movement to said shaft and said feeler bar for intermittently bringing said feeler bar out of said slot in the absence of paper upon said track.

6. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, a device for separating said rollers when paper ceases to be fed thereto, comprising shiftable supporting members within which one of the rollers is journaled, means including cyclically operable cam and spring means for shifting said supporting members with said last-named roller toward the other of said rollers and for shifting said supporting members in the opposite direction for separating the rollers, feeler means responsive to the feeding of paper and operatively connected with said shifting means for controlling actuation thereof, said shifting means including a bar, locking means for engaging the bar to hold said rollers in engaged relation, said cam and spring means being effective to cause contact of the rollers at least once during each revolution of the rollers while said rollers are rendered inoperative, and means for rendering the locking means inoperative during said last-mentioned movement of the shifting means.

7. In a printing machine including a pair of rollers toward and between which paper to be printed is normally fed, a device for separating said rollers when paper ceases to be fed thereto, comprising shiftable supporting members within which one of the rollers is journaled, means including cyclically operable cam and spring means for shifting said supporting members with said last-named roller toward the other of said rollers, and for shifting said supporting members in the opposite direction for separating the rollers, feeler means responsive to the feeding of paper and operatively connected with said shifting means for controlling actuation thereof, said shifting means including a bar, locking means for engaging the bar to hold said rollers in engaged relation, said cam and spring means acting on the bar to move the shifting means and cause contact of the rollers at least once during each revolution of the rollers while said rollers are rendered inoperative, and a plunger operatively connected with the feeler means and acting on the bar for rendering the locking means inoperative during the last-mentioned movement of the shifting means, said plunger being movable out of operative relation with the bar by shifting of the feeler means by the feeding of paper.

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