March 27, 1962 O. F. WITT 3,027,160

COLLATOR MACHINE

Filed June 9, 1960 4 Sheets-Sheet 1

Fig. 1.

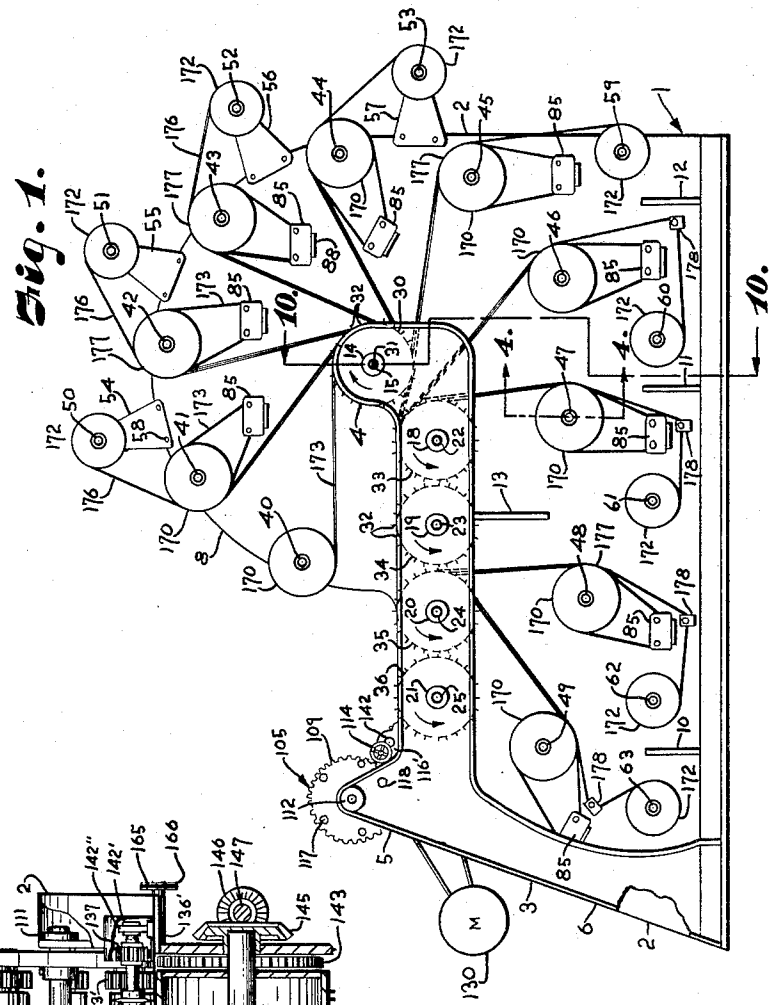
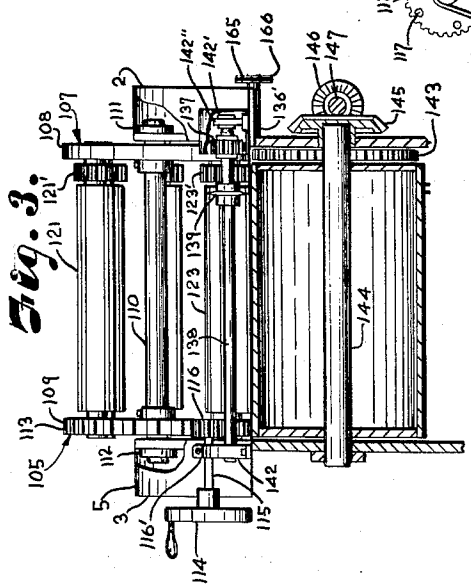


Fig. 3.



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Fig. 2.

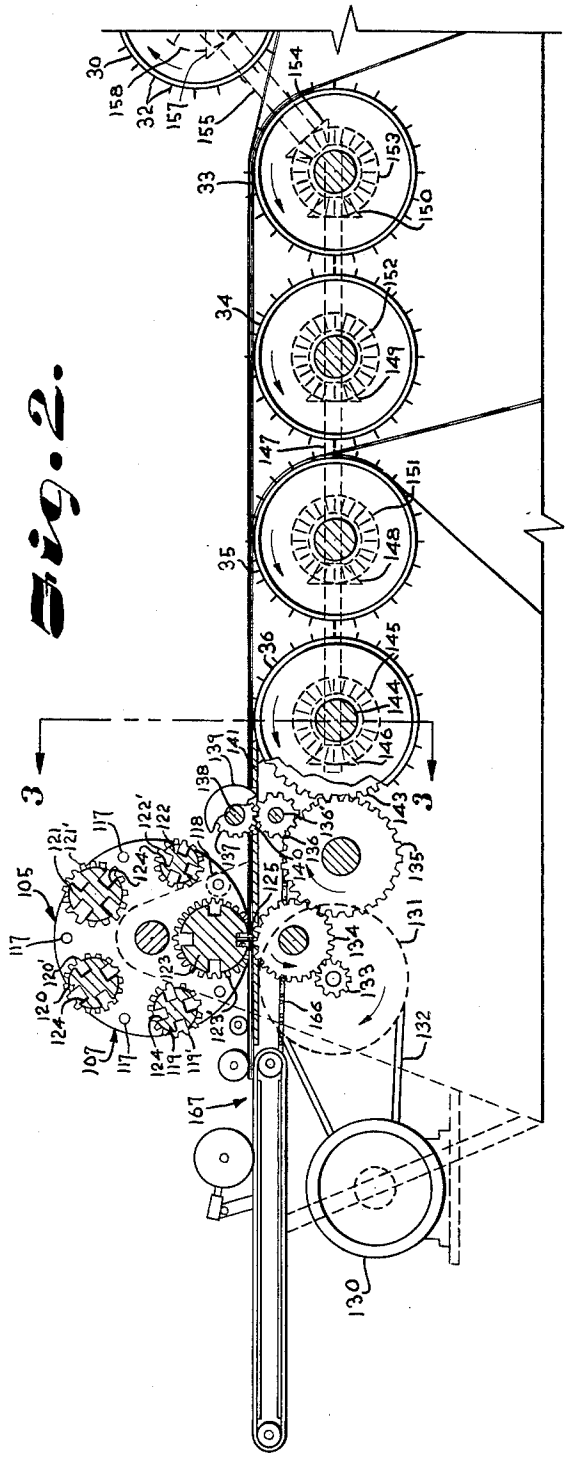
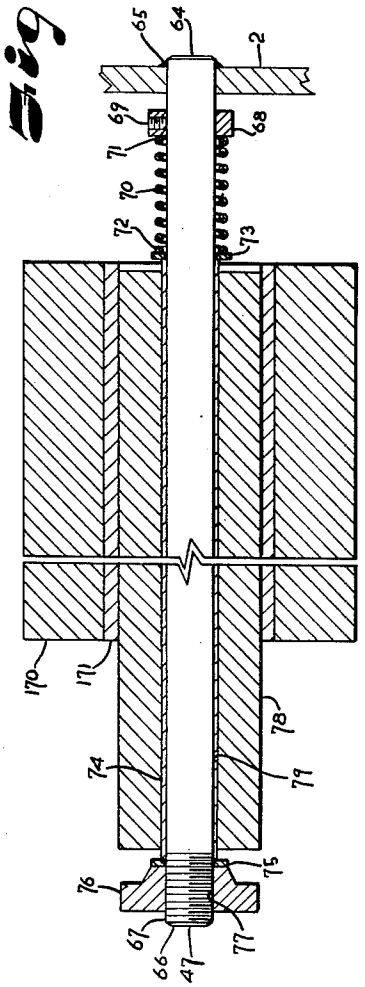


Fig. 4.



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Fig. 6.

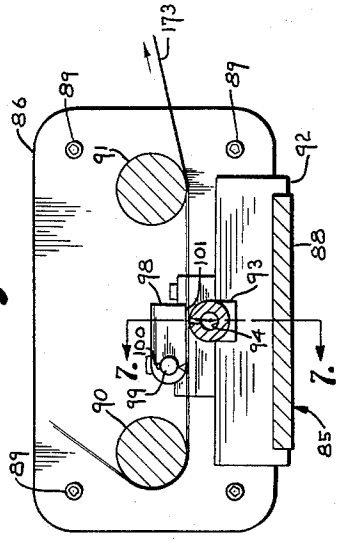


Fig. 7.

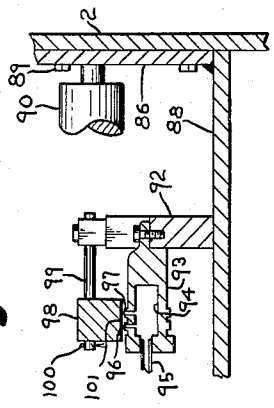


Fig. 5.

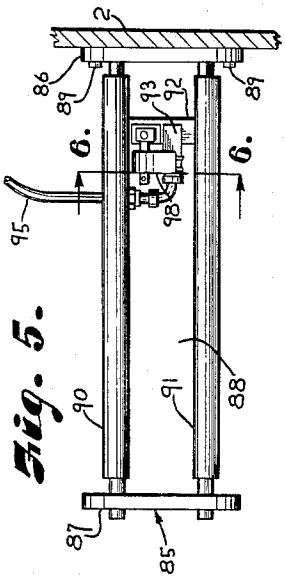
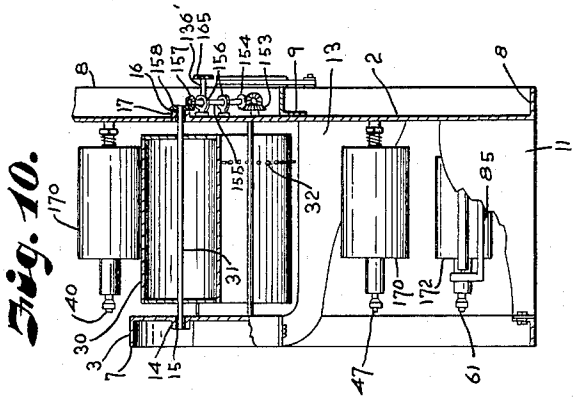


Fig. 10.



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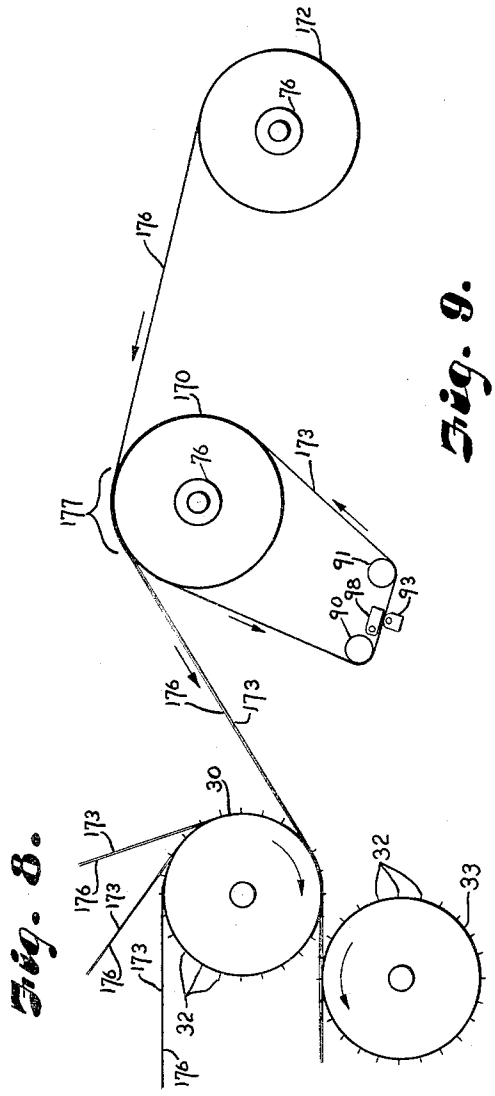


Fig. 8.

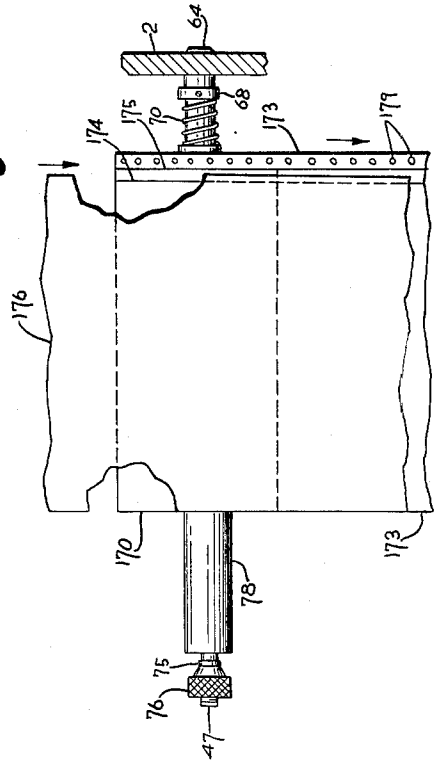


Fig. 9.

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3,027,160

COLLATOR MACHINE

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Filed June 9, 1960, Ser. No. 35,038
8 Claims. (Cl. 270—52)

This invention relates to an improved machine for collating or bringing together several webs of paper and carbon paper in superimposed layers for producing business forms and the like.

Collator machines heretofore used generally had the reels of paper and carbon paper mounted side by side in a horizontal, linear relationship, producing a machine of great length which occupied much valuable floor space.

The invention herein contemplates a collator machine in which the paper and carbon paper reels are maintained in a vertical plane and in a radial relationship about the web-driving roll or rolls permitting the machine to occupy a significantly smaller floor space than collator machines of the same capacity heretofore known.

Other important objects of this invention are: to provide a machine adapted for the high speed production of business forms having any desired number of sheets, as for example, two to ten sheets of paper with carbon paper sheets therebetween from paper and carbon paper webs and wherein the paper webs are adhesively connected to the carbon paper webs and to each other as they are unrolled from their respective rolls; to provide a collator machine in which the relative tension between respective webs is easily and quickly adjusted; to provide a collator machine having a minimum down time for set up due to hitherto unknown short web threading paths and conveniently located reel spindles; to provide a machine of this type in which a substantial arc of pin band engagement is maintained on the webs for better control; to provide such a machine so arranged that simultaneous observation of each reel and web being collated is permitted; to provide such a machine adaptable to receive reels of paper and carbon paper of any desired width; to provide a machine of this type having a form cutter mechanism which is quickly and easily adjustable to produce a great variety of form widths; to provide such a machine which, due to minimum handling of the webs, reduces the likelihood of carbon smears; and to provide a collator machine which can be manufactured at a substantial savings over the cost of machines hitherto used.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a side elevation of the collator machine with the outlet conveyor removed.

FIG. 2 is a fragmentary side elevation of the machine showing the web driving rolls and the form cutter mechanism.

FIG. 3 is a sectional view on the line 3—3, FIG. 2, showing details of the form cutter mechanism and a web driving roller.

FIG. 4 is a sectional view on the line 4—4, FIG. 1, showing details of a reel supporting spindle.

FIG. 5 is a detailed plan view of the adhesive applicator and associated rollers.

FIG. 6 is a sectional view taken on the line 6—6, FIG. 5, showing further details of an adhesive applicator and associated rollers.

FIG. 7 is a sectional view taken on the line 7—7, FIG. 6, showing further details of the adhesive applicator.

FIG. 8 is a diagrammatic view showing the path of a typical carbon paper web and paper web between the reels and the web driving rollers.

FIG. 9 is a plan view of a typical reel of paper with the web thereof contacting a web of carbon paper for adhesion therewith.

FIG. 10 is a sectional view taken on the line 10—10, FIG. 1, showing details of the frame construction and the relative positions of the machine components.

Referring more in detail to the drawings:

A rigid frame 1 is composed of a raised, planar, vertically disposed back section 2 and an elongated horizontally extending front section 3. The front section 3 exhibits raised portions 4 and 5 at opposite ends thereof and an integral leg 6 extending downwardly and outwardly from the raised portion 5. A flange 7 extends around the periphery of the front section 3 to provide strength and rigidity without adding excessive weight thereto. The back section 2, for the same purpose, carries thereon a peripheral flange 8 and an angle member 9, FIG. 10. Braces 10 to 13 are fixed to the back section 2 and the front section 3 for maintaining said sections in spaced parallel relationship. A raised boss 14 retains a bearing 15 on the raised portion 4 of the front section 3. The bearing 15 is horizontally aligned with a bearing 16 retained in a boss 17 on the opposed portion of the back section 2. A series of spaced raised bosses 18 to 21 on front section 3 contain bearings 22 to 25 respectively which are horizontally aligned with similar bearings (not shown) in raised bosses (not shown) on the back section 2.

A web driving roller 30 is located between the back section 2 and the front section 3 and fixed to a shaft 31 rotatably mounted in the bearings 15 and 16. The shaft 31 is driven in a clockwise direction, as shown in FIG. 1, through a gear train and motive device described hereinafter. The web driving roller 30 has, on the periphery thereof, a plurality of radially extending circumferentially spaced driving pins 32. Web driving rollers 33 to 36 which are identical with the roller 30 are similarly mounted between the back section 2 and the front section 3 in the bearings 22 to 25 respectively and in the aligning bearings in the back section 2 (not shown). The rollers 30 and 33 to 36 are horizontally spaced and the axes of rotation thereof are parallel, FIG. 1. The roller 30 is vertically offset as well as horizontally spaced from the rollers 33 to 36. For reasons which will appear hereinafter the rollers 33 to 36 are driven at the same rotational speed but in the opposite direction to that of the roller 30. The driving pins 32 on all of the rollers 30 and 33 to 36 are in a single plane perpendicular to the axis of rotation of the rollers 30 and 33 to 36 and near the edges thereof for a purpose described hereinafter.

A plurality of stationary cantilever spindles 40 to 47 are mounted on the back section 2 in a radial pattern approximately equidistant from and of equal circumferential spacing about the web driving roller 30. Additional stationary cantilever spindles 48 and 49 are also mounted on the back section 2 and radially positioned with respect to the roller 30 but are at greater radial distances from the roller 30 than the spindles 40 to 47. The spindles 48 and 49 are approximately the same radial distance to the roller 35 as the spindles 40 to 47 are to the roller 30. The spindles 46 to 49 are positioned substantially beneath the horizontal elongated portion of the front section 3, FIG. 1. A group of stationary cantilever spindles 50 to 53 are mounted on radially extending supporting members 54 to 57 respectively which are rigidly secured to the back section 2 by means of bolts or the like 58. The spindles 50 to 53 and further stationary cantilever spindles 59 to 61 which are mounted directly to the back section 2 are in a radial pattern substantially equidistant from the web driving roller 30 and are substantially equally circumferentially spaced about the roller 30. The radial distance from the spindles 50

to 53 and 59 to 61 to the roller 30 is substantially equal but greater than the distance from the roller 30 to the spindles 40 to 47, forming two distinct concentric substantially semi-circular patterns about the roller 30. Spindles 62 and 63 are also mounted on the back section 2 radially about the roller 30 but at proportionally greater distances therefrom than the spindles 48 and 49. The spindles 50 to 53 and 59 to 63 appear to form a substantially equidistant "outer layer" of spindles, and the spindles 41 to 49 an "inner layer," with each layer substantially surrounding the roller 30. Each of the spindles in the "outer layer" is slightly staggered circumferentially clockwise with respect to spindles 41 to 49, for a purpose described hereinafter. The above mentioned spindles are all maintained perpendicular to the plane of the back section 2 and parallel to the axes of the web driving rollers 30 and 33 to 36.

The construction of the above described stationary spindles is typical of the spindle 47 which is illustrated in detail in FIG. 4. Referring to FIG. 4, the spindle 47 at one end 64 extends through and is mounted in cantilever fashion on the back section 2 by suitable means such as weld 65. The opposite unsupported end 66 of spindle 47 exhibits threads 67. A collar 68 contains a longitudinal bore therethrough of sufficient size to be longitudinally slidable over the spindle 47 and is adapted to be fixed in selected positions on said spindle by means of a set screw 69. The collar 68 is maintained on the spindle 47 in the vicinity of the mounted end 64. A helical compression spring 70 bears, at one end 71 thereof, against the collar 68 and at the other end 72 thereof against a washer 73 urging it longitudinally of the spindle 47 in a direction away from the back section 2. A longitudinally movable and rotatable bearing sleeve 74 bears against the washer 73 at one end thereof and against a washer 75 at the other end thereof. A knob 76 having a threaded bore 77 is mated with the threads 67 on the end 66 of the spindle 47 and bears against the opposite side of the washer 75. A support cylinder 78 contains a longitudinal bore 79 into which the bearing sleeve 74 is press fit, causing the bearing sleeve 74 and the support cylinder 78 to rotate as a unit about the spindle 47. It is apparent that the support cylinder 78, when rotated about the spindle 47 is retarded by the friction of the bearing sleeve 74 against the washers 73 and 75, the degree of such retardation being adjustable by longitudinal adjustment of the collar 68 which alters the contact pressure between the washers and the bearing sleeve.

It is also apparent that longitudinal or lateral adjustment of the support cylinder 78 along the spindle 47 may be accomplished by rotating the knob 76. If such lateral or longitudinal adjustment results in undesirably high or low contact pressure between the washers 73, and 75 and the bearing sleeve 74, such condition may be corrected by selectively positioning the collar 68 without changing the longitudinal position of the support cylinder 78.

Adhesive applicators 85 are located substantially beneath the respective spindles 41 to 49, FIG. 1. The adhesive applicators 85 are compriserd of end plates 86 and 87 rigidly held in spaced parallel relation on a base plate 88 by a suitable securing means such as welding. The end plate 86 is rigidly secured to the back section 2 with screws 89 providing cantilever support for the adhesive applicator 85. A pair of parallel rollers 90 and 91 are rotatably mounted by each end thereof in the end plates 86 and 87 and extend perpendicular to the back section 2. A bracket 92 is mounted on the base plate 88 intermediate of the end plates 86 and 87 and beneath the rollers 90 and 91. Secured on the bracket 92 intermediate the rollers 90 and 91 is an adhesive receiver 93. The adhesive receiver 93 contains a hollow chamber 94 therein for liquid adhesive which is fed thereinto under pressure by a suitable pump (not shown) through a hose 95. A pair of spaced dispensing nozzles 96 and 97, which communicate with the hollow chamber 94, are located on the upper side of the adhesive receiver 93 in a line transverse to and preferably perpendicular to the back section 2. A weight 98 is freely pivotally mounted upon a shaft 99 and retained thereon with a cotter pin 100. The weight 98 is unbalanced on the shaft 99 and the underside 101 of the free end bears against the nozzles 96 and 97.

A form cutter mechanism indicated generally at 105 is located between the back section 2 and the front section 3 downstream from the web driving roller 36. The form cutter mechanism 105 comprises a cutter drum turret 107 having spaced, opposed circular end plates 108 and 109. A shaft 110 is fixed to the circular end plates 108 and 109 at the respective centers thereof, maintaining said plates in spaced paralled relation. The shaft 110 is journaled at each end thereof respectively in aligned bearings 111 and 112 on the back section 2 and raised portion 5 of the front section 3, FIG. 3. The circular end plate 109 exhibits a gear form 113 on the periphery thereof. A station selection wheel 114 is fixed to the end of a shaft 115 which carries a gear 116 on the other end thereof in mesh with the gear form 113. The shaft 115 is rotatably supported in a bearing member 116' fixed to the front section 3. A plurality of circumferentially spaced locking holes 117 are located near the periphery of the circular end plate 109. A locking pin 118 is retained on the front section 3, FIG. 1, but free to move longitudinally therethrough to engage any selected locking hole 117 for the purpose of maintaining the cutter drum turret 107 in a fixed selected rotational position relative to the machine frame. When the locking pin 118 is disengaged the turret 107 may be rotated by turning the hand wheel 114, permitting the selection of a new position or station for the cutter drum turret.

A plurality of cylindrical knife mounts or cutter drums 119 to 123 are rotatably mounted between the circular end plates 108 and 109 near the periphery thereof. The knife mounts or cutter drums 119 to 123 each contain a plurality of longitudinal slots 124 in which one or more web-cutting knife blades such as 125 may be removably retained. The cutter drums 119 to 123 are respectively of different diameters and each carries fixed thereto and adjacent the circular end plate 108, a gear 119' to 123' of a diameter corresponding to the diameter of the respective cutter drum.

The motive power for the machine is provided by an electric motor 130 which drives a pulley 131 through a belt 132. The pulley 131 rotates a gear 133 engaging with a gear 134. The gear 134 meshes with a gear on a selected cutter drum, such as 123' and also drives a gear 135. The gear 135 meshes with a gear 136 fixed on shaft 136', the gear 136 engaging with a gear 137 which is fixed to a shaft 138 rotating a disk cutter 139 fixed thereon. The disk cutter 139 has a portion of the periphery thereof extending through a slot 140 in a web supporting plate 141. The shaft 138 is supported at each end thereof in suitable bearings 142 and 142'. The bearing 142 is mounted in the bearing member 116' and the bearing 142' is mounted in opposed aligned position in bearing member 142'' on back section 2, FIG. 3. The disk cutter 139 rotates in a plane parallel and adjacent to the plane containing the driving pins 32 of the web driving rollers 30 and 33 to 36 for a purpose explained hereinafter.

The gear 135 also meshes with a gear 143 which drives a shaft 144 fixed to the web driving roller 36. The shaft 144 also has fixed thereto a bevel gear 145 engaging with a bevel gear 146 which is fixed to a shaft 147 suitably rotatably mounted on back section 2 at right angles to the shaft 144. The shaft 147 has fixed thereto, at spaced longitudinal points, bevel gears 148, 149 and 150. The bevel gears 148 to 150 respectively mesh with bevel gears 151 to 153 which, through appropriate shafting, turn the web driving rollers 35, 34 and 33 in the same direction and at synchronized rotational speed as

the web driving roller 36. The bevel gear 153 meshes with a bevel gear 154 fixed to a shaft 155 which extends upwardly and rearwardly toward the web driving roller 30. The shaft 155 is rotatably mounted on back section 2 by bearing support members 156, FIG. 10. The opposite end of the shaft 155 from the bevel gear 154 has fixed thereto a bevel gear 157 which meshes with a bevel gear 158. The bevel gear 158 is fixed to the shaft 31 which rotates the web driving roller 30. The web driving roller 30 as disclosed above turns in synchronization with, but in the opposite direction of, the web driving rollers 33 to 36.

The shaft 136', which supports the gear 136, extends through the back section 2 and has fixed on the end thereof a sprocket wheel 165 which meshes with a chain 166 driving the exit conveyor mechanism shown generally at 167.

In setting up the machine for operation, paper reels 170 having a core 171 of a suitable inside diameter to frictionally engage the outer surface of the support cylinders 78, are mounted on the stationary spindles of the "inner layer," namely, spindles 40 to 49. Carbon paper reels 172, having similar cores 171 are mounted on the spindles in the "outer layer," namely, spindles 50 to 53 and 59 to 63. The paper reels 170, with the exception of the paper reel mounted on the spindle 40, have the webs 173 thereof threaded beneath the rollers 90 and 91 of the respective adhesive applicators 85 and then directed back over the paper reel 170, FIG. 8. The relative tension between each web may be quickly and easily adjusted to a desired degree by longitudinally altering the positions of the collars 68. In its passage between the rollers 90 and 91, the edge of the paper web 173 contacts the adhesive nozzles 96 and 97, resulting in a pair of adjacent parallel lines of adhesive 175 and 174 being dispensed thereon, FIG. 9. The weight 98 insures that the paper web will contact the nozzles 96 and 97 and also helps control the thickness of the adhesive laid thereon. Each carbon paper reel 172 is laterally adjusted with respect to its associated paper reel 170 so that the carbon paper web 176 overlies the line of adhesive 174 without overlying the line of adhesive 175. The carbon paper reels 172 which are mounted on spindles 50 to 53 and 59, as mentioned above, are held in staggered relation with respect to their associated paper reels 170 mounted on spindles 41 to 45 in order that the carbon paper web 176 will pass through a desired arc of contact 177, FIG. 8, with its associated paper reel 170, during which the carbon paper web 176 is pressed against the paper web 173 for a period of time and thereby adhesively secured to the paper web 173. In the case of the carbon paper reels mounted on spindles 60 to 63, idler rolls 178 direct the carbon paper webs 176 through a suitable change of direction in order to provide the desired arc of contact 177 while more advantageously using the limited space provided beneath the front section 3.

As the various paper webs 173 come together or collate at the driving rollers, the line of adhesive 175, which is exposed, contacts and causes adherence to the underside of the overlying paper web 173, producing adherence thereto for forming an integrated, multi-layer paper web group with a web of carbon paper between each pair of opposed paper web surfaces.

The paper web 173 has on one edge thereof a row of equally spaced holes or perforations forming a pin band 179 adapted to be engaged with the driving pins 32 on the web driving rollers 30 and 33 to 36 which drive the paper and carbon paper webs in a path toward the form cutter mechanism 105. The pin bands 179 on the paper webs serve not only to cause gripping of the webs for driving same but they also cooperate with the driving pins 32 to maintain registry of the printed forms on the paper webs 173.

Due to the radial spindle arrangement about the row of web driving rollers, the paper webs 173, with the adhering carbon paper webs 176, travel toward the web driving rollers in various radial paths, as best seen in FIG. 1. The webs emanating from the reels on spindles 40 to 45 and 50 to 53 and 59 first contact the web driving roller 30 where they are driven thereunder and then over the subsequent web driving rollers 33 to 36. Other webs, namely those emanating from reels on spindles 46, 47, 60 and 61, first contact the web driving roller 33, while webs emanating from reels on spindles 48, 49, 62 and 63 first contact the web driving roller 35 before coming together with the rest of the webs. Thus, the various paper with their adhering carbon paper webs 176 travel over substantially equal distances before coming together or collating with the rest of the webs at the web driving rollers. Likewise, the "outer layer" arrangement of the carbon paper reels permits the carbon paper webs to travel over somewhat analogous distances before associating with paper webs. These features are of great advantage because, since the various webs must be maintained under tension to be properly processed, if the distances that the various webs must travel are substantially different, they will stretch unequal amounts before collating, producing forms which may tend to bend or buckle. Another great advantage of the radial spindle arrangement is the fact that various webs are handled to a minimum extent during unwinding and collating, greatly reducing the chances of carbon paper smears.

After coming together or collating, the various webs are driven in an integrated group into the form cutter mechanism 105 wherein the webs are periodically cut transversely therethrough to provide successive groups of superimposed sheets with every sheet in a group of substantially the same selected uniform width. By bringing one of the various knife mounts or cutter drums 119 to 123 into active position with respect to the webs ,and using one or a plurality of knife blades on the active cutter drum, a great variety of cutoff lengths for the finished business form may be quickly and easily provided.

After the various webs have been adhesively connected and are driven past the web driving roller 36, there is no further need of the pin band 179 on the edges of the paper webs 173. The disk cutter 139 is therefore adapted to cut the pin band from the paper webs as they are fed into the form cutter mechanism 105. After the webs are cut into individual forms they are carried away from the collator machine by means of a conventional exit conveyor mechanism 167.

It is apparent that the radial pattern and easy accessibility of the various paper and carbon paper reel spindles provides a compact space saving arrangement permitting the machine to be quickly and easily set up without having to transport individual reels and threads individual webs over substantial distances from the collating area. This permits spot unloading and mounting of the reels from a stationary truck. Also, the entire machine may be easily observed from a stationary position, eliminating the need to move back and forth to observe an extended row of rotating reels.

A further advantage stemming from the unique reel arrangement is that the various webs, by traveling over short and approximately analogous distances before collating, permit a smoother collating operation due to the absence of cumulative stresses likely to develop in webs which must pass over multiple sets of rolls over progressively longer distances. Also, the short length of the machine allows the manufacturing costs thereof to be maintained at a significantly lower figure than would otherwise be possible.

It is to be understood that while I have illustrated and described one form of my invention, it is not to be limited to the specific form or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. In a collator machine adapted to produce business

forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of paper and interjacent webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a front and a back section, bracing means fixed to said front and back sections for maintaining said sections in spaced relation, means supporting said paper and carbon paper reels in position for supplying said webs in superimposed condition, means mounted on said frame between said sections for driving said superimposed webs along a path, a form cutter mechanism downstream of said path adapted for periodically transversely cutting said webs, said form cutter mechanism being mounted on said frame between said sections and comprising, a rotatable, circular cutter drum turret having a plurality of cylindrical cutter drums of different diameters rotatably mounted near the periphery thereof, locking means for selectively retaining said turret in alternate rotational positions with respect to said frame whereby a selected cutter drum is brought into active position with respect to said webs, means for rotating the actively positioned cutter drum at a rate in synchronization with the web driving speed of said web driving means and a removable web-cutting knife blade adapted for mounting on said actively positioned cutter drum.

2. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of paper and interjacent webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a front and a back section, bracing means fixed to said front and back sections for maintaining said sections in spaced relation, means supporting said paper and carbon paper reels in position for supplying said webs in superimposed condition, means mounted on said frame between said sections for driving said superimposed webs along a path, a form cutter mechnism downstream of said path adapted for periodically transversely cutting said webs, said form cutter mechanism being mounted on said frame between said sections and comprising, a rotatable cutter drum turret having opposed, spaced circular end plates, a plurality of cylindrical cutter drums of different diameters rotatably mounted near the periphery of and between said end plates, said cutter drums having a plurality of longitudinal slots on the surface thereof, locking means for selectively retaining said turret in alternate rotational positions with respect to said frame whereby a selected cutter drum is brought into active position with respect to said webs, means for rotating the actively positioned cutter drum at a rate in synchronization with the web driving speed of said web driving means and a removable web cutting knife blade adapted for mounting in at least one of said slots on said actively positioned cutter drum.

3. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speeds from superimposed webs of paper and interjacent webs of carbon paper originating from respective rotating paper reels and carbon paper reels; frame means having a raised back section, web driving means mounted on said frame means, cantilever spindles mounted on said back section for supporting said reels in position for supplying said webs in superimposed relation to said web driving means, the unsupported ends of said spindles having screw threads thereon and being accessible for mounting said reels thereover, means on each of said spindles for rotatably supporting and adjustably rotatably braking and longitudinally positioning said reels, each of said rotatably supporting, longitudinally positioning and braking means comprising a longitudinally movable and rotatable bearing sleeve on said spindle having one end facing said back section and the other end facing said screw threads, washers on said spindle contacting said sleeve at each end thereof, a collar in a selectively fixed longitudinal position on said spindle adjacent said back section, a helical spring on said spindle having the ends thereof urging respectively against said collar and said washer contacting said back section facing sleeve end, a knob having a threaded bore mating with said screw threads and urging against said washer contacting said thread facing sleeve end and means mounting said reels on said sleeves for movement therewith.

4. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of paper and integrated webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a front section and a back section, bracing means fixed to said front and back sections for maintaining said sections in spaced relationship, web driving means mounted on said frame between said sections, spindles mounted on said frame for rotatably supporting said paper reels and carbon paper reels in position for supplying said webs in superimposed position to said web driving means, a plurality of adhesive applicators mounted on said frame for applying adhesive on selected webs, each of said applicators comprising; an adhesive receiver having a chamber for containing liquid adhesive under pressure, a dispensing nozzle communicating with said chamber, means guiding the web over said nozzle, and means urging the web against said nozzle to insure contact therewith.

5. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of paper and integrated webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a front section and a planar back section, bracing means fixed to said front and back sections for maintaining said sections in spaced relationship, web driving means rotatably mounted on said frame between said sections, spindles mounted on said back section for rotatably supporting said paper and carbon paper reels in position for supplying said webs in superimposed relation to said web driving means, means for longitudinally adjusting said reels on said spindles with respect to each other, a plurality of adhesive applicators mounted on said frame adapted to apply a pair of adjacent parallel lines of adhesive on selected paper webs, each of said applicators comprising an adhesive receiver having a chamber for containing liquid adhesive under pressure, a pair of dispensing nozzles in a line transverse to the plane of the back section and communicating with said chamber, means guiding the paper web over said pair of nozzles, and means urging the paper web against said pair of nozzles to insure contact therewith, whereby said paper reels and carbon paper reels may be laterally adjusted with respect to each other in order that each carbon paper web overlies one of said adhesive lines and the other of said adhesive lines contacts an overlying paper web.

6. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of pin band perforated paper and interjacent webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a raised, planar, vertically disposed back section and an elongated horizontally extending front section, a plurality of braces fixed to said front and back sections for maintaining said sections in spaced, parallel relationship, mutually aligned sets of bearings in horizontally opposed portions of said front and back sections, a plurality of web driving rollers rotatably mounted in said bearings and between said sections in horizontally spaced positions and having the axes of rotation thereof parallel, each of said web driving rollers having a plurality of radially extending circumferentially spaced driving pins located in a plane perpendicular to the axes of rotation of said web driving rollers, the spacing of said pins being such that they will engage in corresponding holes in said pin band perfora-

tions for maintaining registry between the paper webs and driving the webs in a path, cantilever spindles mounted on said back section in radial and approximately equally circumferentially spaced relationship about one of said web driving rollers to support said reels in position for supplying said webs in superimposed relation to said web driving roller, said spindles extending parallel to the axes of rotation of said web driving rollers, the unsupported ends of said spindles being threaded and accessible for mounting said reels thereover; means for rotatably supporting and rotatably braking said reels on said spindles and laterally adjusting said reels with respect to each other; a plurality of adhesive applicators mounted on said frame adapted to apply a pair of adjacent parallel lines of adhesive on selected paper webs as they unroll from their respective reels, each of said applicators comprising an adhesive receiver for containing liquid adhesive under suitable pressure; a pair of adjacent dispensing nozzles in a plane perpendicular to the back section and communicating with said adhesive receiver, means guiding the paper web over said pair of nozzles and means urging said paper web against said pair of nozzles to insure contact therewith.

7. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of pin ban perforated paper and interjacent webs of carbon paper originating from respective rotating paper reels and carbon paper reels; a rigid frame having a raised, planar, vertically disposed back section and an elongated horizontally extending front section, a plurality of braces fixed to said front and back sections for maintaining said sections in spaced, parallel relationship, mutually aligned sets of bearings in horizontally opposed portions of said front and back sections, a plurality of web driving rollers rotatably mounted in said bearings and between said sections in horizontally spaced positions and having the axes of rotation thereof parallel, each of said web driving rollers having a plurality of radially extending circumferentially spaced driving pins located in a plane perpendicular to the axes of rotation of said web driving rollers, the spacing of said pins being such that they will engage in corresponding holes in said pin band perforations for maintaining registry between the paper webs and driving the webs in a path, cantilever spindles mounted on said back section in radial and approximately equally circumferentially spaced relationship about one of said web driving rollers to support said reels in position for supplying said webs in superimposed relation to said web driving roller, said spindles extending parallel to the axes of rotation of said web driving rollers, the unsupported ends of said spindles being threaded and accessible for mounting said reels thereover; means for rotatably supporting and rotatably braking said reels on said spindles and laterally adjusting said reels with respect to each other; a plurality of adhesive applicators mounted on said frame adapted to apply a pair of adjacent parallel lines of adhesive on selected paper webs as they unroll from their respective reels, each of said applicators comprising an adhesive receiver for containing liquid adhesive under suitable pressure; a pair of adjacent dispensing nozzles in a plane perpendicular to the back section and communicating with said adhesive receiver, means guiding the paper web over said pair of nozzles and means urging said paper web against said pair of nozzles to insure contact therewith; a form cutter mechanism adapted to periodically and transversely cut said webs, said form cutter mechanism being mounted on said frame between said sections and downstream from said web driving rollers for receiving said superimposed webs, motive means for driving said form cutter mechanism at a rate in synchronization with the web driving speed of said web driving rollers, and a rotary disk cutter located between said web driving rollers and said form cutter mechanism and rotating in a plane parallel to the plane of said driving pins, said rotary cutter adapted to sever said pin band from said superimposed paper webs as they are delivered to said form cutter mechanism from said web driving rollers.

8. In a collator machine adapted to produce business forms having a plurality of integrated paper-carbon paper sheets at high speed from superimposed traveling webs of paper and interjacent webs of carbon paper originating from respective rotating paper and carbon paper reels, the improvement comprising; a rigid frame having a raised, planar, vertically disposed back section and an elongated horizontally extending front section, a plurality of braces fixed to said front and back sections for maintaining said sections in spaced parallel relationship, mutually aligned sets of bearings in horizontally opposed portions of said front and back sections, a plurality of web driving rollers rotatably mounted in said bearings and between said sections in horizontally spaced positions and having the axes of rotation thereof parallel, a first plurality of stationary cantilever spindles mounted on said back section approximately equidistant from and of equal circumferential spacing about one of said web driving rollers, a second plurality of stationary cantilever spindles mounted on said back section and radially positioned with respect to said one web driving roller but at greater radial distances therefrom than said first plurality of spindles, said second plurality of spindles being substantially radially equidistant from another of said web driving rollers, a third plurality of stationary cantilever spindles mounted on said back section forming a substantially equidistant outer layer of spindles about said first and second pluralities of spindles, all of said spindles extending parallel to the axis of rotation of said web driving rollers; the unsupported ends of said spindles being threaded and accessible for mounting said reels thereover; means for rotatably supporting and rotatably braking said reels on said spindles and laterally adjusting said reels with respect to each other; a plurality of adhesive applicators mounted on said frame adapted to apply adhesive on selected paper webs as they unroll from their respective reels; a form cutter mechanism adapted to periodically and transversely cut said webs, said form cutter mechanism being mounted on said frame between said frame sections and downstream from said web driving means for receiving said superimposed webs, and motive means for driving said form cutter mechanism at a rate in synchronization with the web driving speed of said web driving rollers.

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