

June 12, 1934.

C. J. BECK

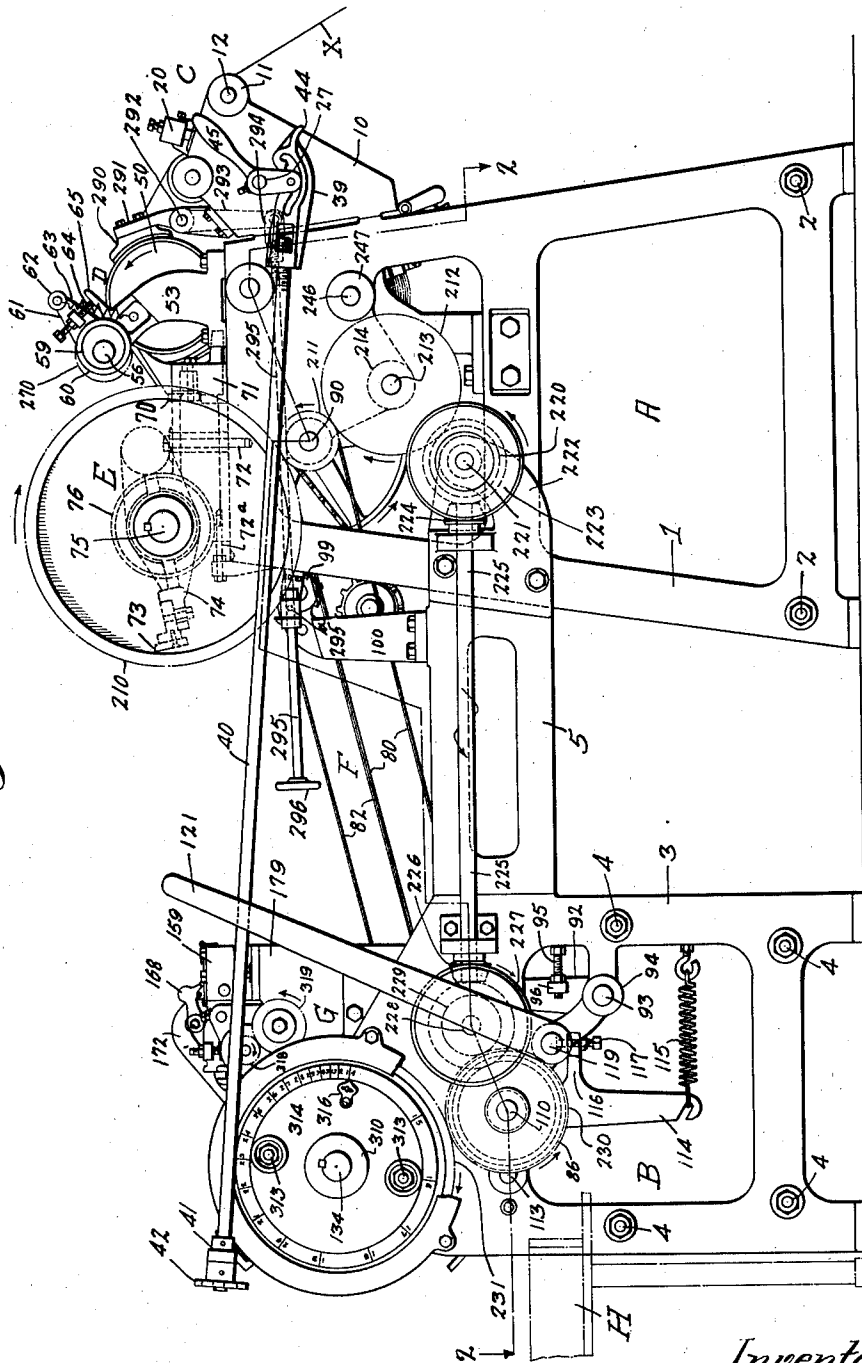
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 1

Fig. 1.



Inventor:
Charles J. Beck,
By his Attorneys
Horn & Horn

June 12, 1934.

C. J. BECK

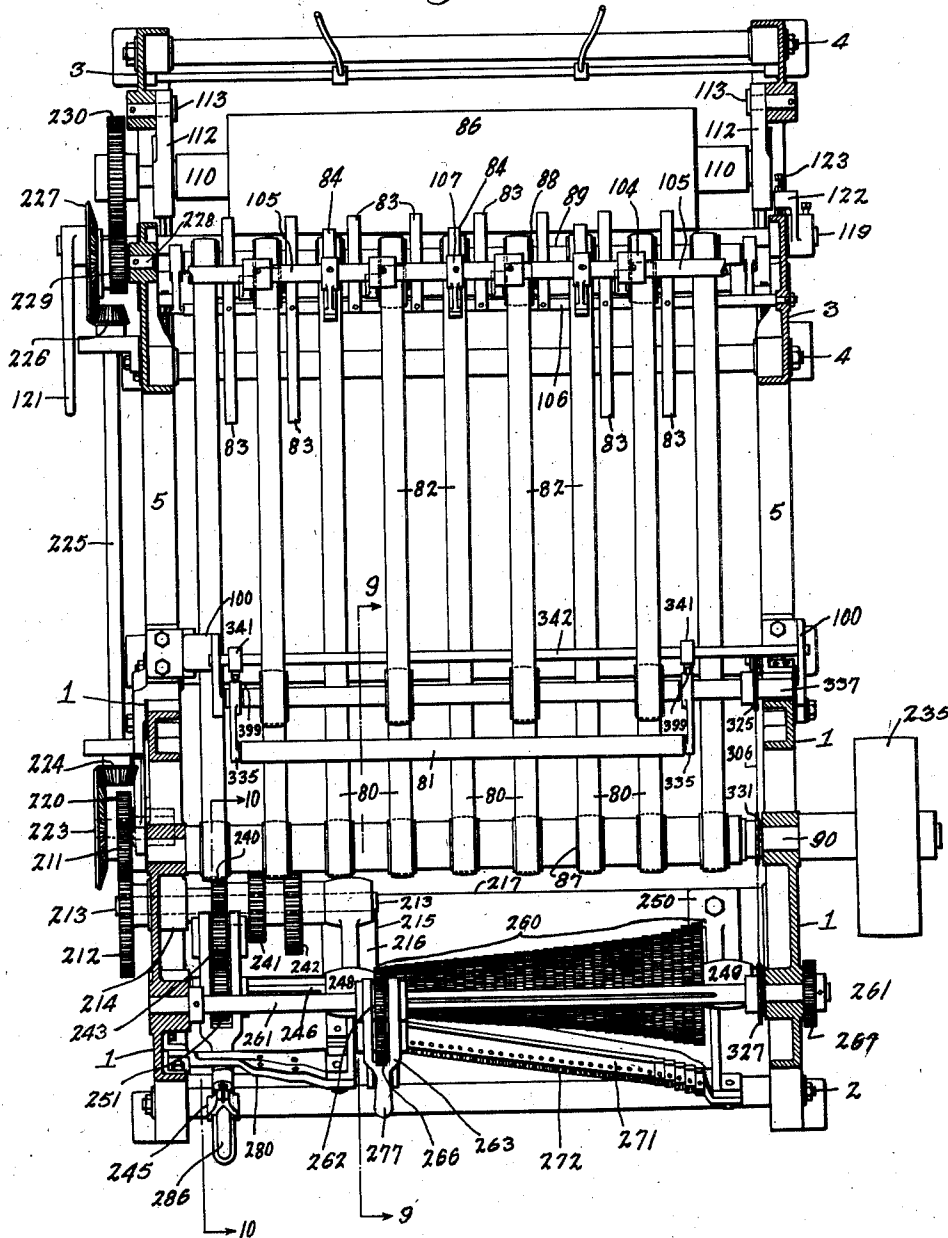
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 2

Fig. 2.



Inventor:-
Charles J. Beck,
By his Attorneys
Howson & Howson

June 12, 1934.

C. J. BECK

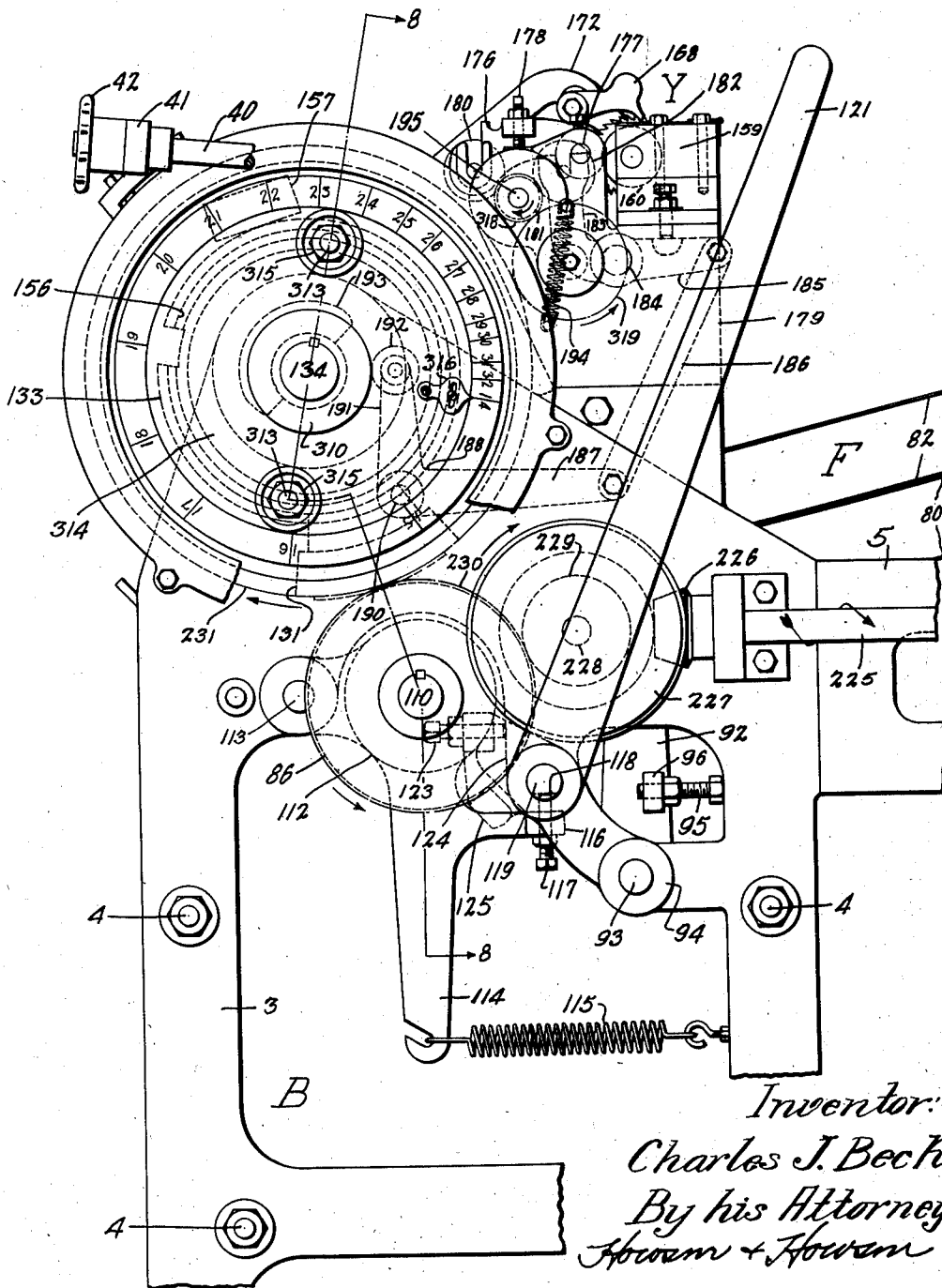
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 3

Fig. 3.



June 12, 1934.

C. J. BECK

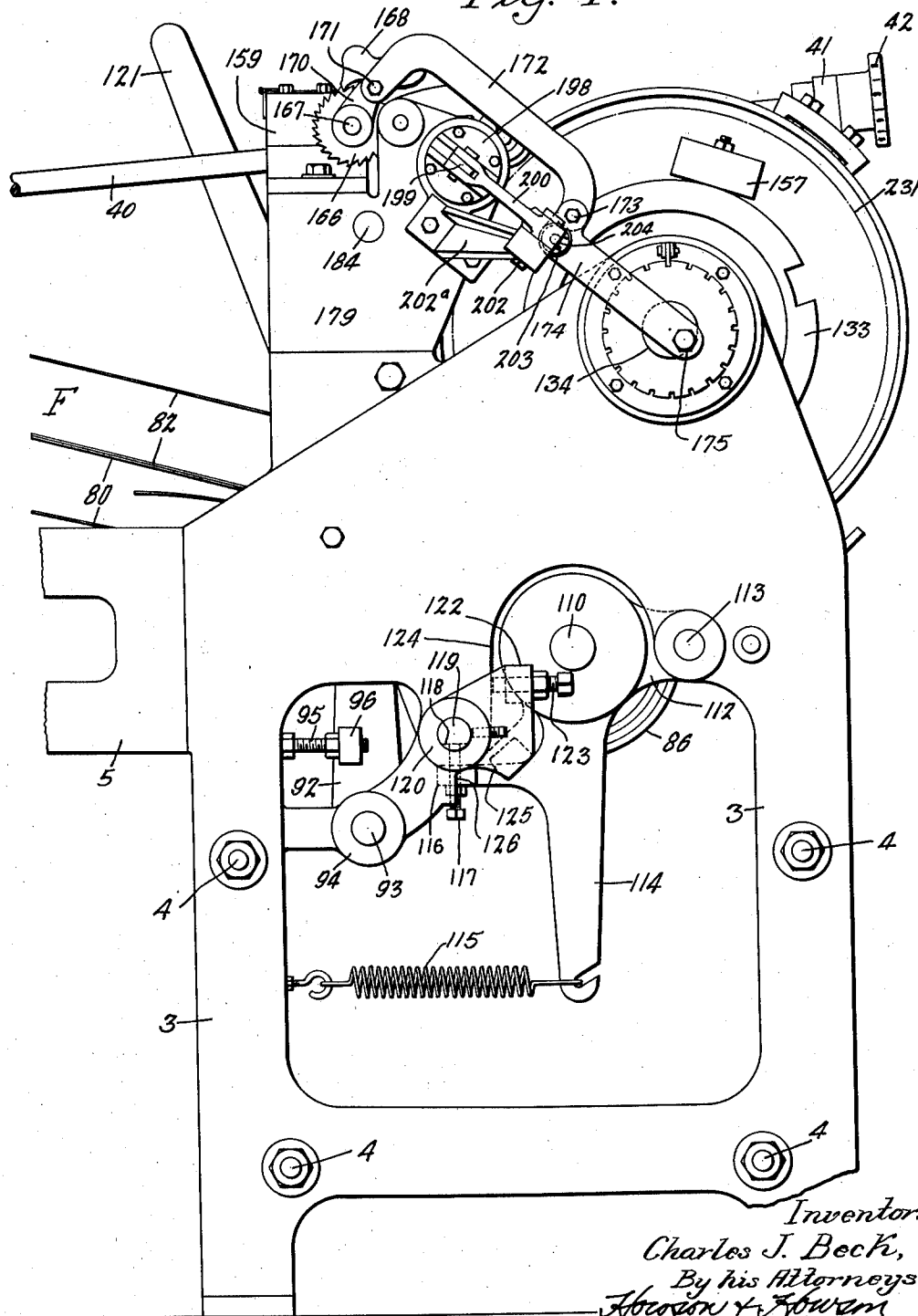
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 4

Fig. 4.



June 12, 1934.

C. J. BECK

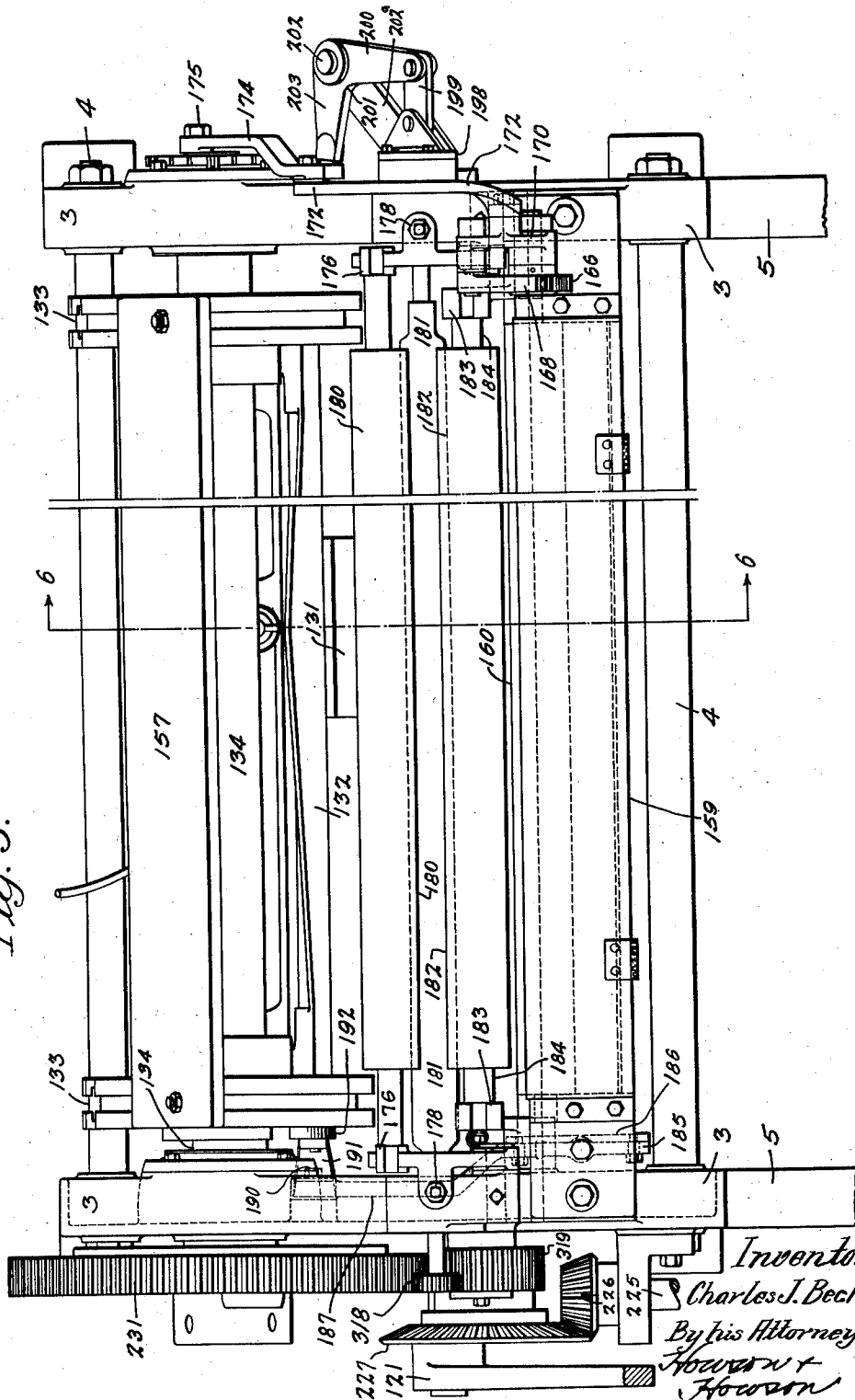
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 5

Fig. 5.



Inventor:
Charles J. Beck,
By his Attorneys
Hobbs &
Hobbs

June 12, 1934.

C. J. BECK

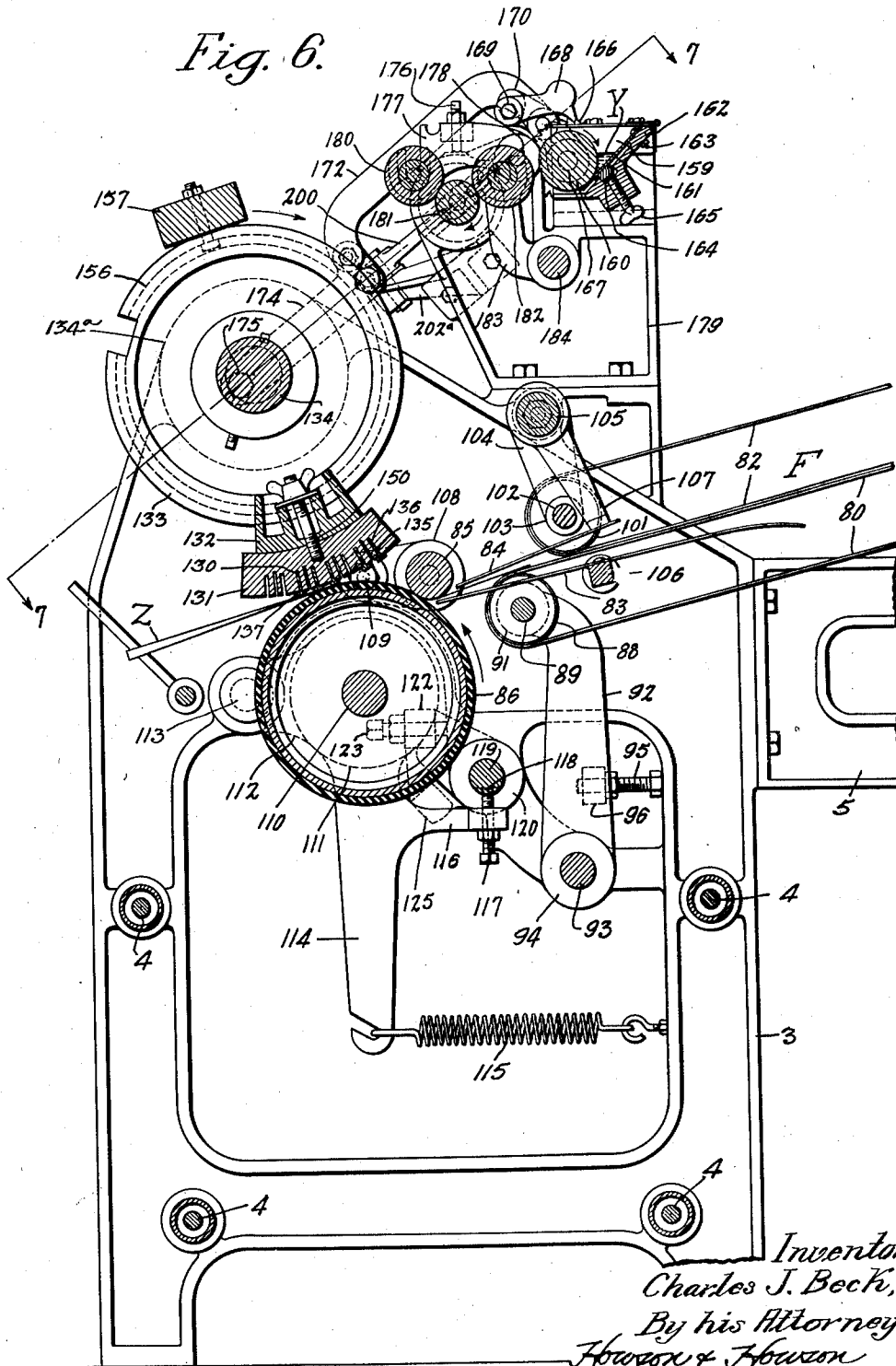
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 6

Fig. 6.



Inventor
Charles J. Beck,
By his Attorneys
Howson & Howson

June 12, 1934.

C. J. BECK

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 7

Fig. 10.

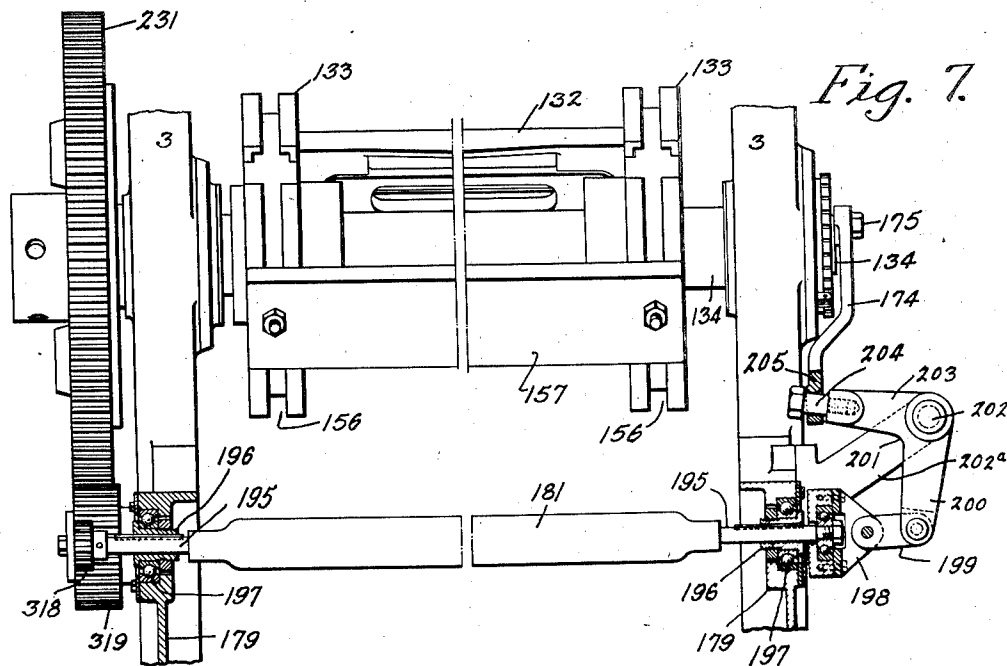
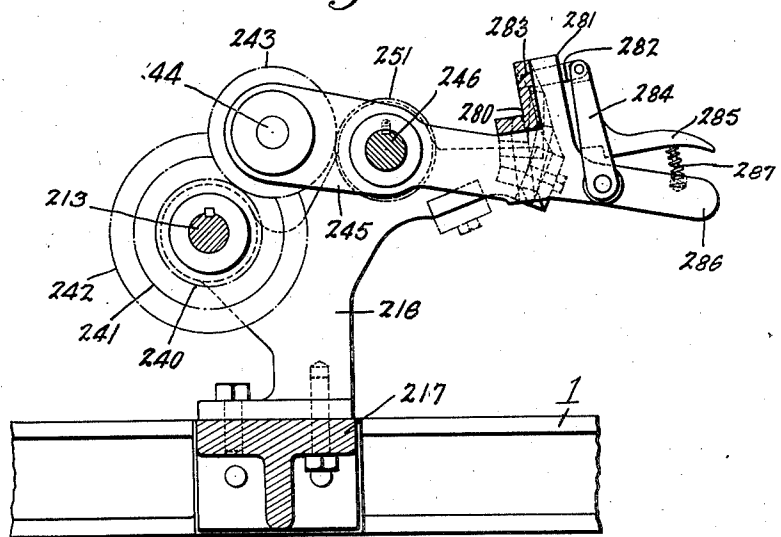


Fig. 7.

Inventor:-
Charles J. Beck,
By his Attorneys
Howson & Howson

June 12, 1934.

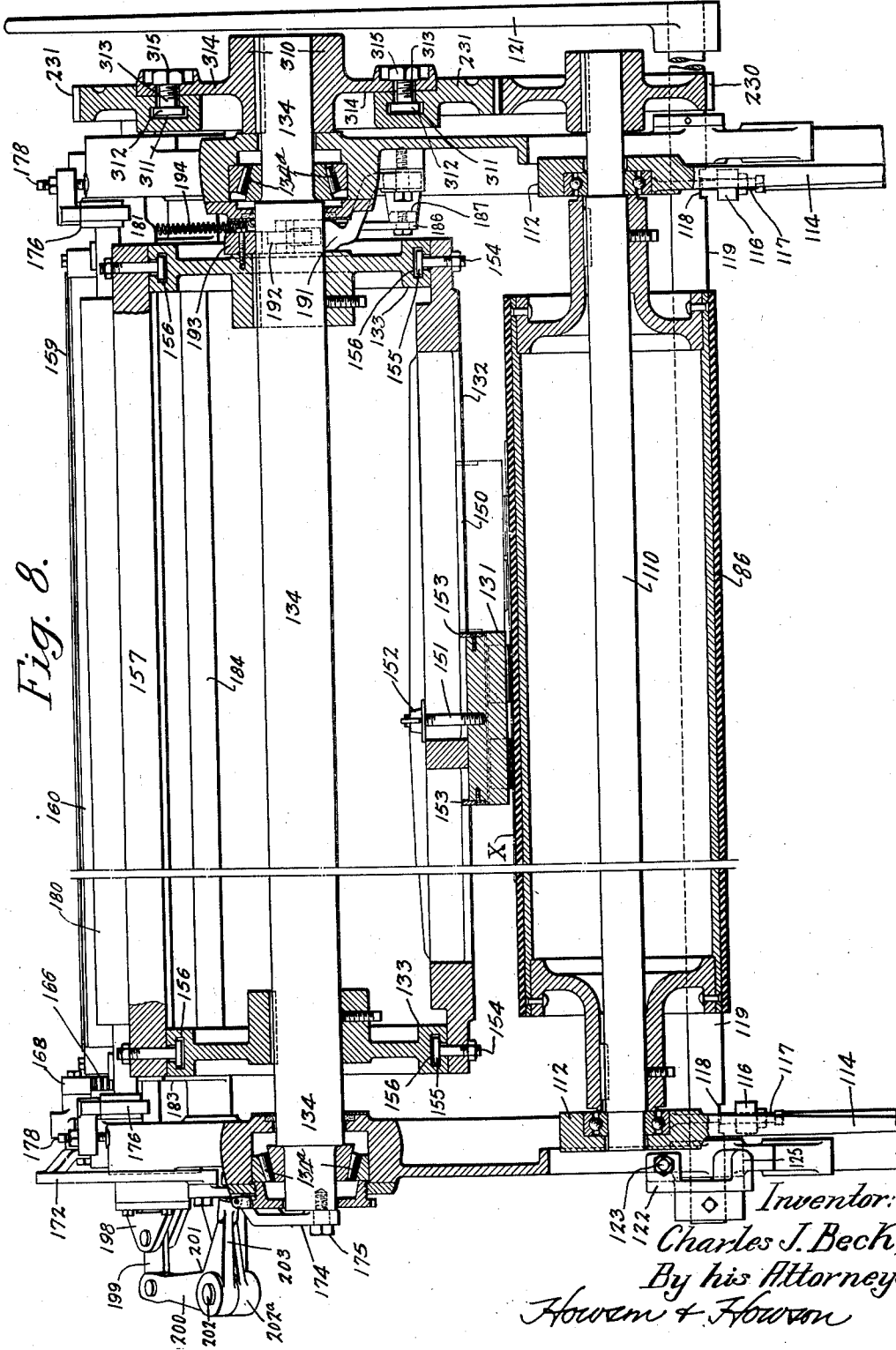
C. J. BECK

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 8



June 12, 1934.

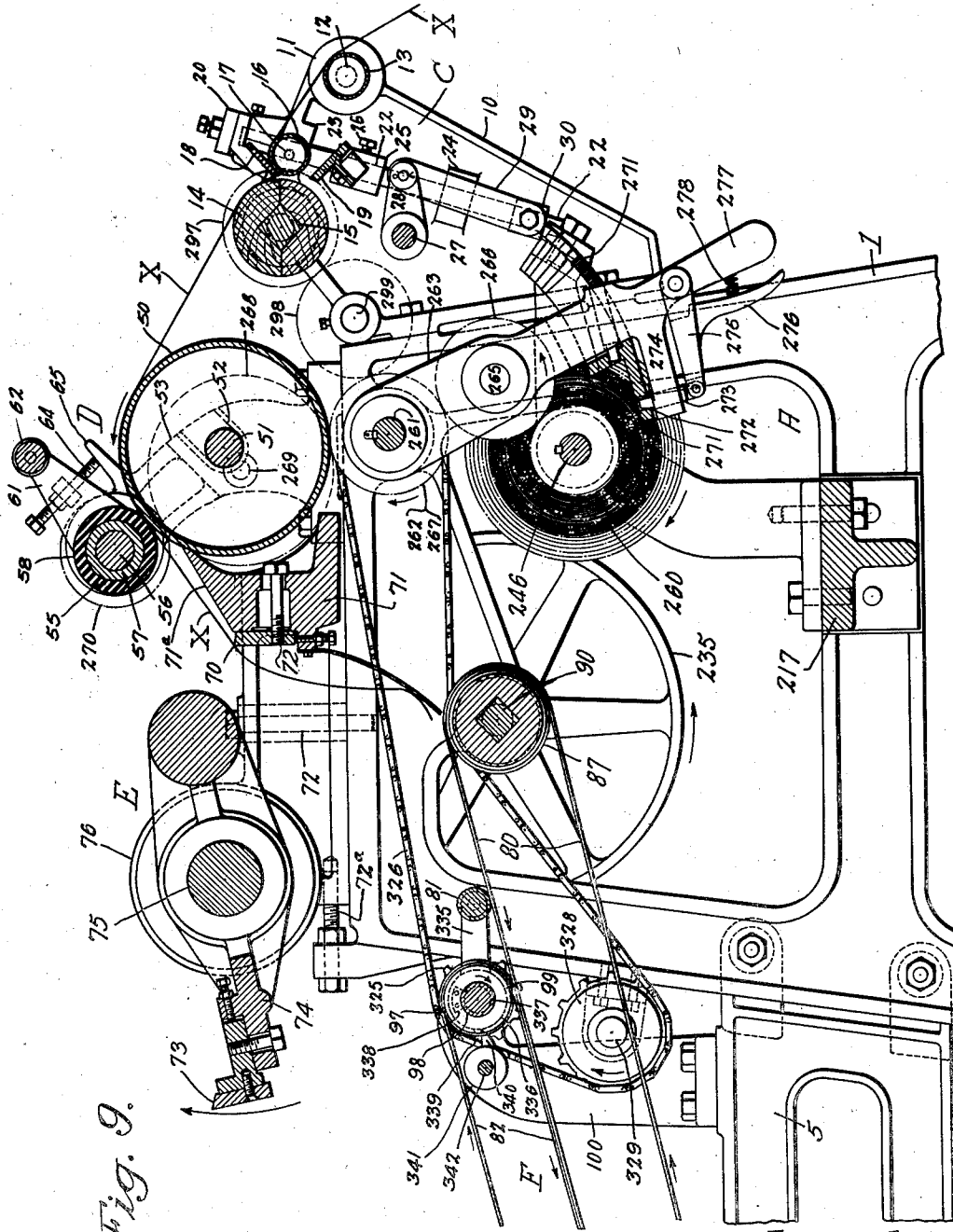
C. J. BECK

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 9



Inventor:-
Charles J. Beck,
By his Attorneys
Howson & Howson

June 12, 1934.

C. J. BECK

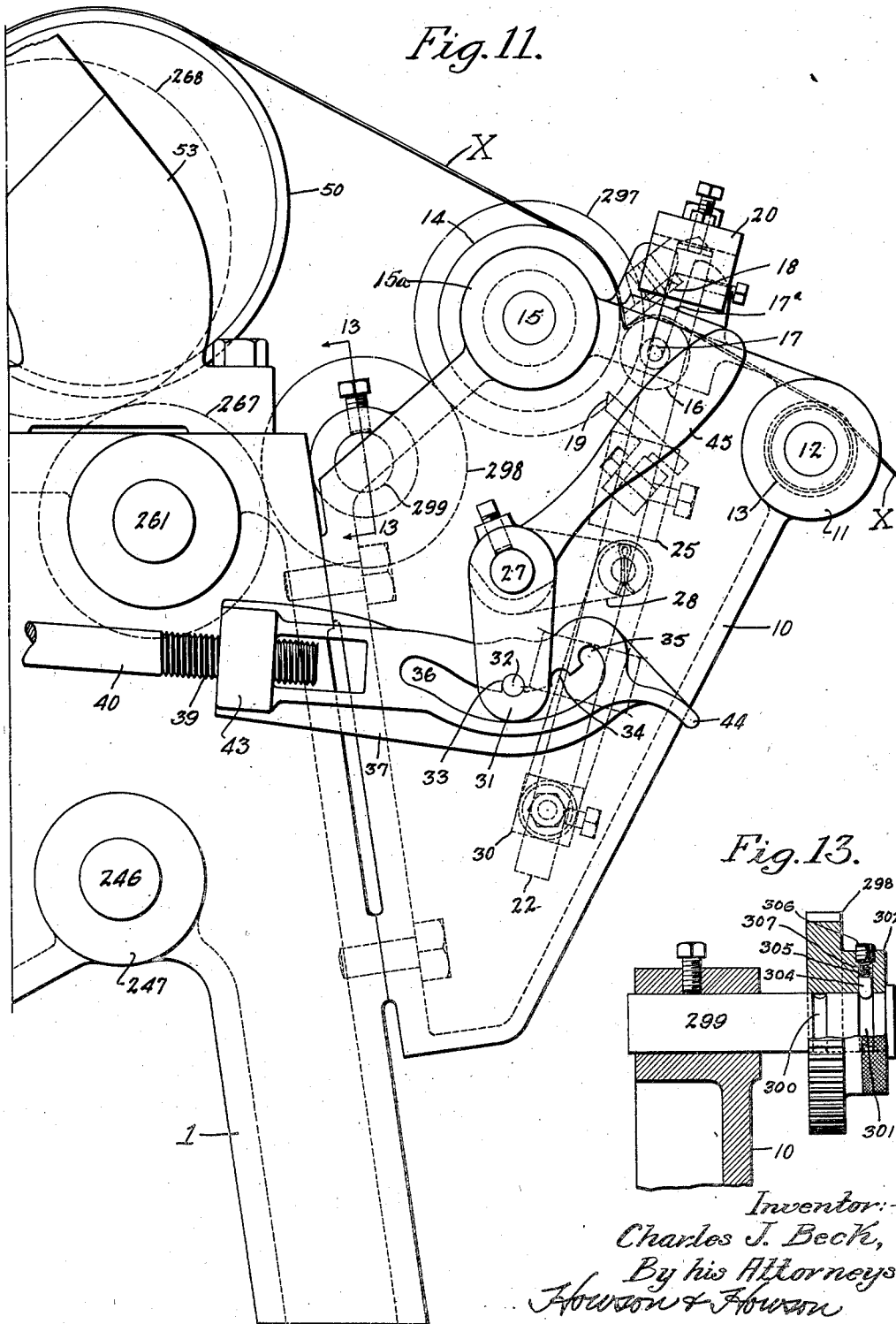
1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 10

Fig. 11.



June 12, 1934.

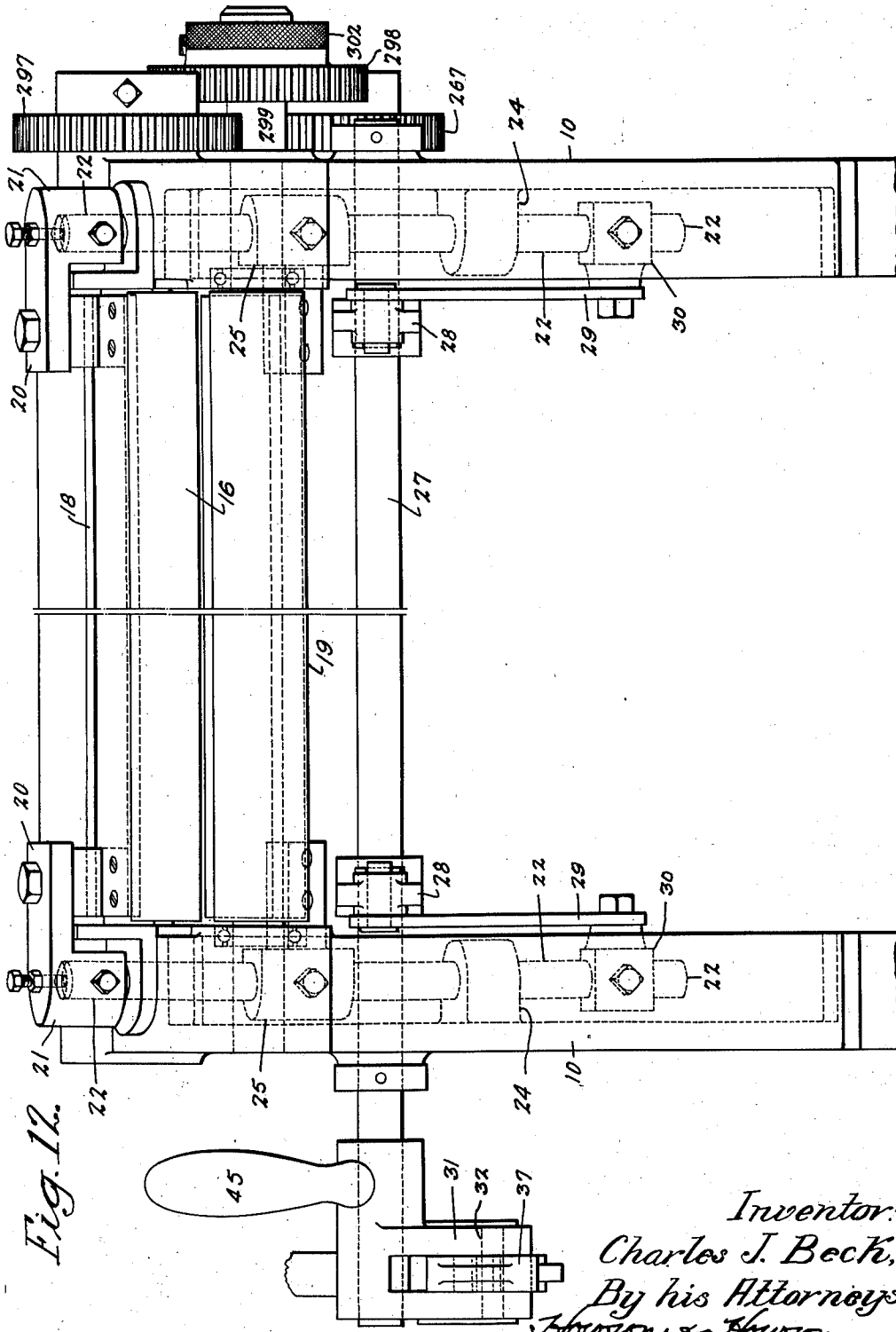
C. J. BECK

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 11



Inventor:
Charles J. Beck,
By his Attorneys
Hobson & Hobson

June 12, 1934.

C. J. BECK

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Filed Oct. 24, 1929

12 Sheets-Sheet 12

Fig. 14.

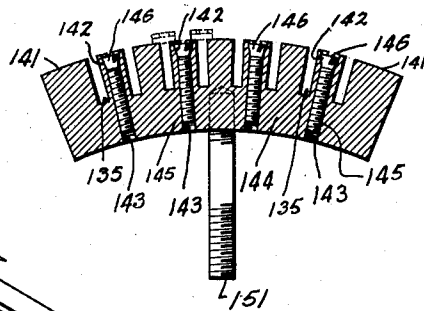
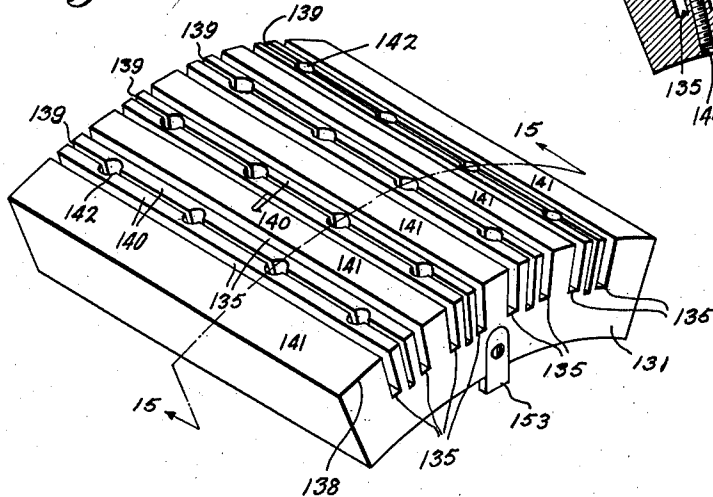
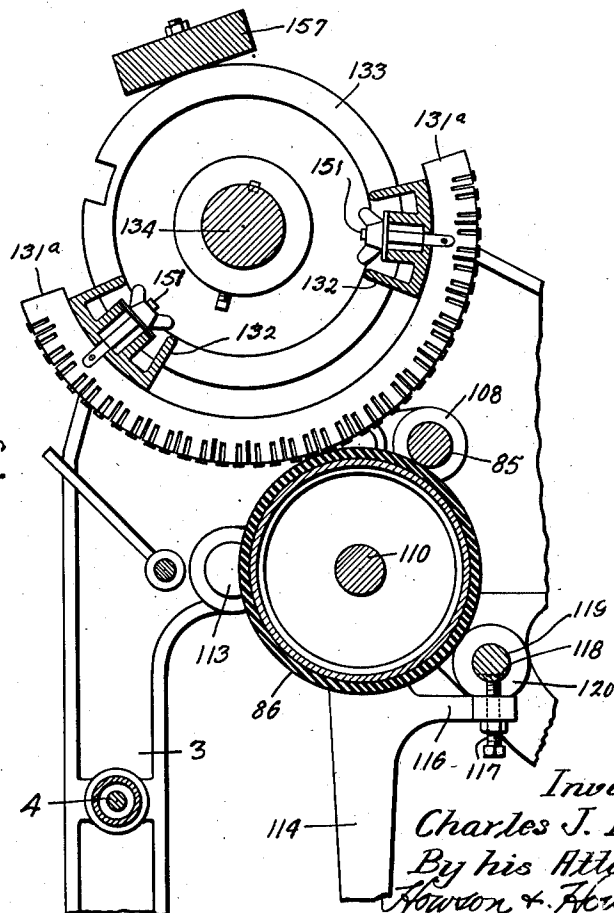


Fig. 15.

Fig. 16.



UNITED STATES PATENT OFFICE

1,962,128

SHEET CUTTING AND PRINTING MACHINE

Charles J. Beck, Philadelphia, Pa.

Application October 24, 1929, Serial No. 402,024

13 Claims. (Cl. 101—232)

This invention relates primarily to a machine for cutting sample sheets of wall paper from a continuous web thereof, and for printing certain identifying data in a desired position on the back or reverse side of each sample.

Prior to my invention it has been the common practice in the wall paper industry, in providing samples for the trade, to print identifying data at spaced intervals along and on the back of a continuous web of wall paper, the spacing of the individual blocks of printed data being less than the length of each sample sheet to be cut from the web, to insure that the identifying data would be complete on each sheet when cut from the web. Each sheet is of sufficient size to include one complete repeat of the design depicted on the face of the wall paper, and as no definite relation existed between the full repeats on the face of the paper and the blocks of data printed on the reverse side of the paper the positions of the printed data on the reverse side at no time occupied the same positions with respect to the edges of the sheets, on the sample sheets successively cut from the web, and in many instances the cut occurs at a point intermediate the ends of the block of printed data, consequently one portion of the block of printed data appeared at one end of the sheet and another portion of the data appeared at the opposite end of the sheet, which obviously created a very undesirable condition making it inconvenient to read the identifying data, especially after the samples had been bound into the usual book form.

To print a block of identifying data on each sheet after it had been cut from the web would require extra handling and as these samples are distributed gratis to the trade such a method has not been employed because of the expense involved in the extra handling of the individual sheets in order that the printed data might occupy the same relative position on each sheet.

The object of this invention is to accurately cut a web of wall paper or the like into sheets of predetermined size, each of which shall depict at least one full repeat of the design and on the same machine and without additional handling to print a block of identifying data on the reverse side of each sample at any desired location relative to the edges of the sheet, the identifying data on the successively cut sheets occupying the same general positions with respect to the edges of the sheets so that when a number of samples are bound into the usual book form the identifying data of each sample will be disposed in substantially the same position with respect to the edges of the book, thus making the data easy to read and considerably improving the general appearance of the sample book.

The construction and operation of the machine forming the subject of this invention will be

fully disclosed hereinafter, reference being had to the accompanying drawings, of which:

Fig. 1 is a side elevation of the machine;

Fig. 2 is a sectional plan view taken on the line 2—2, Fig. 1;

Fig. 3 is an enlarged side elevation of one end of the machine;

Fig. 4 is a similarly enlarged side elevation of the same end of the machine, but looking from the opposite side thereof;

Fig. 5 is a plan view of the mechanism shown in Figs. 3 and 4;

Fig. 6 is a longitudinal sectional elevation taken on the line 6—6, Fig. 5;

Fig. 7 is a sectional plan view taken on the line 7—7, Fig. 6;

Fig. 8 is a transverse sectional elevation taken on the line 8—8, Fig. 3;

Fig. 9 is an enlarged longitudinal sectional elevation of the opposite end of the machine, illustrating the feeding and cutting mechanism thereof, the section being taken on the line 9—9, Fig. 2;

Fig. 10 is a sectional elevation taken on the line 10—10, Fig. 2;

Fig. 11 is an enlarged side elevation of a curl-removing mechanism forming part of the machine;

Fig. 12 is a front elevation of the mechanism shown in Fig. 11;

Fig. 13 is a sectional view taken on the line 13—13, Fig. 11;

Fig. 14 is a perspective view of one of the type holders employed in the machine;

Fig. 15 is a sectional view taken on the line 15—15, Fig. 14; and

Fig. 16 is a longitudinal sectional elevation illustrating a larger form of type holder.

In the present instance, the machine comprises a feeding and cutting unit indicated at A and a printing unit indicated at B. The feeding and cutting unit A comprises side frames 1, 1 held in rigid laterally spaced relation with respect to each other by suitable transversely extending stay members 2, 2. The printing unit B in the present instance comprises side frame members 3, 3 held rigidly in laterally spaced relation with respect to each other by transversely extending stay members 4, 4. The side frame members 1 and 3 are rigidly held in longitudinal spaced relation with respect to each other by means of connecting frame members 5, 5 bolted or otherwise rigidly secured to the frame members 1 and 3 respectively.

Wall paper as it is delivered from the machine which prints the design thereon is wound in rolls of suitable size, sometimes with the design face outermost, other times with the design face innermost. These rolls, if to be cut into sample sheets, are then placed on a suitable support (not shown) at the feeding and cutting end of the machine

forming the subject of this invention and so disposed on the support that the plain side of the web is delivered uppermost to the machine.

In order to accurately position the identifying data on each sample, it is essential that the sheet be delivered to the printing mechanism in a substantially flat condition, and paper of this kind after having been rolled has a natural tendency to curl when drawn from the roll.

In order to remove such curl from the web, I have provided at the receiving end of the machine a curl-removing mechanism generally indicated at C and from which the web travels to a feeding mechanism generally indicated at D. The feeding mechanism delivers the continuous web to a cutting unit generally indicated at E which is adapted to cut the said web into sheets of uniform predetermined lengths, each sheet being cut from the continuous web falling upon and being positively gripped by a conveying mechanism generally indicated at F. The conveying mechanism F delivers the flat sheet to the printing mechanism generally indicated at G from which the printed sheets are delivered to a receiving or stacking table H.

The curl-removing mechanism C comprises side frames 10, 10 rigidly secured to the side frames 1, 1 as illustrated in Fig. 9. Rotatably mounted in bearings 11, 11, formed in the side frames 10, 10, are trunnions 12, 12 which project from the opposite ends of and rotatably support a guide roll 13 over which the continuous web X is adapted to pass.

Spaced apart from and extending substantially parallel to the roll 13 is a second roll 14, which is rigidly secured to a shaft 15 rotatably mounted in bearings 15a, 15a formed in the side frame members 10.

Intermediate and substantially parallel to the rolls 13 and 14 is a roll 16 having trunnions 17 rotatably mounted in grooves or slots 17a, 17a formed in the side frames 10, 10.

Above and below and substantially parallel with the roll 16 are located decurling blades 18 and 19 respectively. The upper decurling blade 18 is secured at its opposite ends to arms 20, 20 which project laterally from collars 21, 21 which are secured to the upper ends of rods 22, 22 respectively. The rods 22, 22 are slidably mounted in bearing lugs 23 and 24 formed on the inside of the side frames 10, 10 respectively.

The lower decurling blade 19 is secured to collars 25, 25 which are adjustably fastened to the slide rods 22 by means of set screws 26. The blades 18 and 19 are disposed in planes substantially at right angles with respect to each other, and the plane of each being disposed at an angle with respect to the axes of the slide bars 22, 22 and each blade is provided with a beveled edge adapted to be brought into an operating position between the adjacent surfaces of the rolls 14 and 16 respectively.

Axial movement of the slide rods 22, 22 to bring the desired decurling blade into operative position is effected by means of a rock shaft 27 rotatably mounted in the side frames 10, 10 and provided with levers 28, 28 to the opposite ends of which are connected links 29, 29. The opposite end of each link 29 is pivotally connected to a collar 30 secured to the lower end of a corresponding slide bar 22.

When operating upon a web which has been rolled with the plain side outermost the decurling blade 18 is employed in the manner illustrated in Fig. 9, the paper or web passing over the upper

surface of the roll 16 and under the beveled edge of the decurling blade 18, thence over the upper surface of the adjacent roll 14 which tends to produce a curl in the paper in a direction opposite to the natural curl therein which balances the said natural curl and causes the sheet to lie flat.

When operating with a web which has been rolled with the plain surface innermost the decurling blade 19 is employed, the web then passing from the roll 13 under the roll 16 over the beveled edge of the blade 19 and under the roll 14, the rods 22, 22 being moved axially to raise the blade 18 out of position and to bring the blade 19 into such a position that the roll 16 is engaged thereby and is raised slightly to bring its trunnion 17 out of the bottom of the slots 17a, whereupon the roll 16 rests upon the paper being drawn over the beveled edge of the blade 19 to hold the paper down against said blade, whereupon the curl is removed from the paper.

The outer end of the shaft 27 is provided with a lever 31 having a laterally extending pin 32 which is adapted to enter either of a series of notches 33, 34 and 35 extending outwardly from a slot 36 formed in a head 37 adjustably mounted on the threaded end 39 of a rod 40, the opposite end of the rod 40 being rotatably mounted in a bearing 41 supported by one of the side frames 3 of the printing unit at the delivery end of the machine, a hand wheel 42 being provided on the end of the adjusting rod 40 by means of which the rod may be rotated thereby moving the head 37 axially of said rod by means of the threads 39 thereon co-operating with threads formed in a collar portion 43 of the head 37.

Movement of the head 37 rocks the shaft 27 in a manner to increase or decrease the degree of the angle formed in the paper by the decurling blade which happens to be functioning.

In order to throw one of the decurling blades out of operation and to throw the other of the blades into operating position the head 37 is raised by grasping the finger grip 44 thereof which releases the pin 32 in the lever 31 from the notch in the head 37 which is occupied thereby, and by grasping the handle 45, which forms part of the lever 31, the shaft 27 may be rocked to bring the pin 32 into line with one of the other notches in the head 37 which brings the desired decurling blade into an operative position with respect to the rolls 14 and 16.

From the guide roll 14 the web X passes over the top of a feed roll 50 which is secured to a shaft 51 rotatably mounted in bearings 52 formed in brackets 53, 53 which are secured to the side frames 1 of the machine.

Co-operating with the feed roll 50 is an expansible feed roll 55 of the type shown and described in my prior U. S. Patent No. 1,715,271, dated May 28, 1929. This roll comprises a shaft 56 on which is splined a series of flanged sleeves 57 on and between the flanges of which are disposed a plurality of resilient rings 58 which when the sleeves 57 are moved axially of the shaft 56 are expanded or contracted radially to increase or diminish the circumference of the roll 55.

As shown and described in the said patent, the shaft 56 is rotatably mounted in eccentric bearing sleeves 59 which in turn are rotatably mounted in bearings 60 formed in the outer ends of the brackets 53. The bearing sleeves 59 are provided with arms 61 connected at their outer ends by a rod 62, springs 63 being provided which tend to rotate the eccentric bearings 59 in a manner to maintain the expansible feed roll 55 in contact

with the surface of the roll 50 at all times, limit screws 64 being carried by the arms 61 and engaging lugs 65 on the brackets 53 whereby the proper amount of pressure is applied by the roll 55 to properly grip the paper between the surface thereof and the surface of the feed roll 50.

Movement of the levers 61 in a direction away from the roll 50 will rotate the eccentric bearing sleeves 59 in a manner to release the expansible feed roll 55 from the feed roll 50, the springs 63 crossing the center of rotation of the eccentric sleeves 59 during such movement will maintain the expansible feed roll 55 out of engagement with respect to the feed roll 50.

From the feed rolls 50, 55 the web X passes over the cutting edge of a fixed blade 70 which is adjustably secured in a frame 71 secured to the side frames 1 of the machine by means of bolts 72, adjusting screws 72a being provided for the purpose of properly positioning the apron 71a of the frame 71 with respect to the feed roll 50. The cutting unit E is of substantially the same construction as the cutting unit shown and described in the above mentioned U. S. patent, and comprises the said frame 71 in which is mounted the fixed blade 70 which is adapted to co-operate with a revolving blade 73 adjustably mounted in a rotary frame 74 secured to a shaft 75 which is rotatably mounted in bearings 76 formed in the frame 71. The cutter frame 74 and the blade 73 carried thereby are adapted to rotate at a uniform predetermined rate of speed, and for each revolution of the blade 73 a predetermined portion of the web X is cut from the said web by the co-operating action of the blades 70 and 73. The length of the sheet is governed entirely by the speed of rotation of the expansible friction feed wheel 55 which is adapted to be varied to feed any desired amount or length of the web across the fixed blade 70 during the rotation of the movable or rotary blade 73 with respect thereto.

After the desired length of sheet is cut from the web X by the cutting unit E, the cut sheet is engaged by the lower series of conveyer belts or tapes 80 forming part of the conveying mechanism F.

As the upper run of the tapes 80 moves in the direction of the arrow shown in Fig. 9, the sheet passes under a roll 81 which holds the sheet flat on the tapes 80 and directs the end of the sheet under an upper series of tapes 82 whereby the sheet is positively gripped between the lower run of the upper tapes 82 and the upper run of the lower tapes 80. The tapes 80 and 82 direct the sheet between a series of lower guide fingers 83 and a co-operating series of upper guide fingers 84 which guide the sheet between the periphery of the roll 85 and the platen roll 86 of the printing unit B. The lower series of tapes at one end pass around a roll or a series of pulleys 87 which are secured to a shaft 90 rotatably mounted in bearings formed in the side members 1, 1 of the machine. The opposite ends of the lower tapes 80 pass around a series of pulleys or a roller 88 which is secured to a shaft 89 rotatably mounted in bearings 91 formed on the outer ends of levers 92 which are pivotally mounted on a transversely extending shaft or bar 93 mounted in bearings 94 which in turn are formed integral with or carried by the side frames 3 of the machine. Tension is applied to the lower tapes 80 by means of screws 95 threaded into lugs 96 formed on the levers 92, the opposite ends of the screws 95

bearing against the side frame members 3 as clearly illustrated in Figs. 1 and 6.

The upper tapes 82 at one end pass around their roller or series of pulleys 97 which are secured to a shaft 98 rotatably mounted in bearings 99 formed on the upper ends of brackets 100 which are secured to the side frame members 5 in the present instance.

The opposite ends of the tapes 82 pass around the series of pulleys 101 which are secured to a shaft 102 rotatably mounted in bearings 103 formed on the ends of levers 104, the opposite ends of which are secured to a shaft or bar 105 extending transversely of the machine and secured at its opposite ends in the side frames 3.

The lower guide fingers 83 are secured to a transversely extending bar 106 which is secured at its opposite ends in the side frames 3. The upper guide fingers 84 are secured to arms 107 which are carried by the above mentioned transversely extending bar 105. The presser roll 85 is rotatably mounted in the outer ends of arms 108 which are pivotally attached at 109 to the side frames 3. The platen roll 86 is secured to a shaft 110 which is rotatably mounted at its opposite ends in bearings 111 formed in levers 112 which are pivotally attached at 113 to the side frames 3, 3.

The levers 112 have depending arms 114 to the lower end of each of which is attached one end of a tension spring 115, the opposite end of which is attached to the side frame 3. The arm 114 has a laterally extending portion 116 into which is threaded a screw 117, the one end of which is adapted to engage a flat portion 118 formed in a transversely extending shaft 119. The shaft 119 is rotatably mounted in bearings 120 formed in the side frame members 3.

On one end of the shaft 119 is secured a lever 121, and on the opposite end of the shaft 119 is an arm 122 into which is threaded a screw 123, the end of which bears against an abutment 124 formed in the frame member 3 which limits the movement of the lever 121 and shaft 119 for maintaining the flat portions 118, 118 of the shaft 119 substantially at right angles to the axis of the screws 117 carried by the levers 112.

When the elements are in the position just described the platen roll 86 is in correct position for printing.

Movement of the lever 121 in a counterclockwise direction, as viewed in Fig. 3, causes the shaft 119 to be rotated in such a manner that the screws 117 of the levers 112 ride off the flat portions 118 of the shaft 119 on to the circular or peripheral surface of the said shaft which effects a rotation of the levers 112 about their pivots 113 which causes the platen roll 86 to be moved from an operative to an inoperative position.

Rotation of the shaft 119 in the last said direction is limited by a lug 125 (see Fig. 4) on the lever 122 engaging an abutment 126 formed in the side frame 3.

The platen roll 86, when in the operative position above described, co-operates with suitable type 130 which is carried by a type block 131 adjustably secured on the transversely extending bar 132 which, at its opposite ends, is adjustably mounted on the peripheries of wheels 133, 133 respectively. The wheels 133 are secured to a transversely extending shaft 134 which is rotatably mounted in bearings 134a formed in the side frame members 3, and as the shaft 134 is rotated the segmental type block 131 with the type 130 thereon is likewise rotated and co-

operates with the platen roll 86 to print the identifying data on the sample sheet Z as illustrated in Fig. 6.

As shown in Figs. 6, 14 and 15, the type block 5 131 is segmental in form and as shown in Fig. 8 in the present instance is of considerably shorter length than the distance between the wheels 133, 133. On the outer surface of the type block 131 are radially extending type-receiving grooves 135 10 into which are adapted to fit fins 136 (see Fig. 6) formed on the type slugs 137.

As shown in Figs. 14 and 15, the type-receiving grooves 135 are substantially equally spaced around the periphery 138 of the type block. Between each successive pair of grooves 135 is a 15 radially extending groove 139 which provides a fin 140 adjacent one side of each of the type-receiving slots or grooves 135. At the opposite side of each of the type-receiving grooves 135 is formed a relatively heavy and rigid portion 141.

At spaced intervals along each of the grooves 139 the type block 131 is provided with tapered openings 142 which terminate in threaded openings 143 formed in the base or ungrooved inner 20 portion 144 of the type block 131. The threaded openings 143 are adapted to receive correspondingly threaded screw members 145 which have frusto-conical heads 146 which are adapted to move axially into the tapered openings 142 when the screws 145 are tightened and thereby spread 25 the relatively thin and more or less flexible portions 140 in opposite directions toward their adjacent type-receiving grooves 135, which reduces the width of the said type-receiving grooves and thereby clamps the fins 136 of the type slugs respectively within the said type-receiving grooves 30 135. The type block 131, as above noted, is carried by the transversely extending bar 132 which is slotted in a direction parallel to the shaft 134 as indicated at 150 in Figs. 6 and 8.

Secured in the block 131 and passing through the slot 150 in the supporting bar 132 is a stud 151 on the inner end of which is a butterfly nut 152 35 by which the block 131 is rigidly secured to a supporting bar 132, and by means of which the block 131 may be moved to any desired position transversely of the machine for positioning the identifying data at any desired point with respect to the side edges of the sample being printed upon.

To insure parallel positioning of the block 131 with respect to the supporting bar 132 the said block is provided with projections 153 at its opposite ends respectively and which extend into the slot 150 in the supporting bar 132.

As shown in Fig. 8, the supporting bar 132 is secured to the wheels or heads 133 by means of bolts 154 having rectangular heads 155 which fit within T-shaped grooves 156 which extend circumferentially of the wheels 133. By this means 40 the bar 132 and consequently the type block 131 may be adjusted to any angular position with respect to the axis of the shaft 134 for positioning the block of identifying data at any desired position intermediate the end edges of the sample sheet being printed upon.

For the purpose of counterbalancing the weight of the supporting bar 132 and the type block 131 a counterweight 157 is adjustably mounted on and extends between the wheels 133, 133 in substantially diametrically opposed relation to the said 45 supporting bar 132.

As shown in Fig. 16, a relatively long type block 131a may be used providing for a considerably greater number of type slugs, such a type block 75 being supported by two or more of the supporting

bars 132 which may be spaced, as illustrated in Fig. 16, circumferentially of the wheels 133 and adjacent the respective ends of the type block 131a.

Ink is supplied to the type slugs 137 in the present instance from a fountain 159, in which is rotatably mounted an inking roll 160 against which a wall 161 is adapted to bear at its lower ends, the upper edge of the wall 161 being secured to a rigid side wall 162 of the ink fountain by means of bolts or other fastenings 163, the flexible wall 161 of the fountain being urged into contact with the periphery of the ink roll 160 by a bar 164 which is engaged by screws 165 threaded into the rigid wall 162 of the said ink fountain, a body of ink Y being disposed in the angle formed between the periphery of the ink roll 160 and the tangentially arranged flexible wall 161. The ink roll 160 is adapted to be rotated in intermittent steps and in the direction of the arrow shown in Fig. 6 by a pawl and ratchet mechanism, the ratchet wheel 166 of which is secured to the shaft or trunnion 167 of the ink roll 160 at one end of the said roll, the ratchet wheel being engaged by a pawl 168 pivotally mounted at 169 to an arm 170 which is loosely mounted for rotation on the trunnion 167. Pivotaly connected at 171 to the arm 170 is one end of a link 172, the opposite end of which is pivotally connected at 173 to one end of a second link 174. The opposite end of the link 174 is pivotally mounted on a stud 175 which is eccentrically mounted on and projects from the end of the shaft 134 as clearly shown in Fig. 4. As the shaft 34 rotates the stud 175 being eccentric with respect thereto causes reciprocation of the links 174 and 172 which in turn causes an intermittent rotation of the ink roll 160.

The printing slugs, as the shaft 134 rotates, are adapted to engage an inking roll 180 which is rotatably mounted in a relatively fixed position with respect to the axis of the shaft 134 in arms 177, 177 pivoted at 178 to frame members 179 which are secured to the side frame members 3 of the machine. Stop screws 176 are provided in the arms 177 and bear against the frames 179 to maintain the roll 180 in correct position to be engaged by the type slugs 136. The inking roll 180 is engaged by a distributing roll 181 which is rotatably mounted in the said frame members 179 rotatably engaging the periphery of the inking roll 125 180 at all times and in addition thereto receiving an axial movement transversely of the machine by means hereinafter set forth.

Adapted to alternately engage the distributing roll 181 and the fountain roll 160 is a transferring roll 182 which is rotatably mounted in arms 183 which are secured to a transversely extending shaft 184 mounted for oscillation in the said frame members 179.

As shown in Fig. 3, the shaft 184 is provided with an arm 185 which is connected by a link 186 to one arm 187 of a bell crank lever 188. The bell crank lever 188 is pivotally mounted at 190 to one of the side frame members 3 of the machine. The second arm 191 of the bell crank lever 188 is provided with a roller or cam follower 192 which is adapted to be engaged by a cam 193 rigidly secured to the shaft 134 and as the said shaft 134 is rotated the cam 193 engaging the cam follower 192 causes the bell crank lever 188 to be rocked about its pivot which, through the link 186 and arm 185, causes the rocking motion in the shaft 184. Rocking of the shaft 184 causes the transfer roll 182 to alternately engage the fountain roll 150

160 and the distributing roll 181. A spring 194 having one of its ends secured to the frame member 179 and its opposite end secured to one of the levers 183 (see Fig. 3) tends to move the transfer roll 182 into engagement with the distributing roll 181 and maintains the cam follower 192 in operative contact with the cam 193 at all times.

Axial movement of the distributing roll 181 is effected by mechanism clearly shown in Fig. 7.

- 10 The distributing roll 181 is provided with shafts or trunnions 195 which are splined to sleeve bearings 196 which in turn are rotatably mounted in antifriction bearings 197 located in the side frame members 179. One end of the shaft 195 is provided with a head 198 within which the said shaft is free to rotate but prevented from any axial relative movement with respect to the said head, whereby movement of the head in a direction longitudinally of the distributing roll 181 will effect a similar endwise movement of the said roll.

- 20 Axial movement of the distributing roll 181 is effected by a link 199 pivotally connected at one of its ends to the control head 198, the opposite end of the link 199 being pivotally connected to one arm 200 of a bell crank lever 201 which is pivotally mounted at 202 to a bracket 202a extending laterally from and rigidly secured to a side frame member 179. The second arm 203 of the bell crank lever 201 is provided with a stud 204 which projects through an opening 205 formed in the above-mentioned link 174, the walls of the opening 205 being curved longitudinally of the stud 204 to provide for a universal movement of the stud 204 with respect to the link 174. The above-mentioned reciprocation of the link 174 through the bell crank lever 201 will effect the desired axial movement of the distributing roll 181 whereby the ink deposited thereon by the transfer roll 182 will be distributed longitudinally along and circumferentially of the inking roll 180 as the same is rotated.

- 45 As previously mentioned, the length of the sample sheet Z to be cut from the web X depends upon the speed of rotation of the feed roll 55 with respect to a single rotation of the rotary knife 73, whereby more or less of the web X is fed across the fixed blade 70 from the time of one co-operative engagement of the rotary knife 73 with said fixed blade 70 to the next successive co-operative engagement between these said knives.

- For the purpose of obtaining the proper speed for any desired length of sample sheet the following driving mechanism is provided:

- 60 Let it be known at this time that the shaft 134 on which the type block 131 is mounted and by which the same is rotated and the shaft 75 which supports and rotates the rotary knife 73 rotate at the same speed, that is a speed ratio of one to one at all times and each time the rotary blade 73 co-operates with the fixed blade 71 to cut a sheet Z from the web X the printing block 131 is co-operating with the platen roll 86 to print upon the sheet cut previously thereto and that the travel of the delivery tapes 80 and 82 is so synchronized with the cutting and printing units that a cut sheet is picked up from the cutting unit and delivered to the printing unit without perceptible variation in time, and so that the printing of one sheet is coordinately timed with the cutting of the next sheet.

The synchronization of the rotations of the shafts 75 and 134 is accomplished in the following manner:

On the shaft 75 is a gear 210 which meshes with a pinion 211 carried by and secured to the shaft 90. The pinion 211 meshes with a gear wheel 212 which is rotatably mounted on a shaft 213 rotatably mounted in bearings 214 and 215, the former of which is formed in the side frame member 1 and the latter of which is formed in a bracket 216 which is carried by a transversely extending supporting beam 217 which is secured at its opposite ends to the side frame members 1, 1. The gear 212 meshes with a similar spur gear 220 which is rotatably mounted on a stud 221 carried by a bracket 222 which in the present instance forms a part of the side frame member 5.

90 Secured to and adapted to rotate with the spur gear 220 is a bevel gear wheel 223 which meshes with a bevel pinion 224 which is secured to one end of a horizontally disposed shaft 225. On the opposite end of the shaft 225 is secured a similar bevel pinion 226 which meshes with a bevel gear 227 which is rotatably mounted on a stud 228 projecting laterally from and supported by the side frame member 3.

Secured to and adapted to rotate with the bevel gear wheel 227 is a spur gear 229 which meshes with a spur gear 230 which is secured to the platen roll shaft 110. The gear wheel 230 on the platen roll shaft 110 meshes with a gear wheel 231 secured to the type shaft 134.

105 Let it be here noted that when the platen roll 86 is moved to an inoperative position with respect to the printing block 131 the relative movement between the shaft 110 and the shaft 134 is insufficient to move the teeth of the wheel 230 out of engagement with the teeth of the wheel 231 thereby maintaining the true relation between the cutting shaft 75 and the printing shaft 134 at all times.

Power is applied to the machine in the present instance by a belt passing around a pulley 235 which is secured to the shaft 90, it being noted that the roll or pulley wheels 87 around which the tapes 80 pass are mounted on this main drive shaft 90, whereby the speed of travel of the tapes remains constant at all times and in a fixed relation with respect to the rotation of the shafts 75 and 134. The drive for the feed roller 55 is taken from the shaft 213 and is adapted to be varied to suit any length sheet desired. For this purpose the shaft 213 is provided with a series of gear wheels, in the present instance three in number designated as 240, 241 and 242. Adapted to mesh with any one of the gears 240, 241 or 242 is a gear wheel 243 which is rotatably mounted on a pin 244 (see Fig. 10) secured in a yoke arm 245 which is pivotally and slidably mounted on a shaft 246, the shaft 246 being rotatably mounted in a bearing 247 formed in the side frame 1, a bearing 248 formed on the bracket 216 and a bearing 249 formed on a bracket 250, which, like the bracket 216, is carried by the transverse frame member 217. Splined to the shaft 246 and disposed between the side arms of the yoke lever 245 is a gear wheel 251 with which the gear wheel 243 meshes. The yoke arm 245 is adapted to be moved along the shaft 246 in a manner to bring the gear wheel 243 into mesh with either the gear 240, 241 or 242, whereby a substantially great difference in the speeds of the shafts 213 and 246 is accomplished.

145 Secured to the shaft 246 is a plurality of gears disposed side by side and having diameters which slightly vary one from the other and in effect produce a toothed cone or cone frustum.

Rotatably mounted in the side frames 1, 1 and 150

extending parallel to the shaft 246 is a shaft 261 to which is splined a gear wheel 262. The gear wheel 262 is mounted between side arms of a yoke lever 263 which is pivotally and slidably mounted on the said shaft 261. Meshing with the gear wheel 262 and rotatably mounted on a pin 265 supported by the yoke arm 263 is a gear 266 which is adapted to be brought into alignment and to mesh with any one of the gear wheels of which the gear cone 260 is composed. By the means just described a wide variation of speed ratios between the shaft 213 and the shaft 261 may be obtained. On one end of the shaft 261 is secured a spur gear 267 which meshes with a gear wheel 268 rotatably mounted on a stud 269 which projects laterally from one of the brackets 53 (see Fig. 9). The gear wheel 268 meshes with a gear wheel 270 secured to one end of the shaft 56 on which is carried the feed roll 55.

From the above it will be obvious that the speed of the feed roll 55 may be varied with respect to a single rotation of the knife 73 to feed practically any desired length of sheet across the stationary blade 70 while the rotary blade 73 is making one revolution between cuts.

For the purpose of maintaining the yoke arm 263 in the position to which it has been adjusted a retaining member 271 is provided which extends transversely of the machine and is provided with a plurality of holes 272 adapted to receive a locking pin 273 (see Fig. 9) carried by a lateral extension 274 on the yoke arm 263, a lever 275 being pivoted at one of its ends to the locking pin 273 and at its opposite end to the said yoke arm 263, said lever 275 having a hand grip 276 disposed substantially parallel to a hand grip 277 formed on the yoke arm 263, a spring 278 being interposed between the two to keep the locking pin in locking engagement with the locking bar 271. A similar arrangement is provided for the yoke arm 245, a locking bar 280 being supported at its opposite ends by the bracket 216 and the side frame 1 respectively, the yoke arm 245 having a vertical extension 281 in which is slidably mounted a locking pin 282 which is adapted to engage in holes 283 formed in the locking bar 280, a lever 284 being pivoted at one end to the yoke arm 245 and at its opposite end to the locking pin 282 and provided with a hand grip 285 extending substantially parallel to a hand grip 286 formed on the yoke arm 245 with a spring 287 being interposed between the two to maintain the locking pin 282 in locking engagement with the locking bar 280.

In order to minutely control the feeding of the web X over the fixed blade 70, I provide a brake shoe 290 which is adapted to bear against the periphery of the feed roll 50, the brake shoe being carried by the lever 291 pivoted at 292 to the side frame of the machine, and the opposite end of the lever 293 being pivotally connected to a yoke head 294 threaded on to the end of a controlling rod 295 which extends towards the delivery end of the machine and is provided with a hand wheel 296 by which the shaft 295 may be rotated to cause the threads at one end of the rod or shaft 295 to move the yoke head 294 longitudinally of the said rod, it being understood that the rod itself is held against axial movement in a bearing 295a secured to the side frame 1.

Movement of the head 294 on the rod 295 causes the lever 291, 293 to be rocked about its pivot 292 to apply or release the brake shoe 290 with

respect to the feed roll 50. This mechanism is clearly shown and described in my prior Patent No. 1,707,839, dated April 2, 1929.

When the web X is being fed over the top of the rolls 13, 14 and 16 with the decurling blade 18 operating between the rolls 14 and 16, the roll 14 is permitted to rotate freely, but when the paper is being delivered over the top of the roll 13 and under the rolls 14 and 16 with the decurling blade 19 operating between the rolls 14 and 16, the roll 14 is then adapted to be driven and for this purpose the shaft 15, on which the roll 14 is secured, is provided with a gear wheel 297 which is adapted to mesh with a gear wheel 298 rotatably mounted on a stud 299 projecting laterally from the side frame of the machine.

The gear wheel 298 is adapted to be brought into mesh with or disengaged from the gear wheel 267 for the purpose of driving the roll 14 or for permitting the same to run free as above noted.

In order to permit of such manipulation of the gear wheel 298 the said gear is adapted to be moved axially of the stud 299 on which it is rotatably mounted, means being provided for locking the gear in either its operative or its inoperative position, such means being shown in detail in Fig. 13, wherein the stud 299 is provided with a pair of circumferential grooves 300 and 301 and the hub 302 of the gear 298 is provided with a spring-pressed detent 304 slidably mounted in a radially extending opening 305 formed in the hub 302, said opening being closed by a screw or plug 306 between which and the outer end of the detent 304 is provided a compression spring 307. When the detent 304 is riding in the groove 301 the gear 298 is out of mesh with the gears 267 and 297, but when the detent 304 is riding in the groove 300 the gear wheel 298 is then in mesh with both the gear 267 and the gear wheel 297, whereby the roll 14 is power driven.

In order to place the block of identifying data at a definite position with respect to the ends of each sheet cut, regardless of the length of the sheet, means has been provided for effecting the positioning of the block of identifying data on the sheet and by which the printing block may be readily adjusted to the predetermined position when the machine is set up for cutting a different size sheet from that which has been previously cut on the machine.

For the purpose of explanation, we will assume that in every case it has been desired to place the block of identifying data in the center of the sample sheet. In order to accomplish this with the smallest sheet capable of being cut on the machine, a certain amount of sheet must pass over the platen roll 86 before the type carried by the printing block 231 is brought into printing contact with the paper passing over the platen roll 86. For this purpose the set up of the elements of the machine as illustrated in the drawings is employed.

Now if it is desired to change the machine to cut the largest possible sheet, the yoke levers 245 and 263 are moved to the other extreme position along the respective shafts 246 and 261, whereby the speed of the roll 55 will be increased to feed the desired amount of paper across the fixed blade 71 between cuts made by the rotary blade 73.

The knife 73 and the printing block 131 rotate at the same speed; that is, one for one, and the tapes 80 and 82 move at a constant linear speed in a constant relation to the rotary speed of the knife 73 and printing block 131. Thus, when the

rotary knife 73 cuts a sheet from the web that is passing over the fixed knife 70 the cut sheet immediately falls onto and slides along the lower tapes 80 until the forward edge of the sheet comes into contact with the upper tapes 82, or the feed roll 81 when used, whereupon the forward edge of the sheet will be gripped between the tapes 80 and roll 81 or tapes 82, as the case may be, and is carried forward to the printing unit by the tapes 80, 82 at a predetermined definite rate of speed bearing a constant relation to the speed of rotation of the knife 73 and the printing block 131, therefore, it will be obvious that regardless of the length of the sheet the forward edge of the sheet will be gripped between the tapes 80 and 82 at substantially the same time as the sheet is cut by the knife 73; thus, the movement of the forward edge of the sheet is always timed from the moment the sheet is cut by the knife 73. The time required for the forward edge of the sheet to reach the platen roll 86 is constant, regardless of the length of the sheet and the timing of the impression of the printing block 131 on the sheet is accordingly calculated from the time the forward edge of the sheet passes over the platen roll 86. Thus, in setting the machine so that the printed matter will be positioned in the center of a sheet of any given size the amount of the sheet passing over the platen roll 86 before the printing block 131 contacts with the sheet must be taken into consideration at all times, as this amount will vary in every different length of sheet. In order to properly position the block of identifying data on the larger sheet, means has been provided between the gear wheel 231 and the shaft 134 whereby the printing block may be moved backward so that the type carried thereby will not engage with the paper until a greater amount of paper has passed over the platen roll 86. For this purpose the gear 231 is in the form of a ring carried on the periphery of a hub member 310 which is keyed to the one end of the shaft 134. In the ring gear 231 is formed an annular T-shaped groove 311 in which is mounted a rectangular head 312 of a bolt 313 which passes through the flange 314 of the hub member 310 and is adapted to rigidly secure the ring gear 231 to the hub member 310. However, by loosening the nuts 315 on the bolts 313 the hub member 310 and with it the shaft 134 and the printing block 131 may be rotated with respect to the ring gear 231 while the same is held against rotation by the teeth thereof being in mesh with the teeth of the gear 230, and in order to facilitate and accurately determine this adjustment for the various size sheets the ring gear 231 is provided with graduations corresponding to the various size sheets capable of being cut on this machine, and the hub member 310 is provided with an arrow 316 adapted to be brought into registry with the particular graduation corresponding to the size sheet to be printed upon whereafter the nuts 315 are again tightened to lock the ring gear 231 to the hub member 310 so that the two may move as a unit.

If it is desired to place the block of identifying data at a position other than the center of the sheet, the bar 132 may be adjusted circumferentially of the wheels 133 in order to accomplish the result desired.

The operator of the machine standing in front of the machine as viewed in Fig. 1 and within easy reach of the controls 42, 121 and 296 is in a position to quickly correct any variation that may occur due to the condition of the paper of

which the samples are composed, for instance, if as the web X is drawn from the roll on which it has been wound reduces the size of the roll the smaller the roll the greater the amount of curl occurs in the paper, therefore, the operator by watching the sheets as they come through the machine may by operating the control 42 move the decurling blade to a position to place a greater counter-curl in the paper to offset the natural curl thereof. In doing this it may so happen that an increased tension will be placed on the web X whereupon the sheet coming through would be somewhat reduced in length. This the operator may readily correct by operating the control 296 which would tend to reduce the retarding effect of the brake shoe 290 on the lower feed roll 50 whereupon the sheet will be brought back to the correct size, it being understood that the brake shoe exerts a retarding effect on the roll 50 and as there is more surface contact between the roll 50 and the web X than there is between the feed roll 55 and the web X a certain amount of slippage between the roll 55 and the web X occurs and this is minutely controlled by the retarding effect produce by the brake shoe 290.

Likewise if for some reason or other a sheet should come through the conveying mechanism F in a folded or wrinkled condition or if a sheet coming through should be defective in some way the operator by throwing the lever 121 may move the platen roll 86 to its inoperative position as above noted so that the type carried by the block 131 will not engage the paper.

As above described the ink fountain roll 160 is intermittently rotated while the distributing roll 181 is continuously rotated and at the same time receives axial reciprocation, and in order to permit of such reciprocation and at the same time providing the continuous rotation of this roll the shaft 195 on its end opposite the head 198 is provided with a narrow faced gear 318 (see Figs. 3 and 7) which meshes with a broader faced idler gear 319, which in turn meshes with the gear 231 by which the printing block 131 is rotated.

As shown in Fig. 7, the face of the gear 319 is sufficiently broad to maintain operative connection with the gear 318 as the distributing roll 181 is axially reciprocated.

The inking roll 180 and the transferring roll 182 are rotated merely by contact with the distributing roll 181.

In order to positively grip and carry the sheet Z after it is cut from the web X, the upper series of tapes 82 are driven at the same speed as the lower series of tapes 80, and for this purpose the shaft 98 on which the pulleys 99 are mounted has secured to one of its ends a sprocket wheel 325 around which passes a sprocket chain 326, the sprocket chain also passing around an idler sprocket 327 on the shaft 261 (see Fig. 2) around an idler sprocket 328 rotatably mounted on a stud 329, which is carried by the frame member 1 and around a sprocket wheel 331, which is secured to the main drive shaft 90, the idler 328 being adjustable with respect to the frame member 1 to take up slack in the sprocket chain 326.

In order to prevent the feed roll 81 from jumping due to some vibration which may occur in the lower tapes 80 the said roll 81 is rotatably mounted in the outer ends of levers 335, the hubs 336 of which are loosely mounted on the shaft 98, the said shaft being provided with circumferential grooves 337 which are adapted to receive segmental plates 338 secured to the hubs 336, where-

by lateral movement of the levers 335 is prevented, the said hub members having lugs 339 projecting from the side thereof opposite the levers 335 and adapted to be engaged by projections 340 formed on collars 341 which are secured to a transversely extending rod 342 secured at its opposite ends in the brackets 100. By this means the roll 81 is held down into contact with the upper runs of the tapes 80 at all times.

In some instances, especially in cutting extremely large sheets, the tape rolls 87 for the lower tapes 80 may be mounted on a sleeve loosely mounted on the shaft 90 with the sprocket wheel 331 secured to the end of the sleeve on which the tape wheels 87 are secured. In this case the sprocket wheel 327 will be secured to the shaft 261. The sprocket chain 326 passing around the wheels 327, 331 and 325 will then be driven from the shaft 261, instead of from the shaft 90, and when the speed of the shaft 261 is increased or decreased to change the speed of the feed roll 55 the lineal speed of the tapes 80 and 82 will be correspondingly changed, thus in the extremely large sheets the rear end of the sheet will be carried out of the path of the rotating knife 73 more quickly.

I claim:

1. In a sheet cutting and printing machine the combination of a web cutting unit, a printing unit, means for feeding a continuous web to the cutting unit, means for conveying a cut sheet from the cutting unit to the printing unit, a pair of relatively spaced guide rolls for the web in advance of said feeding means, a pair of blades operable against the web intermediate said pair of guide rolls, and means for selectively effecting engagement of said blades with said web for removing curl from the web.

2. In a sheet cutting and printing machine the combination of a web cutting unit, a printing unit, means for feeding a continuous web to the cutting unit, means for positively gripping and conveying a cut sheet from the cutting unit to the printing unit, means for controlling the feeding unit to minutely govern the feeding of the web to the cutting unit, means for removing curl from the web, and means for readily varying the curl-removing means manually while the said curl-removing means remains in contact with the continuously moving web.

3. In a sheet cutting and printing machine, the combination of a diametrically expansible and contractible feed roll and a retarding roll cooperating therewith to feed a continuous web at a minutely controlled lineal speed to said machine, a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut the sheet from a continuous web as it is being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, and means for positively gripping and conveying a cut sheet from the cutting unit to the printing unit in an assured definitely timed relation to the printing block in its cycle of rotation.

4. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary

knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, means for positively gripping and conveying a cut sheet from the cutting unit to the printing unit in an assured definitely timed relation to the printing block in its cycle of rotation, and means for continuously feeding said web across said stationary knife at a substantially uniform minutely controlled lineal speed comprising a diametrically expansible and contractible feed roll and a freely rotatable roll each in peripheral contact with the web, and means for retarding the rotation of the freely rotatable roll.

5. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, means for positively gripping and conveying a cut sheet from the cutting unit to the printing unit in an assured definitely timed relation to the printing block in its cycle of rotation, means for continuously feeding said web across said stationary knife at a substantially uniform minutely controlled lineal speed comprising a diametrically expansible and contractible feed roll and a freely rotatable roll each in peripheral contact with the web, and means for retarding the rotation of the freely rotatable roll, and means for varying the lineal speed of said web to effect cutting of a sheet of another desired length by varying the rotary speed of the expansible feed roll.

6. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, means for conveying a cut sheet from the cutting unit to the printing unit in a definitely timed relation to the printing block in its cycle of rotation, means for continuously feeding said web across said stationary knife at a substantially uniform lineal speed, comprising a freely rotatable roll around which the web is adapted to pass, a continuously driven roll tangentially bearing against the web on the free roll, and means for retarding the rotation of the free roll to produce slippage of the driven roll for minutely controlling the lineal speed of the web across the stationary knife.

7. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut

from said web, means for synchronously rotating said knife and said printing block, means for conveying a cut sheet from the cutting unit to the printing unit in a definitely timed relation to the printing block in its cycle of rotation, means for continuously feeding said web across said stationary knife at a substantially uniform lineal speed, comprising a freely rotatable roll around which the web is adapted to pass, a continuously driven roll tangentially bearing against the web on the free roll, means for retarding the rotation of the free roll to produce slippage of the driven roll, and means for readily varying the state of retardation of said free roll for maintaining uniformity in the lineal speed of the web.

8. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, means for conveying a cut sheet from the cutting unit to the printing unit in a definitely timed relation to the printing block in its cycle of rotation, means for continuously feeding said web across said stationary knife at a substantially uniform lineal speed, comprising a freely rotatable roll around which the web is adapted to pass, a continuously driven roll tangentially bearing against the web on the free roll, means for retarding the free roll to create a slippage of the driven roll to minutely control the lineal speed of the web, and means for varying the speed of the driven roll to effect cutting of a sheet of another desired length.

9. In a sheet cutting and printing machine, the combination of a cutting unit comprising a stationary knife and a rotary knife adapted to intermittently co-operate with said stationary knife to cut a sheet from a continuous web being fed across said stationary knife, a printing unit comprising a relatively fixed platen roll and a rotary type block adapted to co-operate with said relatively fixed platen roll to print upon a sheet cut from said web, means for synchronously rotating said knife and said printing block, means for conveying a cut sheet from the cutting unit to the printing unit in a definitely timed relation to the printing block in its cycle of rotation, means for continuously feeding said web across said stationary knife at a substantially uniform lineal speed, comprising a freely rotatable roll around which the web is adapted to pass, a continuously driven roll tangentially bearing against the web on the free roll, means for retarding the free roll to create a slippage of the driven roll to minutely control the lineal speed of the web, means for varying the speed of the driven roll to effect cutting of a sheet of another desired length, the latter said means comprising a driven shaft, a plurality of gears of various diameters secured to said shaft, a second shaft, a plurality of gears of various diameters secured to said second shaft and a single gear splined to said second shaft and movable thereon into alignment with any of the series of gears on the first said shaft, an intermediate gear meshing with said splined gear and the aligned first shaft gear, a third shaft operatively con-

nected to said driven feed roll, a gear splined to said third shaft and adapted to be aligned with any of the series of gears on the second shaft, and an intermediate gear meshing with the last said splined gear and the aligned gear on the said third shaft.

10. In a sheet cutting and printing machine, the combination of a cutting unit, a printing unit, means for conveying a cut sheet from the cutting unit to the printing unit, said printing unit comprising a continuously rotating platen roll disposed in definite and relatively fixed relation to the delivery end of the conveying means, a continuously rotating shaft disposed parallel to and spaced from the said platen roll, a pair of wheels spaced longitudinally of and secured to the said shaft, a supporting bar carried at its opposite ends by said wheels respectively, a type block secured to said supporting bar, means for adjusting the type block longitudinally of the supporting bar, and means for adjusting said supporting bar circumferentially of said wheels.

11. In a sheet cutting and printing machine, the combination of a cutting unit, a printing unit, means for conveying a cut sheet from the cutting unit to the printing unit, said printing unit comprising a continuously rotating platen roll disposed in definite and relatively fixed relation to the delivery end of the conveying means, a continuously rotating shaft disposed parallel to and spaced from the said platen roll, a pair of wheels spaced longitudinally of and secured to the said shaft, a supporting bar carried at its opposite ends by said wheels respectively, a type block secured to said supporting bar, and means for adjusting said block longitudinally of said supporting bar.

12. In a sheet cutting and printing machine, the combination of a cutting unit, a printing unit, means for conveying a cut sheet from the cutting unit to the printing unit, said printing unit comprising a continuously rotating platen roll disposed in definite and relatively fixed relation to the delivery end of the conveying means, a continuously rotating shaft disposed parallel to and spaced from the said platen roll, a pair of wheels spaced longitudinally of and secured to the said shaft, a supporting bar carried at its opposite ends by said wheels respectively, a type block secured to said supporting bar, means for adjusting said block longitudinally of said supporting bar, and means for maintaining said block in parallel relation to and on said supporting bar.

13. In a sheet cutting and printing machine, the combination of a cutting unit, a printing unit, means for conveying a cut sheet from the cutting unit to the printing unit, said printing unit comprising a continuously rotating platen roll disposed in definite and relatively fixed relation to the delivery end of the conveying means, a continuously rotating shaft disposed parallel to and spaced from the said platen roll, a pair of wheels spaced longitudinally of and secured to the said shaft, a supporting bar carried at its opposite ends by said wheels respectively, a type block secured to said supporting bar, and a counterweight secured to said wheels in substantially diametrically opposed relation to said type block.

CHARLES J. BECK.