

May 16, 1933.

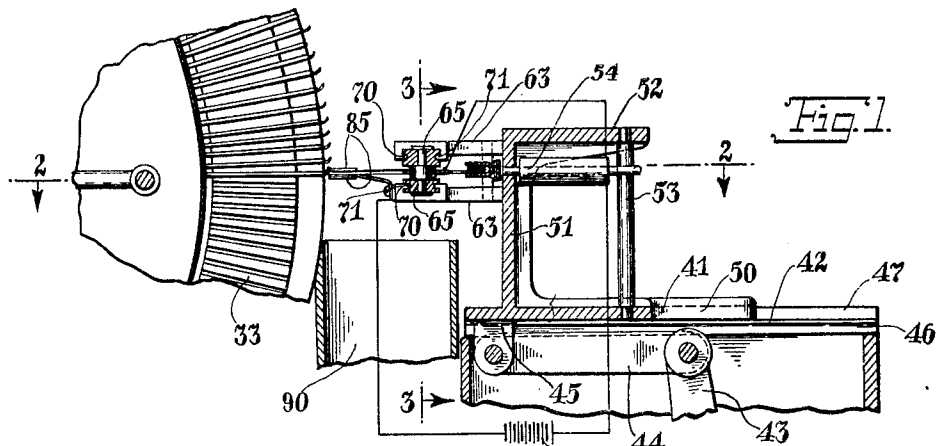
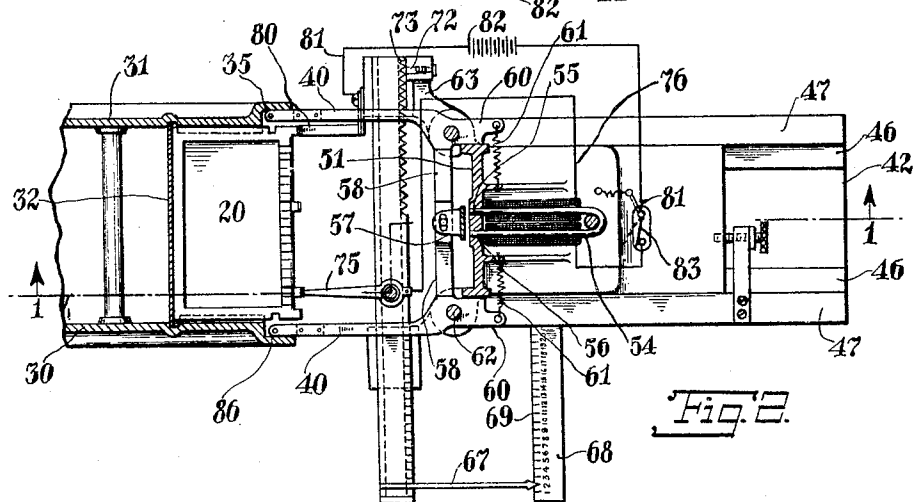
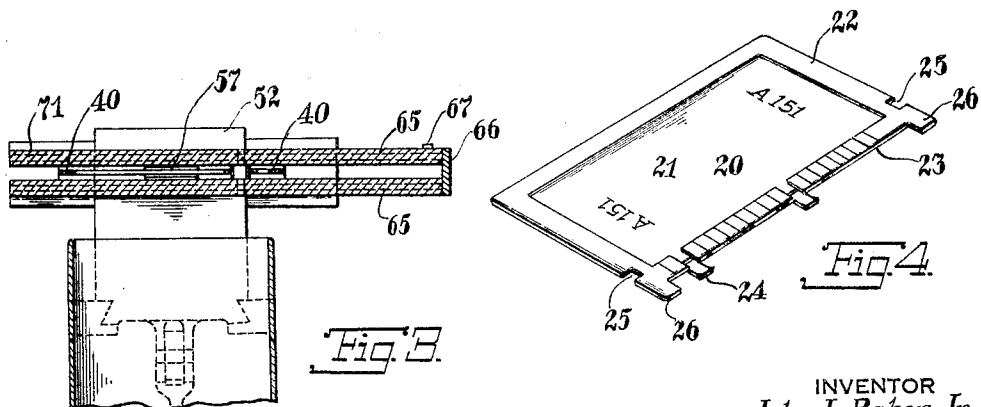
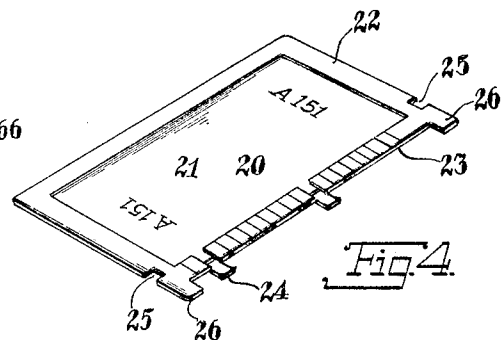
J. L. BABER, JR

1,908,944

ARTICLE CONTROLLED ARTICLE HANDLING MACHINE

Filed Dec. 31, 1929

4 Sheets-Sheet 1



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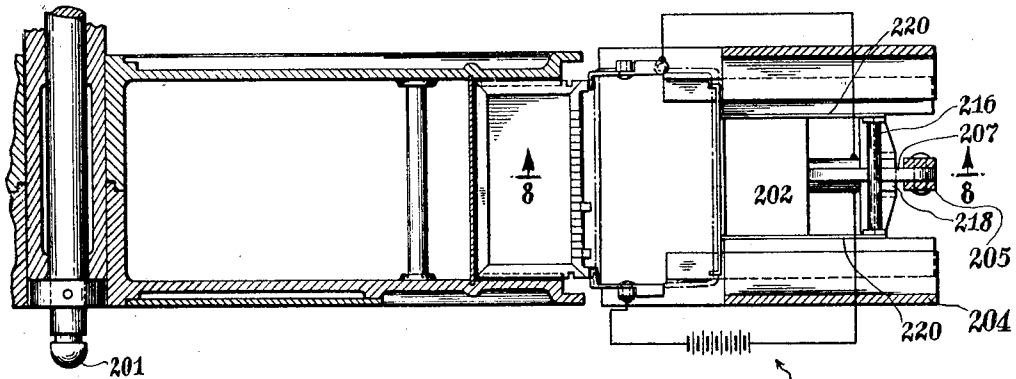
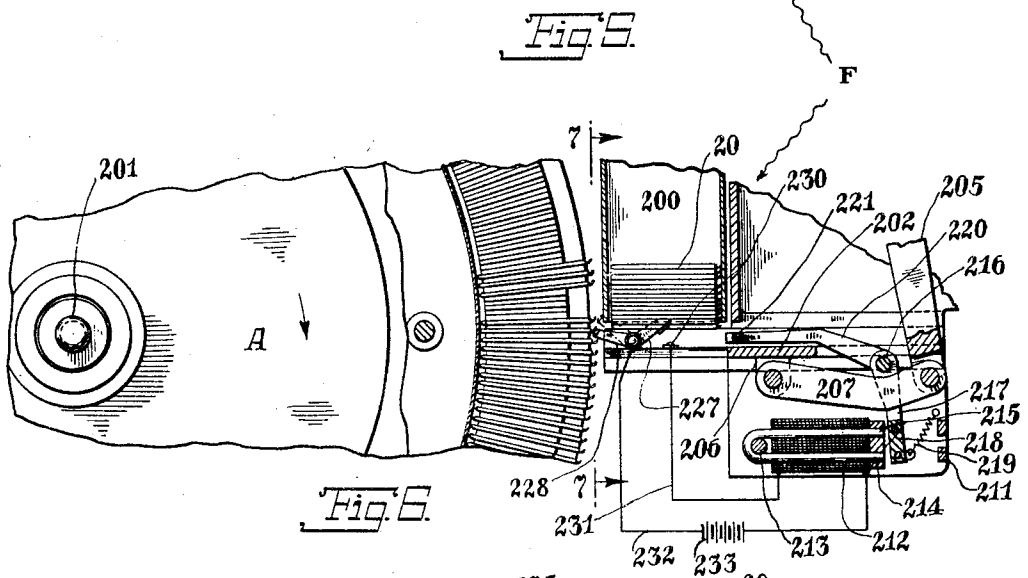
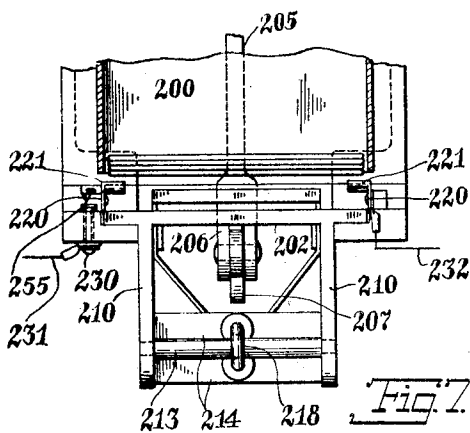
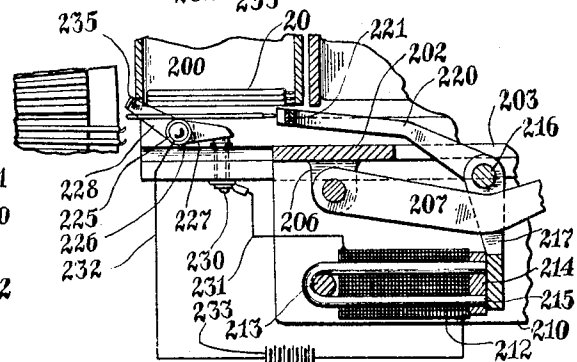
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ARTICLE CONTROLLED ARTICLE HANDLING MACHINE

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4 Sheets-Sheet 2



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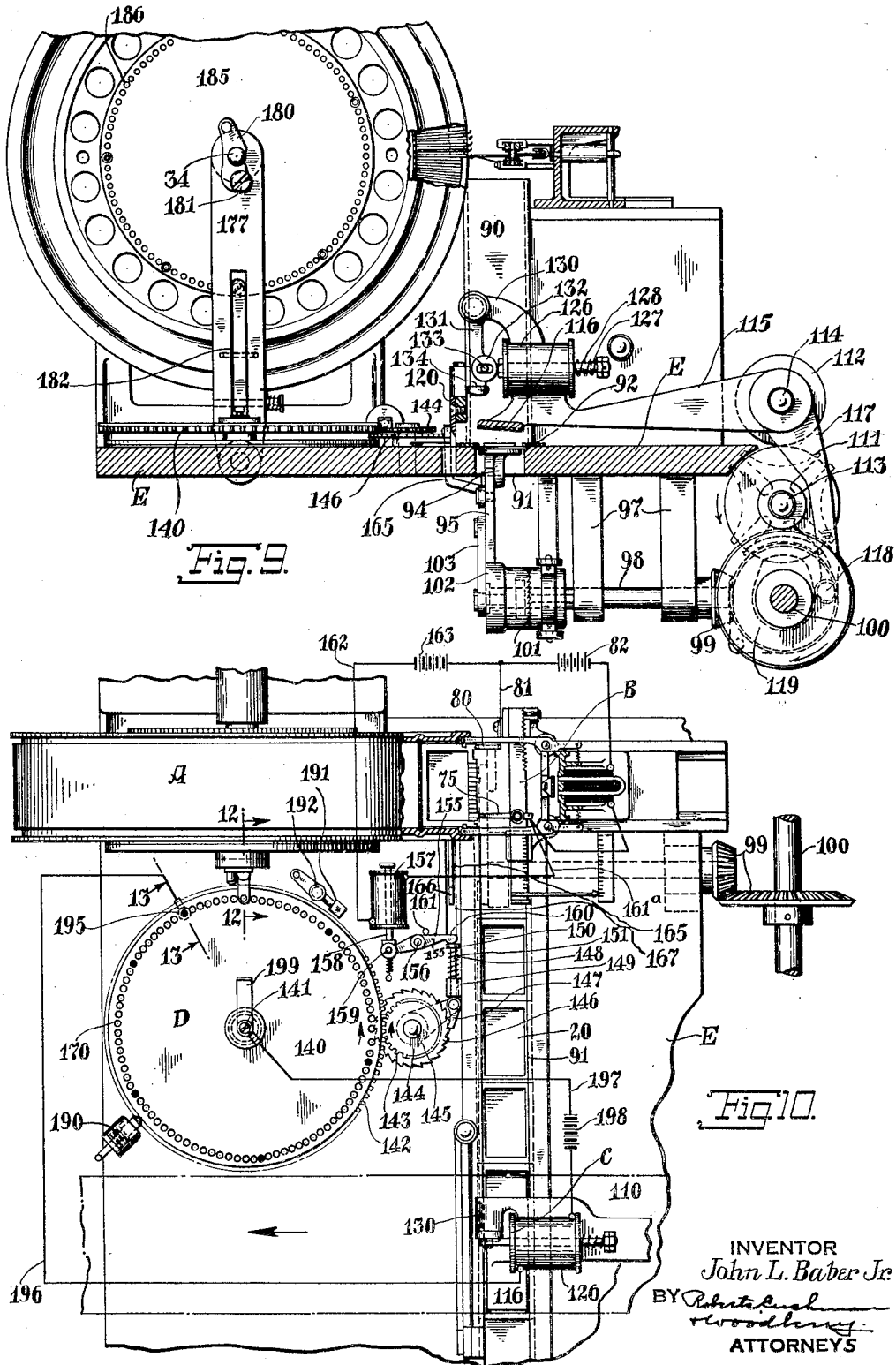
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ARTICLE CONTROLLED ARTICLE HANDLING MACHINE

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4 Sheets-Sheet 3



May 16, 1933.

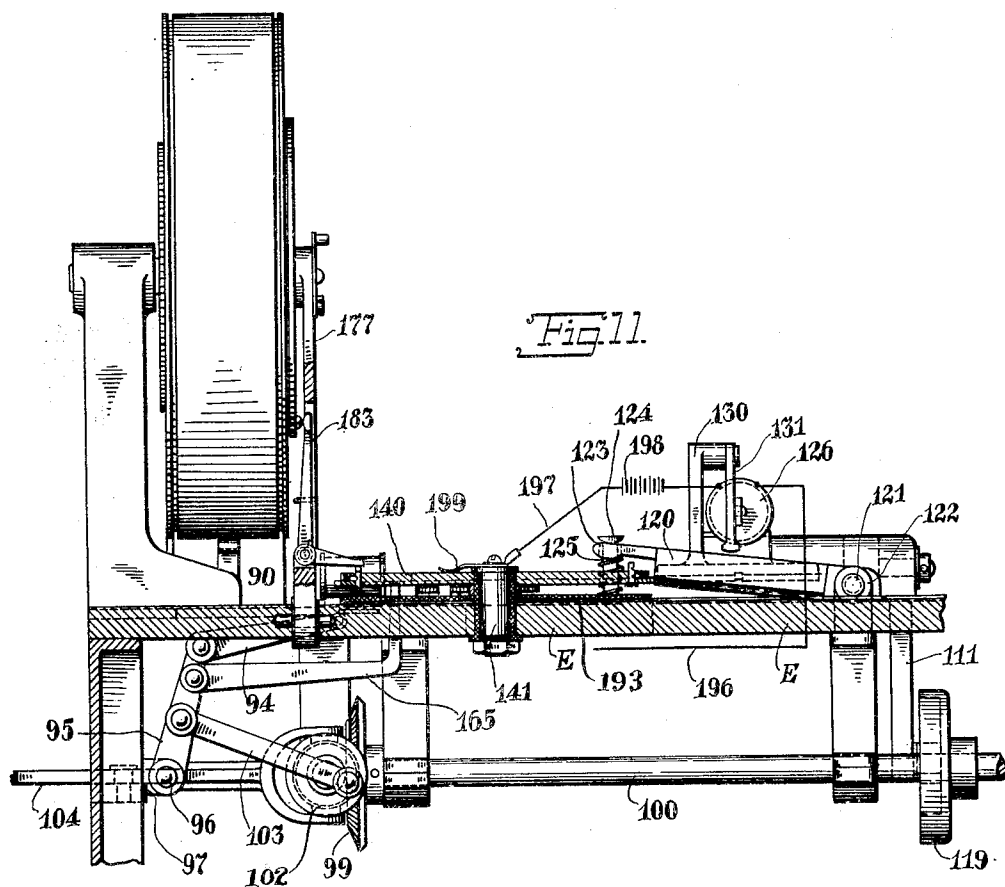
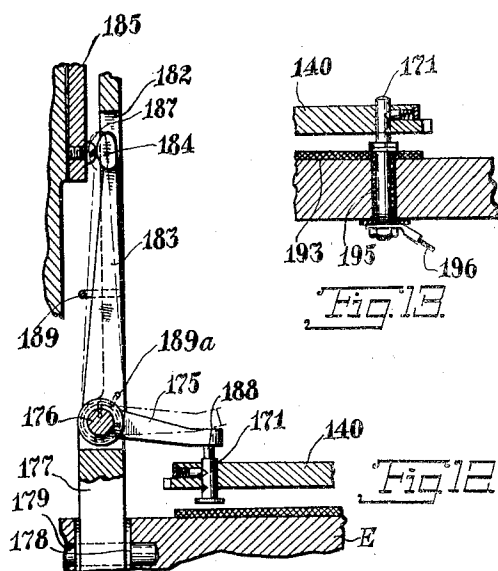
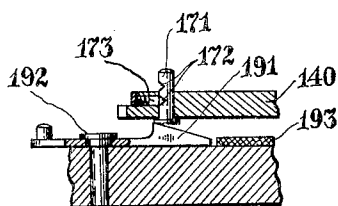
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ARTICLE CONTROLLED ARTICLE HANDLING MACHINE

Filed Dec. 31, 1929

4 Sheets-Sheet 4



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ARTICLE-CONTROLLED ARTICLE-HANDLING MACHINE

Application filed December 31, 1929. Serial No. 417,723.

This invention relates to an improvement in article-controlled, article-handling mechanism of the general type disclosed in my copending application, Serial No. 322,248, filed November 27, 1928.

As a basis for the description of my invention I have selected a mechanism embodying this invention and adapted for use in utilizing printing plates. The operation of such a mechanism will now be described briefly. The printing plates are stored in compartments in a magazine which is rotated step by step, from which magazine certain preselected plates are withdrawn by extractors, the function of which is determined by certain control factors which may be regulated as desired. The plates extracted from the magazine are fed to a printing mechanism by which impressions are placed upon a web of paper which is intermittently fed to the mechanism. In conjunction with the printing mechanism is provided a control mechanism which functions at certain pre-selected operations of the printing mechanism to cause the severance of a printed blank from the web while the web is at rest. After passing through the printing mechanism, the printing plates are fed to a hopper and then refilled in the compartments of the magazine, from which they were originally extracted.

The primary object of this invention is to provide mechanism by means of which the series of operations above referred to may be carried out. Another object of the invention resides in the extractor mechanism and the various features thereof. A further object of the invention resides in the mechanism by which the printed strips are severed from the web after a certain predetermined number of impressions have been made. Another object of the invention resides in the mechanism by which the articles are refilled in the pockets of the magazine from which they had been removed.

Other objects will appear from a consideration of the following specification taken in connection with the drawings, which disclose one embodiment of this invention, and in which;

Fig. 1 is a sectional view taken along the line 1—1 of Fig. 2 of the means for extracting the articles from the magazine;

Fig. 2 is a sectional plan view taken along the line 2—2 of Fig. 1, of such means;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one form of printing plate which may be employed in connection with this invention;

Fig. 5 is a sectional plan view of a portion of the machine disclosing the refilling mechanism;

Fig. 6 is a side elevation of such mechanism, certain of the parts being shown in section;

Fig. 7 is a sectional view taken along the line 7—7 of Fig. 6;

Fig. 8 is a sectional view taken along the line 8—8 of Fig. 5;

Fig. 9 is a side elevation, partly in section, of that portion of the machine by which is performed the extracting of the articles from the magazine, the feeding of the web, the printing upon the web, and the severing of the printed portions therefrom;

Fig. 10 is a plan view, partially in section, of the mechanism shown in Fig. 9;

Fig. 11 is an end elevation, partially in section, of the mechanism disclosed in Fig. 9;

Fig. 12 is an enlarged sectional view taken along the line 12—12 of Fig. 10 of a detail of the construction disclosing the means for operating the control factor;

Fig. 13 is an enlarged sectional view, taken along the line 13—13 of Fig. 10; and

Fig. 14 is a sectional view illustrating the operation of the means for restoring the shear control factors to their inoperative positions.

Referring particularly to the drawings and to Figs. 6, 9 and 10 the reference character A is employed to designate the magazine in which the articles to be treated, in this case the printing plates, are stored, the reference character B to designate generally the extracting mechanism, the reference character C to designate the printing and cutting mechanism, the reference character D to

designate the means for controlling the operation of the cutting means, the reference character E to designate the table by which the various mechanisms are supported, and the reference character F to designate the refiling mechanism.

The operation of the extracting mechanism is shown particularly in Figs. 1, 2, 3 and 4 and attention thereto is expressly directed. The printing plate 20 (shown in Fig. 4) comprises a printing surface or stencil 21 mounted within a frame 22 which is provided along one side edge 23 with a plurality of tabs 24, which are normally in the plane of the edge 23, as shown in Fig. 4, but which may be bent outwardly, if desired, into a position in which they project beyond the edge 23 of the frame, as illustrated in two instances in Fig. 4. In the present embodiment twenty of such tabs 24 are shown, but it is obvious that the number may be varied as circumstances require. In the end walls of the frame 22 adjacent the edge 23 are formed depressions 25, the purpose of which will be set forth later. The end walls terminate in tips 26, which extend beyond the edges 23 a distance approximately that of the tabs 24 when extended.

The magazine A is here shown as of the drum type having a pair of spaced walls 30, 31 and being provided with a circular band 32 which is seated within the walls and provides an outer annular portion within which the plates 20 are seated. Mounted on the inner faces of the walls 30 and 31 are inwardly projecting shelves 33 which so correspond to each other in location that they are in the same plane and provide supports for the plates 20, the pairs of shelves in the same plane forming pockets. The walls 30, 31 are shouldered at their periphery to provide annular recesses 35 at the ends of the shelves 33. The particular magazine here shown is the same as that set forth in my copending application mentioned above, and since its construction forms no particular part of this invention, it will not be described nor has it been shown in detail. It will be understood, however, that the magazine is caused to rotate both in its plate with drawing position on its supporting shaft 34 and in its plate refiling position on its supporting shaft 201 in a step by step motion by suitable operating means such as that well illustrated in Fig. 18 of my said copending application.

The extractor mechanism B comprises a pair of grippers 40 which are mounted upon a movable support 41 adapted to be reciprocated over a platform 42 by means of an oscillating arm 43, connected through a link 44 with a bracket 45, depending from the base of the support 41. The platform 42 includes a pair of guideways 46 on which the support rest and a pair of guiding walls 47 between which the base 50 of the support 41 is seated.

The support 41 comprises in addition to a base 50, a front wall 51 and an upper wall 52. Suitably supported upon a post 53 which is carried by the base 50 and the upper wall 52 is a magnet 54, the poles 55 of which extend through apertures 56 in the wall 51 and are adapted when energized to act upon an armature 57 mounted upon arms 58 which constitute extensions at right angles to the grippers 40. The grippers 40 and arms 58 may be made integral if desired or may be of separate portions rigidly joined as here shown. Each of the grippers 40 includes a projection 60 which normally rests against the ends of the front wall 51, being held in such position by means of springs 61 (see particularly Fig. 2). Each gripper 40 with its arm 58 and projection 60 is mounted upon a pin 62 fixed in spaced brackets 63 carried by the support 41 at each side of the front wall 51.

The brackets 63 also support a pair of crossbars 65 connected at their ends by plates 66. Mounted upon the upper crossbar 65 is a pointer 67 which extends at right angles to said bar over a bracket 68 projecting from the support 41 parallel to the bars 65. The bracket 68 is provided with a scale 69 with which the pointer 67 cooperates. It will be noted that the crossbars 65 are slidable relative to the brackets, being provided with grooves 70 into which enter fingers 71 carried by the brackets 63, thus permitting the reciprocation of the bars as a unit relative to the support 41. The upper arm of one of the brackets 63 is extended (see Fig. 2) and upon it is mounted a spring operated check 72 which coacts with a series of corrugations 73 provided in the rear edge of the upper crossbar 65.

The grippers 40 extend between the crossbars 65, and mounted in the space between the crossbars and between the grippers is a finger 75 (see Fig. 2) which is suitably insulated from the other elements of the extractor mechanism and connected by a lead 76 to one side of the magnet 54. Mounted upon one of the brackets 63 is a spring finger 80 which is insulated from the bracket and connected by a lead 81 through a battery or other source of power 82 with the magnet 54. In the lead 81 is inserted a switch 83 by which the circuit is automatically broken when the gripper support 41 is in the retracted position shown in dotted lines in Fig. 2. The particular structure of the circuit cutoff forms no part of the present invention and hence is not described in detail. It will be noted from an examination of Figs. 1 and 2 of the drawings that the finger 80 bears upon one of the tips 26 of each plate 20 as the magazine revolves. The finger 75 may be set to contact with any one of the tabs 24 of the plate, if the tab for which the finger is set be in the extended position.

The grippers 40 are as shown and described in detail in my copending application above mentioned and comprise a pair of plates 85 provided at their outer end with a pin 86. The grippers are free to enter the annular recesses 35 in the magazine at either side of the printing plates 20 and they do not in any way interfere with the rotation of the magazine so that they may therefore be advanced before the magazine ceases to rotate. Such construction is shown particularly in Fig. 2.

In my copending application is disclosed a master plate provided with control factors, which are set to determine the operation of the grippers by which the articles are extracted. The mechanism herein set forth differs from that shown in the copending application by the provision of the tabs 24 on the articles in place of the master plate so that the machine not only handles the articles but is controlled by them.

The bodily travel of the grippers 40 is controlled by the reciprocation of the support 41, but unless the magnet 54 be energized, the grippers will not extract a plate from the magazine. If, however, on the plate 20 in the magazine then between the grippers 40, the tab 24, for which the finger 75 is set, be extended, the finger 75 contacting therewith completes a circuit from the battery 82 through the finger 80, the plate 20, the tab 24, the finger 75, and the magnet 54, which energizes such magnet. The energization of the magnet attracts the armature 57 and causes the grippers 40 to swing upon the post 62, the bars 86 entering the slots 25 so that when the support is retracted the gripper will extract the printing plate 20 so engaged. The tabs 24 on the plates thus function as control factors for the extracting mechanism.

The extracted printing plate 20 is drawn into a position over a hopper 90 into which it drops when the grippers are deenergized by the automatic opening of the switch 83 by any suitable means as that shown in Fig. 2. When the magazine has made a complete rotation all the printing plates having a certain predetermined tab 24 extended will thus have been extracted from the magazine and placed in the hopper 90.

Attention is now called to Figs. 9 to 14 inclusive which show the mechanism for manipulating the plate. The hopper 90 is mounted on the table E directly over a slot 91 formed therein and provided with guiding recesses 92 closed by strips 93 in which recesses the edges of the plates 20 rest. The plates 20 are fed along the slot 91 by a feeding finger 94 mounted upon an arm 95 which is pivoted on a shaft 96 carried by a bracket 97 mounted below the table E. A shaft 98 driven by intermeshing gears 99 from a shaft 100 is connected through a clutch 101 with a

plate 102, to which is secured one end of a link 103, the other end of which is attached to the arm 95. The clutch 101 is operated by a lever 104 and obviously when thrown into the operative position the arm 95 will be caused to oscillate and the finger 94 will reciprocate, advancing the plates from the hopper 90 along the slot 91.

The plates thus travel along the slot 91 to the printing and cutting position indicated generally in Fig. 10 by the reference character C. At this position there is fed over the table E and over two of the plates 20 in the slot 91 a web 110 of paper upon which it is intended that the printing plates should apply an impression. The paper is intermittently fed in the direction indicated by the arrow in Fig. 10 by a pair of rolls 111, 112 which are mounted upon stub shafts 113, 114 driven from the main shaft 100 by any suitable well known means such as a Geneva movement. Pivotaly mounted upon the stub shaft 114 is an arm 115 which carries at its outer end a platen 116 so located that it may be brought to bear upon the portion of the web of paper 110 directly over the printing plates 20. The arm 115 is also provided with an arm 117 which may be integral therewith or rigidly connected thereto. The arm 117 carries at its lower end a roller 118 which coacts with a cam 119 carried by the main shaft 100. This construction is shown particularly in Fig. 9, and it will be perfectly apparent that upon each rotation of the main shaft 100 the platen 116 will be reciprocated.

Mounted upon the table E is a cutting blade 120 which is pivoted upon a shaft 121 carried upon brackets 122 suitably fixed upon the surface of the table E (see Fig. 11). The cutting blade 120 is provided at its outer end with an aperture 123 through which extends a post 124 mounted upon the table E. A spring 125 coiled around the post 124 normally holds the cutting blade 120 in the inoperative position, as shown in Fig. 11, thus permitting the free advance of the web 110 below the blade. The operation of the platen 116 by the arms 115 through the cam 119 is normally independent of the cutting blade 120. It will be noted, however, that mounted upon the arm 115 is a solenoid 126 having a core 127 which, by reason of a spring 128, is normally in the retracted position. Pivotaly depending from a bracket 130 on the arm 115 is a trip 131 having a slot 132 into which projects a pin 133 carried by one end of the core 127 of the solenoid 126. The trip 131 terminates in a pad 134. When the solenoid 126 is energized by the means to be described later, the core 127 will be advanced, swinging the trip on its pivot and thus carrying the pad 134 over the blade 120 so that upon the next depression of the arm 115 the

cutting blade is forced to descend, severing the printed blank from the web.

The operation of the solenoid 126 is regulated by the control mechanism D, which comprises a disk 140 mounted to rotate upon and suitably insulated from a pin 141 carried by the table E. The periphery of the disk 140 is provided with teeth 142, with which mesh the teeth 143 in a gear 144 mounted upon a pin 145 carried by the table E. Connected to the gear 144 is a ratchet wheel 146 with which engages a pawl 147 pivotally mounted upon one end of a rod 148. The rod 148 is mounted for reciprocation in a loop 149 carried by the table E and terminates in a head 150. Surrounding the rod 148 between the loop 149 and the head 150 is a spring 151 which normally holds the rod in the retracted position shown in Fig. 10. The rod 148 is impelled to travel in a direction against the tension of the spring 151 by a rocker 155 which is pivotally mounted upon a pin 156 carried by the table E and actuated by a solenoid 157, the core 158 of which is connected to one arm 159 of the rocker 155. The other arm 160 of the rocker bears against the head 150. A pin 161 limits the travel of the rocker 155 in the direction urged by the spring 151. The solenoid 157 is connected by a lead 161^a with the finger 75 and by a lead 162 through a battery or other source of supply 163 to the lead 81 from the finger 80. Obviously, therefore, when the fingers 80 and 75 both engage a plate 20 in the magazine, the solenoid 157 will be energized, retracting the core 158 and, through the rocker 155, causing the rod 148 to reciprocate and act through the pawl 147 to advance the ratchet 146, gear 144 and disk 140 one step. Thus the disk 140 is moved one step every time a plate is withdrawn from the magazine. The arm 160 of the rocker is also directly actuated by a pusher 165 which is fixed at one end upon the arm 95, (see Fig. 11). The pusher 165 here shown is right angular in form and its outer end 166 extends through a slot 167 in the table E directly behind the arm 160. Hence, upon each oscillation of the arm 95 the pusher 165 bears against the arm 160 and causes the disk 140 to advance a single step. The movement of the disk is thus controlled in time with the functional operation of the grippers and also in time with the operation of the feeding finger 94. These, however, as will be pointed out below, do not operate simultaneously.

The disk 140 is provided with an annular series of holes 170 in each of which is inserted a pin 171. (See the enlarged views, Figs. 12, 13 and 14.) The pins 171 are provided with a pair of notches 172 with either of which a spring-pressed check 173 carried by the disk 140 will engage. Obviously, therefore, the pins 171 are held yieldably

either in the depressed position shown in Fig. 13 or in the raised position shown in Fig. 14. The position of the pins 171 in the disk 140 is here shown as controlled by a rocking arm 175 which is mounted upon a stub shaft 176 carried in a bracket 177. The bracket 177 is pivotally supported in a slot 178 in the table upon a shaft 179 and is removably connected at its upper end to the main shaft 34 upon which the magazine A is rotatably mounted by means of a latch 180 which is pivotally mounted on a screw 181 carried by the bracket 177.

The stub shaft 176 on which the arm 175 is pivotally mounted extends across a slot 182 formed in the bracket 177. Within the slot 182 is an arm 183 which forms a continuation of the rocking arm 175 substantially at right angles thereto. The arms 175 and 183 may be integral or may be formed of separate elements rigidly connected. The arm 183 terminates in a head 184 in front of the periphery of a disk 185 which is suitably secured to the wall 30 of the magazine. At the periphery of the disk 185 is found an annular row of apertures 186 adapted to receive set screws 187 or other similar elements. From the description above given and from an examination of the drawings it will be noted that the head 184 of the arm 183 is adapted to be engaged by the set screws 187, while the end of the arm 175 is provided with a boss 188 which may engage a pin 171 in the disk 140. The arms 175, 183 normally take the dotted line position shown in Fig. 12, the boss 188 on the arm 175 being raised above the upper end of the pin 171 so that it will not interfere with the rotation of the disk 140. The arm 183 is held out of contact with the disk 185 and against a bar 189 carried by the bracket 177 by any suitable means such as by a spring 189^a shown in dotted lines carried by the shaft 176. Obviously when the arm 183 is engaged by a set screw 187, it is caused to swing out of its dotted line normal position and the boss 188 on the arm 175 depresses that pin 171 which at the time happens to be directly below it.

A suitably formed check 190 engages the teeth 142 and supplements the action of the gear 144 in preventing movement of the disk 140 more than one step at a time. An indicia of any desired form may be applied upon the surface of the disk to insure its proper location at the beginning of the operation. The pins 171 may be returned to the raised or inoperative position by a pivotally mounted trip 191 (see particularly Figs. 10 and 14). In Fig. 10 the trip 191 is shown swung on its pivot 192 into the inoperative position, while in Fig. 14 it is shown in the operative position. The table E below the disk 140 may be covered with a sheet of insulating material 193, if desired.

Extending through the table E is a post

195 so located that the pins 171 pass over the head thereof during the rotation of the disk 140, and upon each stop of the disk there will be a pin 171 directly over the post 195. The post 195 is suitably insulated from the table E and connected by a lead 196 to one side of the solenoid 126. The other side of the solenoid is connected by a lead 197 through a battery or similar source of energy 198 to a clip 199 fixed upon the pin 141 and bearing at one end upon the surface of the disk 140. Obviously a depressed pin 171 will contact with the head of the post 195 (see Fig. 13) and thereby complete the circuit through the solenoid 126 causing the core 127 to advance so that the cutter 180 will be actuated upon the next depression of the platen 113. On the other hand an undepressed pin 171 will pass above and out of contact with the head of the post 195.

After the printing plate has been fed to the printing position along the slot 91, and the printing operation has been completed, it is then transferred to the refilling mechanism shown in Figs. 5, 6, 7 and 8, by which it is returned to the magazine. The plates travel along the slot 91 and drop into a hopper 200 in any desired manner, as for instance that shown in my copending application above referred to, and form a stack therein, as shown particularly in Fig. 6. The magazine A is transferred from the shaft 34 to a stub shaft 201, on which it is suitably secured and on which it is given a step by step rotation bringing each pocket in turn into alignment with the refilling mechanism so that if the aligned pocket in the magazine is empty, it will be filled by the lowest of the stack of plates in the hopper 200.

The refilling mechanism F comprises a reciprocable slide 202 supported in guideways 203 on a suitably formed table or support 204. The slide 202 is reciprocated by a pivotally mounted arm 205 connected to a bracket 206 on the under side of the slide by a link 207. The arm 205 is pivotally supported and caused to oscillate by means not here shown, but which will be readily apparent to those skilled in the art. Depending from the slide 202 are a pair of walls 210 suitably joined at one end by crossbars 211. A magnet 212 is mounted between the walls 210 by means of a shaft 213 and a cross-bar 214, the poles 215 of the magnet extending through suitable formed apertures in the crossbar 214. Pivotally mounted upon a shaft 216 are a pair of arms 217 connected at their lower ends by a plate 218 which is directly behind the poles 215 and acts as an armature for the magnet. The armature 218 is normally held away from the poles 215 by a spring 219. Also mounted upon the shaft 216 are a pair of arms 220 having flanged tips 221. The arms 220 may be extensions of the arms 217 or may be formed separate from such arms as here

shown and connected therewith in any suitable manner so that the oscillation of the arms 217 out of their normal position shown in Fig. 6 will cause the arms 220 to be raised into the position shown in Fig. 8.

Pivotally mounted upon a shaft 225 carried by brackets 226 on the table 204 is an L-shaped rocker member comprising arms 227 and 228. Mounted in the support 204 behind the bracket 226 is a post 230 with the upper end of which the arm 227 of the rocker member will contact when the member takes the position shown in Fig. 8. The post 230 is suitably insulated from the support and connected by a lead 231 with one side of the magnet 212. The other side of the magnet 212 is connected by a lead 232 through a battery or other source of supply 233 to the shaft 225. Obviously when the rocker member is in the position shown in Fig. 8, the circuit through the magnet 212 and the battery 233 is completed by the arm 227 thus energizing the magnet and thereby causing the arms 217 to move from their normal position and raise the arms 220 into their upper position. When the rocker member swings into the position shown in Fig. 8, the ends of the arms 220 are behind the lowest plate 20 in the hopper 200 so that upon the next reciprocation of the slide 202, that plate is advanced into the pocket in the magazine directly in line therewith.

The arm 228 of the rocker member terminates in a flange 235 which projects into the path of the plates carried by the magazine a sufficient distance so that as the magazine is rotated the flange 235 will contact with one of the tips 26 of each plate in the magazine. Consequently, therefore, as the magazine is rotated the contact of the arm 228 with the tips 26 of the plates in the filled pockets will cause the rocker member to retain the position shown in Fig. 6. When, however, an empty pocket in the magazine appears at the refilling position, the rocker member will be free to return to its normal position and energize the magnet 212 so that the empty pocket is filled by the lowest plate in the hopper. The tips 26 of the plates thus act as control factors for the refilling mechanism in the same way that the extended tabs 24 act as control factors for the extracting mechanism. It will be understood that the magazine A, having been removed from the shaft 34 at the completion of the selecting operation is suitably mounted upon the shaft 201 and rotated in a step by step position, being located in the proper position so that the plates 20 in the hopper 200 will be returned in order to the pockets in the magazine from which they were removed.

The operation of the entire mechanism will now be briefly described. The magazine A is filled with plates or in case it is not filled the empty pockets will be provided with

dummies. The predetermined tab 24 of each plate which is to be employed in connection with the particular run of the mechanism is extended if it is in the non-extended position. In the present instance the second tab is chosen to be extended and the finger 75 of the extractor mechanism is located so that it will engage with the extended second tab of any plate. Tabs other than the one selected for this particular operation may be extended from the plates without affecting the action of the mechanism. In fact it is very common to have the same plates used for a number of different operations so that several tabs may be extended. The finger 75 contacts only with the predetermined tab so that the extension or non-extension of other tabs has no effect upon the action of the finger 75.

It will be understood that this mechanism is particularly adapted for use in connection with the preparation of instruction tickets relating to the various operations that must be performed upon a piece of work as it passes through the factory. These operations of course take place in different departments and the purpose of this machine is to prepare the instruction tickets for the various departments. The printing plates 20 carry on them certain instructive matter relating to various operations, and they are so arranged in the pockets of the magazine that all the printing plates relating to the operations in one department are in a single group. After the plates have been properly located in the magazine, the set screws 187 are arranged in the disk 185 so that they divide the pockets into groups corresponding to various departments for which instructions are to be given. As shown in Fig. 9, in the present instance the pockets are divided into five groups, each group containing plates for the operations in one department and the termination of each group is indicated by a set screw 187.

The magazine is first rotated and the extractor mechanism set in operation. The magazine and the extractor mechanism may be independently operated or a single power means may be used to operate both simultaneously. As the magazine rotates, the extractor mechanism withdraws from the magazine those plates on which the second tab 24 is extended and the plates are dropped into the hopper 90. When all the plates having the second tabs 24 extended have been extracted, the magazine A is transferred from the shaft 34 to the shaft 201 in readiness for the operation of the refilling mechanism.

The control mechanism D has been set by means of an indicator formed on the plate in a predetermined position, preferably by means of the check 190 and an indicia. As each plate is extracted from the magazine A by the grippers 40 the disk 140 is caused to rotate one step by means of the solenoid 157

and the connections previously described. When all the plates in the pockets of one department group have passed the extractor mechanism by which the designated plates are removed, the set screw 187 at the end of the group strikes the arm 183 and through the mechanism previously described and shown particularly in Fig. 12 causes the depression of the finger 171 below the head 188. This takes place as each screw 187 engages the arm 183 so that, when the operation is completed, there are depressed in the disk 140 the same number of pins 171 as there are screws 187 in the disk 185.

The plates are removed from the hopper 90 by the feeding mechanism shown in Fig. 11 and caused to travel in a step by step movement along the slot 91 toward the printing position. This movement of the plates in the slot 91 is transmitted to the disk 140 by the pusher 165 and the mechanism previously described so that as each plate is moved one step the disk 140 also moves one step. When the plates traveling along the slot 91 reach the printing position, the feed of the paper web 110 is started and the platen 116 of the printing mechanism is actuated so that upon each depression of the platen two successive printing plates simultaneously print upon the web. The timing of the web feed and the printing mechanism is so arranged that each printing plate is advanced two positions for each operation of the printing mechanism.

The disk 140 is set so that each movement of the pusher 165 will duplicate the movement given by the energized grippers of the extracting mechanism and the pin 171 depressed by the set screw of the first group will therefore contact with the post 195 after all the plates of the first group have been printed in successive rows on the web as it is advanced step by step for each operation of the platen. The contact of a depressed pin 171 with the post 195 will complete the circuit through the solenoid 126 so that upon the last depression of the platen for that series of printing operations the printed blank is severed from the web. By the mechanism thus described the blanks severed from the webs may be of different lengths, depending upon the number of pairs of printing plates in each group which are to be used to print on successive surfaces of the web for each group, thus eliminating any wastage of paper.

After passing the printing mechanism C, the plates are fed to the hopper 200 in which they are allowed to stack until all the plates of the magazine A which are to be used in the printing of the particular set of tickets have been received. Should it be desired to repeat this operation, the plates are transferred bodily to the hopper 90 and passed again along the slot 91 to the printing mechanism. After the desired number of blanks have

been printed, the plates are then refilled in the magazine A in the manner set forth above.

The selecting and filing features herein described may be used independently of the other features if it be desired to do so. Thus these features may be used in connection with addressing or similar listing or other such work in which it is desired to select certain printing plates from a magazine, manipulate them and refill them in the magazine after the manipulation has been completed.

The particular machine herein described was selected for the purpose of facilitating the disclosure of the invention and it will be understood that the details of construction of the various elements can be changed if desired without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. The combination with a magazine containing articles of means for removing certain articles from the magazine, means for refilling the articles in the magazine, factors carried by the articles for predetermining the articles to be handled by the removing means and other factors on the articles for controlling the operation of the refilling means.

2. The combination with a magazine provided with pockets, each pocket containing an article, of means for removing articles from the pockets in the magazine, means for refilling the articles in the pockets from which they were removed and a plurality of distortable factors carried by each of the articles whereby a factor may be brought into position for predetermining the articles to be handled by the removing means, and other factors on the articles for controlling the operation of the refilling means.

3. The combination with a magazine provided with pockets containing articles, of means for removing predetermined articles from the magazine, means for utilizing the articles removed from the magazine, such utilizing means including a normally inoperative element, a movable control for such element including a plurality of factors normally inoperative and means carried by the magazine for moving one of said factors into the operative position after a predetermined number of articles have been removed from the magazine.

4. An article handling machine comprising a magazine containing a plurality of articles, gripper mechanism for extracting certain articles from said magazine, factors on the articles to be extracted controlling the operation of said mechanism, means for feeding the extracted articles, a movable plate, a device for moving said plate intermittently and connections between said extractor mechanism and said device and between said feeding means and device whereby said plate is

actuated intermittently upon each operation of said extractor and/or feeding mechanisms.

5. An article handling machine comprising a magazine containing a plurality of articles, gripper mechanism for extracting predetermined articles from said magazine, factors on the articles to be extracted controlling the operation of said mechanism, a movable plate, a device for moving said plate intermittently and connections between said mechanism and said device whereby said plate is actuated intermittently upon each operation of said extractor mechanism.

6. A magazine containing printing elements, web feeding, printing and cutting mechanisms, and mechanisms for removing certain selected printing elements only from the magazine and feeding them through the printing mechanism, the web cutting mechanism being operated by the printing mechanism to sever a printed strip from the web after a plurality of web printing operations.

7. A magazine containing printing elements, web feeding, printing and cutting mechanisms and mechanisms for removing certain selected printing elements only from the magazine and feeding them through the printing mechanism, the web cutting mechanism being operated by the printing mechanism to sever a printed strip from the web after a plurality of printing element feeding operations.

8. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing certain selected printing elements only from the magazine and feeding them through the printing mechanism, and means for causing the printing mechanism to operate the web cutting mechanism after a plurality of printing operations.

9. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing certain selected printing elements only from the magazine and feeding them through the printing mechanism, and means for causing the printing mechanism to operate the web cutting mechanism after a plurality of printing element feeding operations.

10. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and means controlled by the printing element feeding mechanism for causing the web cutting mechanism to operate after a predetermined number of printing operations.

11. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing

mechanism, and means controlled by the printing element feeding mechanism for causing the printing mechanism to operate the web cutting mechanism after a predetermined number of printing operations.

12. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and means controlled by the element removing mechanism for causing the web cutting mechanism to operate after a predetermined number of printing operations.

13. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and means controlled by the element removing mechanism for causing the printing mechanism to operate the web cutting mechanism after a predetermined number of printing operations.

14. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and means controlled by the printing element removing and feeding mechanisms for causing the web cutting mechanism to operate after a predetermined number of printing operations.

15. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and means controlled by the printing element removing and feeding mechanisms for causing the printing mechanism to operate the web cutting mechanism after a predetermined number of printing operations.

16. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism, and control means having a plurality of settable control devices, said control means being operated first by the printing element removing mechanism and coacting with the magazine to bring into position for action predetermined settable control devices and then by the printing element feeding mechanism to cause said control devices to act for ensuring the operation of the web cutting mechanism after a predetermined number of printing operations.

17. A magazine containing printing elements, web feeding, printing and cutting mechanisms, mechanisms for removing pre-

determined printing elements from the magazine and feeding them through the printing mechanism, and control means having a plurality of settable control devices, said control means being operated first by the printing element removing mechanism and coacting with the magazine to bring into position for action predetermined settable control devices and then by the printing element feeding mechanism to cause said control devices to act to ensure the operation of the web cutting mechanism by the printing mechanism after a predetermined number of web printing operations.

18. A magazine containing printing elements and provided with a control member, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism and a second control member provided with settable control devices, said second control member being operated first by the printing element removing mechanism and coacting with the magazine control member to set predetermined control devices in position for action and then operated by the printing element feeding mechanism to cause said control devices to act to ensure the operation of the web cutting mechanism after a predetermined number of printing operations.

19. A magazine containing printing elements and provided with a control member, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism and a second control member provided with settable control devices, said second control member being electrically operated first by the printing element removing mechanism and coacting with the magazine control member to set predetermined control devices in position for action and then mechanically operated by the printing element feeding mechanism to cause said control devices to act to ensure the operation of the web cutting mechanism after a predetermined number of printing operations.

20. A magazine containing printing elements and provided with a control member, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism and a second control member provided with settable control devices, said second control member being operated first by the printing element removing mechanism and coacting with the magazine control member to set predetermined control devices in position for action and then operated by the printing element feeding mechanism to cause said control devices to act to ensure the opera-

tion of the web cutting mechanism by the printing mechanism after a predetermined number of printing operations.

21. A magazine containing printing elements and provided with a control member, web feeding, printing and cutting mechanisms, mechanisms for removing predetermined printing elements from the magazine and feeding them through the printing mechanism and a second control member provided with settable control devices, said second control member being electrically operated first by the printing element removing mechanism and coacting with the magazine control member to set predetermined control devices in position for action and then mechanically operated by the printing element feeding mechanism to cause said control devices to act to ensure the operation of the web cutting mechanism by the printing mechanism after a predetermined number of printing operations.

22. The combination with a magazine containing articles of means for removing predetermined articles from the magazine, a plurality of distortable factors carried by each of the articles whereby predetermined factors may be brought into position for controlling the operation of the said article removing means, means for refiling the articles in the magazine and factors carried by each of the articles for controlling the operation of the said article refiling means.

23. The combination with a magazine provided with pockets, each pocket containing an article of means for removing articles from the pockets of the magazine, a plurality of distortable factors carried by each of the articles whereby predetermined factors may be brought into position for controlling the operation of the said article removing means, means for refiling the articles in the magazine and factors carried by each of the articles for controlling the operation of the said article refiling means.

Signed by me at Boston, Massachusetts
this 27th day of December, 1929.

JOHN L. BABER, JR.