May 15, 1945. W. T. GOLLWITZER 2,375,842

PRINTING MACHINE

Original Filed Jan. 28, 1938 5 Sheets-Sheet 1

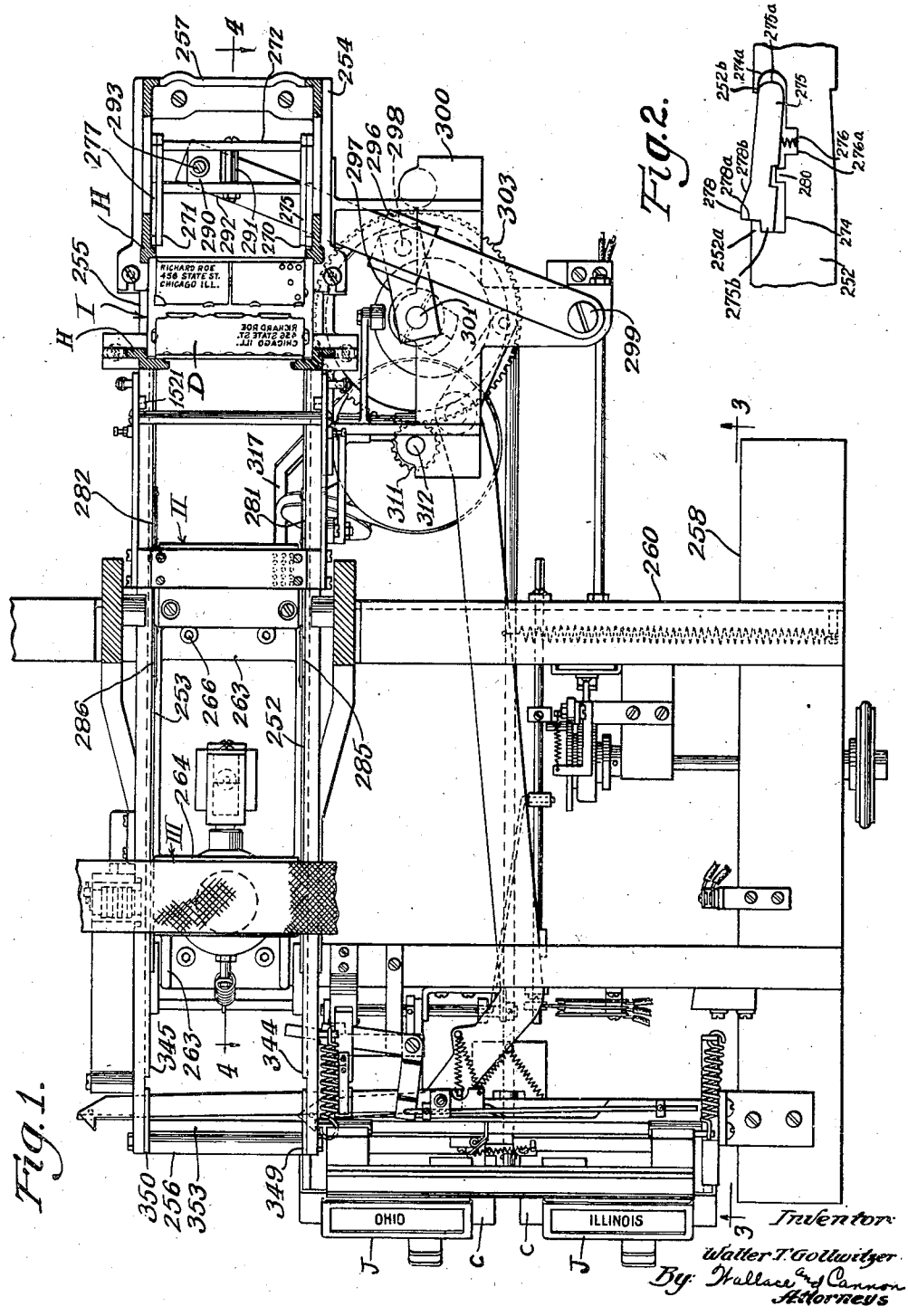


Fig. 1.

Fig. 2.

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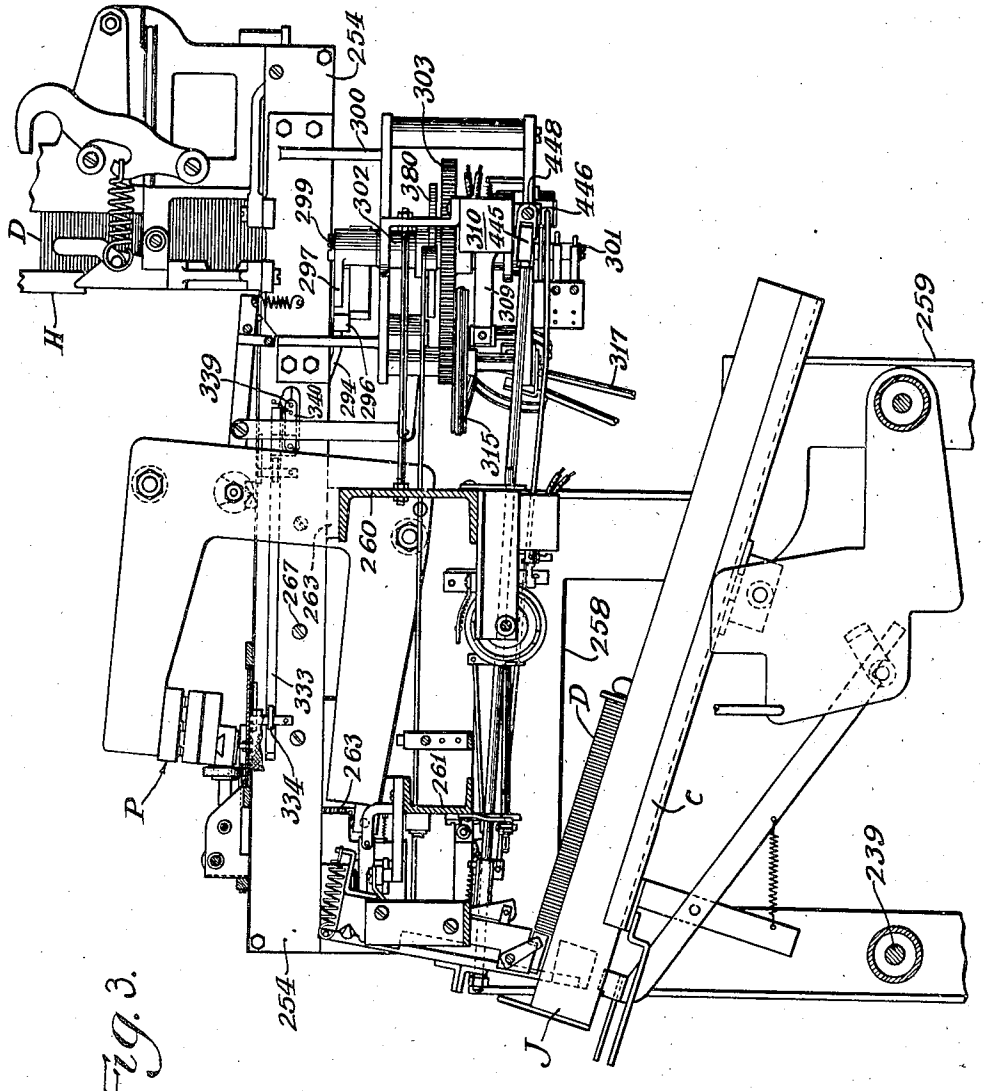


Fig. 3.

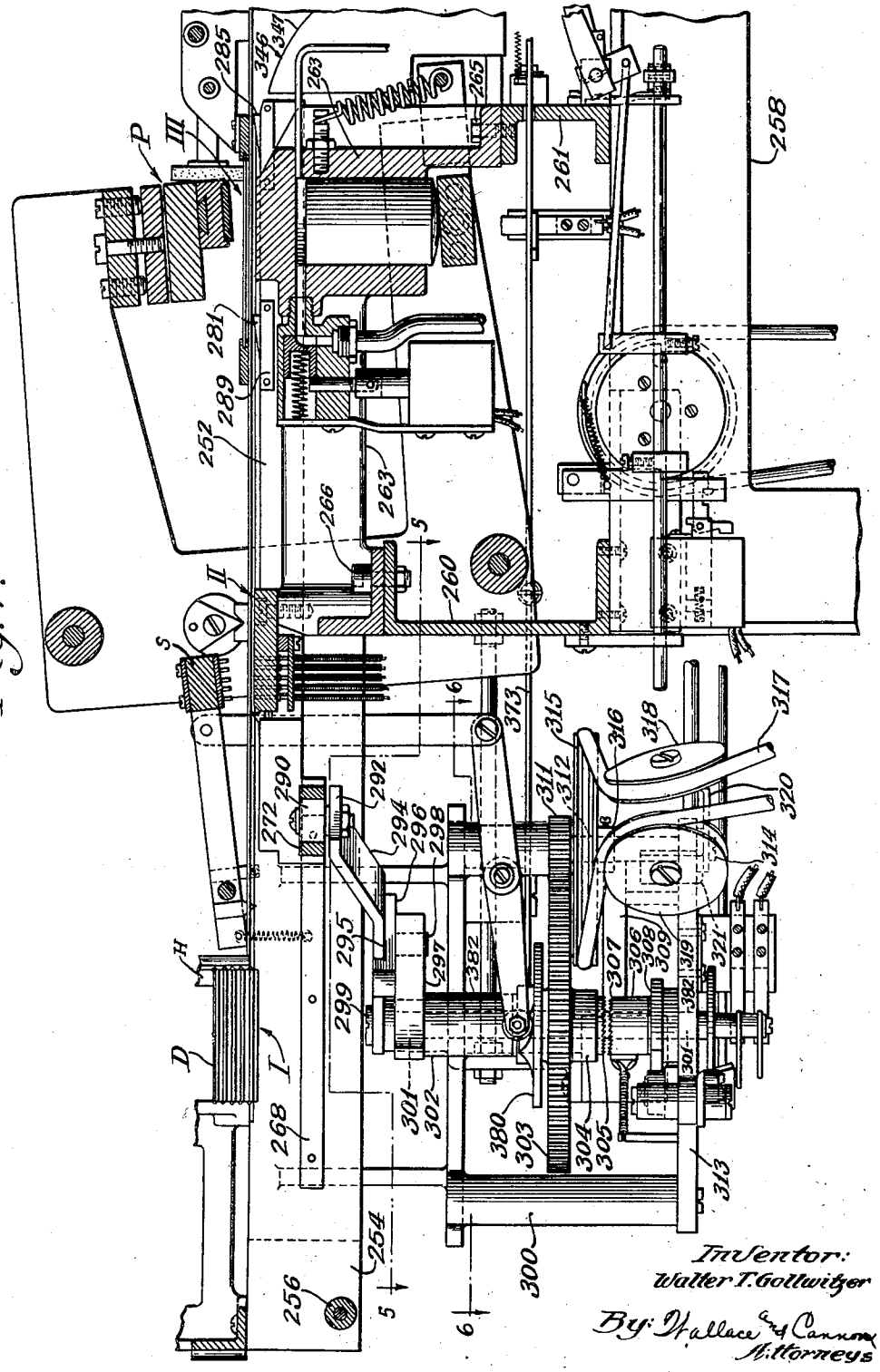
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Fig. 4.



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Fig. 5.

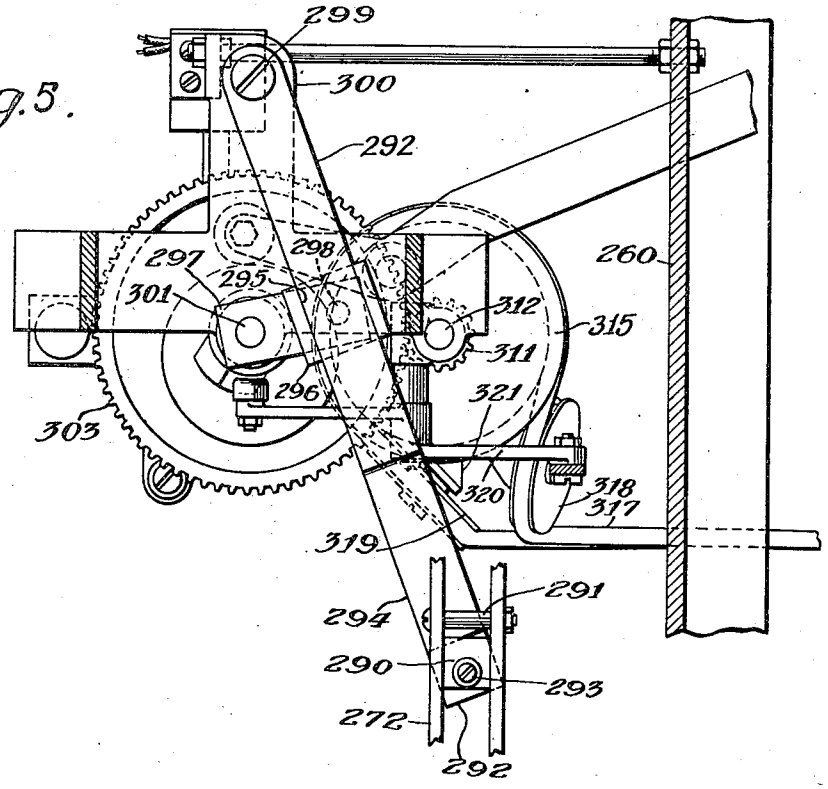
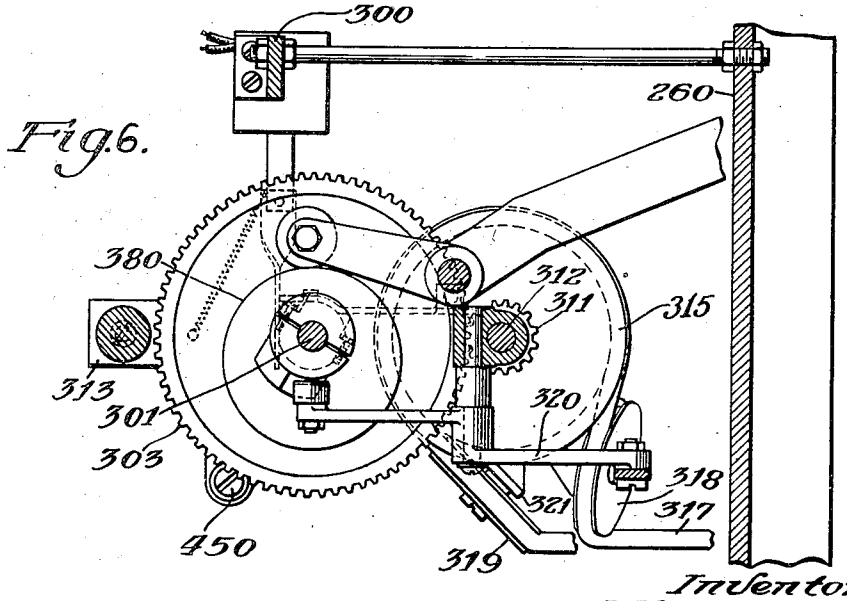


Fig. 6.

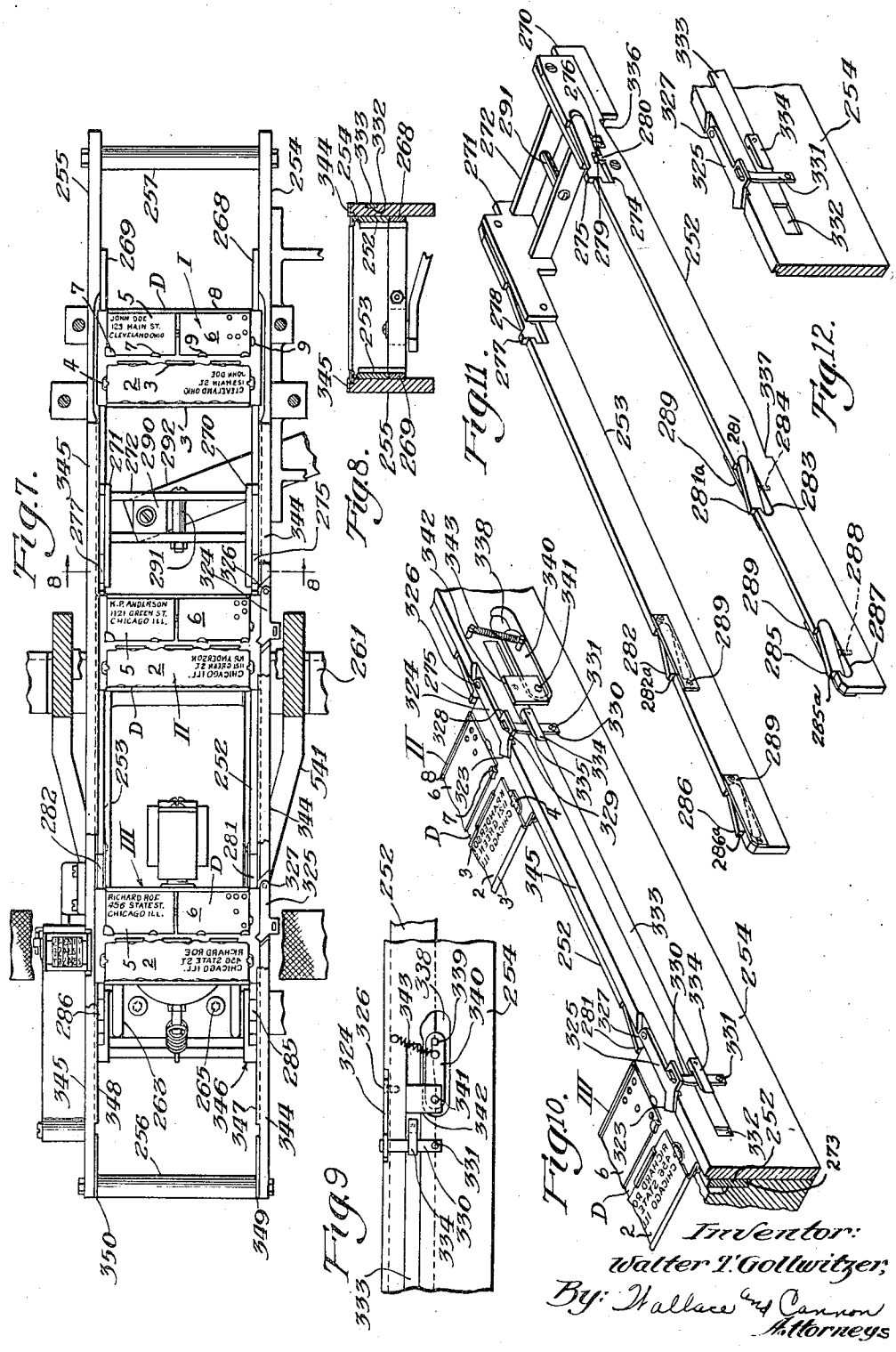


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PRINTING MACHINE

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Patented May 15, 1945 2,375,842

UNITED STATES PATENT OFFICE

• 2,375,842

PRINTING MACHINE

Walter T. Gollwitzer, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Wilmington, Del., a corporation of Delaware

Original application July 28, 1938, Serial No. 221,841. Divided and this application October 16, 1941, Serial No. 415,317

15 Claims. (Cl. 101—57)

This application is a division of my copending application, Serial No. 221,841, filed July 28, 1938, on which Patent No. 2,296,277 issued September 22, 1942.

This invention pertains to printing and the like machines through which printing, printing and control or like devices are sequentially fed to have printing, control or other operations performed therefrom, thereon or under control thereof and more specifically this invention pertains to advancing such devices through a series of positions in a machine whereat operations may be performed therefrom, thereon or under control thereof.

Printing, printing and control and like devices are customarily stored in drawers, trays or the like when not in use, and when it is desired to utilize such devices in the machine they are transferred from the drawers or the like to a magazine or other receiving means in the machine. Suitable feeding means operates to withdraw these devices successively from the magazine and to advance them along a guideway in a step-by-step manner. In machines of the character to which the present invention pertains each device is brought to rest in each of a plurality of positions along the guideway, in at least some of which positions operations such as sensing, setting up of variantly settable means and direct-contact printing are effected upon, under control of or from the devices disposed in such positions. Each device passes successively through these positions or stations after being withdrawn from the magazine, and after the various operations with respect thereto have been performed, the device is discharged to a collector to be returned to the drawer or other storage receptacle therefor.

Heretofore it has been the practice whenever printing, printing and control and like devices were sequentially advanced in a step-by-step manner along a guideway to advance the devices in several steps of advancing movement of substantially equal length, usually commensurate with the stroke of the feeding means. Because of this uniform spacing of the various stations along the guideway at which the devices come to rest, the mechanisms operating under control of or upon the devices when they are disposed in such stations were also uniformly spaced and this imposed restrictions upon the design and construction of machines in which such devices were utilized. One of the important objects of the present invention is to afford maximum flexibility in arranging the aforesaid operating mechanisms in the machine, to the extent that the several stations or positions in which the devices are successively disposed to have operations performed upon or under control thereof may be variantly spaced one from another.

Another object is to move a plurality of printing or like devices in unequal amounts during a single operative stroke of a common device feeding means.

A further object is to arrange a series of members such as pawls on a reciprocatory element so that the pawls may engage corresponding edges of printing or like devices and move such devices through unequal distances along a guideway during a forward stroke of the reciprocatory element, said pawls being ineffective to move said devices during a return or idle stroke of the reciprocatory element. One novel manner in which the foregoing may be accomplished is to so locate the pawls on the reciprocatory element that the devices in the several stations are successively engaged by the respective pawls in the course of a device feeding operation, and so to do constitutes another object of the invention.

There are instances where accurate positioning of printing, printing and control and like devices in stationary positions during their movement through the machine is essential, as where detecting operations are to be performed thereon or where impressions made therefrom are to be accurately positioned on the sheets or the like. In view of this it is another important object of this invention to provide a novel arrangement for accurately positioning printing and control or like devices in the various stationary positions thereof occupied thereby in the course of movement thereof through printing and like machines.

In those instances where printing and control or like devices are made of aluminum or other materials likely to wear rapidly if subjected to dragging friction, it is advantageous to avoid subjecting the devices to such friction as far as possible during movement thereof through printing and like machines and so to do constitutes a further object of this invention, and objects related to the foregoing are to avoid subjecting the printing and control and like devices to the friction drag of means operative thereon; to insure accurate orientation thereof in the course of movement of such devices through printing and like machines; to relieve means active on the printing and control or like devices of tension during movement of the printing and control or like devices relative to such means; to

effectively engage the printing and control or like devices during the advancing movement thereof to thereby insure proper advancing; to positively retain the devices in those positions at which the devices come to rest in the course of the advancing thereof through the machine; and to so arrange the parts on which the printing and control or like devices rest during movement thereof through the machine that friction incidental to the movement of such devices through printing and like machines will be reduced to a minimum.

A yet further object to this invention is to insure against displacement of the means effective to advance the printing devices from the magazine in which the devices are stored when introduced into the machine particularly when one such device is being advanced from the magazine and yet enable the advancing means to return to position to engage a succeeding device in the magazine without disturbing the devices remaining in the magazine.

Reference has been made hereinabove to printing, printing and control or like devices and while hereinafter reference will be made specifically to printing and control devices of the character, for example, disclosed in Patent No. 2,132,412, patented October 11, 1938, it is to be understood that such devices are representative of devices of the character for use with which the present invention is particularly adapted and thus, while for the purposes of this description reference will be made specifically to printing and control devices, it is to be understood that such specific reference is to be taken in the generic sense for, as will be apparent from the foregoing description, my invention is susceptible of use with a wide variety of devices other than the printing and control devices illustrated and described herein.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principle thereof and what I now consider to be the best mode in which I have contemplated applying that principle. Other modifications of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings,

Fig. 1 is a fragmentary top plan view, in which certain parts are broken away, of a guideway through which printing and control devices may be fed into and from operative positions in the machine;

Fig. 2 is a detailed view drawn to an enlarged scale, of a feed pawl and the support therefor employed in my novel apparatus;

Figs. 3 and 4 are vertical sectional views taken substantially and respectively on the lines 3—3 and 4—4 on Fig. 1;

Figs. 5 and 6 are sectional views taken substantially and respectively on the lines 5—5 and 6—6 on Fig. 4;

Fig. 7 is a fragmentary plan view of the printing and control device guideway and in which certain mechanisms are broken away;

Fig. 8 is a transverse sectional view taken substantially on the line 8—8 on Fig. 7;

Fig. 9 is a side elevation of a portion of the printing and control device feeding mechanism;

Fig. 10 is a perspective detail view of the mechanism shown in Fig. 9 and related mechanisms;

Fig. 11 is a perspective view of the reciprocating carrier bars for the printing and control devices; and

Fig. 12 is a detail perspective view of a portion of the mechanism shown in Fig. 10 and illustrating the parts in another operative position.

The machine in which the novel apparatus of the present invention may be utilized is described in detail in my above referred to co-pending application, Serial No. 221,841, filed July 28, 1938, now Patent No. 2,296,277, to which reference may be made for a detailed description of various operative mechanisms included in the machine other than those to which the present invention particularly pertains. In this respect, however, it is to be understood that the aforesaid machine is merely exemplary of machines of the character in which the present invention may be utilized.

The present invention, as shown in the accompanying drawings, primarily pertains to an arrangement for advancing printing and control devices, from which impressions may be made by a platen P, through a machine in which such a platen is included, each of such devices in the present instance also including a control portion under control of which a multiplying mechanism or the like in the machine may be operated. A printing and control device of this character is shown in Figs. 1 and 7 and is, as explained hereinabove, typical of devices that may be handled by the present invention.

The printing and control device D as illustrated in the accompanying drawings includes a carrier or, as it is called in the art, a frame 1 having, in this instance, a metallic plate 2 removably retained thereon by fixed retaining devices 3, a bead 3' at the lower edge of the frame, and yieldable or depressible retaining tongues 4. When one or the other of the tongues 4 is depressed the plate 2 may be slid endwise from the retaining devices 3 and the bead 3'. Type characters T are, in this instance, embossed in the metallic plate 2 so as to appear in relief on one face thereof and in intaglio on the opposite face, impressions being made from the relief faces of the type characters T when the printing and control device D is fed into printing relation with the platen P, Fig. 3, in the machine. Each such printing and control device also bears an identification card 5 on which an impression is made from the type characters T so that the data which may be printed from the type characters T may be read easily, thus facilitating handling of the device D. This card 5 is removably retained on the frame 1 above the plate 2 thereon by suitable retaining devices 7 and a bead 8 at the top of the frame. A control card 6 is retained on the frame 1, at one side of the card 5, by the retaining devices 9, the bead 8, and retaining devices 7' interposed between the cards 5 and 6. The card 6 and the underlying portion of the frame 1 are adapted to have perforations formed therein in accordance with a selected code so as to afford control means or representations of data on the device. The perforations in the control card 6 and the underlying portion of the frame 1 may be conveniently produced in a machine such as that disclosed in my co-pending application Serial No. 210,897, filed May 31, 1938, now Patent No. 2,265,229, patented December 9, 1941.

As has been explained hereinabove, printing,

printing and control and like devices, of which the just described printing and control device D is exemplary, are customarily stored in drawers, trays or the like when not in use, and when these devices are passed through printing or like machines, for example, one of the character shown herein, they are introduced into a suitable receiver in the machine and in the present instance these printing and control devices are introduced into an upstanding magazine H, Figs. 3 and 4, that is provided at the rear side of the machine and at the rear end of the printing and control device guideway, through which guideway the printing and control devices advance to printing position below the platen P.

After the printing and control devices have passed through printing position below the platen P they are reintroduced into the drawer, tray or the like from which they were removed when introduced into the magazine H. In the present instance the machine is equipped with chutes or the like C into each of which a drawer J or the like, Figs. 1 and 3, from which printing and control devices are removed when introduced into the magazine H, may be inserted and two such chutes are provided in the present machine. Indicating means (not shown) are desirably provided to indicate into which chute as C a drawer as J should be placed so that it will receive the printing and control devices that were removed therefrom and placed in the magazine, and automatic means such as are disclosed in my co-pending application Serial No. 403,272, filed July 21, 1941, may be provided to effect such return of the printing and control devices.

In the present machine the lowermost printing and control device in the magazine H is removed therefrom and is fed through positions or stations in the printing and control device guideway, in one of which stations the control areas on the printing and control devices are sensed to effect set-up of a multiplying mechanism or the like and in another of which stations impressions are made directly from the type characters provided on the printing and control devices. Included in the means which withdraw the printing and control devices from the magazine and move these devices through the aforesaid stations in the machine are means which positively retain the printing devices in position in the stations into which they are moved to have operations performed thereon or therefrom.

The magazine H is supported at the rear side of the machine and projects upwardly above the top of a table carried by the frame of the machine. The printing and control devices D are introduced into this magazine so that the lowermost of the printing and control devices D may be withdrawn therefrom by the reciprocal carrier bars **252** and **253**, Figs. 1, 7, 8, and 11. These carrier bars are disposed between the side plates **254** and **255**, Fig. 7, which are spaced apart by spacer bars **256** and **257**, openings being provided in the side plates **254** and **255** and bolts being passed through these openings and threaded into tapped openings in the ends of the spacer bars to interconnect the side plates.

The side plates **254** and **255** are rigidly supported in the frame of the machine and to this end a rear girder **260**, Figs. 1, 3 and 4, is provided as well as a front girder **261**. The girders **260** and **261** afford a firm support for the casting **263** on which the anvil **264**, Fig. 4, is provided, the printing and control devices resting on this anvil at the time impressions are made directly therefrom by the platen P. As shown in Fig. 4 the casting **263** is bolted to the girder **261**, as indicated at **265**, and this casting is also bolted to the girder **260**, as indicated at **266**. The side plates **254** and **255** are firmly secured to opposite sides of the casting **263** and the magazine H is mounted on and carried by the side plates **254** and **255** at the rear ends thereof.

The carrier bars **252** and **253** are supported for reciprocal movement over the inner faces of the side plates **254** and **255** by strips **268** and **269**, Figs. 4 and 8, the carrier bars merely resting on the upper edges of these strips, as best shown in Fig. 8. A plate **270**, Fig. 11, is fast to the inner side of the carrier bar **252** at the rear end thereof and a similar plate **271** is fast to the inner face of the carrier bar **253** at the rear end thereof. Bars **272** are secured to, as by being welded thereto, and extended between the plates **270** and **271** and serve to maintain the rear ends of the carrier bars **252** and **253** in permanent spaced relation, this spaced relation being such that the carrier bars are held in a tight sliding fit against the inner faces of the side plates **254** and **255**.

The anvil **264** is recessed at its sides and below the top surface thereof, as at **273** and the forward ends of the carrier bars **252** and **253** rest in such recesses to be supported for reciprocal movement over the inner faces of the side plates **254** and **255** and at the same time be maintained in properly spaced relation.

In the present arrangement the lowermost of the printing and control devices is withdrawn from station or position I in the guideway, Figs. 1 and 7, which is at the bottom of the magazine H and first comes to rest in what will be referred to hereinafter as the sensing position or station, this position or station being indicated at II, Figs. 1 and 7. In the course of movement of the printing and control devices through the guideway they also come to rest in printing position above the anvil **264**, which position or station is indicated at III in Figs. 1 and 7. After passing from station III over anvil **264**, the printing and control devices D pass into a discharge chute **346**, fragmentally illustrated in Fig. 4. It will be apparent from the foregoing that in the present apparatus the printing and control devices come to rest in two different positions or stations after movement thereof from the magazine H and prior to their discharge into the chute **346**.

By referring to Fig. 7 it will be seen that the distance between the printing and control device in station I and the printing and control device in station II is, in the present instance, less than the distance between the printing and control device in station II and the printing and control device in station III. Hence each printing and control device moves a lesser distance as it moves from station I, in the magazine H, to station II than it does when it moves from station II to station III. Moreover, the distance through which each device D is moved as it passes from station III to the discharge chute **346** at the forward end of the device guideway is relatively short, this distance being appreciably less than the distance between either stations I and II or II and III. The carrier bars **252** and **253** have a uniform reciprocal movement imparted thereto, which is to say, the amount of the distance travelled by the carrier bars **252** and **253** in each operation thereof is uniform. This uniform movement, however, is utilized for moving the printing and control devices both the distance

between stations I and II and the distance between stations II and III, as well as for moving the devices the necessary distance from station III to the discharge end of the guideway **346**.

Thus, the printing and control devices are advanced through the machine by imparting to the carrier bars **252** and **253** a stroke which is just slightly greater than the greatest distance between the stations as I and II and III and by so positioning or spacing the various printing and control device engaging means or pawls on the carrier bars that when these bars are in their most advanced or forward positions, the printing and control devices are moved into the desired positions or stations by the pawls. This is accomplished by so spacing the pawls one from the other along the bars that in the course of the advancing movement of the carrier bars **252** and **253** the various printing and control devices are engaged successively by the pawls or other engaging means. In the present machine, where the greatest distance the devices are to be moved is between station II and III, the advancing movement of a device D from station II to station III is first initiated and the pawls, other than those engaging this device, move idly in such a way that the advancing movements of the other devices are initiated subsequently as determined by the distance which they are to be moved. The particular means employed to accomplish the foregoing will now be described.

As has been explained when printing and control devices are to be advanced to the machine they are first introduced into the magazine H to be stacked one upon the other so that the lowermost printing and control devices in such a stack is disposed at position I. The printing and control device which is thus disposed in position I is then advanced to position II by pawls **275** and **277** which are respectively mounted in the carrier bars **252** and **253**. The manner in which these pawls are arranged and the manner in which they are mounted in the carrier bars is best illustrated in Fig. 2 where the pawl **275** and the portion of the carrier bar **252** in which this pawl was mounted are illustrated.

Thus referring to Fig. 2 a recess **274** is formed in the carrier bar **252** and this recess opens into the upper edge of the carrier bar **252**. The rear end of the recess **274** is rounded as at **274***a* to be complementary to the rounded rear end **275***a* of the pawl **275**. This can be seen best by referring to Fig. 2. The recess **274** is of greater length longitudinally of the carrier bar **252** than the pawl **275** so as to permit longitudinal movement of the pawl in the recess.

A notch **276***a* opens into the lower edge of the recess **274** about midway between the ends thereof and the spring **276** is disposed in this recess to be effective on the lower edge of the pawl **275** to thereby urge the same upwardly. In order to limit upward movement of the pawl **275** an overhanging lip **252***a* is provided at the forward end of the recess **274** and at the upper edge thereof and a toe portion **275***b* is provided at the forward end of the pawl **275**, the relation of the lip **252***a* to the toe portion **275***b* being such that this toe portion remains under this lip at all times during the longitudinal movement of the pawl **275**. Another overhanging lip **252***b* is provided at the top of the recess **274** and overlies the rear end of the pawl **275** at all times. The pawl **275** pivots on its rounded rearward end **275***a* under and against the influence of the spring **276**.

A lug **278** is provided on the top edge of the pawl **275** and projects past the free end of the lip **252***a* and projects above the top of the carrier bar **252**, the forward edge **278***a* of this lug **278** affording the printing and control device engaging surface of the pawl **275**, it being the engagement of the surface **278***a* and a corresponding surface on the pawl **277** which engage the rear edge of a printing and control device in position I to advance the same to position II in the course of advancing movement of the carrier bars **252** and **253** which is brought about in the manner explained hereinabove.

It is necessary that the lug **278** be depressed downwardly so as to enable the pawl **275** to be moved beneath a printing and control device in position I in the course of rearward movement of the carrier bar **252** and to this end an inclined cam surface **278***b* is formed on the rear edge of the lug or tooth **278**. When the cam surface **278***b* engages the forward edge of a printing and control device disposed at position I, this surface is effective to cam the pawl **275** downwardly against the action of the spring **276** and this occurs shortly after the initiation of rearward movement of the carrier bar **252** in a reciprocation thereof. The upper edge of the lug or tooth **278** remains in engagement with the bottom of a printing and control device at position I once the pawl **275** has been cammed downwardly as aforesaid and until the carrier bar **252** has moved rearwardly sufficiently to dispose the edge **278***a* of the tooth **278** in a position behind the printing and control device at position I and once the tooth **278** has passed beyond the rear edge of this device the pawl **275** moves upwardly under the influence of the spring **276** to thereby dispose the surface **278***a* in position to engage the rear edge of a printing and control device in position I when the carrier bar **252** moves in a succeeding cycle of operation thereof.

When a plurality of printing and control devices are stored in the magazine H, these exert appreciable downward force on the lowermost printing and control device in such a stack thereof and in the course of an advancing movement of the carrier bar **252** and the pawl **275**, this force tends to urge the tooth **278** downwardly. Therefore an arrangement is provided which is effective to prevent displacement of a surface **278***a* from engagement with the rear edge of a printing and control device being advanced thereby during the course of movement of the tooth **278** beneath the stack of printing and control devices in the magazine H.

By referring to Fig. 2, it will be seen that a lug **280** extends upwardly from the lower wall of the recess **274** about midway between the forward end of this recess and the notch **276**. Moreover a complementary notch **279** is formed in the lower edge of the pawl **275** and in the course of longitudinal movement of the pawl **275** the notch **279** is moved into and out of registration with the lug **280**. The parts occupy the positions thereof shown in Fig. 2 during rearward movement of the carrier bar **252** and the pawl **275** and at this time the notch **279** is aligned with the lug **280** so that when the tooth **278** is forced downwardly the lug **280** will be embraced in the notch **279** and the lug is so embraced during the time the tooth **278** is riding on the printing and control device at position I in the course of rearward movement of the carrier bar **252**. However, as an incident to the engagement of the surface **278***a* with the rear edge of a printing and control device at position I in the course of an advancing move-

ment of the carrier bar **252**, the pawl **275** is forced rearwardly in the recess **274** and the distance moved is then sufficient to move the notch **279** out of registration with the lug **280** so that therefore the lower edge of the pawl **275** forwardly of the notch **279** will be aligned with and will seat on the upper edge of the lug **280** and this engagement is effective to insure against downward displacement of the pawl **275** in the course of advancing movement of the carrier bar **252** so as to thereby insure that the surface **278***a* remains in engagement with the rear edge of the device that is to be advanced by the pawl **275**. However, when the carrier bar **252** moves rearwardly and the surface **278***b* engages the forward edge of a printing and control device at position I, the pawl **275** is moved forwardly in the recess **274** into position shown in Fig. 2 to thereby align the recess **279** with the lug **280** to permit downward movement of the pawl **275**.

It will be understood that the pawl **277** is arranged in a recess in a carrier bar **253** in the manner described hereinabove with reference to the pawl **275** and the recess **274**. Furthermore, it will be understood that the pawls **275** and **277** are arranged in transversal alignment one with the other to insure proper advancing of a printing and control device along the guideway therefore from position I to position II.

In order that the carrier bars **252** and **253** will not only advance the printing and control devices from position I to position II in the course of the uniform reciprocatory movement imparted thereto, but will also advance the printing and control devices from position II to position III, two pawls **281** and **282** are respectively mounted in recesses as **283** in the carrier bars **252** and **253**. These pawls are acted on by springs as **284** to have the device in engaging faces **281** and **282***a* near the forwardly disposed ends thereof projected above the top edges of the carrier bars. The pawls **281** and **282** are spaced forwardly of the pawls **275** and **277** in the carrier bars **252** and **253**, respectively, in an appreciable amount which is equal to the spacing between position II and position III, which is to say, the pawls **281** and **282** are located in such position with respect to the pawls **275** and **277** that when the carrier bars come to rest in their forwardmost position, in which the pawls **275** and **277** are effective to dispose a printing device, that was in position I at the beginning of the forward stroke in the reciprocatory movement of the carrier bars, in position II, then the pawls **281** and **282** are in such position that the printing and control device which was in position II will be disposed in position III.

Two other pawls **285** and **286** are respectively mounted in recesses as **287** in the carrier bars **252** and **253** and are acted on by springs as **288** to have the device engaging faces **285***a* and **286***a* near the forward ends thereof urged upwardly above the upper edges of the carrier bars **252** and **253** respectively. The pawls **285** and **286** are respectively spaced forwardly of the pawls **281** and **282** in but a relatively small amount which is equal to the distance from the rear edge of a printing and control device disposed at position III to the point at which the printing and control devices pass from the guide through which they are advanced by the carrier bars **252** and **253** to pass into the printing and control device discharge chute **346**. When the carrier bars are moved rearwardly, the springs **288** yield to enable the pawls **285** and **286** to pass beneath the printing and control device which is at that time disposed in position III.

It will be understood that the pawls **281** and **282** and the pawls **285** and **286** are mounted in recesses in the respective carrier bars in which these pawls are to be mounted that correspond to the recess **274**, Fig. 2, except that the pawls **281**, **282**, **285** and **286** are not arranged in the recesses therefor for longitudinal movement in these recesses. Thus insofar as these four pawls are concerned the rounded rear ends thereof which correspond to the rounded rear end **275***a*, Fig. 2, on the pawl **275** at all times rest in a rounded end as the end **274***a* of the recess **274**, Fig. 2. Furthermore, each recess is equipped with lips like the overhanging lip **252***a* and the overhanging lip **252***b*, which serve the same functions as the lips **252***a* and **252***b*, it being understood that each pawl **281**, **282**, **285** and **286** includes a toe portion corresponding to the toe portion **275***b* and also that each of these pawls are urged upwardly by a spring like the spring **276**. Since, however, the pawls **281**, **282**, **285** and **286** will not move beneath a stack of printing and control devices as the other pawls **275** and **277**, it is not necessary that an arrangement such as the lug **280** and the notch **279** be provided since there will be no force acting on these pawls tending to displace the same when they are effective to advance a printing and control device engaged thereby.

The various pawls mounted in the carrier bars **252** and **253** have been described as being mounted in recesses in the carrier bars and pawls are in part retained in these recesses by plates as **289**, Fig. 11, that are mounted on the inner faces of the carrier bars in alignment with the slots in which the pawls are mounted. The plates as **289** serve to prevent inward movement of the pawls from the recesses and movement of the pawls outwardly from the recesses is prevented since carrier bars **252** and **253** are mounted for sliding movement over and against the inner faces of the side plates **254** and **255** and the pawls engage the inner faces of these side plates.

As explained, during the course of the rearward movement of the carrier bars the pawls **281** and **282** are forced downwardly to ride under a printing and control device disposed at position II. When, however in the course of the rearward movement these pawls they are clear of and disposed behind the printing device in position II, these pawls spring up behind the rear edge of such printing and control device under the effect of the springs as **284**. In this regard, the extent of the rearward stroke in the reciprocatory movement of the carrier bars **252** and **253** arranged to be sufficient to insure that not only will the printing and control devices be advanced from position II to position III in the advancing movement of the carrier bars but also to insure that the pawls **281** and **282** will be free to spring up behind a printing and control device disposed at position II. Thus, the amount of reciprocatory movement imparted to the carrier bars **252** and **253** in the present instance is equal to the distance from position II to position III plus such additional movement as will be required to insure that the pawls **281** and **282** will be free to operate to spring up to properly engage the rear edge of a printing and control device in position II, such slight additional movement being what is termed in the art, an operative clearance.

The relative spacings of the pairs of pawls along the carrier bars **252** and **253** are such that when the carrier bars come to rest in their rear-

wardmost position, the pawls **281** and **282** are disposed immediately behind the rear edge of the printing and control device D in position II; the pawls **275** and **277** are disposed in appreciable spaced relation to the rear edge of the device D in position I, and the pawls **285** and **286** are spaced still farther away from the device D in position III. Hence, when the carrier bars start to move forward the pawls **281** and **282** almost immediately engage the rear edge of the device D in position II; subsequently the pawls **275** and **277** engage the device D in position I, and thereafter the pawls **285** and **286** engage the device D in position III. Thus, the device D which was in position II is carried the greatest distance, being in motion during substantially the entire forward stroke of the carrier bars **252** and **253**, and is deposited in position III at the end of such stroke. The device D which was in position I is carried a lesser distance in moving to position II, and the device D which was in position III is moved through only a relatively short distance by the carrier bars, this movement being sufficient to introduce it into the discharge chute **346**. Therefore, by properly locating the pairs of pawls on the carrier bars in the manner just described, different amounts of movement are imparted to the printing and control devices in the device guideway during a single continuous stroke of the carrier bars.

In the foregoing description reference has been made to reciprocation of the carrier bars **252** and **253** and this reciprocal movement is imparted to the carrier bars in the following manner: A block **290**, Fig. 1, is mounted between the bars **272** for reciprocal movement between the plate **271** and a spacing pin **291**, Fig. 11, that extends between the bars **272**. The free end of an arm **292** extends beneath the block **290** and affords a support for said block, the block being pivotally connected to this arm, as indicated at **293**.

As best shown in Figs. 4 and 5, the end of the arm **292**, to which the block **290** is pivotally connected, is offset upwardly, this offset portion being interconnected by an inclined portion **294** in the arm. That portion of the main extent of the arm **292** adjacent the inclined portion **294** is reciprocally mounted in a recess **295** in a block **296** pivotally mounted on an arm **297**, as indicated at **298**. The end of the arm **292** opposite that at which the block **290** is pivotally connected is pivotally mounted, as indicated at **299**, on a bracket **300**, Figs. 3, 4 and 5.

The block **296**, the arm **297** and the pivotal connection therebetween indicated at **298** afford a scotch yoke connection for the arm **292**, the arm **297** being, fast to a vertical shaft **301**, Figs. 3, 4 and 5. The shaft **301** is journaled in a vertical bearing **302** that is carried by the bracket **300**. A gear **303** is rotatably mounted on the shaft **301** and includes a hub **304** having clutch teeth **305** thereon. A sleeve **306** is slidably but nonrotatably mounted on the shaft **301** and includes clutch teeth **307** which are urged toward the clutch teeth **305** by springs acting between the sleeve **306** and a collar **308** rotatable on the shaft **301**, the sleeve **306** being connected to the collar **308** for rotation therewith.

The clutch teeth **305** and **307** and the sleeve **306** are part of a clutch such as is dislosed in my co-pending application, Serial No. 239,561, filed November 8, 1938, now Patent No. 2,265,133, patented December 9, 1941. A pin (not shown) on the sleeve **306** cooperates with a cam surface (not shown) on the arm **309** to hold the clutch teeth **307** separated from the clutch teeth **305**. A solenoid **310**, Fig. 3, is adapted to be energized to attract its core whereupon the cam surface on the arm **309** is retracted from cooperation with the pin on the sleeve **306** to thereby enable the clutch teeth **307** to engage the clutch teeth **305** and in this manner the gear **303** is connected to the shaft **301**. The clutch including the clutch teeth **305** and **307** is a one-revolution clutch, for after the solenoid **310** has been energized to enable engagement of the clutch teeth, the pin on the sleeve **306** acts to again dispose the cam surface on the arm **309** in position to be engaged by this pin near the end of a revolution so that as the pin moves over the cam surface the clutch teeth **307** are separated from the clutch teeth **305** to interrupt rotation of the shaft **301** at the end of a rotation thereof.

The gear **303** meshes with a pinion **311** rotatably mounted on a rod **312**, Figs. 4 and 6, that is driven into a socket in the bracket **300**, a cross member **313** being fixedly attached to the lower end of this rod, as indicated at **314**. A pulley **315** is also rotatable on the rod **312** and is connected to the pinion **311**, the pulley **315** being mounted below the pinion **311** and said pulley and pinion are supported in operative position by a collar **316** secured to the rod **312**.

A belt **317** is passed about the pulley **315** and over guide pulleys **318** and **319** carried by arms **320** and **321** that are secured in position at the point of interconnection of the cross member **313** with the rod **312**, as indicated at **314**, Fig. 4. From the guide pulleys **318** and **319** the belt **317** passes to a pulley fast on the main drive shaft of the machine in which my novel apparatus is included. Thus whenever the main drive shaft of the machine is rotating, the pinion **311** and the gear **303** are rotated so that when the solenoid **310** is energized to cause the clutch teeth **307** to engage the clutch teeth **305**, as described above, the arm **297**, Figs. 4 and 5, is caused to make a complete revolution whereupon through the connection of the arm **292** with the block **296** a reciprocatory movement is imparted to the end of the arm **292** to which the block **290** is pivoted and thereupon reciprocatory movement is imparted to the carrier bars **252** and **253** to advance the printing and control devices through the guideway therefor.

In the illustrated machine, when the printing and control devices are in position II, Figs. 1, 4 and 7, a sensing means cooperates therewith to effect set-up of a multiplying mechanism or the like and it is advantageous to accurately locate the printing and control device when it is in position II and this sensing means is to cooperate therewith. Furthermore, when the printing and control devices are in position III above the anvil **264** and impressions are being made therefrom it is desirable to firmly hold the printing and control devices in position for so to do enables accurate location of the impressions made therefrom and this also enables clear-cut impressions to be produced.

By referring to Fig. 10 it will be seen that a notch as **323** is provided in one side edge of each printing and control device D. The notch **323**, in the illustrated device, is accurately positioned with respect to the control area on the printing and control device, as explained in United States Patent No. 2,132,412, patented October 11, 1938, and it is also located accurately with respect to the printing plate **2** on the printing and control devices. Inasmuch as notches as **323** are ac-

curately located with respect to other parts on the printing and control device it is possible, by locating means in the machine adapted to cooperate with these notches accurately with respect to parts in the machine adapted to cooperate with the printing and control devices, to insure that the machine parts will cooperate with the printing and control device parts in an accurate manner. The means in the machine adapted to cooperate with the notches 323 in the printing and control devices are, in the present instance, pawls 324 and 325, Fig. 11, the pawl 324 being positioned to cooperate with the notch in the printing and control device at the station II and the pawl 325 being positioned to cooperate with a notch in the printing and control device at the station III.

The pawl 324 is pivotally connected to the upper edge of the side plate 254, as indicated at 326, and the pawl 325 is similarly mounted, as indicated at 327. In order to insure seating of these pawls in the notches in which they are adapted to seat, these pawls are urged toward the edges of the printing and control devices by applying spring pressure thereon. It will be apparent, however, that if the pawls are spring-urged toward the printing and control devices they will drag thereover and that they might, therefore, subject the printing and control devices to undesirable wear. Hence I have arranged these pawls in such a manner that the pressure exerted thereon may be varied so that appreciable pressure will be effective on these pawls only at the times the pawls are to be operative and at all other times, and especially when the printing and control devices are moving past these pawls, but very light pressure is applied thereon so that objectionable wear on the printing and control devices is avoided. To accomplish this entails arranging the springs effective on the pawls in such a manner that the effective force of the springs may be varied and this is accomplished in the following manner.

As best shown in Fig. 10, each pawl 324 and 325 includes an ear 328 having an opening 329 therein and the free upper end of a leaf spring 330 is passed through this opening. The lower end of each leaf spring is firmly connected to the outer face of the side plate 254 as by a screw 331. A groove 332 is provided in the outer face of the side plate 254 and a slide 333 is mounted in this groove, said slide passing behind each leaf spring 330 and these springs serve to retain the slide 333 in the groove 332. A lug as 334 is fast on the slide 333 in position to cooperate with each spring 330, each lug 334 including an overhanging portion which may pass over the outer face of the adjacent spring. The forward edge of the overhanging portion of each lug 334 is beveled, as indicated at 335, to insure passage of the overhanging portion of this lug over the outer face of the adjacent spring 330 upon reciprocation of the slide 333.

By referring to Fig. 11 it will be seen that a notch 336 is provided in the lower edge of the carrier bar 252 and that another notch 337 is provided in the lower edge of this bar forwardly of the notch 336. These notches are arranged to define oppositely facing shoulders, the shoulder defined by the rear notch 336 facing forwardly and the shoulder defined by the front notch 337 facing rearwardly. An opening 338 is provided in the side plate 254 and a pin 339, Fig. 9, projects through this opening to be engageable in the notches 336 and 337. The pin 339 is fast in a finger 340, pivoted as indicated at 341 to the lower end of a plate 342 secured to the slide 333. A spring 343 extends between spring anchors respectively located on the side plate 254 and the finger 340 and acts on this finger to urge the pin 339 into engagement with the lower edge of the carrier bar 252.

In the latter part of the rearward movement of the carrier bar 252 the shoulder thereon defined by the notch 337 engages the pin 339 and through the finger 340 and plate 342 moves the slide 333 rearwardly, and thereupon the lugs as 334 assume the position shown in Fig. 12. This disposes the beveled edges 335 on these lugs in alignment with, but free of, the spring 330. Hence the fulcrum for each spring 330 is the screw 331 wherefore the extent of each spring between its fulcrum and the point where it applies its effective pressure is relatively elongated and by reason of this each spring exerts but very little pressure on the pawl to which it is connected. Hence, after the carrier bars attain their rearwardmost position and start to move forwardly to advance the printing and control devices in the manner above described, both the pawls 324 and 325 exert but very little pressure on the edges of the printing and control devices moving past them.

However, just before the carrier bars attain their forwardmost position, the pin 339 enters the notch 336 and engages the shoulder thereof whereby, as the carrier bars complete their forward movement, the shoulder of the notch 336 acts through the pin 339, finger 340 and plate 342 to move the slide 333 forwardly. In this movement the slide 333 moves the lugs 334 over the outer faces of the springs 330 with the result that the springs fulcrum on the lugs rather than on the screws 331. This changing in the point of fulcruming of the spring decreases the effective length and thereby substantially increases the effective pressure thereof and at the time this is effected the pawls 324 and 325 are moving into the notches as 323 in the printing and control devices in stations II and III. Therefore effective pressure is applied on the pawls to positively seat these pawls in the notches wherefore the printing and control devices in stations II and III are accurately located, by reason of the fact that the configuration of the pawls and the notches with which they cooperate are complementary, and furthermore, the printing and control devices are firmly held in position. The slide 333 will be moved rearwardly so as to withdraw the lugs 334 from association with the springs 330 prior to the time the printing and control devices start to move forwardly in the next advancing thereof and hence the effective pressure applied on the pawls is relieved prior to the time the printing and control devices are to be moved relative thereto.

During the time the printing and control devices are being carried along by the carrier bars 252 and 253, they are held down on these carrier bars by thin strips 344 and 345, Fig. 8, respectively fastened to the upper edges of the side plates 254 and 255, these thin strips projecting inwardly beyond the inner faces of these side plates and defining the upper surfaces of the printing and control device guideway.

During rearward movement of the carrier bars, at which time the pawls 281 and 282 are passing under the printing and control device in position II and the pawls 285 and 286 are passing under the printing and control devices in position III, the above described pawls 324 and 325 are seated

in the notches in the edges of the printing and control devices in these positions and this seating of the pawls together with the strips **344** and **345** insures that the printing and control devices remain in positions II and III until the rearward movement of the carrier bars **252** and **253** has been completed. However, as explained above, the spring pressure effective on the pawls **324** and **325** is relieved prior to the time the carrier bars **252** and **253** start to move forwardly and therefore when these carrier bars do move forwardly the pawls **324** and **325** are cammed out of the notches in the printing and control devices in the course of the forward movement of the carrier bars, the strips **344** and **345** preventing the printing and control devices riding upwardly away from the carrier bars as the pawls **324** and **325** are being so cammed out.

By referring to Figs. 9 and 10, it will be noted that a clearance is provided between the lower edges of the finger **340** and the opening **338**. The purpose of this clearance is to enable the finger **340** to be cammed downwardly without being shifted laterally during the interval when the shoulder of the notch **336** in the carrier bar **252** is moving out of engagement with the pin **339** on the finger **340**, and before the shoulder of the notch **337** has engaged the pin **339** during rearward movement of the carrier bars **252** and **253**. The spring **343** serves to maintain the pin **339** in contact with the bottom edge of the carrier bar **252** at all times during this operation, and the slide **333** will remain in its forward position due to the frictional engagement of the lugs **334** with the leaf springs **330**, until the shoulder of the notch **337** again engages the pin **339** and causes the finger **340** and slide **333** to shift rearwardly.

It has been stated that the pawls **285** and **286**, Figs. 4, 7, and 11, eject the printing and control device from the position III above the anvil **264** into a printing and control device discharge chute **346**. This discharge chute includes two plates **347** and **348**, Fig. 7, secured to the inner faces of the side plates **254** and **255** near the front ends thereof and the upwardly and forwardly disposed faces of these plates are arcuate as shown in Fig. 4. The forwardmost position attained by the pawl **285** is illustrated in Fig. 4 and inasmuch as this pawl will be engaged with the rear edge of a printing and control device D that has been located at station III, Figs. 4 and 7, it is manifest that, in the course of movement of this pawl and its mate **286** into this position, the aforesaid printing and control device is fed out over the upwardly and forwardly disposed arcuate edge of the plates **347** and **348** and as this device attains this position it falls in such a way that its leading edge drops downwardly onto the aforesaid edges of the plates **347** and **348**. To insure passage of the printing and control devices onto these edges of the plates **347** and **348**, plates as **349** and **350**, Fig. 7, are secured to the side plates **254** and **255** at the front ends thereof and the rearwardly disposed edges of these plates are also curved for a short distance to define a throat through which the printing and control devices fall, this throat constituting the discharge chute **346**. It will be understood that the plates **347** and **348** are spaced to cooperate with the opposite side edges of the printing and control devices as are the plates **349** and **350**.

As has been explained, printing and control devices are customarily stored in drawers or other suitable storage means when not in use and where drawers are employed they are intended to be mounted in suitable cabinets. The printing and control devices are removed from these drawers and introduced into the magazine H and when this is done each drawer J from which a series of devices has been removed may be placed in the machine in a chute C as shown in Figs. 1 and 4. After the printing and control devices which were removed from such drawer and introduced into the magazine fall down through the discharge chute **346**, they may be passed back into this drawer by suitable means as is disclosed in my aforesaid co-pending application, Serial No. 403,272, to which application reference may be had for complete description of an apparatus of the aforesaid nature.

It will be apparent from the foregoing that the present invention materially facilitates the utilization of printing and control or like devices in a printing or like machine. One of the principal advantages afforded by this apparatus consists in that a single reciprocatory means may be employed to move a plurality of printing devices through unequal distances in a uniform operative stroke thereof. Thus, referring particularly to Figs. 7, 10, and 11, the carrier bars **252** and **253** are effective in each forward stroke thereof to move a printing and control device D through the distance from station I to station II, as well as to move another device D through a greater distance from station II to station III, and also to move still another device D from station III through a relatively small distance to the discharge chute **346**, Fig. 4. Such unequal displacements of the various printing and control devices D are brought about in the present instance by arranging the pairs of pawls **275** and **277**, **281** and **282** and **285** and **286**, which respectively engage these devices, in such a manner that the devices are successively engaged by their respective pawls as the carrier bars **252** and **253** move forwardly, the device in station II being engaged and starting to move forwardly first, followed by the device in station I and then the device in station III. This feature is advantageous where, as in the illustrated machine, it is not always feasible or desirable to have the various stations equally spaced apart, and it enables a comparatively simple and economical construction of the device feeding means.

Another outstanding advantage of the present invention is afforded by the provision of the pawls as **324** and **325**, Fig. 10, which cooperate with the notches as **323** in the frames of the printing and control devices D to insure accurate positioning of these printing and control devices at the stations II and III, respectively. Means including the slide **333** actuated in timed relation with the advance and retraction of the carrier bars **252** and **253** cause the pawls **324** and **325** to be yieldingly urged into cooperation with the aforesaid notches **323** when the devices D have been advanced to the stations II and III to thereby correct any inaccuracies in the positioning of these devices relative to the means such as the platen P, Fig. 4, which are to operate upon them or under control thereof. However, when the printing and control devices D are to be advanced away from the stations II and III, respectively, the spring tension on the pawls **324** and **325** is relieved to thereby minimize the frictional drag exerted by these pawls upon the devices D while they are in motion so that there is no undue wearing of the edges of these devices.

It is also to be noted that while I have referred

to the devices D herein as being printing and control devices, such devices could well be what are commonly known in the art as printing devices and these devices could bear either stencil printing means or embossed type characters or the devices could be of other form and constitute, for example, only control means rather than printing means or both printing and control means, insofar as the essential features of the present invention are concerned.

Thus, while I have illustrated and described a selected embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a printing machine through which printing and control or like devices embodying locating means are fed in a step-by-step manner to thereby come to rest at predetermined positions in the machine, spring urged means adapted for cooperation with the locating means on said devices at at least one of the positions where said devices come to rest and effective to accurately locate the devices at such position, and means for increasing the effectiveness of said spring urged means as the devices move into association therewith to thereby insure functioning of such means at such time so as to thereby enable the spring urged means to be relatively ineffective at all other times.

2. In a printing machine, means for advancing printing and control or like devices embodying locating means through the machine and effective to cause such devices to come to rest in predetermined positions in the machine, spring urged means adapted for cooperation with the locating means on said devices at at least one of the positions where said devices come to rest and effective to accurately locate the devices at such position, and means operated with the means for advancing the devices through the machine and operative to increase the effectiveness of said spring urged means as the devices move into association therewith to thereby insure functioning of such means at such time so as to thereby enable the spring urged means to be relatively ineffective at all other times.

3. In a printing machine, means for advancing printing and control or like devices embodying locating means through the machine and effective to cause such devices to come to rest in predetermined positions in the machine, means responsive to relatively light spring pressure and adapted for cooperation with the locating means on said devices at at least one of the positions where said devices come to rest and effective to accurately locate the devices at such position, and means operated with the means for advancing the devices through the machine and operative to increase the spring pressure effective on the means responsive to such pressure as the devices move into association therewith to thereby insure functioning of such means at such time so as to thereby enable the spring urged means to be relatively ineffective at all other times.

4. In a printing machine through which printing and control or like devices having locating means thereon are fed, means for feeding said devices through said machine in a step by step manner, means including a part at one end shaped complementary to said locating means and adapted for interengagement with such means, said latter means being pivotally mounted at its other end, relatively weak spring means normally urging said complementary part toward said devices, and means operable by said feeding means to increase the force exerted by said spring means to insure positioning and adjusting of said devices in predetermined positions in said machine.

5. In a printing machine through which printing and control or like devices having locating means thereon are fed, means for feeding said devices through said machine in a step by step manner, a pawl pivotally mounted at one end and having a part on its other end shaped complementary to said locating means and adapted for interengagement with such means, a relatively weak leaf spring engaging said pawl and normally urging said pawl toward said devices, and means operable by said feeding means to shorten the lever arm of said leaf spring to increase the force exerted thereby against said pawl to render the pawl more positive in positioning and adjusting said devices in predetermined positions in said machine.

6. In a printing machine through which printing and control or like devices having locating means thereon are fed, means for feeding said devices through said machine in a step by step manner, a pawl pivotally mounted at one end and having a part on its other end shaped complementary to said locating means and adapted for interengagement with said locating means, a relatively weak leaf spring engaging said pawl and normally urging said pawl toward said devices, and means operable by said feeding means to shorten the lever arm of said leaf spring to increase the force exerted thereby against said pawl to render the pawl more positive in positioning and adjusting said devices in predetermined positions in said machine.

7. In a printing machine through which printing and control or like devices having locating means thereon are fed, means for feeding said devices through said machine in a step by step manner, a pawl pivotally mounted at one end and having a part on its other end shaped complementary to said locating means and adapted for positioning interengagement therewith, a relatively weak leaf spring engaging said pawl and normally urging said pawl toward said devices, and a slide operable by said feeding means and having a lug thereon adapted to engage said leaf spring substantially medially thereof to increase the force exerted thereby against said pawl to render the pawl more positive in positioning and adjusting said devices in predetermined positions in said machine.

8. In a printing machine through which printing and control or like devices having locating means thereon are fed, a pair of carrier bars adapted for reciprocating movement for feeding said devices through said machine in a step by step manner, means including a part at one end shaped complementary to said locating means and adapted for positioning cooperation therewith relatively weak leaf spring means normally urging said complementary part toward said devices, a slide mounted for reciprocable movement and having a lug thereon arranged to engage said spring means to increase the force exerted thereby against said complementary means, and means on one of said carrier bars adapted to reciprocate said slide through a shorter stroke than said carrier bars, to insure

positioning and adjusting of said devices in predetermined positions in said machine.

9. In a printing machine through which printing and control or like devices having locating means thereon are fed, a pair of carrier bars adapted for reciprocating movement for feeding said devices through said machine in a step by step manner, means including a part at one end shaped complementary to said locating means and adapted for positioning interengagement with said locating means, relatively weak leaf spring means normally urging said complementary part toward said devices, a slide mounted for reciprocable movement and having a lug thereon arranged to engage said spring means to increase the force exerted thereby against said complementary means, and one of said carrier bars having a pair of spaced notches providing oppositely disposed shoulders one of said shoulders adapted to move said slide in position whereby said lug engages said spring at the end of a feeding movement of said carrier bars and said other shoulder is adapted to return said slide to disengage said lug from said spring at the end of said return movement of said carrier bars.

10. In a printing machine through which printing and control or like devices having locating means thereon are fed, a pair of carrier bars adapted for reciprocating movement for feeding said devices through said machine in a step by step manner, means including a part at one end shaped complementary to said locating means and adapted for interlocking engagement with said locating means, relatively weak leaf spring means normally urging said complementary part toward said devices, a slide mounted for reciprocable movement and having a lug thereon arranged to engage said spring means to increase the force exerted thereby against the complementary means, one of said carrier bars having a pair of spaced notches providing oppositely disposed shoulders, a finger secured to said slide and having a pin thereon, one of said shoulders adapted to engage said pin to move said slide in position whereby said lug engages said spring at the end of the feeding movement of said carrier bars, and said other shoulder is adapted to engage said pin on return movement of said carrier bars to return said slide to disengage said lug from said spring at the end of said return movement of said carrier bars.

11. In a printing machine through which printing and control or like devices having locating means thereon are fed, means for successively advancing said devices in a step by step manner to and from a predetermined station in the machine, a member disposed at said station and having a part adapted to cooperate with the locating means on each of said devices for accurately positioning such device when it is disposed at said station, resilient means normally tending to urge said member with a relatively light force into device engaging relation, and means operating in timed relation with said device advancing means and effective when a device is resting at said station to increase the force normally exerted by said resilient means for thereby insuring the accurate positioning of such device by said member.

12. In a printing machine through which printing and control or like devices having accurately located indentations therein are fed in a step by step manner to and from a predetermined station in the machine, a member disposed at said station and having a part conforming to and adapted to seat in the indentation in each of said devices for accurately positioning such device when it is disposed at said station, a spring normally tending to urge said member with a relatively light force into device engaging relation, and means effective whenever a device is resting at said station to increase the force normally exerted upon such device by said member for thereby insuring the accurate positioning of such device.

13. In a printing machine through which printing and control or like devices having accurately located notches in the edges thereof are fed in a step by step manner, means for concurrently advancing a plurality of devices to a corresponding plurality of stations in the machine, members disposed at said stations and each having a wedge-shaped portion conforming to and adapted to seat in the notch in the device disposed at the respective station for accurately positioning such device, springs normally tending to urge said members with relatively light force into engagement with the respective devices, and a common means concurrently effective upon all of said members while said plurality of devices is resting at said stations to increase the force normally exerted by said members upon the respective devices and thereby insure the accurate positioning of such devices.

14. In a printing or similar machine, a guideway for printing or like devices which have accurately located positioning means thereon and in which the devices are fed in a step-by-step manner to and from a predetermined station therein, at least one carrier bar mounted for reciprocation in said guideway and having at least one printing or like device engaging portion thereon adapted to engage and advance a printing or like device through said guideway and into said station as an incident to movement of the bar in one direction, a locating member disposed at said station and having a part conforming to and adapted to cooperate with positioning means on a device disposed at said station, means urging said locating member with relatively light force toward a device moving to said station, and means actuated by said carrier bar as said engaging portion advances a device into final at rest position in said station and operative to increase the force exerted on said locating member by the urging means effective thereon to thereby effectively urge said member into cooperating relation with the positioning means on device at said station to thereby accurately position said device in the station.

15. In a printing or similar machine, a guideway for printing or like devices which have an accurately located notch therein and in which the devices are fed in a step-by-step manner to and from a predetermined station therein, at least one carrier bar mounted for reciprocation in said guideway and having at least one pawl shiftably mounted thereon and having a printing or like device engaging portion on the upper edge of said pawl, yieldable means effective on said pawl to urge said engaging portion to an active position, means for imparting a reciprocatory movement to said bar to thereby cause the engaging portion to engage and advance a printing or like device through said guideway and into said station as an incident to movement of the bar in one direction, a locating member disposed at said station and having a part shaped complementary to said notch,

spring means normally urging said part with relatively light force toward said station, and means under control of said carrier bar and operable thereby as a device moves into final at rest position in said station near the end of movement of said carrier bar in said one direction and effective to increase the effect of said spring on said locating member whereby said part is effectively urged toward the notch in the device at said station and into such cooperating relation therewith that the device at said station is accurately positioned therein.

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