

Nov. 22, 1927.

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M. W. GRIESBAUM
LAUNDRY MARKING MACHINE

Filed Jan. 15, 1926

4 Sheets-Sheet 1

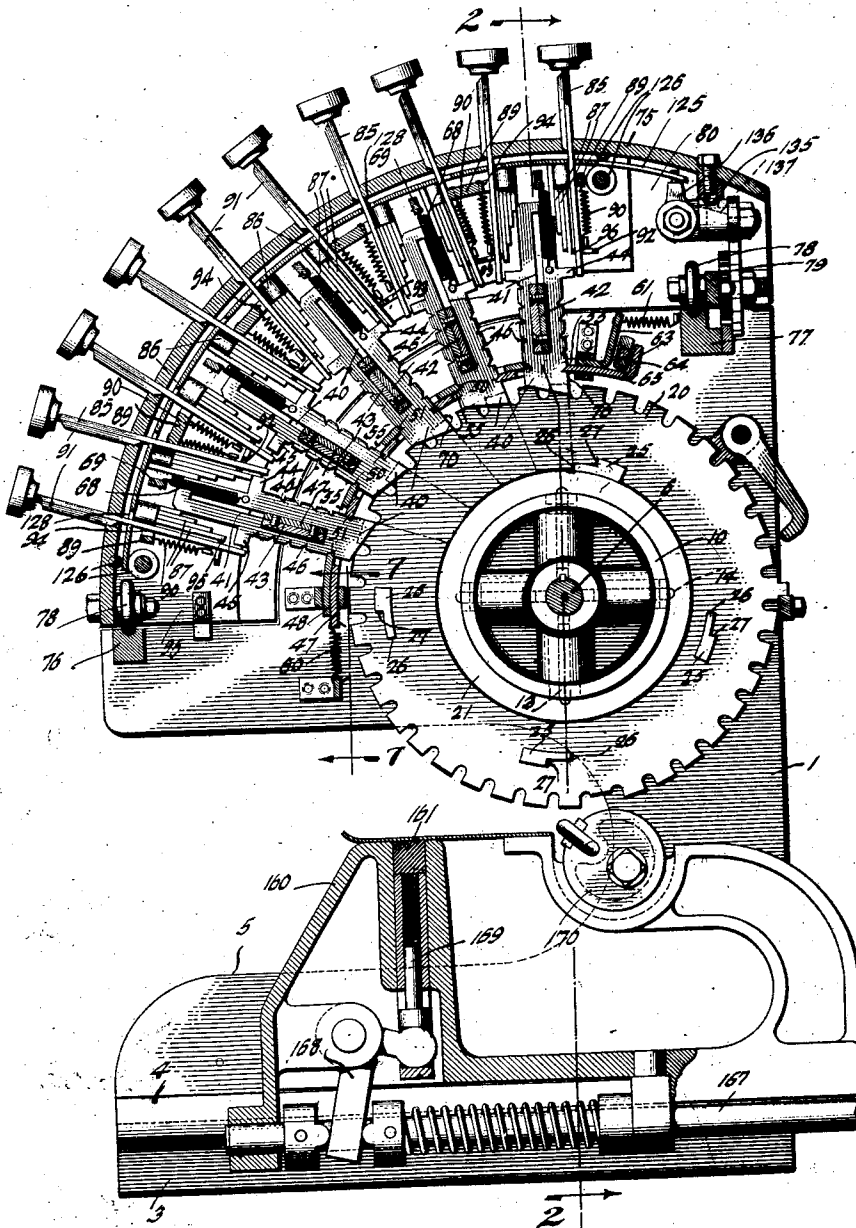


Fig. 1

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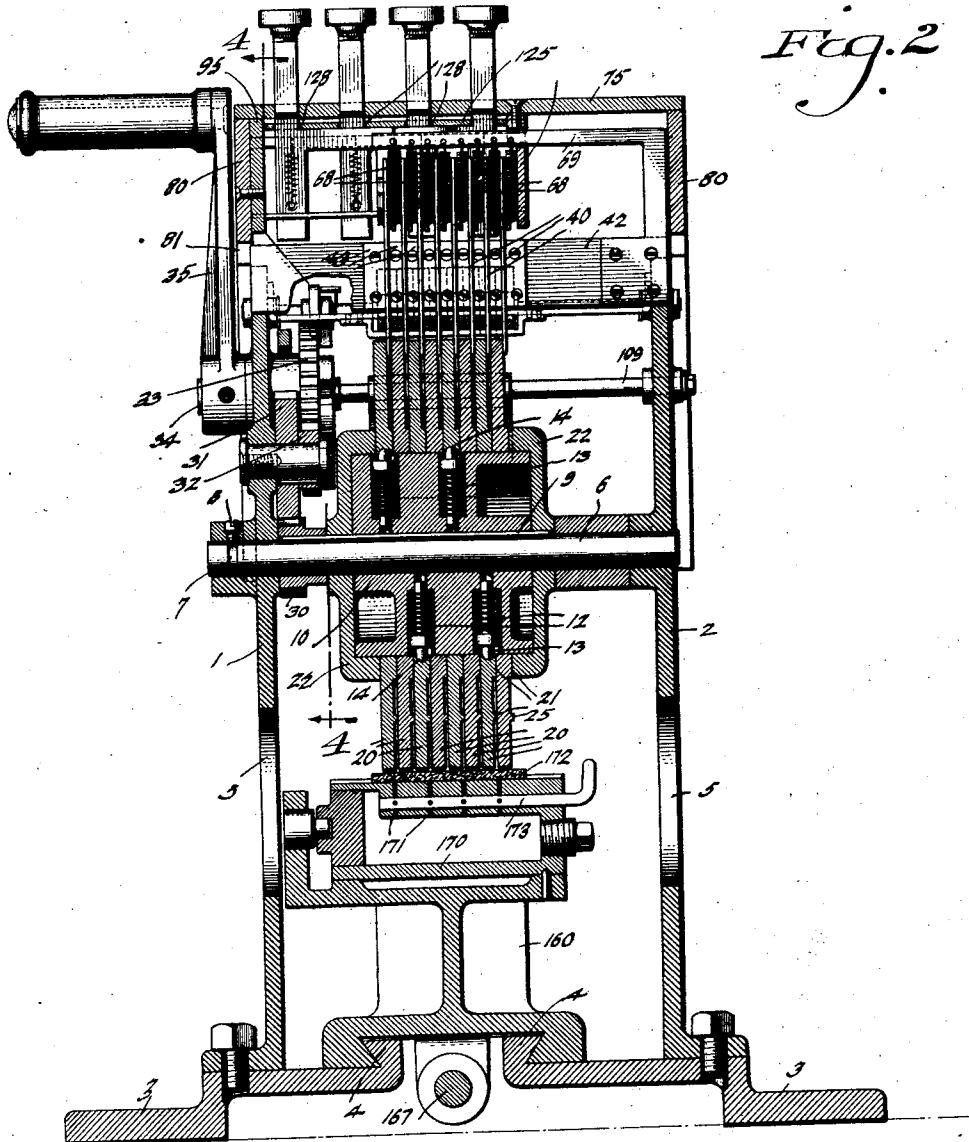
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

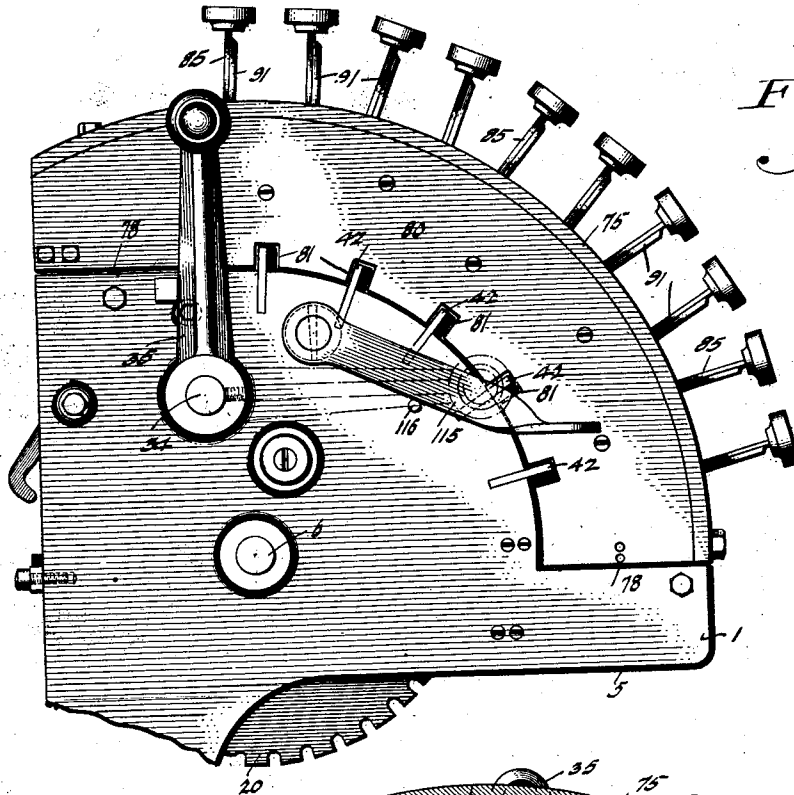


Fig. 3

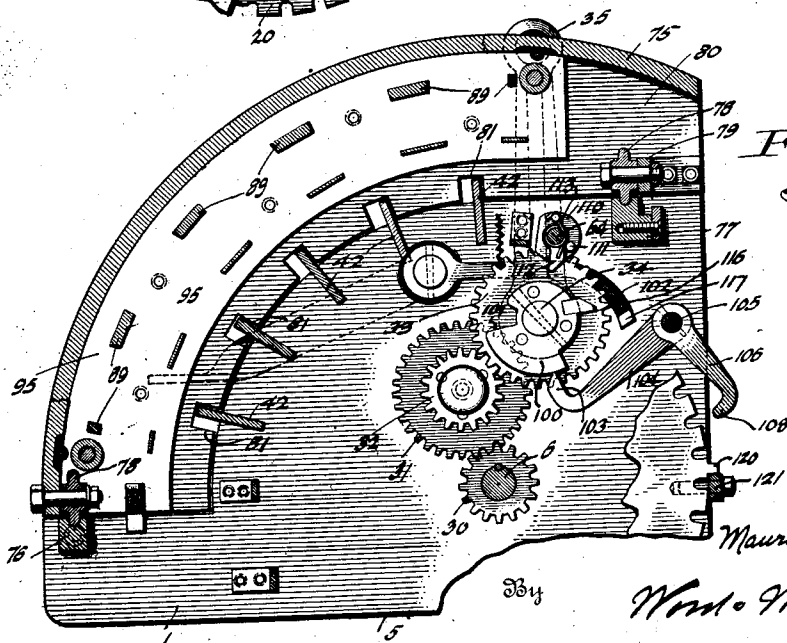


Fig. 4

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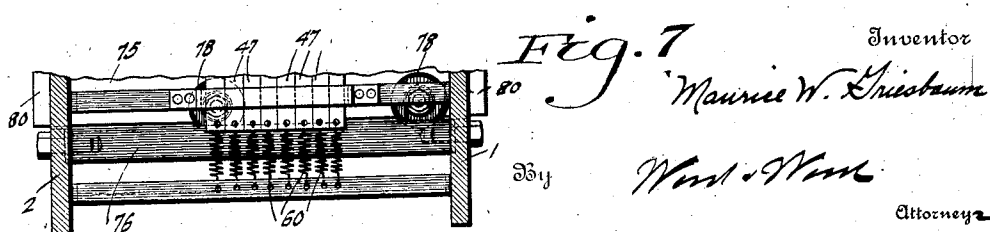
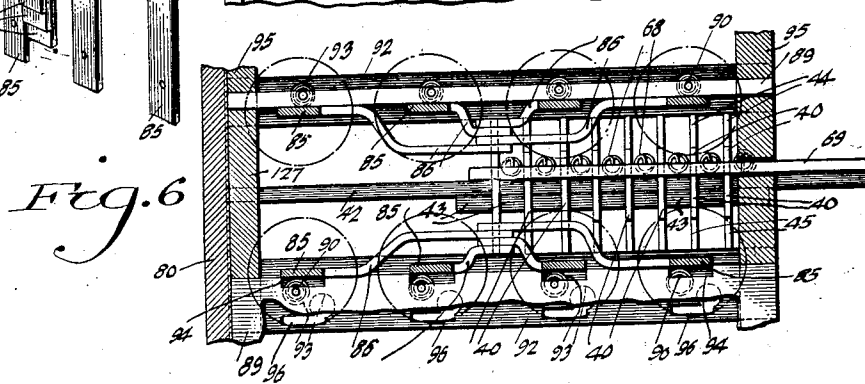
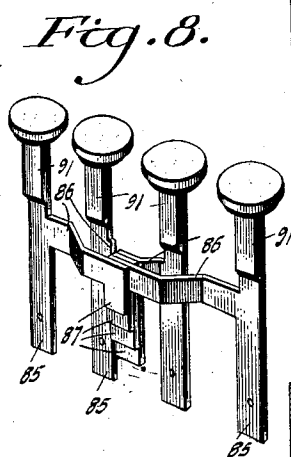
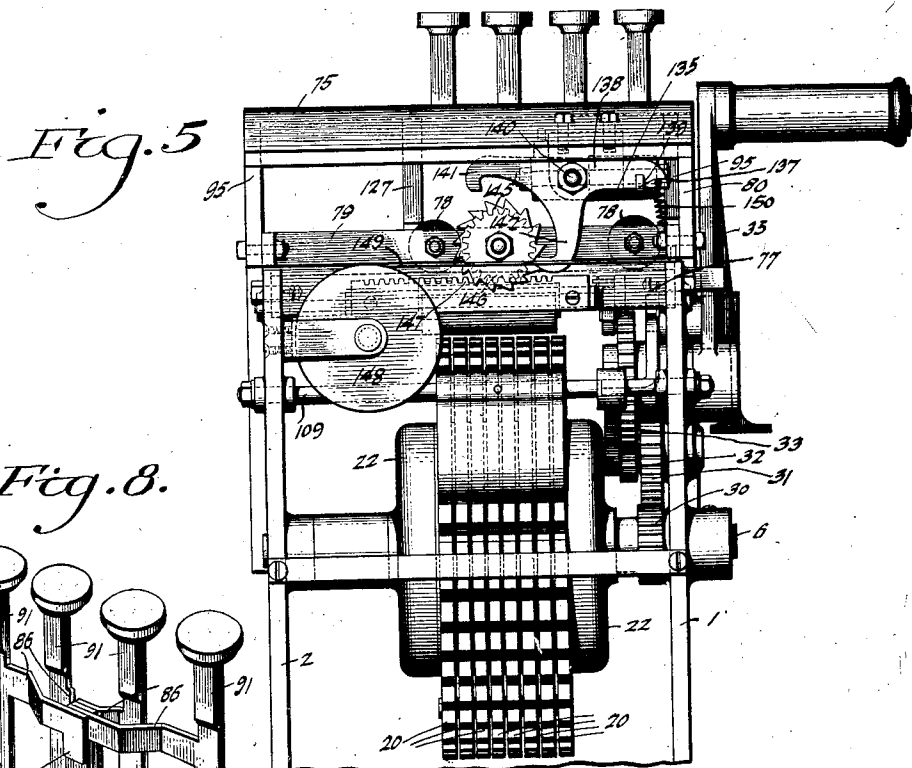
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE.

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LAUNDRY-MARKING MACHINE.

Application filed January 15, 1926. Serial No. 81,573.

This invention relates to improvements in marking or stamping machines adapted to print upon materials of various kinds, the principles of the invention being herein shown as applied in a laundry marking machine.

General objects are to provide a machine of a compact design which may be cheaply manufactured, which has a minimum number of type or character printing elements, and which provides key-operated means for controlling and manipulating the printing elements to obtain a maximum number of character or type combinations for printing, with a minimum number of parts.

Another object is to provide rotative printing disks or type carrying elements each having printing characters thereon arranged in spaced relation upon the periphery, and having stops upon one face related to the characters in such manner that when a disk is rotated a given stop may be caused to impinge an adjustable abutment, to bring the desired character to and stopping and holding the same in printing position.

Other objects are to provide a spring retractable abutment member adjustable in different degrees toward and away from a printing disk and stops thereon and in predetermined degree, and to provide means for locking the abutment in any adjusted position to intercept one, and one only, of the stops, as well as to provide means for automatically releasing the plunger-abutment and returning the same to initial position after printing operation.

Another object of the invention is to provide upon a single shaft, a plurality of disks of the above nature, and to further provide a plurality of plungers each selectively operated by rows of keys, and to provide means for advancing the keys from one row of plungers to the other, whereby individual members of a row of keys are adapted to selectively operate upon a plurality of linearly arranged plungers for advancing any plunger or plungers to intercept any one stop of a corresponding disk.

Another object of the invention is to provide hand operable means, in geared connection with a type disk rotating shaft in such a manner that the disks may be rotated by the shaft thereby to bring the stops into en-

gagement with the abutments, and whereby the shaft can rotate independently of the disks, the lever also acting to simultaneously return the plurality of disks to initial position after printing operation.

Another object of the invention is to provide keys translatable mounted relative to the disk stop intercepting means or plunger abutments, and adapted to selectively engage and translate any plunger in varying degrees for placing the same in the desired position to intercept a certain stop upon a certain type disk.

Another object is to provide for movement of the keys with respect to other portions of the mechanism in such manner that the keys are successively advanced to proper position, for setting the abutment elements for conditioning the type carrying elements for printing.

Another object is to provide depressible keys or a plurality of such keys, which act in conjunction with the other mechanism to condition that mechanism for limiting rotation of type carrying or printing elements, in this case printing disks having a plurality of peripheral characters thereon, for selectively bringing either a single character or a line of characters into printing position.

Another object is to provide independent hand operable means for bringing the type disks or letter carrying elements to printing position, and locking the same in such position during the printing operation.

Another object is to place the printing characters in spaced relation upon the rotatable elements and to provide means whereby a given character can be selectively brought from an initial position to a printing position, locked during the printing operation, and returned to initial position thereafter.

Another object is to provide an interlock between the means for rotating or setting the printing elements or disks, and the locking means therefor, whereby both are simultaneously positively held during a printing operation.

Another object is to provide independent means for releasing the interlock means, simultaneously with release and return of the disks to initial position after printing.

Other objects, features and advantages

will be disclosed in the description of the drawings forming a part of this specification, in which drawings:

Figure 1 is a vertical cross section showing the general arrangement of the keys, plungers, type disks and work supporting table.

Figure 2 is a vertical longitudinal section approximately on line 2—2 of Figure 1.

Figure 3 is a fragmentary side elevation from the operating side of the machine.

Figure 4 is a fragmentary vertical transverse section approximately on the line 4—4 of Figure 2, illustrating the disk locking, operating handle and mechanism operable thereby, as well as the interlock associated therewith.

Figure 5 is a fragmentary rear view of the machine showing the key carriage advancing escapement mechanism.

Figure 6 is a plan section illustrating the relation of the banks of keys to the plungers.

Figure 7 is a detail vertical section on line 7—7 of Figure 1, illustrating the mounting of the plunger locking plates.

Figure 8 is a perspective view of a cross row of keys showing the relation of the key abutments.

The main frame comprises two spaced parallel side members 1, 2, each bolted to a base 3. Each base 3 is provided with an upstanding guide lug 4 extending from front to back at the inner edge, the bases spaced apart to form a slot therebetween and the lugs forming together a dovetail guide or slide for the reciprocable work supporting and type inking carriage. This carriage has mounted thereon an inking device for cooperation with type disks as herein-after more fully described. Each side frame has a slot 5 extending horizontally rearwardly from its front edge, the middle of the longitudinal axis of the slot being on a level with the upper side of the work supporting carriage, the slots horizontally aligned and together defining a throat into which the goods to be stamped can be introduced to lie upon and be yieldably engaged with and translated to printing position by the work holder, suitable mechanism being provided for translating the work holder to its printing or stamping position and for withdrawing or returning the same to initial position.

Rotatably mounted crosswise at a point approximately midway between the top and the bottom of the members 1, 2 and in said members, or plates, is a shaft 6 circumferentially grooved as at 7 and having a pin 8 engaging the groove permitting rotation but preventing endwise movement of the shaft. Keyed to the shaft as at 9, substantially at the middle thereof is a hub 10 having radially arranged bores 12 therein, within which

are slidably disposed shouldered pins 13 having rounded outer extremities adapted for yieldable locking engagement with corresponding depressions 14, in the type disks. The depressions are circumferentially connected by grooves in which the pins ride when a disk is held while the shaft 6 rotates. The locking pins are urged outwardly by the springs and said pins are therefore yieldable inwardly against spring tension. Thus, when the disks are held against rotation in a manner to be described, the hub may be independently rotated and as such rotation takes place the pins will ride in and out of the depressions and within the grooves connecting the depressions. The spring sockets are arranged in crosswise aligned pairs, in this instance a pair in each of four hub spokes.

Printing elements.

The printing disks 20 are circular and each has a series of characters upon its relatively narrow and flat periphery. The number, kind and arrangement of the characters may and will be varied to suit the demand, no particular kind or arrangement being herein shown. The disks are rotatably engaged upon the hub face to face, each being provided with a lateral ring shaped projection 21 acting to space adjacent disks sufficiently for the slidable introduction of the setting plunger abutments therebetween. The disks are held from lateral movement by circular members 22 keyed to the shaft one at each side of and engaging the face of an end disk of the series, each member being provided for this purpose with a marginal flange fitting over the end of the hub and engaging the side face of an end disk sufficiently to permit rotation of the disks. Each disk is preferably slotted to provide radial peripheral teeth, upon the peripheral face of each of which is formed or attached a suitable character adapted to be brought to printing position by the selective manipulation of the keys acting upon the plungers, and causing the same to limit disk motion in a predetermined manner. To this end, one lateral face of each disk is provided preferably with a plurality of lugs or stops 25, circumferentially arranged at successively increasing distances from the rotative axis of the disk, said lugs providing spaced shoulders arranged substantially in spiral relation.

The stops in this instance have the form of thin sheet metal pieces each having substantially a thickness corresponding to the space between adjacent disks, and circumferentially notched to provide front and rear shoulders, the rear shoulder 27 being spaced from the front or first shoulder 26 of the lug such a distance as will advance a tooth a distance equal to that between cen-

ters, or in other words, as will bring one letter to printing position whenever a stop is intercepted by a plunger. For this reason, when the second shoulder of any one of the lugs is engaged against a plunger or lies within the projective path of that plunger, the first shoulder of that lug is spaced from the projective path of the succeeding plunger a distance corresponding to that between type centers. Thus, each lug or stop has two shoulders forward and rear, the distance therebetween corresponding to that required to bring successive or certain teeth to printing position, the lugs being so related to the projective linear radial path of the plunger that when a rear shoulder of any lug is engaged with a plunger, the forward shoulder of that lug is spaced from the path of the succeeding plunger a distance corresponding also to that required to bring the succeeding tooth to printing position. The shoulders may be formed by individual pieces and arranged in the manner indicated, that is, with the successive shoulders spaced a greater distance outwardly from the axis of the disk supporting shaft, and so related to one another and to the projective path of the abutment faces of the plungers as to cause one of the characters of the printing disk to stop in printing position whenever one of the lugs engages the abutment face of a depressed plunger.

The disks are preferably stamped from sheet metal and have a series of peripheral radially extending teeth on the outer end of which a printing character may be formed or secured, outwardly faced. One tooth is omitted or cut off to form a gap or space 20^a, for the purpose of providing a blank space to prevent printing when a disk has been completely rotated to cause its lug 120 to engage beneath the bar 121 which condition obtains when a disk stop is not intercepted by a plunger or abutment.

The disks are rotated until one stop of any disk engages an abutment, and any disk which has not so engaged an abutment continues to rotate either until an abutment is reached or until the lug 120 engages beneath and against the bar 121, in which latter case the space 20^a will be disposed in printing position, and therefore no impression will be made by that disk.

Keyed to the disk supporting shaft, between one of the plates and the inner side of the frame, is a small spur gear 30 in mesh with a larger companion gear 31 mounted rotatably upon a stub shaft extending inwardly from the frame parallel with the disk supporting shaft. Formed integral with this second gear or attached thereto in any suitable manner is a third spur gear 32 in this instance of smaller pitch, which in turn is meshed with a larger fourth gear 33 pinned to the operating shaft 34 which

is a short shaft journaled in the frame also parallel with the disk supporting shaft, and having an operating lever 35 keyed to it at the outer side of the frame. Whenever the operating lever is pulled downwardly to a position shown in Figure 3, the hub supporting shaft is rotated in counter-clockwise direction and the hub correspondingly rotated, and through the yielding connections carried by the hub, the disks selected for rotation are also turned, the rotation being limited in correspondence to the position of the plungers.

Intercepting plunger abutments.

As heretofore mentioned, a given disk is adapted to be stopped with a given character on its periphery in printing position, this by selective depression or translation of plungers into the rotative paths of the lugs of the disks.

These plungers are mounted in radial relation and when depressed are adapted to be positively locked in depressed condition until the disks are brought to printing position, and until the printing operation is complete, after which they are returned to their initial positions and again locked.

The plungers are mounted for reciprocation upon suitable cross bars held at opposite ends by respective side frames 1 and 2, and a carriage in which reciprocable keys are mounted for engaging and depressing the plungers, is mounted for translation crosswise of the machine and plungers, to bring rows of keys in position to engage any member of a circumferentially aligned series of plungers.

The plungers are preferably formed of thin sheet metal to obtain compactness and are reciprocably mounted in spaced relation with their flat faces of greatest area in planes parallel to the planes of the side faces of the disk. All plungers of a circumferential row, comprising in this instance five members, with the exception of one of the end rows, have their ends projecting between adjacent spaced disks with the ends normally lying just within the disk periphery. See Figure 1 in which position they are yieldably locked.

Each plunger 40 for a given machine is substantially identical. Each has a substantially elongated rectangular form, is provided with a central longitudinal slot through which cross guides 42 extend, the guides in this instance extending from side to side of the casing and being radially arranged corresponding to the disposition of the plungers. These guides are of less width than the length of the slot in the plunger to allow limited reciprocation of the plungers on the guides, and the plungers are held in position strictly at right angles to the guides by auxiliary guide strips 43 some lying between the plungers and others outside of the

end members of the series (see Figure 2). The guides also act as stops to limit outward translation of the plunger to dispose their inner ends adjacent the peripheries of the type disks.

Each plunger is provided with aligned lugs 44, 45, extending outwardly from relatively opposite edges at right angles to the plunger axis, the lugs adapted to be engaged by key abutments. Each plunger is moreover provided with notches 46 extending inwardly from relatively opposite edges, which notches are adapted to be engaged and positively held by plunger locking elements 47, 48, after the plunger is forced inwardly a predetermined distance by a key. Each plunger in this instance has adjacent its inner end two notches 50 relatively staggered or offset crosswise of the plunger, each of which is engaged or engageable by a tooth 51 of the respective locking elements 47, 48, when the plungers are in their uppermost or retracted position, thus yieldably locking the plungers in that position. Four additional notches 46 are provided on each relatively opposite side also arranged in staggered relation in such manner that opposite notches may be alternately engaged with corresponding projections of the locking elements, thus providing in this instance eight locking positions for each plunger, which correspond to the bringing of as many type characters to printing position.

Plunger locking mechanism.

In order to lock the plungers both in their initial positions, and transverse advanced positions, the two arcuate plates 47, 48 are provided having their center arc curvature in the axis of the printing disk supporting shaft 6, the two plates being provided for each circumferentially aligned row of plungers, each plate having a series of circumferentially aligned slots 55 of greater length than the width of the plungers, corresponding slots of respective plates superposed and the pairs slidably traversed by a plunger.

These plates are slidable upon one another and are supported at opposite ends in suitable guides attached to the side frames 1 and 2, the inner plate 47 having a spring 60 for drawing it in counter-clockwise direction, and the outer having a spring 61 for drawing it in a clockwise direction. Corresponding side faces of the slots of the outer member are chamfered in one direction, as shown, to form teeth for engagement with the corresponding notches at one edge of the plunger, and corresponding edges of the slots of the inner plate are similarly chamfered in the opposite direction for engagement with the notches at the opposite edge of the plungers. The ends of the plates are upturned substantially in parallel relation as at 63, and a shaft 64 extends crosswise of and is journaled in

the side frame, passes between the upturned portions of the plates and has keyed thereto a cam element 65 adapted when the shaft is rotated to positively throw the plates in opposite direction and withdraw the chamfered portions or teeth 51 from the notches of the plungers. This releasing action takes place after the printing operation and as the operating lever is pushed upwardly from its lowermost position. Springs 68 for retracting the plungers are attached thereto and to arms or brackets 69 which are suitably secured at the opposite ends to the plunger supporting bars 42, there being one of these brackets for each row of springs (see Figures 1 and 2). The brackets 69 together form a stop for limiting the movement of the key carriage.

The overall angular relation of the plunger abutment faces 70, that is, the angle included between the abutment faces of the terminal members of the series must always be less than the angle included between any two stops 25 to prevent the last stop of the series from first engaging any one of the plungers, it being necessary that the stops engage or be capable of engaging the abutments successively, in the order of their arrangement on the disks. This for the reason that the last lug of the series must clear the last abutment plunger before the first stop engages the first abutment, because if otherwise, an advanced stop might reach an abutment out of order and therefore fail to bring the proper letter to printing position.

The plungers are adapted to be thrown inwardly from a normal position adjacent the peripheries of the disks, to bring the extremity of any one of the plungers to a position for engagement by one of the shoulders of one of the stops carried upon the face in each disk, and in this manner rotation of the disk is limited by the engagement of its stop against the plunger. Each disk in this instance has eight stop shoulders arranged serially on a substantially spiral line, successive shoulders being spaced outwardly from the axis of the disk supporting shaft, distances corresponding to the distances that the plungers are adapted to travel as result of selective engagement by the keys. These shoulders may be made, as separate pieces, and fastened in position or the same may be cast integral with or even punched out from the disks. Moreover, the number of shoulders may be decreased or increased at will according as a greater or lesser number of type characters are desired for each disk.

Key carriage and keys.

The keys are reciprocally mounted in a translatable frame or carriage which has substantially the form of the segment of a closed end cylindrical drum, the curved wall thereof being substantially concentric

with the axis of the disk supporting shaft 6, and the keys being mounted in spaced relation longitudinally and radially of the frame, and extending inwardly radially in a direction toward the disk supporting shaft.

These keys are adapted for selectively and successively engaging and operating plungers, the inner extremities of which are, by this operation, in rotative paths of the projections or shoulders arranged on one face of each disk. After a given plunger has been thus "set", by translating the same inwardly the disks are manually rotated, and each continues to rotate until one abutment or stop engages the plunger, thus bringing one character of the disk to and stopping the same at a given point, which corresponds to the printing position of the line of characters, so disposed, and thus "set up".

The frame is supported for translation longitudinally parallel with the axis of the disk carrying shaft 6, upon front and rear tracks 76, 77, each having a groove in its upper face within which are engaged the rounded peripheries of rollers 78 rotatably attached to the curved frame wall at the front inner side thereof, and to a cross bar 79 extending between and attached to the frame end walls 95, at the rear. The frame is thus mounted to act as a key-carriage adapted to move longitudinally of the axis of the disk supporting shaft above, the disks and plungers associated therewith.

The outer curved wall 75 of the carriage is slotted, each slot being of sufficient width to slidably receive the thickened upper portion of the key stem which is thus guided at its upper portion. The inner ends of the keys traverse slots provided in cross pieces having their ends suitably secured in the end walls of the carriage. Pairs of rows of keys are mounted with their stems in parallel relation to one another and to the parallel row of plungers with which they cooperate, as clearly shown in Figure 1.

The upper end of each side plate 1, 2, is cut to substantially conform to the configuration of the side walls 80 of the key carriage, which side walls are curved as shown and notched out as at 81 along their curved peripheries to provide clearance relative to the plunger supporting cross plates or supports 42.

The keys are preferably formed by stamping sheet metal, and each has an elongated stem portion 85 and an arm 86 at a right angle thereto terminating in a projection 87 as a plunger-engaging abutment parallel with the stem and with its broad faces in planes parallel with but offset relative to the planes of the corresponding faces of the stem. The length of each arm 86 carries according as the key stem is to be spaced farther from or nearer to the first member of the cross row of plungers, the keys being

disposed in crosswise and circumferential rows corresponding to the arrangement of the plungers operable by them.

The arrangement is most clearly shown in Figures 6 and 8 wherein the superposed relation of the plunger engaging projections or abutments, as well as their varying length are shown.

It will be noted that in this design two parallel cross rows of keys comprising four members each are arranged in parallelism to act selectively and consecutively upon the members of a corresponding row of plungers, the plunger engaging projections of respective rows being superposed and regularly varied in length. In other words, the length of each successive projection, for example beginning with the shortest, is increased over that of the preceding one by a certain amount, corresponding to the linear spacing of the notches 46. Thus when a given key is fully depressed a plunger associated therewith is carried inwardly a distance equal, in this instance, to one-eighth of the total distance of the possible plunger travel.

The number of plunger engaging abutments is however optional, as well as the relative lengths of the projections or abutments 87, conformably to the number and spacing of the plunger notches, and thus may be increased or decreased as desired, and it is to be understood that each key acts only to throw the plunger inwardly a predetermined distance to form an abutment against which a certain one of the disk stop shoulders will engage, to stop a certain character on the disk at printing position. Each stem is preferably capped by the usual finger disk marked with a suitable character.

Thus there are for each pair of double row of keys, eight abutments, each of a different length and each spaced a different distance from the lugs 44, 45, and corresponding to the distance which a plunger is to be translated inwardly. Four of these abutments are operable against a lug 44 and the other four against a lug 45. Moreover, the spacing of the inner ends of the lugs oppositely from the abutments corresponds to the staggered relation of the notches 46 of the plungers, so that when a key is fully depressed it will translate the plunger and cause the corresponding notch to be engaged and locked by the plates 51, 55.

Each key is, therefore, adapted for throwing the plunger inwardly to one position only, and after depression, release and return of the key carriage is moved to a position wherein the abutments are disposed for selectively engaging and translating the next succeeding plunger.

A single row of plungers only may be used, a larger number of notches 46 provided therein, and a corresponding number of

abutments, disk stops, and keys furnished for operating the same. For this reason, a machine can be constructed having only one pair or rows of keys and a small number of disks and plungers corresponding thereto, by which means a simple and compact machine may be obtained for giving a minimum number of character combinations for printing.

The pairs of parallel rows of key stems are supported intermediate their ends by upper cross pieces 89 suitably held in arcuate supporting plates 95 respectively attached to the side 80 and to the curved wall 75 of the carriage. A spring 90 is provided for each stem or key, connecting with the stem at its inner end and at its outer end with the cross piece 89, adapting each key to be automatically returned to initial position after depression. Certain of the cross pieces 89 are notched or slotted as at 94 to permit the thickened portion 91 of the stem to pass therethrough when the key is depressed. The inner circumferential row of cross pieces 92, supporting and guiding the inner ends of the stems, are bored or cut out as at 93 adjacent the stems for the passage of the springs and securing device, the stems passing through and being guided by slots 96. These slots and openings 93 intersecting one another. Each key stem is thus supported at two points intermediate its end and is continually supported both in normal and depressed positions. By selective key action a plunger is depressed to that degree necessary to bring one notch only into locking engagement with one of the locking elements 47, 48, and upon actuation of the elements after the printing operation, the plungers are retracted by the coil springs 68, to initial position, with one of the lateral lugs 44 in engagement with one of the key abutments. Thus, upon actuation of the locking elements 47, 48 to withdraw the projections from the plunger notches, the plunger will be returned by the spring 68 to its initial position.

The relation of the key stops, plunger, notches and radial spacing of the stops of the disks is such that each plunger can, in the present machine, be set at eight different disk-stopping positions. It is evident, however, that the number may be increased or decreased according as more or less printing characters are required on each disk.

As the disks are brought to printing position by swinging the operating lever 35 to lowermost position they are simultaneously micrometrically aligned and locked together, to maintain the selected printing characters in strict alignment during the printing operation, and at the same time the operating lever is locked in its lowermost position. Means for accomplishing the above results comprises the following mechanism:

Mounted on the inner end of the operating shaft 34 and pinned thereto is a disk-like plate 100 lying against the gear 33. (See Figure 4.) The plate has a radial notch forming a shoulder 101 and also has a radial lug 102 substantially diametric to the shoulder. When the operating handle reaches its lowermost position, corresponding to a selected setting of the type disks, the shoulder 101 is engaged by a hook 103 formed at the end of the lever 104 pinned to a cross shaft 105, rotatably journaled in frames 1 and 2. The shaft has pinned thereto a disk locking element 106 having herein the form of a plate of a width equal to that of the assembled disks, and having a tapered projection 108 at its extremity adapted to engage a row of disk notches to positively micrometrically align and lock the disks in printing position, and to maintain them thus locked during the printing operation. A spring 109 urges the locking element to locking position as well as engaged hook 103 with shoulder 101.

Plunger release mechanism.

Means is also provided for operating the latch plates 47 and 48 to release the plungers after the printing operation, and as the operating lever starts from its lowermost to its initial position. This mechanism comprises a disk 110 rotative with the latch shaft 64, the disk having a stop pin 111 projecting laterally therefrom. Swingingly mounted upon the shaft 64 and engaged against the disk face is a detent 112 having a spring 113 forcing it toward the stop pin, the detent being thus adapted for yieldable movement in one direction for non-rotation of the shaft, and for rotating the shaft 64 when urged in the opposite direction against the pin 111.

Substantially simultaneously with the disk locking action, as the operating lever 35 reaches its lowermost position to set the disks in printing position, and traveling in counter-clockwise direction, the lug 102 passes to the opposite side of the swinging detent 112 which yields during such passage in a clockwise direction, thus disposing the lug in a position to engage the detent and rotate the shaft 64 in counter-clockwise direction when the operating lever starts back to its initial position. As this shaft rotation takes place the latch members 47, 48, are translated by the element 65 (see Figure 1) to release position, allowing the plungers to resume initial position.

Before the operating lever can be returned to its original position however, the hook 103 must be released from the shoulder 101, and for this purpose a release lever 115 is mounted at the outside of the frame upon a short shaft which is rotative in the frame, projects at both sides thereof and has pinned

to its inner end a curved finger 116, having a lateral projection 117 which is engageable with the lever 104 to throw the same downwardly (see Figure 4). A spring attached to the arm 116 and frame 1 normally holds the lever 115 against a stop 116. The outer extremity of the release lever 115 is related to the handle of the operating lever in such manner that with the operating lever in its lowest position the operator may place his thumb beneath the release lever to raise the same slightly and cause the finger to force the lever in counter-clockwise direction, releasing its hook 103 from the shoulder, and at the same time rotating the shaft and withdrawing the tapered projection 108 from the disk notches, thus releasing the disks which are then rotated and brought to initial position as the operating handle moves upwardly.

One tooth of each disk has a radial extension 120 thereon as a stop, adapted to engage a stop bar 121 secured crosswise at the rear of the machine. This stop acts to limit disk rotation in both directions, engaging the upper side of the bar when the disk is in initial position, and the opposite side after the greatest rotation of the disk. In order to prevent this tooth extension from being brought to printing position, one of the key abutments or projections is omitted, so that the depression of one of the keys will not translate a plunger sufficiently to intercept the corresponding stop of the disk. The disks are all rotated, whenever the hub rotating shaft 6 is rocked, and whether the plungers are or are not set. When any plunger is not in disk intercepting position, the corresponding disk is rotated until its stop 120, engages the bar 121, which is the limit for both disk and operating lever.

When the disks are in normal or initial position, each with its stop engaging the upper side of the bar, that tooth having a zero or other corresponding character thereon will be at printing position, and if under these conditions, the first plunger is depressed to its innermost position, that disk will remain in initial position, although others may rotate when the operating handle is pulled downwardly.

Key carriage advancing mechanism.

Mechanism is provided for advancing the key carriage a distance equal to that between the centers of adjacent members of the crosswise disposed rows of plungers, the advance taking place in two stages, to wit, upon depression of a key and immediately after its return to initial position. That portion of the mechanism concerned with the spacing and advancing of the carriage may be of any preferred form, and is adapted for actuation and control by the segmental plate 125

operably connected in this instance at its upper edge with the element which controls the key carriage advancing or spacing mechanism. The plate 125 has its center of curvature in the type disk axis, is circumferentially translatable, and is mounted adjacent the inner face of the curved side 75 of the key frame between pairs of suitable rollers 126 engaging opposite sides of the plate adjacent opposite ends, and held upon the spaced radial arcuate plates 95 respectively attached to the side and top of the carriage frame. The plate 125 is provided with slots 128 equal in number to that of the keys, and each key slidably traverses a slot which is for this purpose of a width slightly greater than that of the thickened portions 91 of the stems 85. Each key when in initial position has one face of the thinner portion of its stem engaged with one face of a corresponding slot, as in Fig. 1, the plate being yieldably urged in clockwise direction by the spring 150 of the escapement mechanism described below.

When a key is depressed, the plate is translated in counter-clockwise direction and the carriage advanced approximately one-half the distance between centers of adjacent circumferential rows of plungers. The remainder of the movement takes place only after the key has resumed its initial position, the plate then being drawn in clockwise direction to the position shown in Figure 1. The plate may be connected with and made to operate any suitable carriage release mechanism but performs a necessary function inasmuch as it procures the proper advance of the key carriage when properly connected with a carriage advancing mechanism.

The escapement mechanism for procuring step-by-step advance of the carriage is mounted at the rear, one portion on the cross bar 79 which supports the carriage rollers, and the other upon a depending bearing block 135 secured by a screw to the wall 75 of the carriage. This block has a forward extension as a bearing through which extends a shaft having pinned thereto at one end a vertically disposed arm 136 terminating in a pin engaged through an opening in the plate 125. Keyed at the opposite end of the shaft and extending horizontally is an arm 137 engaged within a slot 139 formed into the edge of one arm 138 of an escapement lever pivoted as at 140 to the block. At the opposite side of the pivot the lever has the usual escapement wheel engaging arms 141, 142. The escapement wheel 145 is rotatably mounted or pivoted upon the bar 79 in proper relation to the arms of the lever and has attached thereto a spur gear 146 the teeth of which mesh with those of a rack 147 secured longitudinal of and at the rear of the track 77.

The carriage is positively drawn in advance direction by any suitable means such as a spring, acting to rotate a drum 148 suitably mounted upon the frame, to which is attached one end of a strap 149 connecting at the opposite end with the carriage. When released through operation of the escapement the spring acts through the drum and strap to draw the carriage in appropriate direction. The carriage must be returned to its initial position by hand.

The escapement lever is operated against the action of a spring 150 which yieldably holds the same in position shown in Figure 5 and functions through elements 137, 136, to draw the plate 125 in clockwise direction and yieldably hold the same as shown in Figure 1.

Carriage advance is obtained as follows: Referring to Figure 1, when a key is depressed the cam or thickened portion of the key 91 translates the plate 125, rocking the escapement lever against the action of the spring 150 allowing the carriage to move while key projections are engaged with plungers, this movement being some fraction of the total movement of the carriage, and sufficiently small to prevent engagement of a key projection or abutment with the side of an adjacent plunger. When the key reaches its initial position the plate 125 travels in counter clockwise direction correspondingly rocking the escapement lever and permitting the escapement wheel to advance another notch, thus advancing the carriage and bringing the key abutments above the succeeding plunger or row of plungers. This movement of the carriage takes place both upon key advance and return.

General operation.

With the operating lever 35 in vertical position the operator depresses the desired key or keys, pushing them to their limits, as a result of which certain plungers are translated, stopped and locked with their inner extremities disposed for engagement by a certain abutment of a selected type disk. The key frame is advanced part way toward the next circumferential row of plungers, during key and plunger translation, and as the key reaches initial or return position the frame again moves and completes its advance, bringing the key abutments in position for engagement with the succeeding plunger or any member of a circumferential row of the same.

After the key depressing and plunger setting operations the disk shaft rotating lever 35 is operated by pulling downwardly to a position shown in dot and dash lines in Figure 3, the disks being by this means rotated to bring their abutments in engagement with any advanced plunger, thus stopping

the disks with a certain character in printing position.

During the downward movement of the handle the disk shaft is rotated as well as the disks, the pins 13 riding in and out of their depressions and circumferential grooves connecting the depressions, thus permitting the shaft to continue to rotate after certain of the disks have been stopped, in order to bring the remaining disks to their limits of movement.

When the lever reaches its lowermost position, which corresponds to this set position of the disks, the disks and lever are simultaneously locked and interlocked (see Figure 4) by the elements 100, 101, 103, 104, 106, 108, etc., and the plunger release mechanism including the elements 102, 112, 64, is conditioned for release action, as the result of the engagement of the locking element 103 and radial shoulder 101 of the ratchet disk 100. Simultaneously with this interlocking action, the element 108 engages, aligns and locks the disks by entering the slots formed between the radial teeth of the disks.

Substantially simultaneously with the interlocking operation, the radial projection 102 passes to the opposite side of the detent 112 to a position for engagement therewith when the operating lever 35 is raised.

The goods is then brought against the printing characters or line of the same and the printing operation accomplished.

The disk setting lever 35 is now again grasped and the thumb engaged beneath the releasing lever 115 which may be called a plunger-lock, disk-setting and disk-interlock releasing lever.

As this lever is pushed upwardly and during the first part of its movement, the plunger lock and release mechanism is operated, the plunger locking plates simultaneously actuated to release all the plungers which are then retracted to initial or non-stop interlocking position.

During the movement of the disk shaft rotating lever 35 back to its position shown in Figure 3, the disks are returned to their initial position with their projecting lugs 120 engaging at the upper side of the bar 121 thus clearing the machine and conditioning the same for another setting operation.

Work holding mechanism.

The mechanism for holding the work, advancing the same toward and against the type, and inking the type, although forming the subject matter of a separate application is described for the sake of completeness.

The work supporting and type inking frame 160 is reciprocable upon the guides 4 and comprises a front upwardly extending table-like projection in which is mounted a vertically translatable platen 161 against which the work is adapted to be yieldably

held by springs. The platen is adapted to be raised and lowered to bring the work against the type by means of a reciprocable shaft 167 suitably connected by means of a bell crank lever 168 with a plunger 169 abutting a spring in turn abutting the translatable platen, this for the purpose of forcing the platen toward the printing disks at the same time maintaining yieldable pressure upon said platen. By reciprocating the rod or shaft 167 the frame is advanced or retracted.

Mounted for rotation at the rear of the frame, crosswise thereof, is an inking reservoir 170 having the form of a hollow cylinder closed at opposite ends, one end being bored centrally to form a bearing rotatably engaged by a projection of the frame, (see Figure 2). The opposite closed end is centrally bored and threaded, this filling opening being closed by a plug. The reservoir is provided with a cross row of radially extending openings 171 leading outwardly to a longitudinal slot in which is disposed a strip of absorbent material 172 as an inking pad. A bore intersects the radial openings and has disposed therein a valve stem 173 having cross openings therewith registerable with the radial delivery openings by which a supply of ink may be controlled to the pad.

In operation the shaft 167 is translated and when the frame reaches the proper position beneath the type disks the platen is raised and the work engaged with the type. Preliminary to the forward movement of the frame, the pad of the inking device engages the type.

Having described my invention, I claim:

1. A printing mechanism including a rotatable printing member having printing characters thereon, stops upon said member having predetermined relation to the printing characters, and a stop intercepting element projectable into the path of any stop to arrest rotation of the element with the desired character at printing position.

2. A printing machine including a rotatable printing element having printing characters thereon and spirally arranged spaced stops corresponding to the characters, and an abutment element projectable into the path of any stop to arrest motion of the element to bring the desired character to printing position, and means for rotating the printing element.

3. A printing mechanism comprising a hub rotatably mounted therein, a printing member rotatable on said hub and yieldably connected therewith for permitting rotation of the member by the hub and of the hub independently of the member, said member having spaced peripheral printing characters, and spaced stop lugs upon one face arranged in predetermined relation to the printing characters, and an abutment element in the frame selectively adjustable in

predetermined degrees toward the member for intercepting any one of the lugs, when said member is rotated by said hub to stop said member with a corresponding character at a predetermined point.

4. A printing machine comprising a hub rotatably mounted therein, a type disk rotatable upon the hub and yieldably connected therewith for obtaining rotation of the disk by the hub and for permitting rotation of the hub independently of the disk, said disk having spaced printing characters, and having stop lugs substantially spirally arranged in predetermined relation to the type characters, an abutment member radially adjustable in varying degree across the path of any lug to stop a corresponding character at a predetermined point, and means for releasably locking the abutment in any one of its lug intercepting positions.

5. In a printing machine, a shaft rotatably mounted, a plurality of spaced disks rotatable upon the shaft, each independently yieldably connected therewith for obtaining rotation of the disk by the shaft and for permitting rotation of the shaft independently of the disk, each disk having spaced printing characters, and having stop lugs on one face substantially spirally arranged relative to the shaft axis and in predetermined relation to the characters, and abutment members translatable in the frame, one for each disk, and independently selectively adjustable in steps relative to a corresponding disk for intercepting any one of the lugs when that disk is rotated, for the purpose of stopping a printing character at one predetermined point.

6. In a device of the class described, a hub rotatably mounted therein, a plurality of disks rotatable upon the hub, each independently yieldably connected therewith for obtaining rotation of the disks by the hub and obtaining rotation of the hub independently of the disks, each disk having radially spaced teeth, each tooth having an outwardly faced character thereon, and stop lugs upon one face of each disk, substantially spirally arranged in correspondence to the characters of that disk, an abutment member for each disk radially adjustable toward the disk for intercepting any one of the lugs, when the disk is rotated by the hub, for stopping the disk and character thereon at a predetermined point, and means for locking each plunger in any disk stopping position.

7. In a device of the class described, a rotatable shaft, a plurality of disks rotatable thereon, and yieldably connected therewith for obtaining rotation of the disks by the shaft and for permitting rotation of the shaft while any disk is held from rotation, said disks having radial teeth and each tooth having an outwardly faced printing charac-

ter thereon, each disk further having a series of stop lugs upon one side face spirally arranged in predetermined relation to the printing characters, abutment members radially adjustable, one for each disk and projectable into the path of any one of the lugs for stopping a disk by engagement with a lug, when the disks are rotated, and a translatable key frame having a row of translatable keys parallel with the row of plungers, each key having an abutment engageable with a plunger, means for moving said key frame for bringing the key abutments in position for engagement with successive plungers, each key having an abutment adapted to engage and translate a plunger in certain and predetermined different degree.

8. A printing mechanism comprising a frame, a hub rotatably mounted therein, a plurality of disks rotatable on the hub and yieldably connected therewith for obtaining rotation of the disks by the hub and permitting rotation of the hub while any disk is held from rotation, said disks having peripheral printing characters and having stop lugs upon one side face spirally arranged in predetermined relation to the type characters, abutment members radially adjustable in the frame, one for each disk, projectable into the path of the lugs for engagement by a lug of a disk when the disks are rotated, for stopping the disks to dispose the desired character at printing position, a frame translatable on the first mentioned frame having keys translatable mounted therein and engageable with the plungers when depressed, and ratchet means actuating said frame for moving the frame both upon depression and release of a key, whereby upon depression of a key a plunger is set, and the frame advance partially toward the next plunger, and upon release of the key the advance to the next plunger is completed.

9. A laundry marking machine comprising a frame, a hub rotatably mounted therein, a plurality of disks rotatable upon the hub, means carried by the hub for yieldably locking the disks thereto for obtaining rotation of the disks by the hub and permitting rotation of the hub independently of the disks, each disk having spaced peripheral printing characters and having stop lugs upon one face spirally arranged in predetermined relation to the printing characters, abutment members one for each disk radially adjustable between and at the sides of the disks relative thereto for projection into the path of any lug of a disk for stopping a disk to bring a corresponding character to a predetermined point when the disks are rotated by the hub, a key frame translatable parallel with the axis of the hub, rows of spaced keys translatable mounted in said frame

having stops engageable with the plungers and each adapted to translate the plunger to disk stopping position in a certain predetermined different degree, ratchet mechanism for advancing the key frame both upon depression and release of a key, for placing the key abutments in position for operating the next succeeding plunger, and means for locking the plungers in disk stopping and non-disk stopping positions.

10. In a device of the class described, a frame, a hub rotatably mounted therein, a plurality of printing disks rotatable upon the hub yieldably connected therewith for obtaining rotation of the disk by the hub and permitting rotation of the hub independently of the disks, each disk having spaced printing characters and having stop lugs upon one face substantially spirally arranged in predetermined and fixed relation to the type characters, abutment members translatable in the frame, one for each disk, adjustable toward the disks for intercepting one lug of any disk when the disk is rotated by the hub, to stop a certain character of a disk at a predetermined point, a key frame translatable upon the first mentioned frame, having a series of keys translatable toward the plungers, each key having an abutment and the abutments grouped for successive engagement with the plungers as the frame is advanced, to permit any abutment of any key of the series to engage with the desired abutment member and translate the same, each key adapted to translate an abutment member in a certain and different predetermined degree.

11. In a device of the class described, a frame, a hub mounted therein, a type disk rotatable thereon and yieldably connected therewith for permitting rotation of the disk by the hub and of the hub independently of the disk, said disk having spaced printing characters, and stop lugs upon one face substantially spirally arranged in predetermined relation in correspondence to the type characters, a plunger member mounted in the frame translatable radially of the disks toward and away from the shaft and disks for intercepting one of the lugs when the disk is rotated by the hub, a carriage translatable upon the frame axially of the disk supporting shaft, a plurality of aligned keys in said carriage spaced lengthwise of the shaft axis and translatable in equal degree toward the plunger for engaging the same, each key having an abutment for engaging the plunger, the abutments adjacently disposed and consecutively increased in length and grouped to form a series of stepped abutments for selectively translating the plunger in varying degrees to intercept the rotative path of one of the disk stops.

12. In a device of the class described, a frame, a hub rotatably mounted therein, a

series of spaced type disks rotatable thereon and yieldably connected therewith for permitting rotation of each disk by the hub, and of the hub independently of the disks, each disk having spaced printing characters, and stop lugs upon one face spirally arranged in correspondence to the type characters, plungers translatable mounted in said frame radially with respect to the disk supporting shaft axis, a carriage translatable upon said frame axially of the disk supporting shaft, a plurality of keys in the carriage adapted for translation therein in equal degree, each having a plunger engaging abutment, the abutments adjacently disposed and consecutively increased in length for engaging and translating the plunger in varying degrees to selectively dispose the same in the paths of the disk lugs, means for advancing the carriage step by step, and means for releasably locking the plungers in disk-intercepting and non-disk-intercepting positions.

13. In a device of the class described, a frame, a shaft rotatably mounted in the frame having a handle at one end for rotating the same, a hub keyed to said shaft, said hub having radial spring actuated pins, a series of printing disks upon said hub each having depressions engageable by one of the pins for yieldably connecting the disk with the hub for obtaining rotation of the disks by the hub and permitting forced rotation of the hub independently of the disks, each disk having spaced printing characters and having stop lugs upon one face substantially spirally arranged in predetermined relation to the type characters, abutment members translatable in the frame with their outer ends aligned and adjustable toward the disks one for each disk and projectable into the path of any lug of a corresponding disk for intercepting the disk when rotated by the hub, a key frame translatable upon the first mentioned frame having a series of keys translatable mounted, each key having an abutment engageable with an outer end of a plunger, the abutments grouped and each adapted to engage any given plunger, and ratchet means for advancing the frame from one plunger to another on the forward and return stroke of the key.

14. In a device of the class described, a frame, a hub rotatably mounted therein, printing disks rotatable upon the hub and yieldably connected therewith for movement therewith and for permitting rotation of the hub independently of the disk, each disk having spaced printing characters, and having stop lugs upon one face substantially spirally arranged in predetermined relation to the type characters, spring retractable abutment members translatable in said frame, radially related to the axis of the hub and each adjustable in predetermined degree against

spring action into the rotative paths of any lug of a disk to stop the disk with a corresponding character at a predetermined point when the disk is manually rotated through the hub, a frame translatable upon the first frame parallel with the hub axis, a series of keys translatable in the frame toward the plungers, each having an abutment engageable with any plunger as the frame is advanced, each lug adapted to translate the plunger in a certain different and predetermined degree, means for locking the plungers in any one of its disk intercepting positions after depression by a key, and means for releasing the plungers as the disks are restored to initial position by rotation of the hub.

15. In a device of the class described, a frame, a hub mounted therein, printing disks rotatable upon the hub and yieldably connected therewith for movement therewith, and for permitting forced rotation of the hub independently of the disks, each disk having spaced printing characters and having stop lugs upon one face substantially spirally arranged in predetermined relation to the type characters, spring retractable abutment members translatable in said frame, radially related to the axis of the hub and adjustable in predetermined degree against spring action into the rotative paths of the lugs to stop a disk with a corresponding character at a predetermined point when the disk is rotated by the hub, a key carrying frame translatable upon the first frame parallel with the hub axis, a series of keys translatable in the frame toward the plungers, each having an abutment engageable with any plunger as the frame is advanced, each lug adapted to translate the plunger in a certain different and predetermined degree, locking means for holding the plungers in disk intercepting and non-disk intercepting positions, and means for releasing the plunger locking means for allowing the plungers to resume their initial position, as the hub is rotated to restore the disks to initial position after a printing operation.

16. A frame, a hub rotatably mounted therein, a series of spaced type disks rotatable upon the hub and yieldably connected therewith for permitting rotation of the disks by the hub and of the hub independently of the disks, each disk having spaced printing characters and stop lugs upon one face spirally arranged in correspondence to the type characters, a series of plungers one for each disk translatable mounted in the frame, radially with respect to the hub axis, and with their outer ends aligned, a key carriage translatable upon said frame axially of the hub having a plurality of spring retractable keys therein translated in equal degree, each having a plunger engaging abutment of different length and spaced outwardly a dif-

ferent distance from the aligned outer ends of the plungers, said abutments grouped and lying face to face, means for translating the frame to bring the group of abutments over the desired plunger to dispose the abutments in position for any one to operate a plunger and project the same in the rotative path of one of the disk lugs of its corresponding disk, and means operable by the keys for releasing and translating the key frame both upon depression and retraction of a key, whereby upon depression of a key the frame is advanced partially toward the next succeeding plunger, and upon retraction of the key the frame advance is completed.

17. A frame, a hub rotatably mounted therein, a series of identically similar type disks rotatable upon the hub and yieldably connected therewith for permitting rotation of the disks by the hub and of the hub independently of the disks, each disk having spaced peripheral printing characters, and stop lugs upon one face spirally arranged in predetermined relation to the printing characters, two curved plates superposed and slidably mounted in said frame and slidable one upon the other concentric with and beyond the disk periphery, each plate having a number of openings therein corresponding to the number of plungers, the corresponding openings of respective plates normally overlapping in direction of slide of the plates, with an oppositely related edge of the respective overlapped openings chamfered to form oppositely directed teeth, a spring retractible plunger translatably mounted in the frame and traversing each pair of openings, and projectable into the paths of the disk lugs, each plunger having a linear series of notches extending inwardly from each edge, the notches on opposite sides in staggered relation and each notch engageable one by one or the other of said teeth to lock the plungers in any advanced position, means for simultaneously sliding the plates in opposite direction to destroy the overlapped relation and withdraw a tooth or teeth from a plunger, said means including a rock shaft rotatable in the frame, means connected with the plate and the rock shaft for sliding in opposite directions when the shaft is rocked, said shaft having a detent thereon, a second shaft translatably connected with the hub for rotating the same, to rotate the disks to printing position and return the same to initial position after printing, said shaft having radial projections thereon adapted to engage the detent of the rock shaft to rock that shaft, slide the plates for releasing the plungers, as and when the hub operating shaft is rotated to return the disks to initial position.

18. A frame, a shaft mounted therein for substantially complete rotation, a hub keyed to said shaft, a printing disk rotatable upon

said hub having a radial socket in its bore facing the hub and further having spaced peripheral printing characters thereon, an outwardly spring pressed detent translatable in the hub and engageable with said socket for permitting rotation of the disk by the hub and independently of the disk, said disk having stop lugs upon one face substantially spirally arranged in predetermined fixed relation to the printing characters, an abutment member in the frame selectively adjustable in predetermined variable degrees toward the disk for projection into the path of one of the lugs, and a peripheral stop on said disk engageable with the frame for limiting rotation of the disk in both directions and as limits of rotation in each direction.

19. A frame, a shaft rotatable therein, a hub keyed to said shaft, type disks rotatable on said hub and connected therewith for permitting rotation of the disk by the hub and of the hub independently of the disk for setting the disk at printing position and for returning the same to initial position after printing, said disks having spaced radial teeth forming slots therebetween and having spirally arranged stops disposed in predetermined position to the teeth, spring retractable abutment members translatable in said frame and selectively adjustable and projectable into the paths of the lugs for interrupting disk rotation, a disk rotating shaft having a radially disposed shoulder, transmission gearing connecting said disk rotating shaft with said hub rotating shaft, a rock shaft, an arm radially keyed thereto having a terminal hook engageable with the radial shoulder of the disk rotating shaft, after said shaft has been rotated to the limit of its disk setting position, a second arm on the rock shaft having a terminally rounded finger adapted to enter between the teeth of the disks to align and lock the same, simultaneously with the engagement of the hook with the radial shoulder, and manually operable means for rotating the rock shaft to simultaneously withdraw both arms from locking position and permit the disk rotating shaft to be returned to initial position, releasing the disks to permit such return.

20. A frame, a hub rotatably mounted therein, a series of spaced type disks, rotatable upon the hub, means for yieldably connecting each disk with the hub for permitting rotation of each disk by the hub and of the hub independently of any disk, each disk having spaced printing characters, and stop lugs upon one face spirally arranged in correspondence to the type characters, spring retractible plungers one for each disk translatably mounted in said frame and radially adjustable with respect to the hub axis, at the side face of a disk, and adjust-

able to intercept a lug of a disk, the outer ends of the plungers aligned; a carriage translatable upon said frame axially of the hub, a plurality of keys translatable in the frame toward the plungers in equal degree and into engagement with their outer ends, each key having an abutment, the abutments adjacently grouped, and consecutively spaced a greater distance from the aligned outer ends of the plungers, each abutment adapted to translate the plunger in a different degree, means for releasably locking the plungers in any disk intercepting position, and tripping mechanism operable by the hub when the same is reversely rotated to return the disks to initial position after printing, for releasing the plunger locking mechanism returning the plungers also to initial position.

21. A frame, a hub rotatably mounted therein, a series of spaced type disks, rotatable upon the hub, means for yieldably connecting each disk with the hub for permitting rotation of each disk by the hub and of the hub independently of any disk, each disk having spaced printing characters, and stop lugs upon one face spirally arranged in correspondence to the type characters, spring retractible plungers one for each disk, translatable mounted in said frame and adjustable toward a corresponding disk, to intercept a lug of that disk, the outer ends of the plungers aligned; a carriage translatable upon said frame lengthwise of the plungers, a plurality of keys translatable in the frame toward the plungers, each key having an abutment engageable with the outer end of any plunger, the abutments adjacently grouped and consecutively spaced a greater distance from the aligned outer ends of the plungers, each abutment adapted to translate the plunger in a different degree, means for releasably locking the plungers in any disk intercepting position, and tripping mechanism operable by the hub when the same is reversely rotated to return the disks to initial position after printing, for releasing the plunger locking mechanism to return the plungers also to initial position.

22. A frame, a hub rotatably mounted therein, type disks rotatable on the hub, means for yieldably connecting said hub and disks for permitting rotation of the disks by the hub and of the hub independently of the disks, said disks having peripheral printing characters, and stop lugs on one face spirally arranged in predetermined relation to the printing characters, a pair of curved lock plates slidably mounted one upon the other and in the frame, concentric with the disk peripheries and spaced therefrom, each plate having a line of openings therein, corresponding in number to the plungers, with corresponding openings of the plates adapted to be overlapped in direction of slide, the

oppositely related edges of respective plates chamfered to form locking teeth, spring retractible abutment members, each traversing one pair of superposed openings, each abutment member having notches at opposite edges engageable by one or both of the oppositely related teeth for locking the abutments in retracted or advanced position, said abutment members projectable into the path of any lug of the corresponding disk, and said plates having their corresponding ends upturned to form spaced parallel projections adjacently disposed, a rock shaft journaled in the frame parallel with the hub axis and having a diametrically disposed abutment thereon lying between the projections and engageable therewith for sliding the plates in opposite directions when the shaft is rocked, springs for forcing the projections of the plates toward one another, and ratchet means connecting the rock shaft with the hub for rotating the rock shaft and sliding the plates to release the abutments as the hub is rotated in disk-restoring direction.

23. In a printing machine, a frame, a hub rotatably mounted therein, type disks rotatable on the hub, means for yieldably connecting said hub and disks for permitting rotation of the disks by the hub and of the hub independently of the disks, said disks having peripheral printing characters, and stop lugs on one face spirally arranged in predetermined relation to the printing characters, a pair of curved plates slidably mounted one upon the other and in the frame, concentric with the disk peripheries and spaced therefrom, each plate having relative openings therethrough providing sets of opposing locking edges, spring retractible abutment members one for each disk, each traversing pairs of superposed openings, each abutment member having notches at opposite edges engageable by one or both of the oppositely related teeth, said abutment members projectable into the path of any lug of the corresponding disk, a rock shaft journaled in the frame having means for sliding the plates in opposite directions to release the abutment members when the shaft is rocked, and ratchet means connecting the rock shaft with the hub for rotating the rock shaft and sliding the plates to release the abutments as the hub is rotated in disk-restoring direction.

24. A frame, a hub rotatably mounted therein, type disks rotatable upon the hub, means yieldably connecting said disks with said hub for permitting rotation of the disks by the hub and of the hub independently of the disks, rotating any disk or plurality of disks, said disks having spaced radial teeth forming slots therein and also having stop lugs spirally arranged in predetermined relation to the teeth, a translatable mounted abutment member for each disk projectable

into the path of any lug of the corresponding disk, a hub rotating shaft transmittably connected with the hub and having a radially disposed shoulder, a rock shaft, an arm fixed
 5 radially thereto having a terminal projection engageable with the radial shoulder of the disk rotating shaft after said shaft has been rotated to the limit of its disk setting position, and a second arm on said rock shaft
 10 having a terminal finger adapted to enter between the aligned teeth of the disks simultaneously with the engagement of the hub with the radial shoulder, to form an interlock between the hub rotating shaft and
 15 disks, and to lock both the shaft against counter rotation and the disks in printing position.

25. In a printing machine, a frame, a hub rotatably mounted therein, type disks rotatable upon the hub, means yieldably connecting each disk with said hub for permitting rotation of any disk by the hub and of the hub independently of any disk for rotating any disk or plurality of disks, each disk having spaced radial teeth forming slots therein
 25 and also having stop lugs spirally arranged in predetermined relation to the teeth, an abutment member for each disk projectable into the path of any lug of the corresponding disk, a hub rotating shaft transmittably
 30 connected with the hub and having a radially disposed shoulder, a rock shaft, an arm having a projection engageable with the radial shoulder of the disk rotating shaft, after said shaft has been rotated to the limit
 35 of its disk setting position, and a second arm on said rock shaft having a finger adapted to enter between the aligned teeth of the disks simultaneously with the engagement
 40 of the hub with the radial shoulder, to form an interlock between the hub rotating shaft and disks, and to lock both the shaft against counter rotation and the disks in printing position.

45 26. A printing mechanism including a rotatable printing member having printing characters thereon, stops upon said printing member having predetermined relation to the characters, a stop intercepting element
 50 projectable into the path of any stop to arrest rotation of the element with the desired character at printing position, and a key carriage translatable adjacent said stop intercepting element having translatable keys
 55 operable for selectively advancing said element to stop intercepting positions.

27. A printing mechanism including a rotatable printing member having printing characters thereon, stops upon said printing
 60 member having predetermined relation to the characters, a stop intercepting element projectable into the path of any stop to arrest rotation of the element with the desired character at printing position, and a key
 65 carriage translatable adjacent said stop in-

tercepting element having translatable keys operable for selectively advancing said element to stop intercepting positions, and detent means for temporarily locking said element at any advanced position.

70 28. A printing mechanism including a shaft, printing members upon said shaft each connected therewith for obtaining rotation of any member or members by the shaft while any member or members are held from
 75 rotation, each member having printing characters thereon, and stops having predetermined relation to the printing characters, and a stop intercepting element projectable into the path of any stop to arrest rotation
 80 of that element with the desired character at printing position, when the shaft is rotated for bringing the stops into engagement with the intercepting element.

29. A printing mechanism including a
 85 shaft, printing members upon said shaft each connected therewith for obtaining rotation of any member or members by the shaft while any member or members are held from
 90 rotation, each member having printing characters thereon, and stops having predetermined relation to the printing characters, and a stop intercepting element projectable into the path of any stop to arrest rotation
 95 of that element with the desired character at printing position, when the shaft is rotated for bringing the stops into engagement with the intercepting element, and a translatable key carriage adjacent said stop intercepting elements having translatable keys
 100 operable for selectively advancing said elements to stop intercepting positions.

30. A printing machine having a printing element rotating member, printing elements upon said member, each having peripheral
 105 printing characters and spirally arranged stops upon one face, corresponding to the characters, yieldable detent means connecting each printing element for rotation with said rotating member and for permitting independent rotation of the member when rotation of any element is prevented, abutment elements one for each printing element selectively projectable into the path of any
 110 stop of a corresponding element to arrest rotation thereof at printing position when and while said rotating member revolves.

31. A printing machine having rotatable printing elements, each element having peripheral printing characters and spirally
 120 arranged stops corresponding to the characters, means for obtaining rotation of any disk or disks while other disks are held from rotation, abutment elements one for each printing element projectable into the path
 125 of any stop of a corresponding element to arrest rotation thereof at printing position.

32. A printing machine having rotatable printing elements, each element having peripheral characters, and stops projecting
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from one face spirally arranged in predetermined relation to the printing characters, abutment elements one for each printing element selectively translatable into the path of any stop of the corresponding printing element for stopping a printing character at printing position, a translatable key carriage having depressible keys adapted for selectively advancing the abutment elements to stop intercepting positions, and escapement means for obtaining and controlling step by step movement of the carriage to dispose the keys in plunger engaging and advancing positions.

33. A printing mechanism comprising a frame, a type wheel journaled therein, said type wheel having spaced printing characters and stop lugs upon one face arranged in spiral relation and in correspondence to the printing characters, a translatable plunger member projectable for intercepting any one

of the lugs when the type wheel is rotated, a key carriage translatable upon the frame, having keys adapted to engage and selectively translate the plunger into the path of any disk stop, and means for advancing the carriage to dispose the keys in plunger engaging position.

34. A laundry marking machine comprising a plurality of rotatable type disks each having type characters thereon, and stop lugs spirally arranged and spaced in correspondence to said characters, plungers projectable into the path of any lug of a corresponding disk, one for each disk, and means for rotating the disks to cause a stop to engage a projected plunger to stop that disk with one of its type characters at printing position.

In witness whereof, I hereunto subscribe my name.

MAURICE W. GRIESBAUM.