Oct. 8, 1968 T. GASSINO ETAL 3,404,765

PRINTING DEVICE WITH SELECTING MECHANISM EMPLOYING A GROUP OF ECCENTRICS

Filed Feb. 17, 1967 3 Sheets-Sheet 1

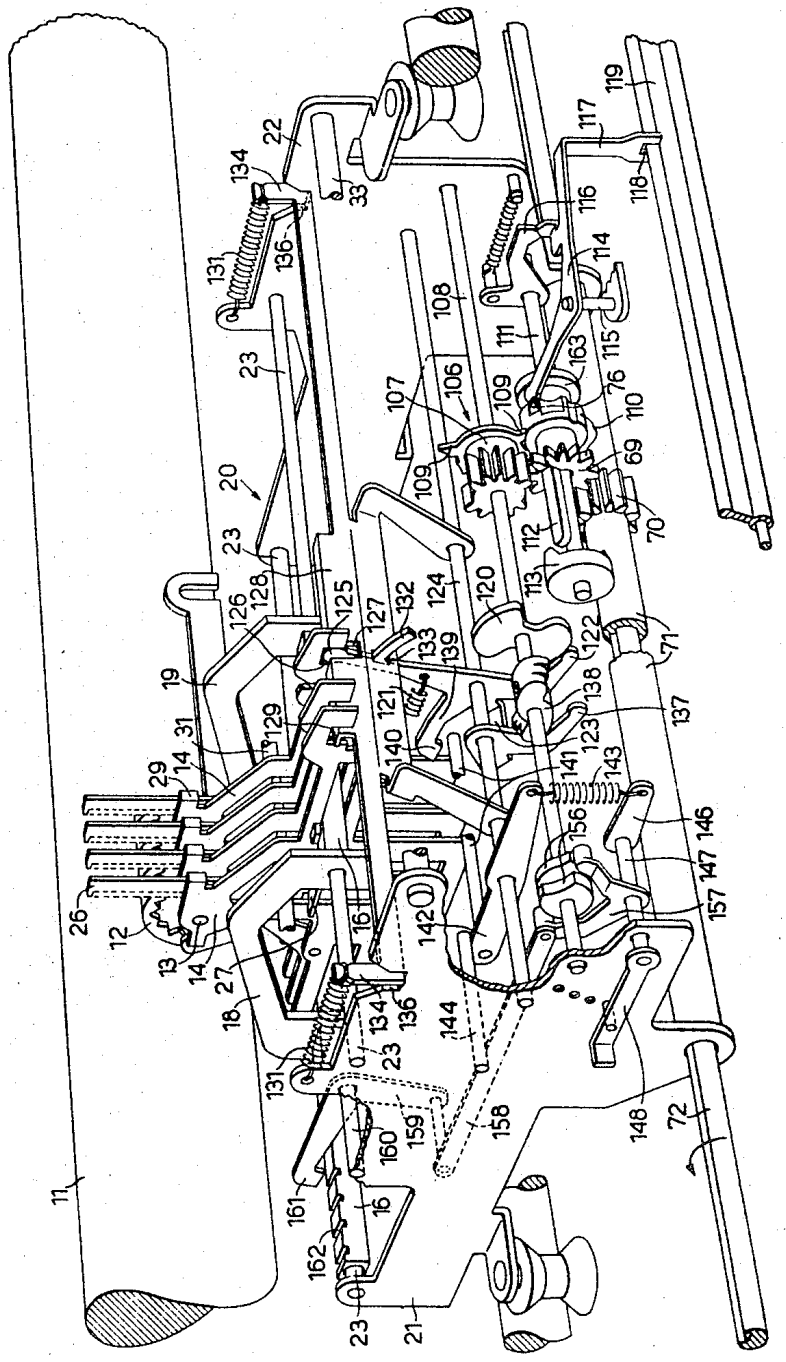

Fig. 1

INVENTORS
TERESIO GASSINO
ILARIO BOVIO

BY John Toggenburger
AGENT

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Filed Feb. 17, 1967 3 Sheets-Sheet 2

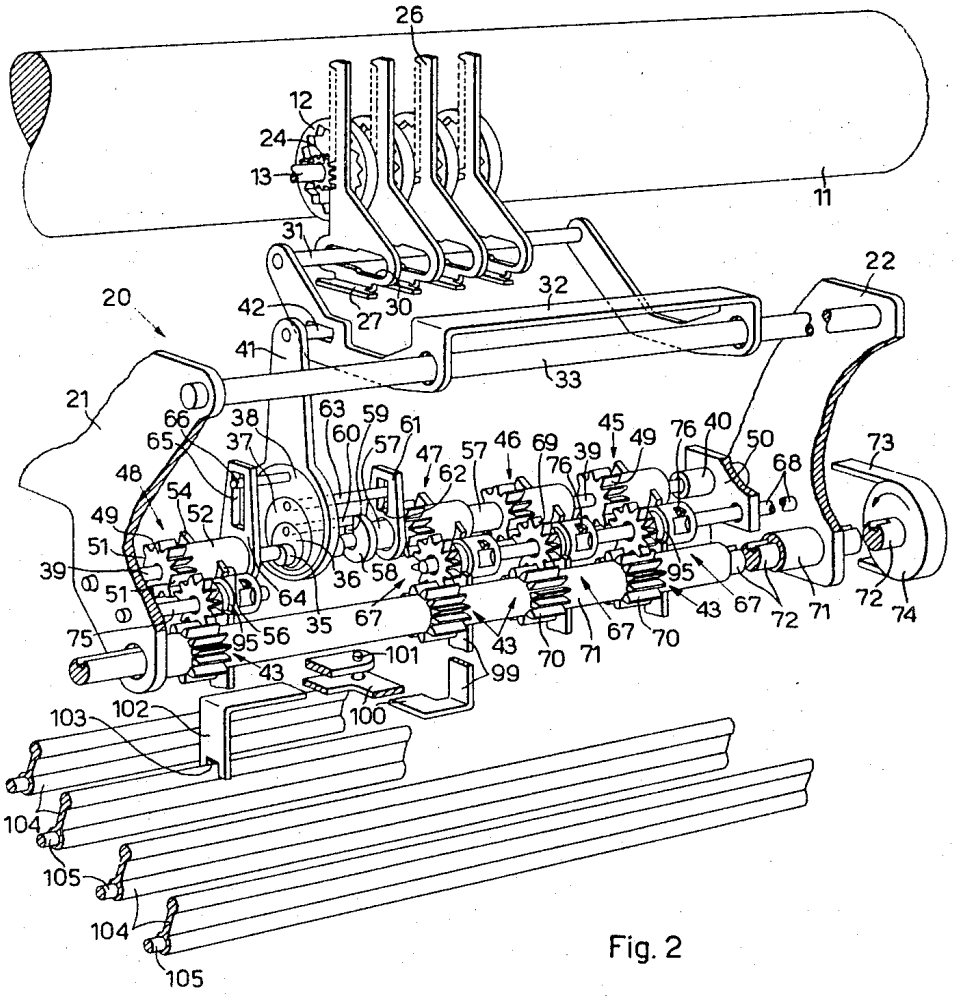

Fig. 2

INVENTORS
TERESIO GASSINO
ILARIO BOVIO

BY John Toggenburger
AGENT

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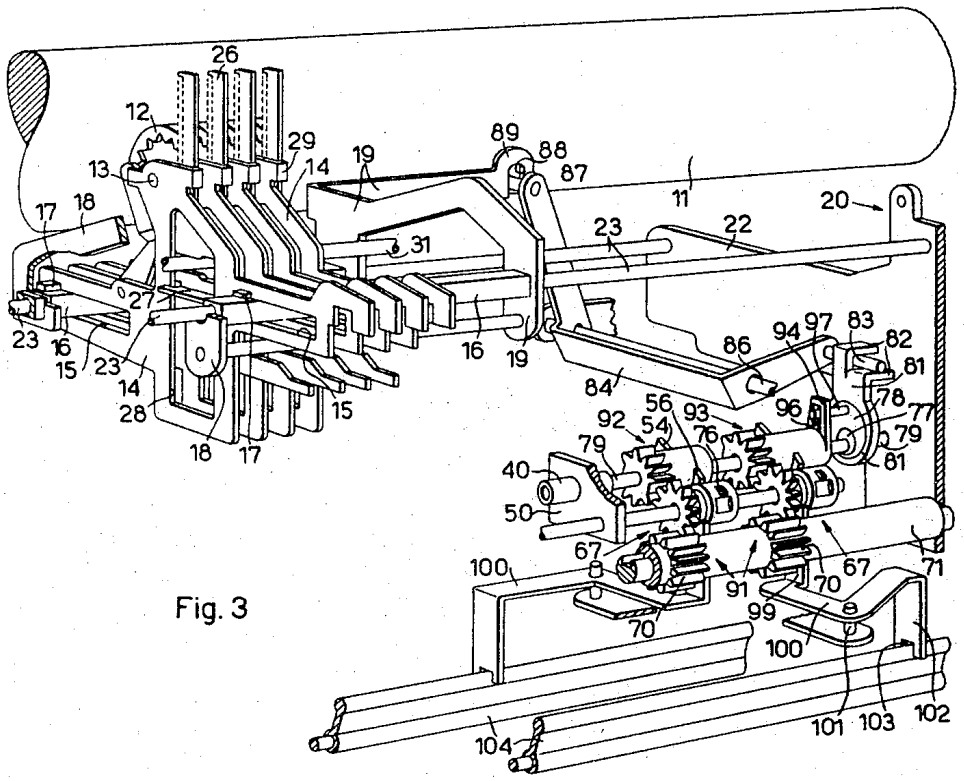

Fig. 3

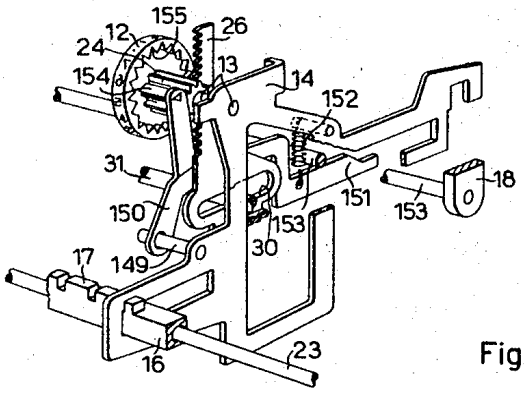

Fig. 4

INVENTORS
TERESIO GASSINO
ILARIO BOVIO

BY John Toggenburger
AGENT

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3,404,765

PRINTING DEVICE WITH SELECTING MECHANISM EMPLOYING A GROUP OF ECCENTRICS

Teresio Gassino and Ilario Bovio, Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy, a corporation of Italy

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Claims priority, application Italy, June 25, 1966, 34,047/66
17 Claims. (Cl. 197—55)

ABSTRACT OF THE DISCLOSURE

A printing device comprises at least a typecarrier provided with a plurality of different types adapted to be selectively positioned by a motion aggregating mechanism formed of a group of eccentrics, each one associated with a code unit and adapted to selectively assume one of two diametrically opposite positions, at least an outer eccentric being rotatably mounted on an inner eccentric of said group. The eccentrics are associated with a group of coaxial similar driven pinions selectively driven by a group of coaxial similar driving pinions, connecting means being provided for enabling each one of said eccentrics to be bodily rotated by the associated driven pinion.

Background of the invention

The present invention relates to a printing device for typewriters, teleprinters, accounting and like machines, having at least a typecarrier provided with a plurality of different types, a motion aggregating mechanism for selectively positioning said typecarrier according to a predetermined code combination, said mechanism comprising a group of eccentrics, each one associated with a code unit and adapted to selectively assume one of two diametrically opposite positions, at least an outer eccentric being rotatably mounted on an inner eccentric of said group.

It is known a printing device substantially of the above mentioned type, wherein each eccentric is integral with a pinion. Since during the rotation of each inner eccentric the outer eccentrics are displaced according to a circular path, the pinions are displaced bodily with said eccentrics. Therefore, to rotate each pinion it is necessary to use a rack capable to rock so as to follow the above mentioned displacement of the eccentrics and pinions. This device has the disadvantage of requiring specific means for guiding and operating the different racks.

Summary of the invention

The primary object of the invention is to obviate this disadvantage. According to the invention, in a printing device of the above type, I now provide a group of coaxial similar driven pinions associated with said eccentrics, a group of coaxial similar driving pinions each one conditionable for rotating a corresponding driven pinion 180 degrees, and connecting means for enabling each one of said eccentrics to be bodily rotated by the associated driven pinion.

This and other characteristics of the invention will become apparent from the following description of a preferred embodiment, made by way of example and not in a limiting sense, and from the accompanying drawings.

Brief description of the drawings

FIG. 1 is a partial perspective view of a printing device according to the invention taken from the front and left side of the machine;

FIG. 2 is another partial perspective view of the device of FIG. 1;

FIG. 3 is a third partial perspective view of the device of FIG. 1;

FIG. 4 is a perspective view of a detail of the device taken from the rear and left side of the machine.

Description of the preferred embodiments of the invention

With reference to the FIG. 1, the numeral **11** indicates a conventional paper platen, which is transversely stationary on the machine. The printing device comprises a set of four typewheels **12**, each one provided with sixteen types and rotatable on an individual pivot **13** parallel to the platen **11** and secured to a corresponding plate **14**. Each plate **14** (FIG. 3) is provided with a pair of rectangular slots **15** longitudinally slidable on a pair of hollow square bars **16** and laterally guided by corresponding projections **17** of the bars **16**. The two bars **16** are secured to a pair of flanks **18** and **19** which together with the bars **16** form a support of the wheels **12**.

Furthermore, the printing device comprises a carriage generically indicated by the numeral **20** (FIG. 1), which is transversely movable step by step rightwards with respect to the platen **11** in a manner known per se. Particularly, the carriage **20** comprises a pair of flanks **21** and **22** secured to a pair of transverse shafts **23** (FIG. 3), slidably mounting the bars **16**, whereby the wheels **12** are adapted to be axially displaced with respect to the carriage **20**.

Each wheel **12** is integral with a pinion **24** (FIG. 4) engaging a corresponding rack **26**, which is provided with a bent lug **27** by means of which it is guided into a recess **28** (FIG. 3) of the plate **14**. A bent lug **29** of the plate **14** prevents the rack **26** from disengaging the pinion **24**. Each rack **26** is also provided with a slot **30** (FIG. 2) engaging a universal bar **31** secured to a bail **32** fulcrumed on a shaft **33** secured to the flanks **21** and **22** of the carriage **20**.

Furthermore, the printing device comprises a first motion aggregating mechanism adapted to angularly position the wheels **12**, and a second motion aggregating mechanism adapted to transversely displace the wheel **12**, said two code combination. Particularly the first mechanism comprises a group of four eccentrics **35**, **36**, **37** and **38** having an eccentricity proportional to the powers of two, that is respectively proportional to 1, 2, 4, and 8 respectively. The eccentric **35** is integral with a shaft **39** rotatably mounted on the flank **21** and on a sleeve **40** secured to an intermediate plate **50** of the carriage **20**. Each one of the other eccentrics **36**, **37** and **38** of the group is rotatably mounted on the eccentric having the next lower eccentricity. In turn the largest eccentric **38** is embraced by the head of a connecting rod **41**, which is provided with a pin **42** engaging a slot of the bail **32**.

Each eccentric **35**, **36**, **37** and **38** is adapted to assume one of two diametrically opposite positions under the action of a corresponding selection clutch generically indicated by **43**. The clutches **43** are of the type having mutilated gears and adapted to be synchronously engaged, substantially similar to the clutch described in the United States Patent No. 3,260,128 to T. Gassino et al. Particularly each clutch **43** comprises a driven part **45**, **46**, **47** and **48** respectively, associated with the eccentrics **35**, **36**, **37** and **38**. Each driven part is formed of a driven pinion **49** having two diametrically opposite portions **51** deprived of teeth. The pinion **49** is secured to a hub **52** coaxial with the shaft **39** and having a pair of additional teeth **54** and **56** axially mutually offset, but angularly aligned with the portions **51**.

The driven part **45** is directly secured to the shaft **39**. The driven part **46** is secured to a sleeve **57** rotatably mounted on the shaft **39**. A flange **58** secured to the sleeve **57** is provided with a radial notch **59** engaged by a pin

60 secured to the eccentric 36, which thus is bodily rotatable with the driven part 46. The driven part 47 is rotatably mounted on the sleeve 57 and is secured to an arm 61 having a notch 62 engaged by a pin 63 secured to the eccentric 37, which then results bodily rotatable with the driven part 47. Finally, the driven part 48 is idle on the shaft 39 and is secured to an arm 64 having a notch 65 engaged by a pin 66 secured to the eccentric 38, which then results bodily rotatable with the driven part 48.

Furthermore, each clutch 43 comprises a driving part 67, three of which are rotatably and slidably mounted on a shaft 68 secured to the flank 22 and to the plate 50 (FIG. 3) of the carriage 20, while the fourth one is rotatably and slidably mounted on a second shaft 75 secured to the flank 21 and aligned with the shaft 68. Each driving part 67 comprises a pinion 69 meshing with a corresponding pinion 70 having a width larger than the pinion 69, but substantially equal to the width of the pinion 49. The pinions 70 are secured to a common sleeve 71 extended between the flanks 21 and 22 and bodily rotatable but axially slidable on a fluted shaft 72 rotatably mounted on the stationary machine frame and extended along the whole width of the machine. The shaft 72 is continuously rotated counterclockwise by a conventional electric motor of the machine through a belt 73 and a pulley 74 secured to the shaft 72.

Furthermore, each driving part 67 comprises a pair of further teeth 76, only one of which is shown in FIG. 2, said teeth 76 being adapted to engage the additional teeth 54 and 56 to start the rotation of the corresponding driven part 45, 46, 47 and 48. The teeth 76 of each part 67 are diametrally opposite, but axially mutually aligned. Furthermore, the teeth 76 of the different parts 67 are located at the same angular position whereby the different driven parts 45, 46, 47 and 48 may be simultaneously started, that is the clutches 43 are synchronously operated. Each driven part 45, 46, 47 and 48 normally faces the corresponding driving part 67 with one of the portions 51 and with the additional tooth 54 or 56 which is out of the plan of the teeth 76.

The second motion aggregating mechanism comprises a group of two eccentrics 77 and 78 (FIG. 3) having an eccentricity according to the ratio 1:2. The eccentric 77 is integral with a shaft 79 rotatable on the flank 22 and on the sleeve 40. The eccentric 78 is rotatable on the eccentric 77 and is embraced by the head of a connecting rod 81. This latter is provided with two lugs 82 engaging a pin 83 of a bail 84 fulcrumed on a longitudinal shaft 86 secured to the carriage 20. Another pin 87 of the bail 84 engages a notch 88 of a projection 89 of the flank 19.

Each eccentric 77 and 78 is adapted to be rotated 180 degrees under the action of a corresponding clutch 91 similar to the clutches 43 and comprising a driven part 92, respectively 93, similar to the driven parts 45, 46, 47 and 48. The driven part 92 is secured to the shaft 79, whereas the driven part 93 is rotatable on the shaft 79 and is secured to an arm 94 having a notch 96 engaging a pin 97 secured to the eccentric 78, which thus is bodily rotatable with the driven part 93. Each clutch 93 comprises also a driving part 67 which is continuously rotated by a corresponding pinion 70 of the sleeve 71.

Each driving part 67 (FIG. 2) may be transversely displaced between two positions to bring the teeth 76 on the plan of the selected one of the additional teeth 54 and 56 of the respective driven parts. To this end each driving part 67 is provided with an annular groove 95 engaged by a lug 99 of a lever 100 pivoted on a pin 101 secured to the carriage 20. Another lug 102 of each lever 100 is provided with a notch 103 engaging a corresponding code bar 104 extended along the whole width of the machine and fulcrumed on the stationary frame of the machine by means of two end pins 105.

The printing device comprises an additional clutch 106 (FIG. 1) for controlling the printing operation of the selected typewheel 12. The clutch 106 is formed of a driven part 107 secured to a shaft 108 rotatable on the flanks 21 and 22 of the carriage 20 and having two additional teeth 109 located on the same plan. Furthermore, the clutch 106 comprises a driving part 110 slidable on a shaft 111 secured to the flank 22 and similar to the driving part 67 of the clutches 43 and 91, with the only difference that the part 110 is provided with a pin 112 cooperating with a frontal cam 113 secured to the shaft 111 and having two similar lobes. The clutch 106 is started with a delay of 60 degrees with respect to the clutches 43 and 91. The driving part 110 of the clutch 106 is provided with a groove 163 engaged by a lever 114 fulcrumed on a pin 115 secured to the carriage 20 and normally held in the position of the figure by a spring urged locking member 116. The lever 114 is provided with a lug 117 having a notch 118 engaging another bar 119 similar to the code bars 104, the bar 119 being rotated counterclockwise to cause the type corresponding to the code combination represented by the bars 104 to be printed.

Secured to the shaft 108 is another cam 120 having two similar lobes and cooperating with an arm 122 of a bail 123 secured to a shaft 124 and urged by a spring 121, the shaft 124 being rotatably mounted on the flanks 21 and 22. Another arm 125 of the bail 123, forming the hammer of the printing device, is adapted to engage a notch 126 of the plate 14 presently facing the printing point for causing the corresponding wheel 12 to strike the platen 11. The arm 125 normally enters a notch 127 provided on a universal bar 128, which engages a recess 129 of each plate 14.

The bar 128 is fulcrumed on the shaft 124 and is normally urged by a pair of springs 131 tensioned between a pair of projections 134 and the flanks 21 and 22 to contact the fore edge of the arm 125. This latter is also provided with a projection 132 engaging a hole 133 of the bar 128. The propections 134 are adapted to cooperate with a pair of shoulders 136 provided on the flanks 21 and 22 of the carriage 20. A third arm 137 of the bail 123 is adapted to cooperate with another cam 138 having two similar lobes and normally secured to the shaft 108. The cam 138 is provided with three sections having different edges adapted to engage the arm 137 when the machine is operated at 50, 75 and 100 bauds respectively. To this end the cam 138 may be axially secured to three different positions so as to cause the appropriate section of the cam 138 to engage the arm 137, according to the speed of the machine operation.

Another arm 139 of the bail 123 is provided with a projection 140 adapted to cooperate with a pin 141 of a lever 142 pivoted on the shaft 124. The lever 142 is normally urged by a spring 143 to contact a pin 144 secured to the flank 21 of the carriage 20. The spring 143 is also connected to an arm 146 secured to a shaft 147 rotatably mounted on the flank 21 of the carriage 20. Secured to the shaft 147 is also a lever 148, which is variably positionable by hand for adjusting the tension of the spring 143.

Secured to each plate 14 (FIG. 4) is a pin 149 pivotally mounting a lever 150 provided with a projection 151 normally urged by a spring 152 to contact a shaft 153 secured to the flanks 18 and 19. The lever 150 is also provided with a wedge shaped projection 154 adapted to cooperate with an inner pinion 155 integral with each wheel 12 and having a pitch equal to the pitch of the types carried by the wheel 12.

Finally, secured to the shaft 108 (FIG. 1) is a complementary cam 156 cooperating with a lever 157 fulcrumed on the shaft 147. The lever 157 is linked through a link 158 to a lever 159 fulcrumed on a pivot 160 secured to the flank 21. The lever 159 is provided with a projection 161 adapted to cooperate with a set of four notches 162 provided on the rear square bar 16 at a mutual distance equal to the distance between the wheels 12.

The printing device operates as follows.

The code bars **104** (FIGS. 2 and 3) are simultaneously selectively positioned according to the code combination of the character to be printed in a manner known per se, for example under the control of the received signals of a teleprinter or under the control of a depressed key. The code bars **104** through the corresponding levers **100**, displace the driving parts **67** of the corresponding clutches **43** and **91**, thus selectively rotating 180 degrees the driven parts **45**, **46**, **47**, **48**, **92** and **93** together with the eccentrics **35**, **36**, **37** and **38** and respectively **77** and **78**.

The connecting rod **41** (FIG. 2) is then vertically displaced to selectively rock the bail **32**. Then the bar **31** displaces the racks **26** vertically and rotates the wheels **12** simultaneously so as to bring the type to be printed in front of the printing line. Simultaneously the connecting rod **81** (FIG. 3) is displaced vertically and selectively rocks the bail **84** so as to bring the wheel **12** carrying the type to be printed in front of the printing point. The plate **14** carrying this wheel **12** is thus located in the longitudinal plane of the notch **127** (FIG. 1) of the bar **128** and its notch **126** is engaged by the arm **125**.

Simultaneously with the selective positioning of the code bars **104** (FIGS. 2 and 3), the bar **119** (FIG. 1) is rocked counterclockwise and through the lever **114** displaces the driving part **110** of the clutch **106** leftwards, so bringing the teeth **76** thereof on the plan of the teeth **109** of the driven part **107**. After 60 degrees of rotation of the clutches **43** and **91** (FIGS. 2 and 3), the driven part **107** (FIG. 1) of the clutch **106** begins to rotate counterclockwise for a 180 degree cycle of the shaft **108**. Upon 60 degrees of the cycle of the shaft **108** the cam **120** releases the arm **122** of the bail **123** which however now bears through the arm **137** against the cam **138**.

Upon 75 degrees of the cycle of the shaft **108**, the cam **156** begins to rock the lever **157** clockwise. Then the link **158** rocks the lever **159** counterclockwise, whereby the projection **161** engages the notch **162** corresponding to the selected wheel **12**, thus locking the supports **18**, **19**, **23** in the reached transverse position with respect to the carriage **20**. This engagement occurs at about 115 degrees of the cycle of the shaft **108**, that is upon 175 degrees of the cycle of the selection clutches **43** and **91** (FIGS. 2 and 3).

In the case the machine operates at the conventional telegraphic speed of 50 bauds, the cam **138** is secured to the shaft **108** so as to cause its rightmost section to cooperate with the arm **137** as shown in FIG. 1. In this case, upon 80 degrees of the cycle of the shaft **108**, the cam **138** causes the spring **121** to rock the bail **123** clockwise. The springs **131** at first cause the bar **128** to follow the bail **123**, whereby the four plates **14** approach the wheels **12** to the platen **11**. Then the bar **128** is arrested by the shoulders **136**, while the bail **123** is further rocked counterclockwise. Therefore, while the wheels **12** fulcrumed on these plates **14**, which engage the bail **128**, are arrested before striking the platen **11**, the wheel **12** carrying the type to be printed is further displaced toward the platen **11** by the arm **125** engaging the corresponding plate **14**. Now the projection **151** (FIG. 4) of the lever **150** leaves the shaft **153**, whereby the spring **152** rocks the lever **150** counterclockwise and the projection **154** engages the pinion **155** of the selected wheel **12** thus adjusting the angular position of this wheel **12**. Thereafter the arm **125** (FIG. 1) through the plate **14** causes this wheel **12** to strike against the platen **11** at 120 degrees of the cycle of the shaft **108**. Since the support **18**, **19**, **23** is transversely locked by the lever **159** and the selected wheel **12** is angularly locked by the projection **154**, the selected type is printed correctly.

In the last part of the counterclockwise rotation of the bail **123**, the projection **140** of the arm **139** engages the pin **141** of the lever **142**. Then the spring **143** of the lever **142** decelerates the speed of the bail **123**, whereby the arm **125** remains slightly detached from the rear edge of the notch **126** of the plate **14**. Therefore, the last part of the printing stroke of the wheel **12** is effected by inertia and any vibration of the wheel **12** between the platen **11** and the arm **125** is prevented, whereby the imprinting will not be smudged. By manually rocking the lever **148** the tension of the spring **143** is adjusted to alter at will the impact intensity.

The bail **123**, after having caused the wheel **12** to effect an imprint, is engaged again by the cam **120** through the arm **122**, which begins to return the bail **123** clockwise, thus restoring forward the plate **14** of the wheel **12** which has effected the imprint. At the beginning of this return stroke the projection **151** (FIG. 4) of the lever **150** engages the shaft **153**, whereby the projection **154** is disengaged from the pinion **155**. Simultaneously the cam **156** (FIG. 1), through the lever **157** and the link **158**, disengages the projection **161** of the lever **159** from the notch **162**. Since the code bars **104** may be positioned already during the cycle of the clutches **43** and **91** (FIGS. 2 and 3), and since in the first part of the rotation thereof, due to the sinusoidal motion originated by the eccentrics, the connecting rods **41** and **81** substantially are not displaced, the next selecting cycle or the clutches **43** and **91** may be effected immediately after the preceding one. In the meanwhile the cam **120** (FIG. 1) fully restores the bail **123** clockwise and in the last part of the stroke of the bail **123** the arm **125** restores the bail **128** clockwise and the plates **14** forwards. After the printing operation the carriage is displaced rightward one step in a manner known per se. Near the end of the cycle of the shaft **108**, the pin **112** engages the frontal cam **113** and is displaced rightwards together with the driven part **110** of the clutch **106**, whereby the bar **119** is returned to the position of FIG. 1. However the clutch **106** is disengaged only in the case the bar **119** has no more been rocked.

It is intended that modifications, improvements, and addition of parts may be made to the described printing device, without departing from the scope of the invention as defined by the appended claims.

What is claimed is:

1. A printing device for typewriters, teleprinters, accounting and like machines, comprising in combination,

at least a typecarrier provided with a plurality of different types,

a motion aggregating mechanism for selectively positioning said typecarrier according to a predetermined code combination,

said mechanism comprising a group of eccentrics including an outer eccentric and at least one inner eccentric, each one associated with a code unit and adapted to selectively assume one of two diametrically opposite positions, at least an outer eccentric being rotatably mounted on an inner eccentric of said group,

a group of coaxial similar driven pinions associated with said eccentrics,

a group of coaxial similar driving pinions each one conditionable for rotating a corresponding driven pinion 180 degrees,

and connecting means for enabling each one of said eccentrics to be bodily rotated by the associated driven pinion.

2. A device according to claim **1**, comprising in combination:

a first common shaft for mounting said driven pinions, and a second common shaft parallel to said first shaft for mounting said driving pinions.

3. A device according to claim **2**, wherein said first common shaft is secured to one of said eccentrics and to the associated driven pinion.

4. A device according to claim **3**, wherein said connecting means between the other eccentrics and the other driven pinions comprise in combination:

a pin secured to each one of said other eccentrics,

a member secured to each one of said other driven pinions,
and a slot on said member entered by the pin of the associated eccentric to allow a radial displacement of each outer eccentric with respect to the associated driven pinion when an inner eccentric is rotated.

5. A device according to claim 3, wherein said connecting means between the other eccentrics and the other driven pinions comprise in combination:
an element secured to each one of said other eccentrics,
and a counterelement secured to each one of said other driven pinions, said element and said counterelement having a sliding relationship to allow a radial displacement of each outer eccentric with respect to the associated driven pinion when an inner eccentric is rotated.

6. A device according to claim 5, comprising in combination:
a pair of diametrically opposite portions deprived of teeth on each driven pinion, one of said portion normally facing the associated driving pinion,
a pair of additional teeth angularly aligned with each one of said portions, said additional teeth being axially mutually offset and being bodily rotatable with a corresponding driven pinion,
a further tooth bodily rotatable with each one of said driving pinions, and normally aligned with the additional teeth not facing the corresponding driving pinion,
and means for axially aligning one of said additional teeth with said further tooth for preliminarily rotating the associated driven pinion, said further tooth of the various driving pinions being angularly mutually aligned so as to drive said driven pinions synchronously.

7. A printing device for typewriters, teleprinters, accounting and like machines, comprising in combination,
a set of adjacent typewheels each one provided with a plurality of different types,
a support rotatably mounting said typewheels,
a first motion aggregating mechanism for selectively bodily rotating said typewheels,
a second motion aggregating mechanism for selectively moving said support so as to displace said typewheels axially, each one of said mechanisms comprising an associated group of eccentrics including an outer eccentric and at least one inner eccentric adapted to assume one of two diametrically opposite positions according to a predetermined code combination, at least an outer eccentric of each group being rotatably mounted on an inner eccentric of the same group,
a group of coaxial similar driven pinions associated with each group of eccentrics,
a group of coaxial similar driving pinions associated with each group of eccentrics and each one conditionable for rotating a corresponding driven pinion 180 degrees,
and connecting means for enabling each one of said eccentrics to be bodily rotated by the associated driven pinion.

8. A device according to claim 7, wherein said typewheels are rotated by a first group of eccentrics having an eccentricity variable according to the powers of two, the smallest eccentric of said first group being integral with the shaft of said driven parts, the other eccentrics of said first group being each one rotatable on the eccentric having the next lower eccentricity.

9. A device according to claim 8, wherein said support is displaced by a second group of eccentrics having an eccentricity variable according to the powers of two, and mounted in manner similar to that of the eccentrics of said first group.

10. A device according to claim 7, comprising in combination:
a stationary paper platen,
a carriage transversely movable step by step with respect to said platen,
means movably mounting said support on said carriage,
and means for mounting said eccentrics, said driven pinions and said driving pinions on said carriage.

11. A device according to claim 10, wherein said typewheels are fulcrumed on individual pivots parallel to the printing line, said pivots being movable to enable the corresponding typewheel to strike on said platen, comprising in combination:
a shaft cyclically rotatable at the end of the rotation of said driven pinions,
and a hammer facing the printing point and operable by said shaft to cause the typewheel located in front of said printing point to be so moved.

12. A device according to claim 11, comprising in combination:
a locking member operable for locking said support in the reached transverse position,
and means on said shaft for operating said locking member before operation of said hammer.

13. A printing device for typewriters, teleprinters, accounting and like machines, having a platen, a set of adjacent typewheels fulcrumed on individual pivots parallel to the printing line, said pivots being movable to enable the corresponding typewheel to strike on said platen, a transversely movable common support for said typewheels, a selecting device for selectively rotating said typewheels and for selectively moving said support, and comprising in combination:
a cyclically rotatable shaft,
a first cam on said shaft,
a second cam on said shaft,
and a hammer facing toward the platen at the location of the printing point and controlled, during cyclic rotation of said shaft, first by said first cam to effect movement of the typewheel partially toward the platen and controlled, during the same cyclic rotation of said shaft, by the second cam thereafter to effect further movement of said typewheel toward the platen at a predetermined speed condition.

14. A device according to claim 13, comprising further, detent notches associated with said typewheels to define type-selective positions thereof,
latches individual to said wheels normally clear of said detent notches and movable to engage them,
and means controlled by said cyclically rotatable shaft to engage said latches before each printing contact of a typewheel is effected.

15. A device according to claim 13, and wherein said cyclically rotatable shaft is rotatable at a number of predeterminable speeds, comprising therewith in combination:
a plurality of different cam edges on said second cam adapted to be predeterminedly selected for individual cooperation with said hammer,
said cam edges relatively to each other adapted to predetermine said further printing movement of said type wheel toward said platen at speeds suited to the selected speed of the cyclically rotatable shaft.

16. A device according to claim 13, comprising therewith in combination:
a decelerating member engageable for displacement from a normal position through the operation of said hammer late in its operating stroke,
spring means urging said decelerating member to its normal position,
and manually settable means to adjust the tension of said spring means, thereby to alter the decelerating effect of said decelerating member on said hammer.

17. A printing device for typewriters, teleprinters, accounting and like machines, comprising in combination:
a platen,
a set of typewheels axially adjacent to each other parallel of the platen and normally removed therefrom transversely of the platen,

a movable support carrying said typewheels for movement parallel to the platen to align different wheels with a printing point on the platen,

mounting plates for said typewheels on said common support situated in adjacent planes transversely of the platen,

means guiding said mounting plates for movement on said support in their individual planes to effect imprints by said typewheels,

a selecting device for selectively rotating said typewheels and also for selectively moving said support parallel to the platen to align selectively said typewheels with the printing point,

a notch in each of said mounting plates,

a hammer for operating said mounting plates transversely to said platen and having an operating end adapted to be straddled by the notch of any of said mounting plates if brought into registration therewith lengthwise of the carriage by said selecting device,

a universal member extending parallel to the platen and along with the operating end of said hammer also adapted to be straddled by said notches,

a recess in said universal member being transversely of the platen in alignment with the printing point, wherefor any mounting plate is operable by said hammer if brought into operative alignment therewith,

a first cam to cause a partial operation of said hammer and thereby to drive partially toward the printing

position whichever mounting plate is aligned with the printing point and further also to cause an operation of said universal member to drive the other mounting plates also partially toward printing position,

and a second cam to cause a further operation of said hammer which will drive only that mounting plate further toward printing position which is in alignment therewith, thereby to cause an imprint by a type of that typewheel.

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ROBERT E. PULFREY, *Primary Examiner.*

E. S. BURR, *Assistant Examiner.*